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48TH Global Congress on MIGS
November 9-13 Vancouver, B.C., Canada

ABSTRACTS

Be a Surgical “Multiplier” in MIGS
Inspire Brilliance Through Teamwork

Scientific Program Chair
Jubilee Brown, MD

Honorary Chair
Barbara S. Levy, MD

President
Marie Fidela R. Paraiso, MD
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Dear Colleagues and Friends,

We welcome you to the 48th AAGL Global Congress on Minimally Invasive Gynecologic Surgery located in the award-winning Vancouver Convention Centre surrounded by the vibrant Vancouver and the natural beauty of British Columbia, November 9-13, 2019.

In early 2019, the dedicated members of your Scientific Program Committee met to solidify our theme: “Be a Surgical "Multiplier" in MIGS --- Inspire Brilliance Through Teamwork,” based on the New York Times bestseller, Multipliers. According to the author, Liz Wiseman, multipliers are “leaders who use their intelligence to amplify the smarts and capabilities of the people around them.” Not only is Liz Wiseman our keynote speaker, who will share her insights and help us learn leadership skills alongside master surgeons, but our Scientific Program Committee took the theme to heart and changed the paradigm for this congress. We have transformed the traditional scheduling into a theme-based agenda, so that you can get the most out of your attendance. You will know where to go based on your areas of interest, and the level of programming will inspire you! You will leave here as the embodiment of a “Surgical Multiplier” by taking your knowledge and skills back home for implementation.

We put the meeting’s theme into practice in so many ways, as we revolutionized the entire abstract submission and grading process by creating a standardized scoring rubric that excluded outliers, resolved conflicts of interest, assigned abstracts to appropriate graders with specified areas of expertise, and allowed category leads to plan engaging subject-specific sessions for you. This was truly teamwork, with our incredible staff and partners who implemented this vision of scientific excellence. I think you will sense the advancement in the level of science presented. I’m impressed with our membership.

This year, we were very pleased to receive 945 abstracts in 20 different categories. After a rigorous selection process, the Scientific Program Committee reviewed and assigned accepted abstracts to topic-specific sessions of the Global Congress. This year we have 8 Plenary Sessions, 28 Open Communications, and additional Scientific Virtual Poster Sessions.

Abstracts provide the summarized findings of research and scientific study, in this case related to all aspects of minimally invasive gynecologic surgery. They allow us to discuss cutting-edge developments within our specialty of minimally invasive gynecology. Presented in this publication are the complete accepted abstracts as they were submitted. We invite you to read them, determine which presentations you want to see, and seek out the author to further engage them and share your own thoughts and experiences.

Thank you for choosing to spend this coming week with us in Vancouver and demonstrating a commitment to take your skills to the next level. I look forward to personally welcoming you!

Sincerely,

Jubilee Brown, MD
AAGL Vice-President and Scientific Program Chair
Keeping the Doors to Education Open

The AAGL acknowledges the corporations who partner with the AAGL to keep open the doors to educating the next generation of minimally invasive gynecologists. With their support the AAGL can provide more programs that will educate physicians and provide better patient care.

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Abstracts that were submitted for consideration for presentation and received as may 2019, are published as submitted and are provided to the members of the AAGL for use at the 48th AAGL Global Congress on Minimally Invasive Gynecology. The abstracts will be presented in oral, video and virtual poster sessions. Published by: Elsevier on behalf of AAGL.

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The Foundation of the AAGL takes great pride in presenting Signature Awards to the “best of the best” selected by our award committees. The authors of the top scoring abstracts were asked to submit a full manuscript and videos for scoring by another independent committee of up to five physicians. The top scoring manuscripts and a video were selected for award and will be presented throughout the Congress.

Additional awards will be presented during the Opening Ceremonies on Sunday, November 10th from 5:00 pm – 5:15 pm for the following: The John F. Steege Mentorship Award, The Harrith M. Hasson Educational Scholarship, and the Robert B. Hunt Endowed Award for the Best Paper Published in JMIGS, September 2018-August 2019.

The Foundation of the AAGL Signature Awards are supported through the generous donations received by our endowed funds and by our industry sponsors. We thank everyone who submitted their research for consideration for presentation and would like to congratulate the 2019 award winners.

### Jordan M. Phillips Endowment
**Best Research Paper on MIGS**

*Supported by the Jordan M. Phillips Endowment*

Established in 2005 and named for the founder and inaugural President of the AAGL, this endowment provides funding for the Jordan M. Phillips Keynote Address, research, fellowships and patient education. Funding for research provides AAGL’s Research Committee the ability to identify key topics in need of further study for AAGL members; facilitate funding and collaboration; promote innovation; and, advance research education.

**Post-Operative Dienogest Following Conservative Endometriosis Surgery: A Systematic Review and Meta-Analysis**

Andrew Zakhari, MD  
Darl Edwards, MD  
Olga Bougie, MD FRCCS MPH  
Michelle Ryu, MD  
Ally Murji, MD, MPH, FRSCSC

Mount Sinai Hospital, Toronto, Canada  
Queen’s University, Kingston, Canada

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Pietro Bortoletto, Lara F.B. Harvey, Elisa Jorgensen, Emad Mikhail

### Golden Hysteroscope Award
**Best Paper on Hysteroscopy**

*Supported by the Educational Grant from Olympus America Inc.*

EMIG Simulation Systems Construct Validation Trial: Hysteroscopic Component  
Malcolm Munro, MD  
Arnold Advincula, MD  
Kim Thayn, Ph.D

University of California, Los Angeles and Kaiser Permanente, Los Angeles Medical Center, Los Angeles  
Columbia University Medical Center, New York  
Kryterion Inc, Park City

Award Committee  
Francisco Carmona, Chair

Jay M. Berman, Jose Carugno, Martin Farrugia, Alka Kumar

### Golden Laparoscope Award
**Best Surgical Video on MIGS**

*Supported by the Educational Grant from Olympus America Inc.*

How We Do It: Identification and Dissection of the Sacrospinous Ligament and Lumbosacral Spinal Root on a Patient with Endometriosis of the Pelvic Floor  
Charles Souza, MD  
Claudio Crispi, MD  
Alexandre Sé, MD  
Faiissal Hajar, MD  
Marco Antonio Xavier, MD  
Instituto Crispi, Rio de Janeiro, Brazil  
Universidade Federal do Paraná, Curitiba, Brazil  
Instituto Crispi, Rio de Janeiro, Brazil

Award Committee  
Suketu Mansuria, Chair

Jay Hudgens, Nash Moawad, Samar Nahas, Stefano Uccella
Daniel F. Kott Award

**Best Paper on New Instrumentation or Technology on MIGS**

*Supported by the Daniel F. Kott Fund*

Colonel Daniel F. Kott was a pioneer in the field of medical audiovisual technology. Colonel Kott practiced at Tripler Army Medical Center where the AAGL held some of its earliest meetings. It was Colonel Kott who documented our first live surgeries by videotaping them—a unique concept in 1973! Established in 1996, this award is given annually to recognize the Best Abstract on New Instrumentation or Technology.

A Clinical Study to Evaluate the Safety and Effectiveness of the Cerene Device to Treat Heavy Menstrual Bleeding (Clarity Study)

*Howard Curlin, MD*
*Ted Anderson, MD, PhD*
*Vanderbilt University Medical Center, Nashville, USA*

**Award Committee**

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*Megan Billow, Shan Biscette, Helder Ferreira, Robert Zurawin*

IRCAD Award

**Excellence in Education**

*Supported by an Educational grant from Karl Storz Endoscopy America*

Honoring the best research in education by an FMIGS Fellow, the IRCAD award recognizes innovative ideas in teaching. The winner (lead author) will receive registration to IRCAD (L’Institut de Recherche contre les Cancers de l’Appareil Digestif) in Strasbourg, France and a travel stipend.

Pregnancy Rates after Surgical Resection of Deep Infiltrating Endometriosis—A Systematic Review and Meta-Analysis

*Sadikah Behbehani, MD*
*Maria Elena Suarez, MD*
*Matthew Buras, MS*
*Johnny Yi, MD, FACOG*
*Javier Magrina, MD*
*Mayo Clinic, Phoenix, USA*

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*Angela Chaudhari, Patricia Mattingly, Linda Nicoll, Stephen E. Zimberg*

Jay M. Cooper Award

**Best Paper on MIGS by a Fellow**

*Supported by the Jay M. Cooper Endowment*

Established in 2004 and named for the 26th President of the AAGL, this endowment provides an award for the best paper on minimally invasive gynecology. Dr. Cooper was renowned for his clarity of vision and gift for communication. This award is a tribute to his passion for excellence in women’s healthcare, both in research and in surgical education.

Surgical Skills Across the Spectrum: Comparing Surgical Skill Based on Surgical Experience Using a Standardized, High-Fidelity Total Laparoscopic Hysterectomy Model

*Chetna Arora, MD*
*Anya Menzies, MD*
*Esther Han, MD*
*Minyi Lee, BS*
*Jin Hee Kim, MD*
*Arnold Advincula, MD*
*Columbia University Medical Center, New York*
*Stony Brook University Medical Center, Stony Brook*
*Institute for Technology Assessment, Massachusetts*

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Jerome J. Hoffman Award

**Best Paper submitted by a Resident or Fellow**

*Supported by the Jerome J. Hoffman Endowment.*

Dr. Hoffman was an early AAGL Board member, a philanthropist, and an educator who strongly believed in supporting residents and fellows. Dr. Hoffman was enthusiastically supportive of the Foundation of the AAGL and was its first Executive Director.

Risk of Complication at the Time of Laparoscopic Hysterectomy; a Prediction Model Built from the National Surgical Quality Improvement Program (NSQUIP) Database

*Kristen Pepin, MD*
*Francis Cook, SD*
*Sarah Cohen, MD, MPH*
*Brigham and Women’s Hospital, Boston*
*Harvard School of Public Health, Boston*

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Oral Presentations

MONDAY, NOVEMBER 11, 2019

Plenary 1: Laparoscopy (11:00 AM – 12:45 PM)

11:00 AM

Transcervical Radiofrequency Ablation of Symptomatic Uterine Fibroids: 2-Year Results of the Sonata Pivotal Trial

Miller CE,1,2,§ Osman K,3 Sakhel K,1 OBGN, Advocate Lutheran General Hospital, Park Ridge, IL;2The Advanced Gynecologic Surgical Institute, Schaumburg, IL;3Fort Lauderdale Women Care, Fort Lauderdale, FL;4Inova Fairfax Hospital, Falls Church, VA

*Corresponding author.

Study Objective: To report 2-year results of sonography-guided transcervical radiofrequency (RF) ablation using the Sonata® system in women with symptomatic uterine fibroids.

Design: Prospective, longitudinal, multicenter, single-arm trial.

Setting: 22 clinical sites (21 in the US and 1 in Mexico).

Patients or Participants: Premenopausal women between the ages of 25 and 50 with heavy menstrual bleeding secondary to fibroids.

Interventions: Ultrasound-guided transcervical, intrauterine radiofrequency ablation was performed on up to 10 clinically relevant uterine fibroids, each ranging from 1 to 5 cm in diameter. Patients were treated on an outpatient basis and returned for regular follow-up visits over 2 years. Assessed outcomes included changes in symptom severity, health-related quality of life, general health status, work and activity limitations, treatment satisfaction, adverse events, surgical reintervention, and occurrence of pregnancy and associated outcomes.

Measurements and Main Results: Among 147 enrolled women, 125 (85%) returned for follow-up at 2 years. Compared to baseline, symptom severity decreased from 55±19 to 23±19 (p<0.001), health-related quality of life increased from 40±21 to 83±19 (p<0.001), and EQ-5D scores increased from 0.72±0.21 to 0.89±0.14 (p<0.001). Overall treatment satisfaction at 2 years was 94%. The mean percentage of missed work time, overall work impairment, and activity impairment significantly decreased at follow-up. Through 2 years, surgical reintervention for heavy menstrual bleeding was performed in 5.6% of patients. One singleton pregnancy occurred with a normal peripartum outcome.

Conclusion: Treatment with the Sonata system provides significant clinical improvement through 2 years post-ablation, with a low incidence of surgical reintervention. Other favorable outcomes included substantial improvements in quality of life, symptom severity, work productivity and activity levels.

Plenary 1: Laparoscopy (11:00 AM – 12:45 PM)

11:10 AM

Internal Iliac Artery Ligation in Laparoscopic Myomectomy

Siedhoff MT,1,2,§ Gubernick L,2 Ronen I,2 Wright KN,3 Division of Minimally Invasive Gynecologic Surgery, Cedars Sinai Medical Center, Los Angeles, CA;1Obstetrics & Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA

*Corresponding author.

Video Objective: Vessel ligation, typically the uterine artery, has been described as a preventative measure for bleeding in laparoscopic myomectomy. The internal iliac, or hypogastric artery, a vessel that obstetricians are familiar with ligating in the setting of postpartum hemorrhage, can also be used in laparoscopic myomectomy. In this video, we will review existing literature on vessel ligation in laparoscopic myomectomy, and then demonstrate internal iliac artery ligation as a prophylactic measure, as well as one to treat acute intraoperative hemorrhage.

Setting: Tertiary care academic hospital.

Interventions: Laparoscopic myomectomy.

Conclusion: Internal iliac artery ligation can be used to prevent and treat bleeding during difficult laparoscopic myomectomy.

Plenary 1: Laparoscopy (11:00 AM – 12:45 PM)

11:20 AM

Laparoscopic Assisted Posterior Transverse Abdominis Plane (Tap) Block

Kim S,1,2 Azodi M,2 Seifi F,1,2 Yale, New Haven Hospital, New Haven, CT;3Obstetrics, Gynecology & Reproductive Sciences, Yale School of Medicine, New Haven, CT

*Corresponding author.

Video Objective: This video demonstrates a laparoscopic assisted transverse abdominis plane (TAP) block as an alternative to the traditional anesthesiology-driven ultrasound-guided TAP block to reduce postoperative pain.

Setting: Our patient is a 49 year old with endometriosis, abnormal uterine bleeding, and fibroids, who undergoes a total laparoscopic hysterectomy.

Interventions: Following removal of the specimen and closure of the vaginal cuff, we inject a mixture of liposomal bupivacaine and regular bupivacaine between the transverse abdominis and internal oblique muscles. We use external and internal anatomic landmarks such as the iliac crest, latissimus dorsi muscle, and the transverse abdominis muscle to target the Triangle of Petit when placing the injection under direct visualization. This supplies analgesia to the parietal peritoneum, skin, and muscles along T8 through L1 dermatomes. The patient did not require any postoperative opioid based medications.

Conclusion: The laparoscopic assisted TAP block is a safe, effective, and quick strategy to reduce pain after minimally invasive gynecologic surgery.

Plenary 1: Laparoscopy (11:00 AM – 12:45 PM)

11:30 AM

Resection of Cystic Adenomyosis

Gissemann J,1,2 Ramirez CI,2 Baker T,1 Obstetrics and Gynecology, San Antonio Military Medical Center, San Antonio, TX;2MIGS Division, Obstetrics and Gynecology, San Antonio Military Medical Center, San Antonio, TX;3San Antonio Military Medical Center, San Antonio, TX

*Corresponding author.
Video Objective: To describe a case of cystic adenomyosis and demonstrate the resection of adenomyotic cysts.

Setting: A 21-year-old nulligravid patient presents for worsening chronic pelvic pain for 3–4 years which is only partially responsive to oral contraceptives.

Interventions: Ultrasound and MRI images confirmed the diagnosis of cystic adenomyosis, and the patient underwent robotic-assisted laparoscopic resection and removal of cystic adenomyosis.

Conclusion: Cystic adenomyosis is a rare disorder that requires excision for complete resolution of symptoms. It is necessary to have a high index of suspicion in young patients with dysmenorrhea that does not resolve with hormonal therapy. It is also important for gynecologists to review ultrasound and MRI images themselves and in conjunction with radiologists experienced in pelvic imaging to reduce misdiagnosis.

Plenary 1: Laparoscopy
(11:00 AM – 12:45 PM)

11:40 AM

Laparoscopic-Assisted Hysteroscopic Resection of Cesarean Scar Ectopic

Urbaña P.1,2, Wu ZC.2, Vargas MV.3, Obstetrics and Gynecology, The George Washington University School of Medicine and Health Sciences, Washington, DC; 2Minimally Invasive Gynecologic Surgery, George Washington University Hospital, Washington, DC; 3The George Washington University, Washington, DC

*Corresponding author.

Video Objective: In this video, we attempted to mitigate the risk of hemorrhage during a hysteroscopic resection of a cesarean scar ectopic through temporary laparoscopic ligation of the uterine pedicles and utero-ovarian arteries.

Setting: The patient is a 28 y/o G4P2011 at 5 weeks gestation with history of a prior cesarean delivery who presented to the emergency department with vaginal bleeding. Transvaginal ultrasound findings showed an empty endometrial canal, however, a gestational sac and yolk sac were seen implanted within the myometrium at the lower uterine segment. These findings were consistent with a cesarean scar ectopic pregnancy, for which the patient received combined medical and surgical management.

Interventions: Diagnostic and operative laparoscopy were performed to obtain temporary occlusion of the uterine and utero-ovarian arteries, followed by operative hysteroscopy to resect the cesarean scar pregnancy tissue.

Conclusion: Temporary occlusion of the uterine and utero-ovarian arteries seems to be an effective and safe technique in reducing blood loss and should be strongly considered prior to operative management of cesarean scar pregnancies.

Plenary 1: Laparoscopy
(11:00 AM – 12:45 PM)

11:50 AM

The Retroperitoneal Approach to a Broad Ligament Fibroid

Newcomb LK.1,2, Mansuria SM.1, Obstetrics and Gynecology, University of Pittsburgh Medical Center,Magee Women’s Hospital, Pittsburgh, PA; 2UPMC, Pittsburgh, PA

*Corresponding author.

Video Objective: To demonstrate a strategic retroperitoneal approach that gynecologic surgeons can employ when encountered with an obscuring broad ligament fibroid.

Setting: Academic medical center.

Interventions: This patient is a 38-year-old G3P3 with menorrhagia and dysmenorrhea secondary to uterine fibroids. Her ultrasound was significant for an 8.5 cm right broad ligament fibroid. She desired definitive management of her symptoms in the form of a total laparoscopic hysterectomy and bilateral salpingectomy. The location of the right broad ligament fibroid obscured visualization of the traditional approach to the uterine artery at the level of the internal os, thus it was necessary to secure the uterine blood supply at its origin off the internal iliac artery. The retroperitoneal space was opened, and the pararectal and paracervical spaces were identified in order to complete this step. The course of the ureter ran in close proximity to the lateral aspect of the fibroid, necessitating mobilization of the ureter laterally. This allowed the fibroid to be safely dissected and the procedure to be safely completed.

Conclusion: This video displays a strategic method for accessing and dissecting the retroperitoneal space in order to safely complete a hysterectomy in a patient with an obstructing broad ligament fibroid. Using this technique, hemostasis is ensured by locating and securing the uterine artery at its origin off the internal iliac artery, and the safety of the ureter is maintained by mobilizing this structure laterally.

Plenary 1: Laparoscopy
(11:00 AM – 12:45 PM)

12:00 PM

Creation of a Neovagina: A Modified Davydov Approach

Sanders AP.1,2, Kives SL.2, Allen LM.1, Obstetrics and Gynecology, Mount Sinai Hospital & Women’s College Hospital, Toronto, ON, Canada; 2Obstetrics and Gynecology, St. Michael’s Hospital, Toronto, ON, Canada; 3Obstetrics & Gynecology, Mount Sinai Hospital & Women’s College Hospital, Toronto, ON, Canada

*Corresponding author.

Video Objective: This video presents a stepwise approach to the creation of a neovagina through a modified laparoscopic Davydov approach.

Setting: This procedure is most commonly performed for vaginal agenesis. First line treatment is self-dilation with multidisciplinary support. When first line treatment fails, a surgical approach to neovaginal creation is the Davydov procedure. This video illustrates the steps of a modified laparoscopic Davydov procedure for the creation of a neovagina in a patient with Mayer-Rokitansky-Küster-Hauser Syndrome.

Interventions: The modified laparoscopic Davydov procedure is comprised of five steps: 1) define the anatomy (+ salpingectomy), 2) create the neovaginal space, 3) line the neovagina with peritoneum, 4) dissect the pelvic sidewall, and 5) suture the neovagina over the stent. The modified laparoscopic approach involves round ligament preservation (instead of transaction) for added vaginal support. It also involves transaction of the utero-ovarian ligaments (instead of preservation) to keep ovaries in their anatomical location. More extensive pelvic sidewall dissection helps avoid tension on sidewall structures.

Conclusion: The Davydov procedure has high rates of sexual satisfaction and should be considered for the surgical creation of a neovagina.

Plenary 1: Laparoscopy
(11:00 AM – 12:45 PM)

12:10 PM

Infrarenal Para-Aortic Lymphadenectomy via Laparoendoscopic Single-Site Approach

Chen L.1,2, Zheng Y.3, Min L.1, Wang Y.1, Dong S.1, Chen S.3, Obstetrics and Gynecology, West-China Second University Hospital, Chengdu, China; 2Department of Obstetrics and Gynecology, West China Second University Hospital, Chengdu, China; 3Department of Gynecologic Oncology, West China Second Hospital, Sichuan University, Chengdu, China

*Corresponding author.

Video Objective: To perform the procedure of Laparoendoscopic Single-Site surgery (LESS) for infrarenal para-aortic nodal dissection and demonstrate the feasibility and safety of infrarenal para-aortic lymphadenectomy via LESS.
Surgical tips and tricks.

To remove transgender, a minimally invasive approach is effective utilizing these time of cesarean delivery. However, in cases of intrapartum and postpartum removal, a minimal invasive approach is effective utilizing these surgical tips and tricks.

Interventions: The comprehensive staging surgery was performed by an experienced gynecologist via LESS approach. The comprehensive staging surgery was successfully completed, and the video mainly show the para-aortic lymph nodes dissection up to level of left renal vein. The operation time of the para-aortic lymphadenectomy was 100 min. There were no intra- and post-operative complications. The histopathology was well-differentiated endometrial adenocarcinoma with deep myometrium invasion but the bilateral adnexa, the 17 pelvic nodes and the 18 para-aortic nodes were negative. The FIGO stage was IB

Conclusion: The para-aortic lymphadenectomy up to the level of infrarenal vein is feasible via LESS. The LESS approach can provide easier access to the upper abdominal regions comparing with traditional laparoscopy and facilitate the high level para-aortic lymphadenectomy, with the advantage of faster recovery, shorter hospital day, less postoperative pain and incisional mobility and better cosmetic result.

Plenary 1: Laparoscopy
(11:00 AM – 12:45 PM)

12:20 PM

Tips & Tricks: Minimally Invasive Removal of Transabdominal Cerclage

Smith RB,* Steck-Bayat KP, Mourad J. Minimally Invasive Gynecologic Surgery, University of Arizona College of Medicine - Phoenix, Phoenix, AZ

*Corresponding author.

Video Objective: To present surgical tips and tricks for the minimally invasive removal of transabdominal cerclage and surgical technique during transabdominal cerclage placement that facilitates easier removal.

Setting: Three patients are presented that underwent uncomplicated robotic transabdominal cerclage placements in pregnancy. The first patient subsequently had a laparotomy for cerclage removal due to second trimester preterm labor at an outside hospital. This case prompted this tips and tricks surgical video to educate surgeons regarding minimally invasive removal of transabdominal cerclage. The second patient underwent an uncomplicated laparoscopic removal of transabdominal cerclage in the setting of preterm labor at 18 weeks. The third case had a term cesarean delivery although her cerclage was not removed at that time. She underwent a robotic transabdominal cerclage removal without complication. Apart from the laparotomy, all placement and removal procedures were performed at an academic medical center by one primary surgeon.

Interventions: In this surgical video, we present surgical tips and tricks for placement and removal of transabdominal cerclage in a minimally invasive fashion using conventional laparoscopic and robotic approaches. Tips described in this video include the “needleless” approach with creation of an avascular tunnel for cerclage placement as well as considerations for anterior versus posterior knot placement. Regarding cerclage removal, we present techniques such as undermining the cerclage tape anteriorly and posteriorly as well as blunt dissection in the previously created avascular tunnel to facilitate removal. Additionally, we present tricks for improved visualization and to delineate anatomic borders around a gravid uterus during these cases.

Conclusion: The removal of transabdominal cerclage is often performed at time of cesarean delivery. However, in cases of intrapartum and postpartum removal, a minimally invasive approach is effective utilizing these surgical tips and tricks.
Measurements and Main Results: 10 genes were revealed to have at least 3-fold mRNA change in endometrial tissue of women with intrauterine adhesions compared to the endometrial tissue of the group of conditionally healthy women. Amongst these changes we identified 9 genes that were shown to have an increased expression in patients with intrauterine adhesions (S100A8, HBB, VNN2, RGS2, ERAP2, AQ99, MMDA, TUBA3E, FCGR3B) and 1 gene with decreased expression (NTRK3).

Conclusion: Our study identifies significant difference in expression levels of 10 genes in endometrial tissue of women with intrauterine adhesions as compared with such expression in women without intrauterine synechiae. Such findings, when further verified, may be helpful in a study of the pathogenesis of the intrauterine adhesions or they may be used to design a molecular diagnostic tool suitable to individualize the treatment of this pathology.

Plenary 2: Basic Science/Research/Education
(2:00 PM – 3:00 PM)

Porcine Tongue Hysteroscopy: A Novel Simulation Model For Operative Hysteroscopy Teaching

Wright E,*, Smith C,1 Suen MW,2 Mehta N,3 OBGYN, University of British Columbia, Vancouver, BC, Canada; 1Obstetrics and Gynecology, Royal Columbian Hospital, Vancouver, BC, Canada; 2Obstetrics & Gynecology, University of British Columbia, Vancouver, BC, Canada
*Corresponding author.

Video Objective: Hysteroscopic surgery is a fundamental skill for all obstetricians and gynaecologists. Time pressure within each case and inadequate OR exposure times can limit hands-on skills acquisition for residents. In order to ensure residents are obtaining and practicing fundamental skills, it is essential to develop teaching methods that can be used outside of an OR setting. The porcine tongue model is a simple and inexpensive model for operative hysteroscopy teaching that is both realistic and effective in teaching residents the fundamentals of hysteroscopic surgery. This presentation outlines the assembly of the model, as well as shows real-time use of the model for teaching.

Setting: N/A
Interventions: N/A
Conclusion: The porcine tongue hysteroscopy model is a simple and effective simulation model for teaching residents the fundamentals of hysteroscopic surgery.

Plenary 2: Basic Science/Research/Education
(2:00 PM – 3:00 PM)

Laparoscopic and Robotic Hysterectomy in Endometrial Cancer Patients with Obesity: A Systematic Review and Meta-Analysis of Conversions and Complications

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Study Objective: Robotic assistance may facilitate completion of minimally invasive hysterectomy, which is the standard of care for the treatment of early-stage endometrial cancer, in patients for whom conventional laparoscopy is challenging. The aim of this systematic review was to assess conversion to laparotomy and perioperative complications after laparoscopic (LH) and robotic hysterectomy (RH) in endometrial cancer patients with obesity.

Design: We systematically searched MEDLINE, EMBASE, and Evidence-Based Medicine Reviews (January 1, 2000 to July 18, 2018) for studies of endometrial cancer patients with obesity (body mass index, BMI ≥30 kg/m²) undergoing primary hysterectomy. We generated pooled proportions of conversion, organ/vessel injury, venous thromboembolism (VTE), and blood transfusion. We assessed risk of bias with the Institute of Health Economics Quality Appraisal Checklist for single-arm studies, and Newcastle-Ottawa Scale for double-arm studies.

Setting: N/A
Patients or Participants: N/A
Interventions: N/A
Measurements and Main Results: We identified 51 observational studies reporting on 10,800 endometrial cancer patients with obesity (study-level BMI: 31.0-56.3). The pooled proportions of conversion from LH and RH were 6.5% (95% CI 4.3-9.9) and 5.5% (3.3-9.1) respectively among patients with BMI ≥30, and 7.0% (3.2-14.5) and 3.8% (1.4-9.9) among patients with BMI ≥40. Inadequate exposure due to adhesions/visceral adiposity was the most common reason for conversion for both LH (32%) and RH (61%); however, intolerance of Trendelenburg caused 31% of LH conversions and 6% of RH conversions. The pooled proportions of organ/vessel injury (LH 3.5% [2.2-5.5]; RH 1.2% [0.4-3.4]), VTE (LH 0.5% [0.2-1.2]; RH 0.5% [0.1-2.0]), and blood transfusion (LH 2.8% [1.5-5.1]; RH 2.1% [1.6-3.8]) were low and not appreciably different between arms.

Conclusion: RH and LH have similar rates of perioperative complications in endometrial cancer patients with obesity, but RH reduces conversions due to positional intolerance in patients with morbid obesity. Existing literature is limited by selection and confounding bias, and randomized trials are needed to inform practice standards in this population.

Plenary 2: Basic Science/Research/Education
(2:30 PM)

Hysteroscopic Resection of a Complete Uterine and Vaginal Septum Under Laparoscopic Ultrasound Guidance

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*Corresponding author.

Video Objective: The aim of this video is to demonstrate the use of laparoscopic ultrasound guidance during hysteroscopic resection of a congenital ureteral and vaginal septum.

Setting: Our patient is a 20 year old G0 female who presented for difficulty with tampon insertion and removal as well as painful intercourse. On physical exam, the patient was noted to have a complete, non-obstructing longitudinal vaginal septum with two separate normal cervices. MRI of the abdomen and pelvis showed a complete septate uterus, two cervices, and two normal kidneys.

Interventions: This video shows the simultaneous use of hysteroscopy and laparoscopic ultrasound to safely and successfully resect the ureterine and vaginal septum.

Conclusion: The goal is to encourage use of this technique during similar procedures for patients with Mullerian duct anomalies desiring surgical correction.

Plenary 2: Basic Science/Research/Education
(2:40 PM)

Gene Expression Signature in Diagnosis of Endometriosis
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Study Objective: To develop a prototype of a complex gene expression bio-
marker for the diagnosis of endometriosis based on differences between molec-
ular signatures of endometrium from women with and without endometriosis.  
Design: Prospective observational cohort study. II-1. Evidence obtained from a well-designed, controlled trial without randomization.  
Setting: Department of Reproductive Medicine and Surgery at the A.I. Evdokimov Moscow State Medical and Dental University.  
Patients or Participants: 30 women with endometriosis and 15 women without endometriosis (control group).  
Interventions: Laparoscopic excision of endometriotic foci, hysterectomy with endometrial sampling. RNA was isolated from all samples and stored in RNA Later. RNA sequencing was performed using Illumina HiSeq 3000 equipment for single-end sequencing. Unique bioinformatics algorithms were developed and validated using experimental and public gene expression datasets.  
Measurements and Main Results: We performed gene expression analysis of dataset containing 83 samples (30 endometrial and 53 endometriotic) and 15 samples (endometrial) of patients with and without endometriosis respectively. We extracted a complex molecular signature of 38 genes and found that the expression of 26 genes in it was significantly increased while the expression of 12 genes was significantly repressed in the endometrium of patients with endometriosis. This endometrial genetic signature successfully differentiated 53 samples of endometriotic lesions from 15 endometrial samples of healthy women (area under the ROC curve (AUC) = 1). The comparison of our dataset of 83 samples of endometrial and endometriotic tissue with preexisting dataset containing 134 samples of other tissues (cervix, ovary, stomach, lung) revealed high sensitivity (94%) and specificity (97%) in the ability of studied molecular signature to equally identify endometrium and endometriotic tissue of patients with endometriosis.  
Conclusion: We obtained a complex molecular biomarker that could be used as a basis for early diagnosis of endometriosis via utilization of endo-
metrial biopsy. Our findings indicate that easily accessible eutopic endo-
meterium can be potentially used as a non-surgical marker for the presence of endometriosis.

Plenary 2: Basic Science/Research/Education  
(2:00 PM – 3:00 PM)

2:50 PM  
Effect of Length of Surgery on the Incidence of Venous  
Thromboembolism After Benign Hysterectomy  
Moulder JK,1,2* Moore KJ,1,3 Strassel PD,3 Louie M4  
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4Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC  
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Study Objective: Determine effect of length of surgery (LOS) on risk for venous thromboembolism (VTE) after hysterectomy and determine if differ-
ences exist based on age, body mass index (BMI), and surgical approach.  
Design: Secondary analysis of prospectively-collected surgical quality improvement data.  
Setting: American College of Surgeons National Surgical Quality Improvement Program database, containing demographic, perioperative information and 30-day postoperative outcomes from >500 hospitals, and targeted data files including procedure-specific risk factors and outcomes for a subset of hospitals.  
Patients or Participants: Patients undergoing abdominal (AH), vaginal (VH), or laparoscopic hysterectomy (LH), identified with Current Procedural Terminology (CPT) codes, for benign indications from 2014-2016 were eligi-
ble. Patients with cancer, surgery not performed by a gynecologist, not in tar-
gored files, missing LOS, or LOS <30 minutes were excluded.  
Interventions: Patients were compared with respect to incidence of VTE and LOS, stratified by age, BMI, and surgical approach.  
Measurements and Main Results: 48,813 patients were included. VTE incidence was 0.3%. Patients with VTE were obese, had greater uterine weight, and had inpatient procedures. Multivariable logistic regression was performed; LOS was treated as a continuous variable. Adjusting for confounders, for each 60 minute increase in LOS, there was a 41% increase in odds of VTE. Stratified by surgical approach, odds of VTE per 60 minute increase in LOS were greatest after AH (aOR 1.56, 95%CI 1.4, 1.75) compared to LH (aOR 1.19, 95%CI 0.76, 1.85) and VH (aOR 1.24, 95%CI 1.04, 1.47). As BMI increased, odds of VTE per 60 minutes increased: <30kg/m2 (aOR 1.31, 95%CI 1.11, 1.55), 30-39kg/m2 (aOR 1.43, 95%CI 1.24, 1.65), and ≥40kg/m2 (aOR 1.46, 95%CI 1.23, 1.72). There was no modification of risk by age.  
Conclusion: Our study suggests given the increased odds of VTE per 60 min-
ute increase in LOS, the risk of VTE is cumulative. Prolonged LOS or obese patients may benefit from pharmacological and mechanical prophylaxis.

Plenary 3: Oncology  
(3:05 PM – 4:05 PM)

3:05 PM  
What Every Gynecologist Must Know: Best Practices for Performing a Risk-Reducing Bilateral Salpingo-
Oophorectomy  
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2UPMC, Pittsburgh, PA  
*Corresponding author.

Video Objective: This video is intended for any gynecologic surgeon who is performing risk-reducing surgery in their practice. We intend to review the “best practices” recommended by ACOG when performing a risk-
reducing bilateral salpingo-oophorectomy (RR-BSO) in patients with Hereditary Breast and Ovarian Cancer Syndrome.  
Setting: Academic Medical Center  
Interventions: This video describes the case of a 36-year-old female diag-
nosed with a BRCA 1 mutation who has completed childbearing and desires RR-BSO. There are four elements that are critical to include in risk-reducing procedures: 1. A thorough visualization of all peritoneal surfaces and accessible intraperitoneal organs should be performed. 2. Washings should be obtained. 3. The ovary should be removed in its entirety, and the fallopian tubes should be removed at their uterine insertion point at the cornua. 4. Complete serial sec-
tioning of the ovaries and fallopian tubes performed by pathology is necessary, with microscopic examination for occult cancer.  
Conclusion: These “best practices” should be employed by all surgeons when performing a RR-BSO in order to most effectively increase detection of early neoplastic changes and occult malignancy, and to decrease their patient’s risk of developing ovarian and fallopian tube cancer.

Plenary 3: Oncology  
(3:05 PM – 4:05 PM)

3:15 PM  
Triage by Methylation Marker Analysis Versus  
Colposcopy Biopsy in Women who test HPV-Positive or  
Abnormal LBC Results on Cervical Samples to Triage  
Cervical Cancer and HSIL for Further Treatment
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Study Objective: To compare the CareMe-Plus methylation and colposcopy biopsy to triage patients who test HPV-positive or abnormal LBC results for further treatment.

Design: Prospective observational multi-center study.

Setting: Academic hospitals.

Patients or Participants: From November 2017 to March 2019, 4070 patients with HPV-positive or abnormal LBC results in four academic hospitals who underwent colposcopy.

Interventions: 4070 patients with HPV-positive or abnormal LBC results who underwent colposcopy-examination to identify the grade of cervical lesion, meanwhile the cervical scrapes were tested for CareMe-Plus methylation (based on the human gene EPB41L3 together with HPV16L1, HPV16L2, HPV18L2, HPV31L1 and HPV33L2). 607 women were diagnosed as ≥HSIL via colposcopy-biopsy and then underwent LEEP (Loop Electrocautery Excision Procedure). The pathology after LEEP as golden standard, the predictive performance of CareMe-Plus and colposcopy-biopsy were compared. The sensitivity and specificity of several alternative methylation tests were analyzed to determine the optimal methylation strategy.

Measurements and Main Results: The predictive performance of CareMe-Plus methylation was significantly greater than colposcopy-biopsy for cervical cancer, CareMe-Plus revealed a significant discrimination of women with cervical cancer from those with ≤HSIL (P=0.022). ROC curve analysis showed an AUC of 0.869. The predictive performance of CareMe-Plus methylation was significantly greater than colposcopy-biopsy for HSIL+, CareMe-Plus methylation analysis revealed a significant discrimination of women with HSIL+ from those with ≤LSIL (P=0.026). ROC curve analysis showed an AUC of 0.800. Of 580 patients, 26 women with cervical cancer were misdiagnosed by colposcopy-biopsy, while that would be decreased to 4 cases when combined with CareMe-Plus methylation. Also, CareMe-Plus is superior to other alternative methylation tests including EPB41L3 and QSure.

Conclusion: CareMe-Plus methylation assay may be applicable to identify HPV-positive or abnormal LBC women with a high-risk of high grade lesion or cervical cancer. It may triage patients for accurate further treatment when combining with colposcopy biopsy.

Plenary 3: Oncology (3:05 PM – 4:05 PM)

3:25 PM

The Long Term Oncological Follow up Results After Robot-Assisted Radical Hysterectomy (RARH) as Compared to Open Radical Hysterectomy (ORH) in the Management of Early-Stage (ST IB1) Cervical Cancer (ESCC)

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Study Objective: To investigate the long term oncological follow up results and the relevant clinicopathologic prognostic factors for early stage (ST IB1) cervical carcinoma patients who were surgically treated with Robot Assisted Radical Hysterectomy (RARH) or Open Radical Hysterectomy (ORH) from 2005 to 2012 at The Norwegian Radium Hospital.

Design: Prospectively collected and non-randomized retrospective controlled study.

Setting: Single institution (A university teaching hospital).

Patients or Participants: All early-stage cervical cancer patients who underwent radical hysterectomy at the Norwegian Radium Hospital within that time period.

Interventions: Patients underwent RARH or ORH.

Measurements and Main Results: 193 stage IB1 patients were identified within the study period. None of the RARH cases was converted either conventional laparoscopy or laparotomy. 19 cases were excluded due to preoperative neoadjuvant chemotherapy and total 174 patients were included. 110 patients underwent ORH and 64 patients RARH. RARH were performed with using the first generation da Vinci surgical platform by the same surgeon (MBS). The two groups were comparable in terms of age, body mass index (BMI) and follow-up time. The ORH group had shorter mean operation time (p<0.001) while RARH group have less estimated mean blood loss (<0.001) and shorter mean length of hospital stay (LOS) (p<0.001). The tumor size, positive lymph-vascular space invasion (LVSI), positive surgical margins were comparable between the groups. The frequency of perioperative complications were similar, but post-operative complications were higher in the ORH group (p<0.005). Recurrence rate 12% in the RARH group and 9% in the ORH group (p=0.48). Mean recurrence-free interval and 5 years survival rate were comparable in the both groups even-thought hematogenous metastasis was more likely (5.4%) in RARH group.

Conclusion: This long follow up study provides that RARH reduces EBL and LOS and post-operative complications without significant poorer oncological outcomes even-thought distant organ metastasis were almost double in the RARH arm which should be further investigated with larger prospective randomized clinical studies.

Video Objective: Uterine leiomyosarcoma (uLMS) is aggressive mesenchymal neoplasm and is associated with a high risk of recurrence and poor prognosis. The 5 year overall survival rate is about 60% even in FIGO stage I disease. There is no firm evidence of chemotherapy, so surgical resection should be considered to control the disease in case of localized recurrence. We will report a case underwent total laparoscopic complete resection for recurrent mass involved sigmoid colon and right ureter.

Setting: Gynecology and Obstetrics department of a general hospital.

Interventions: The patient was a 56-year-old woman underwent total laparoscopic hysterectomy with bilateral salpingo-oophorectomy for enlarged 9cm cervical leiomyoma. The pathological examination of the uterus resected showed cytotypical atypia, nuclear mitoses and coagulative necrosis, she was diagnosed as primary uLMS, stageB. She rejected to receive adjuvant chemotherapy. After 7 months, the isolated metastasis in pelvis and lung was suspected. Magnetic resonance imaging revealed that the 4cm tumor possibly be involved sigmoid colon and right lower ureter. Resection of the recurrent mass with segmental bowel resection and partial resection of ureter with ureteroneocystotomy was performed laparoscopically without any complications. Complete tumor resection with histologic negative margins was achieved. She had postoperative adjuvant chemotherapy with doxorubicinfor 6 cycles and additional surgery for lung meta is scheduled. Also, we experienced another three salvage cases with successful resection in combination with laparoscope and thoracoscope.
Conclusion: The surgical indications for recurrent uLMS should be selected, but the complete resection of localized recurrence may lead to control the disease. Minimally invasive approach may be one of the feasible option.

Plenary 3: Oncology (3:05 PM – 4:05 PM)

3:45 PM

Aiming for Recurrence-Free MI-RH/RT for Early Invasive Cervical Cancer - Focusing on Complete Resection and No-Touch Isolation Techniques

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*Corresponding author.

Video Objective: To demonstrate techniques to regulate and improve the safety and completeness of laparoscopic and robotic radical hysterectomy/ radical trachelectomy (L-RH/RT+R-RH/RT=MI-RH/RT) for early invasive cervical cancer. We will present our techniques and skills as well as data on our long-term outcomes for MI-RH/RT patients.

Setting: Urban general hospital in Japan.

Interventions: 170 early invasive cervical carcinoma stage IA1(LSVI+)-IB1 who underwent MI-RH/RT between 2006-2015 were reviewed. Cases who underwent neo-adjuvant therapy were excluded from this study. In laparoscopy, knowledge laparoscopic anatomy and how to dissect are the most important points for reaching the goals of the surgery. Setting landmarks for dissection boundaries ensures completeness of dissection. For our type C radical hysterectomy/ trachelectomy, our goal is to remove the full length of the cardinal ligament. This is to prevent recurrence.

To prevent the scattering of tumor cells, we create a vaginal cuff as an initial stage of our procedure and don’t use a uterine manipulator as there is the concern that this could stimulate any tumors in the vicinity. When extracting the specimen, we use a large protection bag. This bag prevents spillage of tumor cells in the abdominal cavity and prevents possible port site/ extraction site contamination.

Of the patients included in this study, disease-free survival is 97.1% and the 5 year overall survival in 98.2%.

Conclusion: In our retrospective study, minimally invasive approach for early-stage non-bulky cervical cancer is feasible and safe in terms of oncological outcomes.

Plenary 3: Oncology (3:05 PM – 4:05 PM)

3:55 PM

Surgical Technique Variation for the Laparoscopic Radical Trachelectomy Through the Initial Development of the Pararectal Spaces and Isolation of the Hypogastric Nerves

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*Corresponding author.

Video Objective: Demonstrate a surgical technique variation for the laparoscopic radical trachelectomy by initiating the procedure through the development of the pararectal space and the identification of the hypogastric nerve.

Setting: A 26 years-old patient was diagnosed with a papillary squamous cell carcinoma of the uterine cervix – (FIGO - stage IB1)

Interventions: With the advancement of surgical techniques in frozen pelvis for the treatment of deep endometriosis - we, from the School of Minimally Invasive Surgery from the Crispi Institute (Brazil), adopted a systematic approach, as to always initiate with the dissection of the pararectal space at the level of the promontory, medializing the mesorectal fascia and lateralizing the hypogastric nerve, along with the endopelvic fascia. We follow this dissection caudally towards the pelvic floor – establishing the “base” for the known spaces – Okabayashi, Latsko and paravesical. With the lateralization of the ureter, the isolation of the hypogastric nerve is facilitated and resection of the uterosacral ligaments is performed. Next, the development of the rectovaginal septum and the dissection of the loose areolar tissue can be accomplished – maintaining the adipose tissue attached to the intestinal wall. After medializing and tunnelizing the ureter, we develop the Latsko space, communicating this region to the “base” of the pararectal space, previously established. Next, we can easily dissect the paravesical space, opening the anterior leaflet of the broad ligament, medializing the vesical wall until we reach the floor of the pararectal space. By medially dissecting the obliterated umbilical artery, we develop the lateral paravesical spaces. Connecting the right and left spaces, through the anterior compartment, we resect the vesical pillars and develop the Yabuki and vesicovaginal spaces. After developing all the spaces and isolating the hypogastric nerves, we follow the trachelectomy as usual.

Conclusion: This is a viable and secure approach to initiate a trachelectomy.

Plenary 4: Hysteroscopy (4:10 PM – 5:10 PM)

4:10 PM

EMIG Simulation Systems Construct Validation Trial: Hysteroscopic Component

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*Corresponding author.

Study Objective: Construct validation of the EMIG Hysteroscopic Surgery Simulation System.

Design: A prospective, controlled cohort comparison.

Setting: Thirteen teaching institutions in the US and Canada and an AAGL Congress.

Patients or Participants: 240 subjects who fit one of 4 categories of exposure to hysteroscopic surgery and surgical simulation: 76 novices within 100 days of starting postgraduate year 1 (PGY-1); 69 within the first 100 days of starting PGY-3; 27 American Board of Obstetrics and Gynecology (ABOG) certified and no additional fellowship training (“Proficient”); 43 who had completed the two-year Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS).

Interventions: Subjects were oriented to the simulation system and then tested under proctor supervision on the 2 EMIG hysteroscopic exercises. These included the Targeting Exercise (H-1); and the Polyp Removal Exercise (H-2). Time and accuracy scoring were entered electronically on site, but sessions were video recorded and stored for subsequent review to optimize data quality.

Measurements and Main Results: Each exercise was timed, and a number of objective metrics recorded that were designed to assess accuracy, efficiency and technique. Each exercise had a “time cap”; if a subject had not completed the exercise in by the end of the allotted time, they were categorized as “Did Not Complete” and the maximum time was entered for data analysis. Preliminary data analysis demonstrates that for both H-1 and H-2 the novice group consistently demonstrated the poorest performance and the FMIGS cohort consistently the best. The PGY-3 and “Proficient” cohorts were generally similar to each other but each performed better than the PGY-1 group and well below the FMIGS group.

Conclusion: The EMIG Hysteroscopic Simulation System can be used to distinguish amongst PGY-1, PGY-3, Proficient and FMIGS subjects. FMIGS-trained subjects consistently had the best results.
Transurethral Removal of Perforated Intrauterine Device
Lombardi TM,* Brown AN. Scripps Clinic, San Diego, CA
*Corresponding author.

Video Objective: To describe the management of a perforated IUD into the bladder, with removal of a fractured arm via a transurethral approach.

Setting: 36yo G1P1 with expired ParaGard IUD in place who experienced spontaneous detachment of the IUD strings with attempted removal in the office. Pelvic ultrasound showed evidence of one IUD arm perforating the bladder, which was also confirmed on office cystoscopy. She was scheduled to undergo attempted hysteroscopic IUD removal, but also consented for laparoscopy as she desired a permanent sterilization procedure.

Interventions: Cystoscopy was first performed, confirming one arm of the IUD perforating the bladder dome. Laparoscopy was performed, noting the incidental finding of the second IUD arm perforating the uterine fundus. Adhesions between the fundus, bladder dome, and omentum were noted. Hysteroscopy was performed in attempt to remove the IUD while under laparoscopic guidance. With traction on the IUD body, the IUD was partially removed, but one of the arms was noted to have fractured off. Laparoscopically, it was evident the arm perforating the fundus remained in situ. While attempting to remove the fractured arm via laparoscopy, the arm spontaneously retracted into the myometrium. Bilateral salpingectomy was performed for permanent sterilization. The bladder adhesion was divided and the cystotomy from the perforated arm was repaired. Repeat hysteroscopy was performed but the fractured arm was not visualized. Repeat cystoscopy revealed the fractured arm free within the bladder. The arm was removed transurethrally with a cystoscopic grasper.

Conclusion: When planning surgery to remove a perforated IUD, a surgeon must consider and be prepared to perform multiple approaches for removal in the event of IUD fracture.

Dysmorphic Uterus. Should we Update the Current Classification?
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Video Objective: To describe three different subtypes of dysmorphic uteri identified using 3D ultrasound and hysteroscopy.

Setting: Endoscopy unit of an assisted fertility center.

Interventions: 3D transvaginal ultrasound and diagnostic hysteroscopy.

Conclusion: We identified three different subtypes of dysmorphic uterus. The T-shaped uterus, with thick lateral walls with normal uterine fundus and interstitial distance; the Y-shaped uterus, with thick lateral walls, fundal septum or subseptum and reduced interstitial distance; the I-shaped uterus, with very thick lateral walls (even above the isthmus) and severe reduction of the interstitial distance.

Transvaginal Natural Orifice Transluminal Endoscopic Surgery Hysterektomy (VNOTES): A Walkthrough
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*Corresponding author.

Video Objective: To present a thorough yet concise explanation of the methodology for the completion of a successful transvaginal hysterektomy via natural orifice transluminal endoscopic surgery.

Design: A narrated instructional video detailing each procedure (Canadian Task Force Classification III).

Setting: University Hospital, Baylor College of Medicine, Houston, Texas
Patients: Our patient is a 46-year-old G2P1011 who had two notable previous surgeries: a tubal ligation and an adnexa removal surgery. She possessed a narrow vagina and non-descent uterus while having a strong preference for maintaining a high level of cosmesis.

Interventions: A complete transvaginal hysterectomy utilizing solely natural orifice transluminal endoscopic surgery was performed on the patient. Transvaginal entry was established and with the gelport mini port in place we began circumferential dissection of the cervix anteriorly at the bladder fold. Utilizing the laparoscopic single tooth tenaculum, we hooked the anterior lip of the cervix for countertraction and hydro dissected the anterior cervix with 20 units of Vasopressin (Pitressin) in 20 ml of saline. Next, the monopolar hook was employed to cut the anterior colpotomy and begin the circumferential incision around the cervix. Following this, we used the LigaSure bipolar forceps to sever bilateral ureteral sacral ligament. The same strategy is used at the anterior cervix to separate the bladder from the uterus. Following bladder mobilization, the cardinal ligaments and uterine arteries were cauterized and transected by LigaSure. The right fallopian tube was removed utilizing the LigaSure first, before proceeding with the left fallopian tube; the pelvis was inspected with hemostasis noted throughout. Finally, the vaginal cuff was closed in traditional vaginal fashion after the deflation of the abdomen.

Conclusion: Despite certain drawbacks, utilizing pure natural orifice transluminal endoscopic surgery in hysterectomy is a safe and feasible procedure that maintains a high-level of cosmesis for patients while still offering the most minimally invasive route.

A Novel Robotic Endoscopic Device used for Operative Hysteroscopy
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Video Objective: To trial the use of a novel robotic endoscopic surgery platform for operative hysteroscopy.

Setting: A uterine tissue model with simulated polyps in various locations (Gynesim).

Interventions: The robotic endoscope is a surgical platform that simultaneously delivers two instruments that are 2-3mm in size using concentric tube technology. These instruments extend from the tip of a standard rigid endoscope outer sheath and are controlled robotically by an operator.
distant from the surgical field. In this pilot, a probe and monopolar needle were used to resect simulated endometrial polyps. Surgical principles of adequate exposure and traction and counter-traction are demonstrated.

**Conclusion:** The robotic endoscope platform may offer advantages over conventional hysteroscopy that could be useful for some applications. These advantages include: improved exposure, fine dissection capability, and use of two-handed technique to allow traction and counter-traction. Further study regarding the safe, efficient, and cost-effective use of the robotic endoscope in gynecology is needed.

**Plenary 4: Hysteroscopy**

**(4:10 PM – 5:10 PM)**

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**Post-Ablation Cavity Evaluation: A Prospective**

**Multicenter, Observational Study to Assess**

**Hysteroscopic Evaluation of the Uterine Cavity in Subjects who have Undergone Water Vapor Endometrial Ablation for the Treatment of Heavy Menstrual Bleeding**

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*Corresponding author.

**Study Objective:** Determine the ability to perform a diagnostic hysteroscopic exam more than 3 years after a water vapor-endometrial ablation procedure.

**Design:** Prospective, observational, multicenter, pooled analysis of the Post-Ablation Cavity Evaluation (PACE) Trial Series.

**Setting:** Office and outpatient centers in the U.S. (7) and Mexico (1).

**Patients or Participants:** 70 women who had undergone water vapor endometrial ablation a mean of 3.9 years earlier as part of the AEGEA Pivotal Clinical Trial (NCT01979861). The mean age of subjects at time of diagnostic hysteroscopy was 44 years. None of the subjects had undergone any gynecologic intervention involving the uterine cavity since their participation in the AEGEA Pivotal Clinical Trial.

**Interventions:** Diagnostic hysteroscopy.

**Measurements and Main Results:** Hysteroscopic examinations were recorded and all analyses were made by an Independent Reviewer blinded to subject history and ablation procedure results. Hysteroscopic access to the uterine cavity was achieved in 90% (63/70) of subjects. One or both cornua and ostia were visualized in 79% (50/63) of subjects with cavity access. Intracavity adhesions were absent in 75% (47/63) with only two findings of severe adhesions (3%, 2/63) of subjects with cavity access. Biopsy was projected to be feasible in 89% (62/70) and IUD placement in 60% (42/70) of all subjects. A selection bias analysis determined comparability of the subjects enrolled in this study to the remaining eligible subjects who completed three-year follow-up in the Pivotal Trial.

**Conclusion:** Water vapor endometrial ablation preserved an accessible and evaluable uterine cavity and visualization of the ostia in the majority of the subjects studied with minimal findings of severe adhesions.

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**Tuesday, November 12, 2019**

**Plenary 5: Urogynecology**

**(11:00 AM – 12:45 PM)**

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**Total Laparoscopic Cervical Sacrohysteropexy**

Rosenblatt PL, * et al., *OB/GYN, Indiana University School of Medicine, Evansville, IN; *Clinical Research, MomDoc Women’s Health Research, Scottsdale, AZ

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**Video Objective:** There has been a growing interest among both patients and surgeons in preserving the uterus during the treatment of pelvic organ prolapse. In this video we are demonstrating a novel surgical approach towards the treatment of pelvic organ prolapse. This surgical procedure simplifies the laparoscopic sacrohysteropexy procedure by significantly reducing endoscopic suturing and knot tying, without the need for a combined laparoscopic and vaginal surgical approach.

**Setting:** A 69 -year-old G2P2 Caucasian female suffering from stage II pelvic organ prolapse. Her POP-Q was notable for anterior and apical prolapse to the level of the hymen. The laparoscopic cerclage sacrohysteropexy was initiated following a bilateral salpingo-oophorectomy and completely from the laparoscopic approach.

**Interventions:** Laparoscopic cerclage sacrohysteropexy.

**Conclusion:** This case demonstrates that a laparoscopic cerclage sacrohysteropexy is an efficient, simple, and time-saving surgical option for women with pelvic organ prolapse.

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**Plenary 5: Urogynecology**

**(11:00 AM – 12:45 PM)**

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**Rectus Abdominis Pedicled Flap: An Innovative Robotic Approach**

Haverland R, * et al., *OB/GYN, Indiana University School of Medicine, Evansville, IN; *Clinical Research, MomDoc Women’s Health Research, Scottsdale, AZ

*Corresponding author.

**Video Objective:** To provide education on the utility of rectus muscle flap during pelvic floor reconstruction and describe in detail a minimally invasive technique to avoid laparotomy.

**Setting:** Patients requiring pelvic floor reconstruction at an academic medical center.

**Interventions:** The rectus abdominis muscle flap can be used as a workhorse flap for pelvic reconstruction, providing a large volume of well vascularized soft tissue that can be used in treatment of complex pelvic floor reconstruction, including genital fistulas, post-radiation pelvic exenteration and abdominoperineal resection defects. Intraprofessional harvest of the rectus muscle using a robotic approach allows avoidance of laparotomy and subsequent disruption of the anterior rectus sheath, thus preserving the integrity of the abdominal wall. This educational video demonstrates robotic docking as well as surgical techniques in detail to show the feasibility for robotic-assisted rectus flap harvest and pelvic floor reconstruction.

**Conclusion:** Robotic-assisted rectus abdominis flap harvest for pelvic floor reconstruction is a reliable means of defect closure. This novel approach is surgically feasible for the reconstructive surgeon and maintenance of minimally invasive technique allows for significant advantages over the traditional laparotomy approach.

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**Plenary 5: Urogynecology**

**(11:00 AM – 12:45 PM)**

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**Urethral Diverticulum Excision and Placement of Autologous Fascia Lata Sling**

Acosta DA, * et al., *OB/GYN, Indiana University School of Medicine, Evansville, IN; *Clinical Research, MomDoc Women’s Health Research, Scottsdale, AZ

*Corresponding author.

**Video Objective:** To show the repair of an uncommon urogynecological pathology, and to illustrate a case where an autologous fascial graft is placed for management of stress urinary incontinence.

**Setting:** The patient is a 59-year-old with abdominal pain, urinary incontinence, incomplete bladder emptying, and hematuria. She has a complex past medical and surgical history. Pre-operative urodynamic testing showed genuine stress urinary incontinence, and office cystoscopy was unremarkable. Imaging demonstrated a urethral diverticulum containing
The patient proceeded to the operating room for excision of the diverticulum and placement of an autologous sling.

**Interventions:** Fascia lata from patient’s right thigh was harvested and prepared with polypropylene sutures at each end. Cystourethroscopy identified the diverticulum opening in the posterior mid urethra. The anterior vaginal mucosa was incised and the pubocervical fascia was dissected. The bulge of the urethral diverticulum was identified. Entry into the diverticulum was encountered during the dissection, and multiple stones were removed. The entire diverticular sac was dissected from the posterior urethra and pubocervical fascia.

The urethral wall was reapproximated. The periurethral fibromuscularis was closed in a vest-over-pants fashion in order to avoid overlapping suture line with the urethral closure. An abdominal incision was made above the pubic symphysis. Needle trocars were passed vaginally through retroperitoneal space. The polypropylene stitches on the fascial lata graft were threaded through the needles and pulled onto the abdomen, placing the sling in place. The sutures were then sewn through the rectus fascia and tied in the midline.

Final cystourethroscopy confirmed patent ureteral orifices, normal bladder mucosa, and intact urethral repair. A Foley catheter was replaced and maintained for 4 weeks. A voiding cystogram showed intact bladder and urethra.

**Conclusion:** This case depicts a scenario where autologous sling is preferable over synthetic mesh due to decreased risk of erosion when a urethral diverticulum is repaired.

**Plenary 5: Urogynecology**
(11:00 AM – 12:45 PM)

**11:30 AM**

**Sacrocysterectomy with Anterior and Posterior Attachment**

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*Corresponding author.

**Video Objective:** This video discusses patient selection, different surgical approaches, and outcomes data for sacrohysterectomy. We present a case presentation employing one of the approaches to sacrohysterectomy.

**Setting:** This video presents a case of a 40 year old female with Stage II uterovaginal prolapse who seeks a durable surgical repair. She does not desire future fertility and has risk factors for native tissue repair failure.

**Interventions:** The patient underwent a robotic-assisted laparoscopic sacrohysterectomy, bilateral salpingectomy, and posterior colpophraphy.

**Conclusion:** Sacrohysterectomy is an effective and appropriate surgery for patients with uterovaginal prolapse and risk factors for native tissue failure who do not want a hysterectomy. Sacrohysterectomy can be performed with a posterior vaginal attachment only or with anterior and posterior vaginal attachments. The posterior only attachment is best for patients who desire future fertility as it does not involve surgery into the broad ligament or anterior cul-de-sac. There are two approaches to sacrohysterectomy that also include an anterior attachment to provide anterior vaginal support. Both approaches bring anterolateral mesh arms through windows created in the broad ligament. One technique sutures these arms in addition to the posterior mesh’s sacral arm to the sacral promontory. The other technique sutures the lateral arms to the posterior cervix leaving only the posterior mesh sacral arm to be attached at the sacral promontory. Overall sacrohysterectomy has been shown to have a symptomatic success rate of 90-95% and an anatomical success rate of 70%. Sacrohysterectomy has been shown to have reduced operative time, blood loss, hospital stay length, and to have greater vaginal length preservation than its hysterectomy with sacrocolpopexy alternative.

**Plenary 5: Urogynecology**
(11:00 AM – 12:45 PM)

**11:40 AM**

**Quality and Reliability of Publicly Accessible Information on Laser Treatments for Urinary Incontinence**

Perruzza D, 1, Jolliffe CJ, 2 Butti A, 1 McCaffrey C, 2 Kung RC, 1 Gagnon LH, 2 Lee PE, 1, Faculty of Medicine, University of Toronto, Toronto, ON, Canada; 2Division of Urogynecology, Department of Obstetrics and Gynecology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada

*Corresponding author.

**Study Objective:** This study aims to determine the quality and reliability of the top 20 internet search results for laser vaginal treatment of urinary incontinence in women.

**Design:** Website review

**Setting:** n/a

**Patients or Participants:** n/a

**Interventions:** The phrases “laser treatment of urinary incontinence” and “vaginal laser therapy for urinary incontinence” were searched in the most popular search engine (Google) and the top 20 search results (as of August 2018) were analysed by 2 medical students, 2 clinical fellows and 3 urogynecologists. The quality, credibility and transparency of information was determined using the HONcode, JAMA Benchmarks and DISCERN tool.

Readability was determined using the Flesch-Kincaid grade level and automated readability index.

**Measurements and Main Results:** The 20 sites evaluated had an average HON reliability score of 35.0% (±14.2%) and an average DISCERN scores of 40.4 (±7.7)/80 or 51%, indicating a lack of credibility and transparency. None of the sites analyzed fulfilled all 4 JAMA Benchmark criteria (Authorship, Attribution, Disclosure, Currency). The average grade level was determined to be 13.9 (±2.8) and 14.1 (±3.1) by the Flesch-Kincaid grade level and automated readability index respectively. This is consistent with a high school to college graduate level.

**Conclusion:** This study indicates that there is a lack of reliable, high quality information available to patients on the topic of laser treatment for urinary incontinence. The information is presented such that it might be difficult for patients to understand as the grade level indicates a high level of difficulty meant for skilled readers. The available information is not geared towards informing patients about the therapies, but rather focuses on the recruitment of patients to practices, often leaving out important information in the process. Patients should be made aware of the shortcomings of current available resources and use caution when reading potentially low-quality information on this topic online.

**Plenary 5: Urogynecology**
(11:00 AM – 12:45 PM)

**11:50 AM**

**Non-Puerperal Uterine Inversion Managed Robotically**

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*Corresponding author.

**Video Objective:** To demonstrate a method for surgical correction of chronic non-puerperal uterine inversion.

**Setting:** Patient with chronic non-puerperal uterine inversion of unknown duration, symptomatic for 3 months. She was referred to Urogynecology at a tertiary referral center for presumed pelvic organ prolapse.

**Interventions:** Surgical video demonstration of robotic assisted total laparoscopic hysterectomy and bilateral salpingo-oophorectomy in the setting of complete uterine inversion.
Conclusion: We found that the chronic nature of this patient’s uterine inversion precluded reduction with traditional methods. We demonstrate additional surgical techniques that may be used to ensure safe dissection of pelvic anatomy.

Plenary 5: Urogynecology (11:00 AM — 12:45 PM)

12:00 PM

A Prospective Randomized Control Trial Comparing Continuous Urinary Drainage to a Urinary Catheter Valve in Women Being Discharged with a Foley After Urogynecologic Surgery

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Study Objective: Urinary tract infections (UTIs) are common with indwelling catheter use. A urinary catheter valve is a 3-inch device that attaches to the end of a Foley catheter, replacing a continuous drainage bag, and allows for intermittent bladder drainage. Our primary objective was to evaluate UTI rates in women sent home after surgery with continuous bladder drainage compared with the urinary catheter valve. Design: This was a non-inferiority prospective randomized controlled trial between June 2016 to March 2019. The primary outcome of this study was post-operative UTI rates within 30 days of surgery. Secondary outcomes include: patient satisfaction, as determined by a Foley satisfaction questionnaire, and number of days to spontaneous void. Setting: 2 Academic-affiliated hospitals. Patients or Participants: Women between ages 18-90 who underwent a urogynecologic procedure and were to be discharged home with a Foley catheter were included in this study. Subjects with an intra-operative complication requiring continuous bladder drainage or medical history significant for dementia or altered cognitive function were excluded from participation. A total of 81 women were included; 43 in the continuous drainage group and 38 in the urinary catheter valve group.

Interventions: Women were randomized to either a continuous urinary drainage bag attached to their indwelling catheter, or a urinary catheter valve, allowing for intermittent drainage.

Measurements and Main Results: Patient demographics showed no differences between groups. UTI rates were 25.6% in the continuous drainage group and 26.3% in the urinary catheter valve group (p=0.94). Patients were more satisfied with the urinary catheter valve as compared to the traditional continuous drainage bag (p<0.05). The mean number of days to spontaneous void did not differ between groups (4 days vs 3 days, p=0.143).

Conclusion: The urinary catheter valve is a convenient alternative to a continuous urinary drainage bag with higher patient satisfaction. In this non-inferiority study, rates of urinary tract infection were similar in both groups.

Plenary 5: Urogynecology (11:00 AM — 12:45 PM)

12:10 PM

Occult Uterine Malignancy at the Time of Surgery for Pelvic Organ Prolapse: A Systematic Review

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*Corresponding author.

Study Objective: To conduct a systematic review to estimate the prevalence of occult uterine malignancy, of any subtype, among women undergoing surgery for pelvic organ prolapse.

Design: Systematic review
Setting: N/A
Patients or Participants: Women undergoing surgery for pelvic organ prolapse.

Interventions: Hysterectomy

Measurements and Main Results: The PRISMA guidelines were followed in this systematic review. The search terms used were “occult malignancy” or “occult uterine pathology” paired with “morcclation” or “hysterectomy.” March 25, 2019 was the last date that articles were searched. We did not restrict articles based on language or publication date. Inclusion criteria included any peer-reviewed journal articles reporting occult uterine malignancy rates at the time of surgery for benign conditions, regardless of whether morcellation was used or not. We excluded articles that were reported exclusively on women with pre-operatively diagnosed or suspected uterine malignancies.

Our search yielded a total of 233 journal articles, of which 53 met the criteria for a full-text review and 27 were included in the final systematic review. Of these 27 studies, 9 studies provided specific data on occult uterine malignancy among women undergoing surgery for pelvic organ prolapse. Among the 9 studies examined, the total number of patients combined was 35,880 and there were 144 total occult uterine malignancies. The overall crude prevalence of occult uterine malignancy was 0.40% (95% CI 0.30 – 0.47%). Among the 9 studies, the occult uterine malignancy rate ranged from a low 0% to a high of 3.17%. The largest of these 9 studies incorporated 31,567 patients and the occult uterine malignancy rate was 0.40% in that study.

Conclusion: This is the first attempt to synthesize data on occult uterine malignancies among women specifically undergoing surgery for pelvic organ prolapse. Based on this systematic review incorporating over 35,000 patients, the crude prevalence of occult uterine malignancy among this population is approximately 0.40%.

Plenary 5: Urogynecology (11:00 AM — 12:45 PM)

12:20 PM

Martius Labial Fat Pad Graft (use in RVF Repair)

Leach DA,* Gebhart JB. Division of Urogynecology, Mayo Clinic, Rochester, MN
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Video Objective: To demonstrate the utility of the Martius Labial Fat Pad Graft in pelvic fistula repair.

Setting: We present a minimally invasive surgical approach for a patient with recurrent rectovaginal fistula.

Interventions: An incision is made over the labium majus exposing the yellow fibrofatty graft. This graft is first retracted medially where a natural tissue plane facilitates dissection from the adjacent labium majus. It is then retracted laterally where a plane between it and the bulbocavernous muscle is developed. To avoid devascularization of adjacent skin, a thin fatty layer is left attached at its undersurface.

The division of the flap is begun in this case, at its anterior pedicle. It is important to develop a flap that easily covers the defect with a good degree of overlap. Once the flap has been sufficiently mobilized, a shellcross is used to create the subepithelial defect to enable passage of the flap through the levator plate. This defect is widened enough to prevent compression on the pedicled blood supply. After appropriate positioning, the flap is sewn into place by attaching it to the adjacent, underlying rectovaginal fascia with interrupted 2-0 Vicryl suture. It is important to note that no tensioning of the flap is required to approximate it to the adjacent tissue. The posterior vaginal wall is next closed over the graft in two layers followed by closure of the labial defect.

Conclusion: The Martius flap has multiple minimally invasive advantages in fistula repair to include low morbidity, lack of a cosmetic defect and the need for only a single surgical field. Its’ abundant blood supply promotes...
rapid neovascularization of the transplanted graft and lends itself well to a variety of surgical modifications that can be utilized in the repair of even the most difficult of fistulas.

Plenary 5: Urogynecology

(11:00 AM – 12:45 PM)

12:30 PM

Robotic Assisted Excision of Obturator Mesh and Retropubic Urethropexy

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*Corresponding author.

Video Objective: To showcase a new approach to treatment of chronic pelvic pain after transobturator mesh placement.

Setting: A community based academic institution.

Interventions: A robotic approach to an excision of transobturator mesh causing chronic pelvic pain and a robotic retropubic urethropexy for stress urinary incontinence.

Conclusion: Robotic technology can be used in combination to a vaginal approach to explore the obturator space and removed improperly placed mesh in appropriate candidates. While performing this procedure, it is also possible to perform a robotic urethropexy in patients with persistent stress urinary incontinence symptoms.

Plenary 6: Endometriosis

(2:00 PM – 3:00 PM)

2:00 PM

Exosomal Long Noncoding RNA-NONHAT076754 Facilitates Endometriosis Invasion and Predicts Endometriosis Recurrence

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*Corresponding author.

Study Objective: Exosome-mediated transfer of long noncoding RNAs (lncRNAs) to influence recipient cells is emerging as a novel mechanism for disease progression. NONHAT076754 is a newly identified metastasis-related lncRNA involved in cancer. Since endometriosis exhibits malignancy-like prometastasis behaviour similar to those observed in cancer, we aimed to investigate whether NONHAT076754 is involved in endometriosis and, if so, whether the exosome-mediated transfer of NONHAT076754 contributes to endometriosis migration/invasion. Additionally, we aimed to investigate the clinical value of serum exosomal NONHAT076754 in endometriosis.

Design: A molecular and clinical retrospective study.

Setting: Obstetrics and Gynecology Hospital of Fudan University.

Patients or Participants: Ninety two patients with ovarian endometriotic cysts recruited from 2014 to 2016.

Interventions: N/A.

Measurements and Main Results: The distribution and expression of NONHAT076754 in ectopic, eutopic and normal endometria was evaluated using fluorescence in situ hybridization and real-time polymerase chain reaction. Isolation, characterization, labeling and tracking of exosomes were performed. Migration/invasion assays were conducted. We found that NONHAT076754 was highly expressed in ectopic endometrial stromal tissues than in the paired eutopic and normal endometria. In vitro, using NONHAT076754-high-expression ectopic endometrial stromal cells (Ec-ESCs) as exosome-generating cells and NONHAT076754-low-expression eutopic endometrial stromal cells (Eu-ESCs) as recipient cells, we observed that the PKH67-labeled Ec-ESCs derived exosomes were effectively internalized by recipient Eu-ESCs. Exosome-shuttled NONHAT076754 was transferred from Ec-ESCs to Eu-ESCs which in turn elicited the migratory/invasive ability of Eu-ESCs partially by regulating ZO-1, E-cadherin and N-cadherin, eventually facilitating endometriosis migration/invasion. Notably, elevated serum exosomal NONHAT076754 expression was associated with clinical stages and recurrence of endometriosis (P<0.01), and was an independent predictive factor for endometriosis recurrence (P<0.01).

Conclusion: Our study suggests a novel mechanism for the malignancy-like prometastasis behaviour of endometriosis from the perspective of the “exosomal transfer of lncRNAs” and highlights the potential of serum exosomal NONHAT076754 as a biomarker for endometriosis recurrence.

2:10 PM

Laparoscopic Neurolysis for Deep Endometriosis with Somatic Nerves Involvement: A Prospective Cohort Study on 402 Patients Treated in a Third-Level Referral Center

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*Corresponding author.

Study Objective: To review efficacy and feasibility of laparoscopic decompression and neurolysis for endometriosis involving sacral plexus and/or somatic nerves on a large case series.

Design: Prospective case-series, single-centre, single-surgeon study on 402 patients.

Setting: Department of Obstetrics and Gynecology, IRCCS Sacro Cuore Don Calabria Hospital, Verona - Italy.

Patients or Participants: In a 9-year period, 402 consecutive patients with deep infiltrating endometriosis (DIE) complaining of recurrent sciatica and ano-genital pain were treated by laparoscopic decompression or neurolysis for endometriosis involving sacral roots and somatic nerves. The median follow up was 44.7 months.

Interventions: All the procedures were performed by a gynecologic pelvic surgeon skilled in neuro-anatomy (M.C.) Decompression and neurolysis of the involved neural structures was achieved by means of a tranperitoneal medial approach, by means of a lateral approach from the ileolumbar space, or with both the approaches in a combined technique. Nerve-sparing radical excision of DIE was performed laparoscopically in all cases.

Measurements and Main Results: In all of the 402 patients a laparoscopic evidence of nervous compression of somatic structures and infiltration of their fascial envelope was shown, whereas in 89 patients (22.1%) the same structures were deeply infiltrated, towards the assonal and perineural planes. In all of the patients a surgical whole decompression and partial neurolysis of nervous structures was performed, where in 89 (22.1%) cases a complete neurolysis was required. Complete relief from neuralgia of the plexus and close to the pelvis and the leg.

Conclusion: Laparoscopic retroperitoneal nerve-sparing approach to endometriosis extending to the pelvic wall with somatic nerve compression proved to be a feasible and safe procedure, effective in pain relief, recovery of impaired neurological functions and neuromotoric impairment symptoms of the pelvis and the leg.
Plenary 6: Endometriosis (2:00 PM – 3:00 PM)

2:20 PM

Outcomes in Women Undergoing Conservative Compared to Definitive Surgery for Chronic Pelvic Pain: A Prospective Cohort

Lee C,1,2 * Yong PJ, Bedaiwy M, Williams C, Allaire C. Obstetrics & Gynaecology, University of British Columbia, Vancouver, BC, Canada

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Study Objective: To compare chronic pelvic pain and quality-of-life outcomes in women undergoing conservative or definitive surgery for pelvic pain.

Interventions: Patients underwent either conservative or definitive surgery. Conservative surgery was defined as excision and/or cautery of endometriosis. Definitive surgery involved a hysterectomy and/or bilateral salpingo-oophorectomy.

Measurements and Main Results: Chronic pelvic pain (differentiated from dysmenorrhea or dyspareunia) was determined at baseline, 1-year, and 2-years on a patient-reported numeric rating scale (0-10). Similarly, the Endometriosis Health Profile (EHP)-30 questionnaire functional pain scale (0-100, lower score indicating better quality-of-life) was determined at baseline, 1-year, and 2-years.

The average age of women undergoing surgery was 34 ± 8 for conservative surgery and 39 ± 6 for definitive surgery. There was no statistically significant difference in self-reported chronic pelvic pain between the two groups at baseline (7 ± 2 vs. 7 ± 2, p = 0.35), at 1-year (6 ± 2 vs. 6 ± 2, p = 0.56), or at 2-years (6 ± 2 vs. 6 ± 3, p = 0.51). For quality-of-life, there was no difference in baseline EHP-30 scores (54% vs. 57%, p = 0.31). However, a statistically significant difference in EHP-30 scores was identified for definitive vs. conservative surgery at 1-year (34% vs. 20%, p < 0.001) and at 2-years (33% vs. 20%, p = 0.001).

Conclusion: There was no difference in self-reported chronic pelvic pain after follow-up from conservative vs. definitive surgery. However, definitive surgery (hysterectomy +/- BSO) was associated with improved quality-of-life. This improvement may be a result of the elimination of dysmenorrhea.

Plenary 6: Endometriosis (2:00 PM – 3:00 PM)

2:30 PM

Deep Endometriosis of the Bowl: A Surgical Approach

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*Corresponding author.

Video Objective: The objectives of this video are to define bowel endometriosis and to explore various surgical parameters for the different types of surgical excision. Then, a specific surgical approach will be demonstrated.

Setting: Our case is of a 34 year old nulliparous woman who presented for surgical management of deep endometriosis, as she was unable to tolerate medical management. She also presented with rectal bleeding and fecal urgency. This case was performed at a tertiary care setting hospital in Canada.

Interventions: Surgical management of bowel endometriosis is indicated for symptom and pain relief, intolerance to medical management and to prevent complete obstruction. Importantly, operative planning and management should involve a multidisciplinary team involving gynecologists, general or colorectal surgeons and radiologists.

When planning a surgical approach to deep endometriosis of the bowel, patient characteristics such as age and BMI, as well as their specific symptoms and level of pain, quality of life and fertility goals must be considered. As well, the actual lesion must be investigated with respect to size, number, location, depth of infiltration, and amount of intestinal wall circumference involved. Then, various surgical techniques can be performed depending on these specific characteristics, such as nodule shaving, nodular resection and segmental resection and re-anastomosis.

For our surgical case, segmental resection and re-anastomosis was indicated after intra-operative colonoscopy showed significant luminal obstruction. The video demonstrates a blood vessel preservation and nerve sparing approach, highlighting blood supply, sympathetic and para-sympathetic innervation.

Conclusion: The patient was discharged post-operative day 2 and reported complete resolution of symptoms at her clinical follow-up. This surgical video demonstrates and advocates a multidisciplinary approach to bowel endometriosis to improve patient quality of life.

Plenary 6: Endometriosis (2:00 PM – 3:00 PM)

2:40 PM

How we do it: Identification and Dissection of the Sacrospinous Ligament and Lumbosacral Spinal Root on a Patient with Endometriosis of the Pelvic Floor

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Video Objective: Our aim is to raise awareness of pelvic floor endometriosis and describe a technique to dissect the pelvis until the pelvic floor muscles identifying the lumbosacral nerves and the main structures of the pelvis.

Setting: A 23-year-old woman with cyclic pelvic pain since menarche had a history of claudication and pain in the right lower limb accompanied by dyschezia. At the vaginal and rectal examination, the patient had a nodule in the region of the right sacrospinous ligament, fixed in the pelvis and painful to palpation. The MRI showed a right posterolateral vaginal wall lesion on the uterosacral ligament and the anterior wall of the rectum, that touched the levator ani muscle infiltrating the sacrospinous ligament.

Interventions: The medial dissection of the lesion was performed by developing the pararectal space, resecting the uterosacral ligaments, ureterolysis and identifying the hypogastric nerve. Then, during lateral dissection of the lesion, we identified the iliac vessels and the obturator nerve after pelvic lymphadenectomy. The lumbar trunk, the sacral root S1, the superior gluteal artery and the S2 and S3 roots were identified posteriorly. Thus, we identified the lesion extending from the paracolpus and the rectal wall to the sacrospinous ligament in contact with the levator ani muscle. With both sides dissected, it was possible to approach the lesion preserving noble structures such as the ureter, uterine artery and splanchnic nerves.

Conclusion: Although endometriosis on the pelvic floor is a rare condition, deeply infiltrating endometriosis is more often diagnosed in young women such as our patient. Surgical techniques must be developed to assess those type of lesions and videos like this are a form to discuss different approaches to the pelvic floor.

Plenary 6: Endometriosis (2:00 PM – 3:00 PM)

2:50 PM

Post-Operative Dienogest Following Conservative Endometriosis Surgery: A Systematic Review and Meta-Analysis
Conclusion: Post-operative hormonal suppression with dienogest follow-
ing endometriosis surgery is associated with a low overall recurrence rate, and is superior to no post-operative hormonal suppression (Log odds -2.09, 95% CI 30.9-42.6%) and with ART in 23.7% (95% CI 17.6-31.1%). The live birth rate for all pregnancies was 47.1% (95% CI 40-54.3%). Follow up time ranged from 12-96 months and mean age was 33.31 years.

There were 17 studies that reported pregnancy rates in patients with preoperative infertility of ≥ 1 year. Overall pregnancy rate after surgery was 44.6% (95% CI 39.3 – 50.0%); 30.1% (95% CI 24.8-35.8%) were pregnant spontaneously and 21.6% (95% CI 14.2 – 31.4%) with the use of ART. Live birth rate was 41.9% (95% CI 35.2-48.9%). Mean age in this group was 32.41 years.

Conclusion: Surgical resection alone of DIE aids in both symptom resolution and ability to spontaneously conceive. About half of patients undergoing surgical resection achieve spontaneous pregnancy. Endometriosis is a common cause of infertility, since 44.6% of infertile patients achieved pregnancy following surgical resection of DIE, and most those pregnancies were spontaneous.

Plenary 7: Reproductive (3:05 PM – 4:05 PM)

3:15 PM

Robotic Assisted Laparoscopic Repair of Isthmocele

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Video Objective: This video demonstrates the technique for a Robotic assisted laparoscopic repair of a large Isthmocele.

Setting: A 41-year-old G1P1 woman presented with secondary infertility and postmenstrual spotting. Her first spontaneous pregnancy ended by cesarean section delivery 5 years ago. She has a 3 years history of secondary infertility and failed Intracytoplasmic sperm injection (ICSI). Transvaginal ultrasound showed a wedge-shaped hypoechocic area in the myometrium at the level of the previous cesarean scar and Pelvic MRI confirmed the diagnosis of Isthmocele.

Interventions: Diagnostic hysteroscopy done prior to the Robotic assisted Laparoscopy for endometrial cavity assessment and localization of the cesarean scar defect showed an endometrium studded with black hemosiderin-like lesions, biopsy was taken. Then a Robotic assisted Laparoscopic surgery started with dissection of the vesicovaginal plane and resection of the isthmocele pouch. Complete excision of fibrotic tissues performed and a Hegar dilator was placed to maintain cervico-uterine patency. The defect was then repaired in 3 layers. For the first two layers 0-polyglactin (Vicryl®) was used for faster absorption of the suture material in contact with the endometrial cavity. The third layer was closed using 2-0 delayed absorbable barbed sutures (V-Loc™). An adherence barrier was placed overlying the suture line. The operative time was 150 minutes and the patient had an uneventful post-operative recovery.

Conclusion: The pathology of the endometrial biopsy showed the unusual finding of endometrial glands filled with blood. The postoperative vaginal ultrasound confirmed a well re-approximated uterine wall, a myometrial thickness of 14 mm and a continuous and intact endometrial lining at 6 weeks postoperatively. At 3 months a flexible office hysteroscopy showed excellent repair, complete healing of the lower uterine defect and a normal endometrial cavity with resolution of the abnormal lesions. Post-operatively, the patient denied any post-menstrual spotting and conceived spontaneously 4 months after the repair.
Plenary 7: Reproductive (3:05 PM – 4:05 PM)

3:25 PM

Hyaluronic Acid Gel Reduces the Rate of Intrauterine Adhesions After Dilatation and Curettage in Women with Miscarriage: Multicentric Prospective Randomized Controlled Trial (Hyfaco Study)

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Study Objective: To evaluate the rate of intrauterine adhesions (IUA) after dilatation and curettage (D&C) for miscarriage with and without hyaluronic acid gel.

Design: Multicentric prospective randomized controlled trial, with two years of follow up for each patient.

Setting: Eight hospitals, in France.

Patients or Participants: 343 patients who had a miscarriage were enrolled in the study.

Interventions: Women were randomly assigned to D&C alone, or D&C with intrauterine instillation of hyaluronic acid gel. An office hysteroscopy was planned six to eight weeks after D&C.

Measurements and Main Results: Primary endpoint was the rate of IUA during the office control hysteroscopy. 169 patients had D&C alone and 174 had D&C with hyaluronic acid gel. 278 patients finally had an office hysteroscopy. Global rate of intrauterine adhesions was 13.3% (37/278). In women with D&C alone, rate of IUA was 17.9% (24/134), whereas in women with D&C and hyaluronic acid gel, this rate was 9.0% (13/144), and significantly lower (p=0.0294). Only 77 patients answered the fertility survey one year after D&C. The pregnancy rate twelve months after D&C was 68.8% (53/77), and was significantly higher in D&C + gel group than in D&C alone group (77.6% and 53.6%, p=0.0289).

Conclusion: Intrauterine instillation of hyaluronic acid gel reduces the rate of intrauterine adhesions in women with D&C for miscarriage.

Plenary 7: Reproductive (3:05 PM – 4:05 PM)

3:35 PM

Laparoscopic Relocation of the Ovaries After Prior Transposition

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Video Objective: To describe the indications, surgical approaches and expected outcomes for ovarian transposition and highlight a case of ovarian relocation to the pelvis in a patient who underwent prior transposition.

Setting: A 34 year old patient with a history of metastatic spinal ependymoma underwent laparoscopic ovarian transposition prior to craniospinal radiation. Eleven years after her transposition, she was seen by reproductive endocrinology and infertility for preconception counseling and evaluation. Her follicle stimulating hormone levels were within normal limits, but her hysterosalpingogram demonstrated bilateral tubal isthmic occlusion. She was referred to minimally invasive gynecologic surgery for surgical consultation.

Interventions: The patient was taken to the operating room for operative laparoscopy, ovarian relocation to the pelvis and evaluation of her fallopian tubes. Intraoperative findings were notable for transposition of the bilateral ovaries and fallopian tubes to the lateral abdominal peritoneum.

Adhesiolysis was performed to mobilize each ovary on its vascular pedicle. Without compromise to the ovarian blood supply, and in a tension-free manner, each ovary was sutured to the ipsilateral round ligament.

Conclusion: Laparoscopic ovarian transposition is an important surgical technique to aid preservation of ovarian function in reproductive aged women undergoing pelvic radiation. Gynecologic surgeons should be aware of the techniques to perform ovarian transposition, as well as relocation of the ovaries to the pelvis for future spontaneous or assisted reproduction. Knowledge of abdominal and pelvic anatomy, as well as proficiency in laparoscopic suturing are essential to perform ovarian transposition and relocation in a minimally invasive fashion.

Plenary 7: Reproductive (3:05 PM – 4:05 PM)

3:45 PM

Laparoscopic Repair of Isthmocele with Hysteroscopic Guidance

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Video Objective: The objective of this video is to review the definition, diagnosis, consequences of an uterine isthmocele. This video also demonstrates surgical management of isthmoceles using a combination of laparoscopy and hysteroscopy.

Setting: A patient with a history of 2 prior cesarean deliveries with strong desire for future fertility was found to have a profound isthmocele on transvaginal ultrasound. She presented for surgical management at our large academic center with a robust minimally invasive gynecological surgical team.

Interventions: The patient underwent an uncomplicated laparoscopic isthmocele repair. Hysteroscopy was performed concurrently as a means of visualizing the borders of the uterine defect as well as determining adequate margins for full removal. 6 months after repair, the patient underwent a repeat ultrasound that showed an intact repair with normal myometrial thickness.

Conclusion: Isthmocele is an iatrogenic defect in the uterine myometrium and can complicate future pregnancies. Laparoscopic repair with hysteroscopic guidance is a safe and effective way of addressing an isthmocele for patients that desire future pregnancies.

Plenary 7: Reproductive (3:05 PM – 4:05 PM)

3:55 PM

Utero-Vaginal Reanastomosis for Cervical Agenesis

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Video Objective: The objective of this video is to review the types of cervical agenesis and dysgenesis, methods of diagnosis, and the surgical technique used to correct this type of Mullerian anomaly.

Setting: A young adult with history of primary amenorrhea, pelvic pain found to have endometriosis and cervical agenesis presents for surgical correction of her cervical agenesis at a large academic center with a robust minimally invasive gynecologic surgical group.

Interventions: The patient with cervical agenesis underwent a laparoscopic utero-vaginal reanastomosis. A stent was left in situ for maturation of the new cervical fistulous tract between the uterus and the vagina.

Conclusion: Patients with cervical malformations, such as cervical agenesis or dysgenesis, that want to establish and maintain cyclical menses and/or to preserve fertility can be offered an utero-vaginal reanastomosis. This surgery
can be safely and efficaciously performed with laparoscopy. Though the first reanastomosis procedures performed resulted in high morbidity and mortality, recent surgical outcomes have been more promising with subsequent successful pregnancies and continued patency of the created outflow tract.

**Plenary 8: Robotics**

(4:10 PM – 5:10 PM)

**4:10 PM**

**Minimally Invasive Burch Colposuspension - The Robotic Approach**

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**Video Objective:** To demonstrate a minimally invasive technique to the Burch procedure for treatment of stress urinary incontinence as an alternative therapeutic modality for women who do not want or cannot have mesh products.

**Setting:** Surgical intervention for a 68 yo G12 P10-0-2-10 with prolapse and stress urinary incontinence (SUI). After undergoing appropriate counseling and discussion regarding risks, benefits and alternatives the patient and family declined use of mesh products for any portion of the repair. The decision was made to proceed with a hysterectomy, uterosacral colpopexy and Burch colposuspension. Preoperative optimization of her health and multiple co-morbidities required a multidisciplinary approach. Blood pressure control, diabetes and thyroid management as well as topical estrogen treatment of vaginal epithelium for 3 months prior to surgery.

**Interventions:** Robotic colposuspension for genuine SUI following a robotic hysterectomy and uterosacral colpopexy. The procedure took 62 minutes to complete, the blood loss was minimal and there were no complications. She was observed overnight, had a successful voiding trial in the morning and was discharged shortly after. Follow up at 2 and 6 weeks after surgery she reported no pain and no complications. She reports significant improvement in bladder function and bladder control.

**Conclusion:** The Burch procedure is well known as an effective treatment for SUI but generally not frequently performed due to morbidity associated with laparotomy requiring procedures and the availability of less invasive approaches such as a transvaginal suburethral sling. With the minimally invasive surgery evolution being inclusive of nearly all gynecologic procedures, a robotic or laparoscopic Burch colposuspension as an alternative to transvaginal suburethral sling with mesh should be considered. This video demonstrates a reproducible, safe and efficient approach to this procedure.

**Plenary 8: Robotics**

(4:10 PM – 5:10 PM)

**4:20 PM**

**Case Series for Same-Day Discharge for Minimally Invasive Robotic Surgery for Endometrial Cancer**

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**Study Objective:** Goal of this study is to present a cases series endorsing same-day discharge after minimally invasive robotic surgery for endometrial cancer and to determine factors that affect the length of hospital stay.

**Design:** Retrospective study is comprised of all cases (N = 50) by a single gynecologic oncologist (July 1, 2017 to January 30, 2019) that involved a robotic total hysterectomy (RTH) with bilateral salpingo-oophorectomy (BSO) and total pelvic lymphadenectomy for endometrial cancer. Categorical and continuous variables were analyzed using the Chi-square test and unpaired t-test respectively. Bivariate correlation analysis was utilized to determine risk factor influence on length of stay.

**Setting:** This study was conducted in El Paso, TX, a borderland city primarily comprised of a Hispanic population.

**Patients or Participants:** 50 patients who underwent robotic total hysterectomy with bilateral salpingo-oophorectomy and total pelvic lymphadenectomy for surgical treatment of endometrial cancer.

**Interventions:** N/A.

**Measurements and Main Results:** Total of 50 women with a median age of 62 years-old underwent RTH/BSO and surgical staging, and 62% (31) of patients were successfully discharged the same day (< 24hr) despite no ERAS protocol. Age, number of comorbidities, surgery time of day, and surgical stage did not have a statistically significant effect on length of stay. Of the same-day discharge cases, 29% (8) were immediately discharged following post-op recovery (within 4hr). Patients were more likely to be admitted if they had moderately to poorly differentiated histologic grade (FIGO g2-g3), longer surgery time (> 2 hrs.), or increased surgical complexity (para-aortic lymphadenectomy and/or omentectomy).

**Conclusion:** Same-day discharge is feasible following minimally invasive robotic surgery for endometrial cancer, despite older age, multiple comorbidities, later surgery time of day, and higher surgical stage.

**Plenary 8: Robotics**

(4:10 PM – 5:10 PM)

**4:30 PM**

**Robotic Colostomy Take-Down**

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**Video Objective:** To demonstrate a surgical video where-in a robotic-assisted colostomy take-down was performed with anastomosis of the descending colon to the rectum after reduction of ventral hernias and extensive lysis of adhesions.

**Setting:** Tertiary referral center in New Haven, Connecticut.

**Interventions:** This 64-year-old female was diagnosed with Stage IIIA endometrial cancer in 2015 when she underwent an optimal cytoreductive surgery. She required sigmoid resection and a descending end colostomy with Hartmann’s pouch, mainly secondary to extensive diverticulitis. Following adjuvant chemoradiation, she remained disease-free and desired colostomy reversal.

Imaging was notable for a ventral hernia and a parastomal hernia. Colonoscopy was only notable for narrowing of the distal rectum above the level of the levator ani. Following extensive enterolysis, the splenic flexure of the colon was mobilized to provide an adequate proximal limb to the anastomosis site. The anvil was then introduced into the distal descending colon through the colostomy site. A robotic stapler was utilized in order to seal the colostomy site and detach it from the anterior abdominal wall. Unfortunately, the EEA sizer perforated through the distal rectum, caudad to the stricture site. Thus, a significant length of the distal rectum had to be sacrificed, requiring further mobilization of the splenic flexure. Rectum was then re-approximated with 3-0 barbed suture in two layers. With 6-8cm of distal rectum available, end-to-side anastomosis of descending colon to distal rectum was performed. Given the low colorectal anastomosis, a protective diverting loop ileostomy was then performed.

The patient had an uneventful postoperative course. Hypaque enema performed after three months showed neither anastomotic leak nor stricture. Ileostomy was then reversed.

**Conclusion:** Robotic-assisted colostomy take-down and anastomosis were successfully performed. Minimally invasive techniques should be considered as an alternative to laparotomy for patients with colostomy, as long as they are recurrence-free.
Plenary 8: Robotics  
(4:10 PM – 5:10 PM)

4:40 PM

**Robotic Interval Cytoreductive Surgery for Stage IV Epithelial Ovarian Cancer**

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**Video Objective:** To demonstrate a surgical video where-in interval cytoreduction to no gross residual disease was performed robotically in a patient with Stage IV epithelial ovarian cancer.

**Setting:** Tertiary referral center.

**Interventions:** A 43-year-old Caucasian female was diagnosed with stage IV-A high-grade serous ovarian adenocarcinoma after presenting with shortness of breath. Computed tomography showed bilateral pleural effusions, adnexal masses, retroperitoneal lymphadenopathy, and obliterating the thoracic cavity. Thoracentesis confirmed adenocarcinoma of Mullerian primary. She received three cycles of neoadjuvant carboplatin and paclitaxel with excellent clinical response and was taken to the operating room for robotic-assisted interval cytoreductive surgery.

Trocar sites were placed on a straight horizontal line along the umbilical fold. The rectosigmoid colon was mobilized medially. Parapectal and paravesical spaces were developed. Ureterolysis was completed bilaterally. The ureteric vessels were sealed at the hypogastric bifurcation. Infundibulopelvic (IP) ligament was sealed and cut. Bilateral pelvic sidewall peritoneum was resected. Bladder flap was developed. Colpotomy was performed and the hysterectomy specimen was removed. Procedure was then continued with debulking of enlarged lymph nodes, from bilateral pelvic sidewalls and peri-aortic area. The robotic arms were targeted to the upper abdomen for total omentectomy. Access to the lesser sac was gained by resecting short gastric vessels, along the greater curvature of the stomach. The incision was then extended to the splenic flexure and hepatic flexure. Total omentectomy was completed. Remaining subcentimeter tumoral nodules along the peritoneal surfaces were ablated with argon beam coagulator. The patient had an uneventful postoperative course and was discharged home on postoperative day 1. Pathology confirmed high grade serous ovarian carcinoma. She was resumed on chemotherapy two weeks after her cytoreductive surgery.

**Conclusion:** Laparoscopic/robotic interval cytoreductive surgery should be considered in advanced ovarian cancer patients, who have an excellent clinical response to NACT. Studies to accurately identify the appropriate patient population for laparoscopic/robotic debulking procedures are urgently encouraged and needed.

**Plenary 8: Robotics  
(4:10 PM – 5:10 PM)**

4:50 PM

**Isthmocele Repair: Robotic-Assisted Laparoscopy with Simultaneous Hysteroscopy**

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*Corresponding author.

**Video Objective:** To illustrate the use of robotic-assisted laparoscopy with simultaneous hysteroscopy for the repair of an isthmocele.

**Setting:** An isthmocele is a pouch-like anterior uterine wall defect at the site of a previous cesarean scar. The incidence is not well known but is estimated in the literature is between 19 and 88%. Complications arising from an isthmocele may include abnormal uterine bleeding (especially postmenstrual bleeding), abdominal pain, diminished fertility, ectopic pregnancy, or obstetric complications such as uterine rupture. Repair of isthmocele may be indicated for symptomatic relief and preservation of fertility. Multiple surgical approaches have been described in the literature including laparoscopic, hysteroscopic, and vaginal approaches.

**Interventions:** In this video, we illustrate the key surgical steps of robotic-assisted laparoscopy with simultaneous hysteroscopic guidance for the repair of an isthmocele. Key surgical steps include:

1. Pre-surgical planning with MRI
2. Diagnostic hysteroscopy for confirmation of isthmocele
3. Simultaneous laparoscopy for identification of borders
4. Strategic hysterotomy
5. Excision of scar tissue
6. Tension-free closure

**Conclusion:** Robotic-assisted laparoscopy with simultaneous hysteroscopy is a feasible and safe approach for the repair of an isthmocele.

Plenary 8: Robotics  
(4:10 PM – 5:10 PM)

5:00 PM

**Increased Same Day Discharge Rate After Laparoscopic Guided 4-Point Transversus Abdominis Plane Block for Robotic Assisted Gynecologic Procedures**

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**Study Objective:** To compare rates of same day discharge between four-point and two-point, laparoscopically guided transversus abdominis plane (TAP) blocks, for robotic-assisted gynecologic procedures.

**Design:** We performed a retrospective chart review from October 2017 to March 2019. All information from the surgical admission as well as post-operative follow up was reviewed. Data was compared to a similar cohort of patients who had received two-point TAP blocks.

**Setting:** All procedures were performed at one academic hospital.

**Patients or Participants:** 116 patients who underwent robotic-assisted gynecologic surgery, with administration of a four-point TAP block were included.

**Interventions:** A four-point TAP block was performed under laparoscopic visualization by the same surgeon after induction of anesthesia and immediately following placement of the laparoscope. 20 mL of Liposomal bupivacaine and 20 mL of 0.5% bupivacaine mixed with saline were used as the injectate for both groups.

**Measurements and Main Results:** 116 patients were included with a mean age of 40.6 (19-80) and a mean body mass index of 30.6 (17.2-53.3). 70.7% of patients were discharged to home on the day of surgery. Of the 29.3% of patients who were admitted 20.6% were due to pain control. Those who were admitted for pain control comprised 6.0% of all study participants. In the cohort who received the two-point TAP block, only 33.7% of patients were discharged home on the day of surgery which was significantly lower than the four-point cohort with a p value of < 0.001. There were no adverse events in either group.

**Conclusion:** A surgeon performed TAP block, under laparoscopic visualization, is a safe and efficacious intervention to reduce postoperative pain thereby increasing same day discharge rate. In this study, patients who received a four-point TAP block had a higher rate of same-day discharge than those in the group who received the two-point TAP.
MONDAY, NOVEMBER 11, 2019

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

11:00 AM

Innovative Robotic System for Transvaginal Surgical Procedures

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Study Objective: Determine the feasibility of a transvaginal single-port robotic system for gynecologic surgical procedures

Design: Three-stage trials using animal, cadaveric, and human models.

Setting: The animal trials were performed in a certified animal center. Cadaveric procedures were carried out in a cadaver laboratory. Surgery on humans was performed in hospitals.

Patients or Participants: Human patients who required a gynecologic procedure were given the option of traditional laparoscopy or single-port transvaginal surgery. Twenty-two patients were enrolled in the study and all 22 completed it. There were 10 adnexal procedures, ranging from salpingectomy to ovarian cystectomy to salpingo-oophorectomy, and 12 total hysterecromies.

Interventions: A new robotic system was inserted through the posterior vaginal fornix, first in a sheep model, where 17 oophorectomies, 17 salpingectomies, 18 tubal sterilizations and 15 hysterecomies were performed for a total of 67 procedures. Next, cadavers were utilized to perform 15 transvaginal oophorectomies, 15 salpingectomies, 18 sterilization procedures, and 12 total hysterecomies. Finally, single-incision, transvaginal surgery was performed on 22 human subjects - 10 adnexectomies and 12 vaginal hysterecomies. Immediate postoperative course as well as three-month follow-up was carried out in the human participants.

Measurements and Main Results: The patients were assessed for standard intraoperative as well as postoperative parameters, including operative time, blood loss, and complications. There were no intraoperative or postoperative complications, nor any significant problems encountered at the three-month follow-up.

Conclusion: Vaginal surgery is recommended as the surgical approach of choice for hysterectomy by the American College of Obstetricians and Gynecologists. However, it remains the route least utilized by practitioners because of technical challenges, ranging from difficulty in accessing the peritoneal cavity to a restricted visualization of abdominal and pelvic contents. A new robotic system has been developed that facilitates entry through a single vaginal incision under direct vision, and then allows 360 degree optics of the entire abdomen and pelvis.

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

11:07 AM

Training Model for Laparoscopic Salpingectomy using an Energy Device: Practice Before the Or

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Video Objective: To develop an animal tissue model that can provide training on the use of electrosurgical devices as well as serve as a benchmark for performing laparoscopic salpingectomy procedures by gynecologic trainees.

Setting: Laparoscopic salpingectomy is a milestone procedure for gynecologic trainees. Despite the prevalence of laparoscopic salpingectomy, there is not an established animal tissue model to provide training in this procedure. This limits opportunities to practice with laparoscopic electrosurgical devices prior to performing the procedure in the operating room.

Interventions: An existing model with porcine uterus was modified for the purpose of this study. Copper wire simulated the round and utero-ovarian ligaments, and felt pads simulated the ovaries. Gynecologic trainees used a bipolar device (LigaSure) to perform laparoscopic salpingectomies on the model during a pilot study. Each salpingectomy simulation was recorded, to be graded by two blinded gynecologic surgeons using the Global Operative Assessment of Laparoscopic Skills (GOALS) and Objective Structured Assessment of Laparoscopic Salpingectomy (OSA-LS) and has been previously reported. Each trainee completed a survey to provide feedback on the model.

Conclusion: The animal tissue model shows promise for training in laparoscopic salpingectomy. On the 5-point Likert scale, 8 trainees who had previously performed this procedure in the operating room rated overall satisfaction at 4.9, realism 4.4, tactility 4.5, tissue quality 4.5, model anatomy 4.6. Data will be further evaluated to assess construct validity amongst trainee levels.

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

11:14 AM

Hysterectomy using a Novel Vaginal Robot

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Study Objective: The vaginal approach is considered safer than umbilical access in gynecological surgeries. However, despite the growing popularity of robotic surgery, it has not been performed through the vagina. We set out to evaluate the feasibility of vaginal access in robotic surgery. Here we present a case series of the revolutionary robotic vaginal natural orifice transluminal endoscopic surgery (vNOTES), using the Homiminis system, on vaginal hysterectomy.

Design: This is a prospective analysis of hysterectomy performed by robotic vNOTES. 10 women with nonmalignant indications were recruited.

Setting: Prospective study.

Patients or Participants: 10 women with nonmalignant indications for hysterectomy were recruited.

Interventions: Hysterectomy.

Measurements and Main Results: Two robotic arms were inserted through the posterior fornix. Each arm has built-in mono- and bi-polar capabilities, their actions are controlled by the surgeon sitting at the console a few feet away. Surgical data were collected during the procedures. The median age was 60 years [range: 43-73]; the median BMI was 26 [range: 17-33]; the median total operative time was 60 minutes [range: 24-88], decreasing duration over time indicated a fast learning curve. There were no intraoperative and postoperative adverse events.

Conclusion: This is the first documentation of a robotic hysterectomy performed via the vagina. Outstanding features of vNOTES include its portability and easy handling due to its light weight (less than 10 pounds), scarless surgery, and access to any part of the abdomen by articulation of the flexible robotic arms. No special maintenance is required. The approach combines the benefits of vaginal procedures and laparoscopic techniques and maintains safety in regard to proximity to pelvic organs. This case series demonstrates the feasibility of using vNOTES for hysterectomy for benign gynecologic indications.

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

11:21 AM

Validation of a Simulation Model for Robotic Sacrocolpopexy
Simulation lab.

**Settings:**
- The setting was an8 simulation environment, which was designed to mimic real-life surgical scenarios.
- The participants were trained in this setting to handle various uterine manipulators, understand their selection criteria, and practice their use.

**Interventions:**
- The interventions included 9 FPMRS surgeons and current FPMRS fellows who were video-taped during the RSCP model to complete a RSCP. Videotaped sessions were time-stamped and scored using the validated Global Evaluative Assessment of Robotic Skills (GEARS) by 3 expert reviewers, who were masked to subjects' identity. Construct validity was measured by comparing the performance on the model between experienced surgeons and trainees. Inter-rater reliability was determined by calculating interclass correlation coefficients for total GEARS scores.

**Measurements and Main Results:**
- Experts included 9 FPMRS (2 male, 7 female) surgeons; trainees included 17 fellows (4 male, 13 female).
- Experts practiced at 7 different institutions; most (5/7) taught fellows. Trainees were from 7 institutions with various years of training: PGY5 (n = 6), PGY6 (n = 5), and PGY7 (n = 6). The experts' performance was rated significantly higher for total GEARS scores than trainees. The GEARS autonomy parameter was scored as 5 for both groups, as all participants successfully completed the procedure without assistance.
- Between the three reviewers, inter-rater reliability was 0.99 for pair 1, 0.96 for pair 2, and 0.99 for pair 3, indicating high inter-rater reliability.

**Conclusion:**
- Experts agreed that the model closely approximated live RSCP surgery and was useful for teaching and learning the procedure. Face validity was established, as all participants felt the model replicated live RSCP surgery and was useful for surgical training and education.

**Open Communications 1:** Basic Science/Research/Education (11:00 AM — 12:45 PM)

**Video Objective:**
- The objective of this video is to review the utility of patient-specific 3D printed models of the uterus in surgical planning and as an intraoperative visual aid in laparoscopic myomectomy.

**Setting:**
- The video aimed to provide an educational tool for patients and trainees. Currently, cost and the time to print 3D models are limiting factors for widespread use. As this technology develops, 3D printing may become a more promising educational tool for patients and trainees.

**Interventions:**
- MRI of the pelvis was acquired for each patient. The DICOM images from the MRI were converted to Standard Tessellation Language (STL) using image segmentation and postprocessing software. The STL file was printed using a 3D printer (PolyJet J750; Stratasys, Eden Prairie, MN). The models are printed in a clear polymer with fibroids selectively colored. Transverse slices allow visualization of the intramural extent of fibroids. The models were provided to surgeons for preoperative planning and were also available to the surgeon intraoperatively. Intraoperatively, the models were manipulated outside the sterile field by the research assistant.

**Conclusion:**
- 3D printing is a developing technology with potential for use in surgery. In laparoscopic myomectomy, patient-specific 3D models present an additional tool for preoperative and intraoperative planning. Primary use includes planning of hysterotomies, assessing the depth of myometrial involvement and proximity to the uterine cavity, and intraoperative identification of fibroids which are not visible or palpable laparoscopically. Additionally, the 3D model can serve as an educational tool for patients and trainees. Currently, this technology develops, 3D printing may become a more promising surgical tool.
Setting: To evaluate the impact of 3-dimensional (3D) digital and printed models on minimally invasive gynecologic surgeons’ operative plan, outcomes, and experience.

Design: Prospective, cross-sectional, repeated measures design.

Setting: Pre-, intra-, and post-operative minimally invasive gynecologic surgery.

Patients or Participants: Minimally Invasive Gynecology (MIG) surgeons (n=6) at The Ottawa Hospital (TOH) and their respective surgical cases (n=50).

Interventions: Using our team’s 3D printing protocol, patient-specific 3D digital and printed models are produced from cross-sectional MR images. Surgeons complete a pre-operative questionnaire before and after viewing the models. They are given the opportunity to consult the models intra-operatively, and, finally, complete a post-operative questionnaire. Chi-square test of independencies, Mann-Whitney U, and dependent T-tests will be used to evaluate significant differences between variables related to surgical plan before and after viewing models. Descriptive statistics will be used to evaluate surgeon experience.

Measurements and Main Results: Two cases have been completed to date. The first was a proof of concept to establish our 3D printing and study protocols. In this case, a 3D model of a multibifid uterus was printed for myomectomy planning in a 42-year-old G0P0 with bulk symptoms. In the second case, a 3D model was printed to plan for myomectomy in a 45-year-old GSP1 with future fertility goals. Viewing the 3D digital and printed model affected the surgeons’: planned hemostatic techniques, perceived surgical complexity, allocated operative time, anticipated risk of complications, confidence in surgical plan, and positively impacted their surgical experience.

Conclusion: Patient-specific 3D models increase understanding of complex anatomy in gynecologic surgery, optimizing pre-operative planning, intra-operative performance, surgeon experience, and patient outcomes.

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

11:49 AM

Overcoming Expert Blind Spot when Teaching the Novice Surgeon
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Video Objective: To demonstrate how expert blind spot impacts surgical teaching and provide concrete strategies to overcome this learning barrier.

Setting: Academic teaching hospital.

Interventions: This educational video deconstructs the steps required to teach and assist a novice surgeon during a total laparoscopic hysterectomy.

Conclusion: Skilled surgical educators are able to overcome expert blind spot and deconstruct a procedure into steps appropriate for the learners’ skill level.

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

11:56 AM

A Randomized Control Trial of Non-Surgical Methods of Non-Dominant Hand Training to Enhance Laparoscopic Skill

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Study Objective: To determine if non-dominant hand training using task-specific exercises or everyday activities, would translate to improved laparoscopic ambidexterity amongst medical trainees.

Design: Single center non-blinded, randomized control trial.

Setting: University medical school.

Patients or Participants: Medical students.

Interventions: 100 medical students were block randomized to receive either 1) Task-specific exercises to train the non-dominant hand, 2) Directions to use their non-dominant hand to perform everyday activities, or 3) No training. Laparoscopic skills during completion of pre-defined tasks were assessed using a box-trainer fitted with motion tracking equipment. Three time points were measured; pre-training, post-training (t = 3 weeks), and retention (t = 6 weeks). A principal components analysis incorporating extreme velocity and acceleration events was performed to assess multidimensional hand movements and obtain a global metric of ability i.e. smoothness of motion. We compared smoothness between groups and across times using mixed-effect linear regression, controlling for pre-test ability.

Measurements and Main Results: There was a significant improvement in smoothness from the post-test phase to the retention phase for all groups (mean effect size d = 0.34), suggesting that smoothness was improving over time regardless of intervention. However, there was no difference in smoothness between the control group and either task-specific exercises or everyday activities for any task at any time point (all p > 0.05, mean task-specific effect size d = 0.14, mean everyday effect size d = 0.04).

Conclusion: While sound in theory, training of the non-dominant hand to improve ambidexterity does not translate to the laparoscopic surgical environment. Simulation based laparoscopic exercises remain the favored education modality.
Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

12:10 PM

Endosee for Office Cystoscopy: A Single Site Experience

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Study Objective: Demonstrate the safety and efficacy of an FDA approved handheld hysteroscope used as a newly FDA cleared handheld cystoscope in the office.

Design: Case series.

Setting: Busy outpatient urogynecology office private practice.

Patients or Participants: Thirty-nine consecutive women scheduled for office cystourethroscopy.

Interventions: Patients undergoing office cystourethroscopy in a single outpatient urogynecology office site were evaluated using the Endosee device with saline infusion without anesthesia.

Measurements and Main Results: Patient demographics, indications, findings, procedure length, volume of distention fluid, adequacy of the procedure and complications were analyzed. Digital images of all procedures were obtained and tabulated to illustrate the ability to diagnose a multitude of common bladder conditions in female patients with a variety common urogynecologic problems. 100% of procedures noted complete anatomic visualization and bilateral ureteral spillage. All patients were able to tolerate the procedure with no pre-procedure analgesia. Mean patient age 67.3 (SD=13.5, range 41-91), with common indications including hematuria (51.3%), urgency or incontinence (43.6%), recurrent UTI (20.5%), preoperative evaluation (10.3%). Average time of Endosee cystoscopy procedure was 206.5 seconds (SD=59.9) with average filling fluid volume 386.7 cc (SD=53.1). Procedure findings included trabeculations, hypervascularity, bladder stones, bladder and urethral polyps, hemangiomas, and cystitis cystica. One post-procedure day 2 fever was noted, culture negative who self-treated with Ciprofloxacin.

Conclusion: Endosee, which is FDA cleared for cystourethroscopy, is a safe, effective, well-tolerated alternative for office assessment of the bladder in female patients. The ability to portably perform office cystoscopy in flexible settings may make this modality more accessible to practitioners, without the need for a dedicated cystoscopy room or expensive tower. Further study may be warranted to determine whether Endosee may lead to earlier and more accurate diagnosis for a multitude of bladder problems.

Open Communications 1: Basic Science/Research/Education (11:00 AM — 12:45 PM)

12:17 PM

Tubal Re-Implantation Following Hysteroscopic Tubal Sterilization

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Video Objective: In this video, we demonstrate a novel laparoscopic technique of tubal re-implantation after hysteroscopic tubal sterilization with micro-inserts.

Setting: The patient is a thirty-eight-year-old gravida two para two who previously underwent Essure tubal occlusion. Although she understood the permanent and irreversible nature of Essure coils, she presented with desire of another pregnancy. She was well informed that in-vitro fertilization would offer her the best chance to get pregnant. However, due to personal reasons, she absolutely wanted tubal re-implantation.

Interventions: Laparoscopic bilateral cornuectomy, partial salpingectomy with removal of Essure coils and tubal re-implantation was performed. Postoperative management included oral antibiotics, removal of stents under hysteroscopy and hysterosalpingography.

Conclusion: This is the first reported case of tubal re-implantation following hysteroscopic tubal occlusion using the proposed method. The surgical steps and technical tips discussed are safe, and may help patients with desire of pregnancy following Essure insertion who seek alternative options to assisted reproductive technology.

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

11:30 AM

Surgical Management for Removal of Essure Device

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Video Objective: To present two surgical cases of laparoscopic removal of Essure hysteroscopic sterilization device via salpingectomy with and without cornuectomy.

Setting: One 37-year-old woman with heavy menstrual bleeding, joint pain, and fatigue reported by rheumatology to have a nickel allergy who desired Essure removal and one 51-year-old woman with pelvic pain and multiple co-morbidities who desired Essure removal. Both patients underwent surgical management for the removal of Essure at an academic medical center.

Interventions: In this surgical video, we present two cases of women desiring Essure implant removal secondary to adverse effects from the device. The first case describes the step by step approach to removal of an intact Essure implant by laparoscopic salpingectomy. The second case describes an approach to removal of Essure by salpingectomy with cornuectomy which is particularly helpful when the endometrial cavity has been previously ablated as in second case, or if there was a complicated insertion with perforation. Additionally, we describe the Essure implant composition in detail, describing how intact removal is imperative as fracturing of the device may lead to further complications or adverse effects.

Conclusion: Laparoscopic salpingectomy with and without cornuectomy are safe and effective procedures for the intact removal of Essure and are feasible alternatives to hysterectomy for women who desire removal of Essure.

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

11:37 AM

Techniques to Master A Difficult Bladder Flap

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Video Objective: The purpose of this video is to review techniques utilized to decrease the risk of bleeding or bladder injury when encountering a difficult bladder flap.
Setting: This video reviews the presentation, imaging, and surgery of a patient with a history of three prior cesarean deliveries and a suspected lower uterine segment mass. She was referred to MIGS for concern that this lower uterine segment mass was an isthmocoele in the setting of a scarred bladder flap and would require surgical expertise. This video also discusses techniques that are utilized to decrease the risk of bleeding or bladder injury in a patient with a scarred bladder flap and/or lower uterine segment mass. These techniques can be used alone or in combination to safely dissect around abnormal pathology.

Interventions: The techniques utilized to decrease the risk of bleeding or bladder injury include isolating the uterine artery at its origin, backfilling the bladder, and using the low lateral technique.

Conclusion: This is a unique case in which a patient had both a lower uterine segment mass and a history of three prior cesarean sections. This case highlights numerous techniques that can be utilized to safely dissect a difficult bladder flap.

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

11:44 AM

Transvaginal Natural Orifice Transluminal Endoscopic Surgery Sacrocolpopexy: Tips and Tricks.

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Video Objective: To demonstrate helpful tips and tricks for the successful use of transvaginal natural orifice transluminal endoscopic surgery (NOTES) for performing sacrocolpopexy and salpingo-oophorectomy surgery. Minimally invasive approaches for treating pelvic organ prolapse via sacrocolpopexy have traditionally included laparoscopy either with or without robotic assistance. Transvaginal NOTES is a novel minimally invasive approach that both avoids abdominal incisions and provides improved visualization; however, it can be technically challenging.

Design: Stepwise demonstration with narrated video footage.

Setting: An academic tertiary care hospital in Guangdong, China.

Patient: A 61-year-old gravida 3, para 3 woman with 3 spontaneous vaginal deliveries and stage III uterine prolapse, stage III cystocele, and stage III rectocele. The preoperative vaginal length was 6 cm.

Interventions: After performing vaginal hysterectomy, we show the usefulness of NOTES for salpingo-oophorectomy. We also demonstrate useful techniques for transvaginal NOTES sacrocolpopexy including hydrodissection, division of the Y mesh, anchoring of the anterior mesh before reducing prolapse, retroperitoneal tunneling, and hand suturing of the mesh and vaginal cuff.

Measurements and Main Results: The procedure was successfully performed in approximately 190 minutes. The postoperative vaginal length was 5 cm. Postoperative pelvic organ prolapse quantification was stage 0.

Conclusion: The transvaginal NOTES approach is feasible and efficient for sacrocolpopexy and salpingo-oophorectomy; additionally, it is a reasonable option for patients who desire a minimally invasive approach with excellent cosmetic results. Surgical techniques that aid in effectively performing transvaginal NOTES sacrocolpopexy include the use of hydrodissection, Y mesh division, anterior mesh anchoring before reducing prolapse, retroperitoneal tunneling, and hand suturing. Using the techniques presented here, we were able to insert the port only 1 time, which improves the efficiency and safety of this surgery.

Keywords: Laparoscopic; Natural orifice transluminal endoscopic surgery; Sacrocolpopexy

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

11:51 AM

The Approach to Uterine Artery Ligation

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Video Objective: To demonstrate approaches to uterine artery ligation

Setting: Gynaecology department at a University Hospital.

Interventions: We demonstrate various methods of uterine artery ligation during complex gynaecological surgery.

Conclusion: Bleeding is a significant risk during procedures such as hysterectomies and myomectomies. During hysterectomy, the uterine artery is commonly ligated at the level of internal cervical os, though access may be limited in complex pathology such as fibroids, large uteri and adnexal masses. Furthermore, complications such as haemorrhage, ureteric and bladder injury may occur during attempts to secure difficult vascular pedicles. Such challenges can be overcome, by ligating the uterine artery at its vascular origin. During myomectomy, temporary occlusion using clips may help to reduce blood loss in selected cases. [1] We demonstrate simple and reproducible techniques of ligating the uterine artery at its origin. This valuable skill can be learnt by both novice as well as expert surgeons for utilisation during complex hysterectomy and myomectomy. We begin by performing uterolysis by one of two approaches. [2] The posterior approach begins by opening the peritoneum overlying the uterine following visualisation at the pelvic side wall. Alternatively, a lateral approach is useful when views of the pelvic side wall are limited and includes division of the round ligament and peritoneum towards the base of infundibulopelvic ligament. Once uterolysis is complete the obliterated umbilical artery is identified and followed into the pelvic side wall. Gentle traction can be used to confirm the ligament. Using open and spread, and traction and counter-traction techniques, the space lateral to the ureter and in front of the obliterated umbilical artery is gently dissected revealing the uterine artery. Using a Thunderbeat, we coagulated the vessels whilst maintaining distance from the ureter to avoid damage. One can use any preferred method for ligation including vessel sealing devices, sutures and temporary or permanent clips.

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

11:58 AM

Laparoscopic Resolution of Pre Sacral Cyst by Anterior Approach

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Video Objective: present an infrequent pathology of gynecological pelvic surgery, expose the clinical case and the theoretical framework in an educational way and show the surgical resolution made.

Setting: A 23-year-old patient consulted for adnexal blastoma in the context of previous adnexal surgery with recurrence of the image and posterior laparoscopy, without evidence of it. It provides NMR that informs, in presacral and retrorectal topography, liquid image with regular edges of 9 cm. These images were already described in 2012. Consultation is made with diagnostic imaging, who define it as voluminous extra peritoneal cystic formation at the presacral level, with thin walls and some fine septa inside, which displaces the levator ani muscle.
Interventions: The incidence of presacral cysts is 1 in 100,000. Generally asymptomatic. It is important the correct diagnosis and its adequate treatment; Inappropriate decision can add complications. The treatment is surgical. Depending on its characteristics, you can have previous or subsequent access. The anterior approach is indicated in tumors greater than 5 cm, superior margin beyond the 3rd sacral vertebra and inferior margin is not below the 4th sacral. In our case, the previous approach was decided, achieving the partial extirpation of the cyst with the security of recognizing the neighboring structures throughout the procedure; there were no intraoperative or subsequent complications.

Conclusion: In spite of its low incidence, the presacral cyst must be considered as a possible complication of a previous pelvic surgery, since the incorrect resolution brings about consequences of difficult resolution. With the appropriate evaluation and in experienced hands, the resolution in the first instance is feasible.

Open Communications 2: Laparoscopy
(11:30 AM — 12:45 PM)

12:05 PM

Power Morcellation with Contained Tissue Extraction — A Retrospective Chart Review
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Study Objective: To evaluate the clinical performance of power morcellation (PM) with contained tissue extraction (CTE) (PneumoLiner, Advanced Surgical Concepts, Limited, Wicklow, Ireland) for presumed benign indications for minimally invasive gynecological surgery (MIGS).

Design: Multi-center, retrospective, IRB-approved chart review conducted by a version-controlled protocol. The primary endpoint was operative time and was measured from skin incision to skin closure. Secondary endpoints included complications related to the surgical procedure, morcellator, or tissue containment device; integrity of the tissue containment device following post-operative inspection; specimen histopathology; 30-day hospital readmission; and device deficiencies. Data were pooled and descriptive statistics were used for protocol analysis.

Setting: Three tertiary care institutions in the United States

Patients or Participants: 211 cases including females ≥ 18 years of age indicated for MIGS (robotic or laparoscopic) using PM and CTE were included in this study. Cases were excluded if patients were peri- or post-menopausal, had a known malignancy, were candidates for en bloc tissue removal, had undiagnosed uterine bleeding, had suspected allergies to polyurethane, or had abdominal wall thickness indicating for MIGS (robotic or laparoscopic) using PM and CTE.

Interventions: N/A

Measurements and Main Results: Mean age and body mass index was 41.2±6.7 years and 30.9±7.1 kg/m², respectively. Common surgical indications included: uterine fibroids 70% (148), abnormal uterine bleeding 63% (133), and endometriosis 19% (40). Mean operative time was 82±36.7 minutes. Post-operative complications were reported in 2.4% (5) of patients, including umbilical port site (3) and urinary tract infections (2); all were related to the surgical procedure. Integrity of the tissue containment device was maintained in 100% (211) of cases. Histopathology confirmed malignancy in 0.5% (1) of patients. There were no hospital readmissions or device deficiencies.

Conclusion: Power morcellation with contained tissue extraction is feasible in patients with presumed benign indications for minimally invasive gynecologic surgery.

Open Communications 2: Laparoscopy
(11:30 AM — 12:45 PM)

12:12 PM

A Unique Approach for Total Laparoscopic Hysterectomy and Excision of Endometriosis at Time of Abdominoplasty
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Video Objective: We describe a unique technique to hide trocar scars while performing concurrent laparoscopic hysterectomy and excision of endometriosis at the time of abdominoplasty.

Setting: This patient is a 40 yo/f female undergoing concomitant abdominoplasty and hysterectomy for chronic pelvic pain, abnormal uterine bleeding, and suspected endometriosis. Combining abdominoplasty with gynecologic surgery reduces total anesthesia and operative times, intraoperative blood loss, hospitalization and total recovery time when compared with having both of the procedures performed separately. Additionally, combined surgery does not appear to be associated with an increase in complications.

Interventions: We perform a total laparoscopic hysterectomy (TLH) and excision of endometriosis with concomitant abdominoplasty. First, the abdominoplasty flap is raised by the plastic surgeon. Then, the TLH and excision of endometriosis is performed. Finally, the rectus is plicated, excess tissue is excised, and the abdominoplasty is completed.

Conclusion: Performing concomitant total laparoscopic hysterectomy and abdominoplasty offers many benefits to the patient including shorter total operative and anesthesia, as well as shorter recovery when compared to 2 separate procedures. There are no large fascial defects when the hysterectomy is performed laparoscopically with 5 mm ports, so there is minimal concern for hernia or fascial dehiscence. The laparoscopic approach also offers a detailed survey for endometriosis lesions which can be excised at the same time as hysterectomy for definitive therapy. Aesthetically, the laparoscopic trocar sites are hidden when utilizing this technique, which is advantageous for cosmesis.

Open Communications 2: Laparoscopy
(11:30 AM — 12:45 PM)

12:19 PM

Effect of Age and Prior Gynecologic Surgery on Pathologic Diagnosis in Patients Undergoing Benign Hysterectomy
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Study Objective: To understand the influence of age and prior uterine surgery on postoperative pathologic diagnosis at the time of benign hysterectomy.

Design: Retrospective cohort study.

Setting: Single academic hospital.

Patients or Participants: Patients undergoing hysterectomy for abnormal uterine bleeding or fibroids from 2012 to 2016.

Interventions: Hysterectomy performed by a minimally invasive gynecologic surgeon.
Measurements and Main Results: We identified 570 patients with a preoperative diagnosis of abnormal uterine bleeding or fibroids who underwent hysterectomy from 2012 to 2016. When stratified by age, there were no differences in BMI, parity or history of cesarean sections between the groups. Younger women (≤35) were more likely to have a preoperative diagnosis of pelvic pain, dysmenorrhea and a history of endometriosis (p < 0.001). Overall, 55.8% of women attempted medical management prior to surgery with higher rates seen in women ≤35 and lowest rates in women ≥50 (73.6% vs 40%, p = 0.001). Half of women ≤35 had no uterine pathology at the time of hysterectomy, and the rate of uterine pathology increased with increasing age (p < 0.001). Compared to fibroids (12.5% ≤35 vs 44.5% ≥50, p < 0.001), adenomyosis was more common at younger ages (22.2% ≤35 vs 6.2% ≥50, p < 0.001). On multivariate logistic regression, younger age (≤35) remained an independent risk factor for absence of uterine pathology at time of hysterectomy. Prior uterine surgery including dilation and curettage, hysteroscopy and cesarean section were not associated with an increased rate of pathology at the time of hysterectomy.

Conclusion: Women under the age of 35 are more likely to have benign pathology at the time of hysterectomy for abnormal bleeding despite higher rates of pelvic pain, dysmenorrhea and preoperative medical management. Gynecologic surgery does not increase the risk of adenomyosis or fibroids at the time of hysterectomy.

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

12:26 PM

A Resident Guide to Laparoscopic Myomec tomy with Endometrial Cavity Preservation

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Video Objective: The objective of this video is to provide a surgical guide for gynecology residents prior to entering a laparoscopic myomectomy.

Setting: The patient in this video is a 42 year old female with a history of abnormal uterine bleeding secondary to her known intramural 6 cm fibroid. Her bleeding was refractory to medical management, and she desired definitive surgical management with a laparoscopic myomectomy.

Interventions: The patient underwent a laparoscopic myomectomy with endometrial cavity preservation and scalpel morcellation of the myoma.

Conclusion: This video highlights five basic steps of laparoscopic myomectomy including major surgical considerations for each step. Additionally, the video highlights an example of endometrial cavity preservation. Residents with limited exposure to laparoscopic myomectomy can utilize this video as a reference prior to entering a laparoscopic myomectomy.

Open Communications 2: Laparoscopy (11:30 AM — 12:45 PM)

12:33 PM

Optimization of Pre-Operative Oral Analgesics in Patients Undergoing Ambulatory Minimally Invasive Hysterectomy

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Study Objective: To determine the optimal time to administer pre-operative non-opioid oral analgesics to achieve superior post-operative pain modulation in patients undergoing outpatient minimally invasive hysterectomy for benign disease.

Design: Randomized controlled trial.

Setting: Minimally invasive gynecologic surgery practice.

Patients or Participants: Women undergoing benign minimally invasive hysterectomy

Interventions: From January 2018 to October 2018, 60 women aged 34-67 years were randomized to treatment (n=30) and control (n=30). Patients in the treatment arm self-administered oral celecoxib, gabapentin, acetaminophen and ibuprofen 3-4 hours prior to surgery, while those in the control arm received medications in the pre-anesthesia care unit. All patients were administered intravenous nausea and vomiting prophylaxis. Time of oral medication ingestion and orogastric tube placement were collected. Post-operatively, patients were administered intravenous ketorolac and pain scores were assessed on an eleven-point numeric rating scale. Pain medications and anti-emetics were administered as needed prior to discharge. Opioid consumption was collected and converted to oral morphine equivalents (OME). Patients were sent an electronic survey assessing patient satisfaction and surgical recovery score on post-operative day 10.

Measurements and Main Results: 53 subjects (29 in treatment and 24 in control) were included in the study. Baseline characteristics were balanced between treatment and control arms, with the exception of pre-existing gastro-esophageal reflux which was higher in the treatment group (20.7% vs. 0.0%, p = 0.026). 24.1% of the treatment arm required OME >50 compared to 41.7% of the control group (p = 0.174). There were no significant differences in pain score at discharge (p = 0.234), patient satisfaction (p = 0.90), or surgical recovery score (p = 0.189).

Conclusion: Advanced administration of pre-operative oral analgesia trended towards a decrease in immediate post-operative opioid use when compared to immediate pre-operative administration. Timing of administration had no impact on pain scores, patient satisfaction, or surgical recovery scores. Either technique of administration of pre-operative oral analgesia is acceptable.

Open Communications 2: Oncology (11:00 AM — 11:30 AM)

11:00 AM

Single-Site Laparoscopic Comprehensive Staging Of Early Ovarian Cancer

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Study Objective: To review the single-site laparoscopic staging procedure in a series of patients with early ovarian cancer and compare results with the literature.

Design: A prospective single-center study.

Setting: A hospital in China.

Patients or Participants: A total of 21 patients with apparent early stage ovarian cancer from January 2017 through March 2019. The histologic tumor types were epithelial tumors (18 patients) and dysgerminoma (2 patients). All the epithelial tumors were invasive (13 serous and 8 mucinous).

Interventions: Single-site laparoscopic comprehensive staging was performed in all patients according to the International Federation of Gynecology and Obstetrics guidelines.

Measurements and Main Results: Fifteen patients had previous adnexal surgery and diagnosis and surgical staging were performed in only 6 patients during the same surgery. The patients’ median age was 32.8 years (range 26–57). Four (19%) patients desired to maintain fertility and a conservative approach was performed for this group. Single-site laparoscopic staging was completed in 20 (95%) patients. In 1 case, a conversion to
laparoscopically necessary as the para-aortic lymphadenectomy was completed because of a vessel injury that was repaired without difficulty. The median operative time was 265 minutes (range 210–320) for radical surgery and 218 minutes (range 120–240) for the conservative approach. The mean hospital stay was 3 days. Of the 21 total patients, 6 (28.6%) were upstaged. The median follow-up was 24.7 months (range 1–27), with a disease-free survival of 100% and an overall survival of 100%. No recurrence was observed.

Conclusion: A comprehensive surgical staging procedure is clearly indicated in cases of early ovarian cancer and oncologic guidelines should be respected. The Single-site laparoscopic approach could be a valid alternative to laparoscopic or laparotomy.

Open Communications 2: Oncology
(11:00 AM — 11:30 AM)

11:07 AM
Case Report: Ureteral Obstruction at the Time of Hysterec- tomy after Uterine Artery Embolization
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Study Objective: To report ureteral obstruction at the time of hysterectomy following uterine artery embolization (UAE).

Design: Case report.

Setting: Clara Maass Medical Center.

Patients or Participants: 42-year-old African-American woman.

Interventions: Hysterectomy following UAE.

Measurements and Main Results: Patient presented for total laparoscopic hysterectomy (TLH) for abnormal uterine bleeding and dysmenorrhea. Patient had a history of UAE two years prior, which resolved her symptoms. MRI during UAE showed no kidney abnormalities. Preoperative TLH evaluation included bimanual exam and transvaginal ultrasound, which showed a globular uterus. TLH with bilateral salpingectomy, adhesiolysis, and minor endometriosis excision were performed uneventfully. A routine post-procedural cystoscopy showed no jet from the right ureter. A stent was attempted, but obstruction was noted at the mid-ureter, 6 cm from the vesicoureteral junction. Retroperitoneal dissection showed a dilated distal ureter but no injury noted. Urology was consulted and intraoperative retrograde pyelogram showed dilated distal ureter with complete obstruction. Ureteroscopy showed a complete obstruction at the level of pelvic brim. Postoperative CT with IV contrast showed severe right renal atrophy. Labs showed normal BUN and creatinine levels, but a renal scan showed a non-functioning right kidney. Nephrology concluded that no surgery was needed to resect the atrophic kidney, and the patient was discharged on postoperative day one.

Conclusion: Our experience is similar to a 2005 Canadian case report, in which a patient had complete ureteral obstruction following UAE, requiring nephrectomy. Although ureteral obstruction that results in unilateral non-functioning kidney following UAE is rare, it is likely an under-reported complication. As the uterine arteries supply the lower ureters, embolization could lead to segmental infarction of the ureter. Similarly, as leiomyoma necrose following UAE, peri-ureteral inflammation and infarction could occur. Physicians should be aware of these potential complications, and renal imaging may be indicated before hysterectomy in patients with prior UAE.

Open Communications 2: Oncology
(11:00 AM — 11:30 AM)

11:14 AM
Occult Uterine Malignancy at the Time of Surgery for Benign Gynecologic Indications: An Updated Systematic Review

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Study Objective: To conduct an updated systematic review to estimate the prevalence of occult uterine malignancy, of any subtype, among women undergoing surgery for benign gynecologic conditions.

Design: Systematic review.

Setting: N/A

Patients or Participants: Women undergoing surgery for presumed benign gynecologic conditions.

Interventions: Hysterectomy or Myomectomy.

Measurements and Main Results: The PRISMA guidelines were followed in this systematic review. The search terms used were “occult malignancy” or “occult uterine pathology” paired with “morcellation” or “hysterectomy.” March 25, 2019 was the last date that articles were searched. We did not restrict articles based on language or publication date. Inclusion criteria included any peer-reviewed journal articles reporting occult uterine malignancy rates at the time of surgery for benign conditions, regardless of whether morcellation was used or not. We excluded articles that were reported exclusively on women with pre-operatively diagnosed or suspected uterine malignancies.

Our search yielded a total of 233 journal articles, of which 53 met the criteria for a full-text review and 27 were included in the final systematic review. There were 339,420 patients across 9 countries that were included in these 27 studies. As a comparison, the previous systematic review done by the Agency for Healthcare Research and Quality (AHRQ) only included a total of 136,195 patients.

There were a total of 2,479 occult uterine malignancies (all subtypes combined) among these 339,420 patients. The crude unadjusted occult uterine malignancy rate was 0.73% (95% CI 0.70 – 0.76%). When we examined a subset of the included studies that reported specific data on women undergoing morcellation, there were 82 occult malignancies among a total of 25,422 patients (Crude proportion = 0.32% [95% CI 0.25 – 0.39%]).

Conclusion: Based on this systematic review, incorporating over 300,000 patients, the overall prevalence of occult uterine malignancy at the time of surgery for benign gynecologic indications is approximately 0.73%.

Open Communications 2: Oncology
(11:00 AM — 11:30 AM)

11:21 AM
Retroperitoneal Lymph Nodes: Cytoreduction in a Patient with Ovarian Cancer
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Video Objective: This video will exemplify the techniques necessary to safely complete a difficult dissection and debulking procedure in the obturator fossa in a patient with high-grade serous fallopian tube carcinoma.

Setting: This patient is a 67-year-old who presented with a right sided complex adnexal mass and elevated CA-125 of 1300 with concern for malignancy. She was taken to the operating room for laparoscopic right salpingo-oophorectomy with possible hysterectomy and staging. The frozen section was consistent with high-grade serous fallopian tube carcinoma. A bulky retroperitoneal mass was found in the right obturator fossa and the patient underwent debulking procedure.
Interventions: The patient underwent total laparoscopic hysterectomy, bilateral salpingo-oophorectomy, lymph node dissection, debulking and omentectomy. The bulky retroperitoneal mass was carefully removed using a combination of sharp and blunt dissection, with special care to avoid the nerves and vasculature of the obturator fossa. At the conclusion of the surgery, there was no further evidence of disease.

Conclusion: In order to properly treat and stage ovarian cancer, a complete staging and debulking procedure must be performed. This video emphasizes the importance of a thorough understanding of retroperitoneal pelvic anatomy and highlights the utilization of impeccable surgical technique to safely perform a pelvic side wall dissection and debulking in the presence of abnormal pathologic findings.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

11:00 AM

Transvaginal Natural Orifice Transluminal Endoscopic Surgery Tubal Reanastomosis: A Novel Route for Tubal Surgery

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Video Objective: To demonstrate how a transvaginal natural orifice transluminal endoscopic surgery (NOTES) tubal reanastomosis is a novel route for tubal surgery. The surgical technique is a combination of traditional vaginal surgery with single-site surgical skills.

Design: The surgical technique is explained in a stepwise fashion with the use of surgical video footage. The video uses a surgical case to demonstrate the specific techniques necessary to perform a NOTES tubal reanastomosis.

Setting: Teaching university.

Patients: A 42-year-old female G2P2 with a history of tubal ligation 11 years before presentation requesting a tubal recanalization.

Interventions: Transvaginal NOTES tubal reanastomosis was initiated with a posterior colpotomy. A single-site gelport was placed. The fallopian tubes were hydrodissected, the blocked portion of each tube was removed, an epidural catheter was threaded through each lumen, and the two remaining segments of each tube were sutured together in an end-to-end fashion using single-site suturing skills.

Conclusion: Transvaginal NOTES tubal reanastomosis is an alternative route for tubal reanastomosis. The current preferred technique for reversal of a tubal sterilization is to perform a minimally invasive surgery with an end-to-end anastomosis. This gives the patient a 60%-90% intrauterine pregnancy rate postoperatively. NOTES has the benefits of a fast recovery, no abdominal incisional pain, and an extremely cosmetic outcome. Current research has shown a 0%-3.1% range for the risk of pelvic infection in transvaginal NOTES if prophylactic antibiotics are administered during the surgery. The NOTES tubal reanastomosis combines the traditional vaginal surgery technique of creating a posterior colpotomy with single-site surgical skills like suturing and knot tying. The surgery is completed through a single transvaginal port without an abdominal incision. In the hands of a skilled minimally invasive surgeon, transvaginal NOTES tubal reanastomosis is a feasible and alternative route for this procedure.
Interventions: After sonographic evaluation of the IUD location, as well as gestational age and vitality, patients were transferred to the OR. All 7 IUD removals were performed in vaginoscopic approach without any anesthesia or cervical dilation using 3.5mm Gynecare Versascope (Ethicon). Prior to the procedure, all patients received a single dose of intravenous prophylactic antibiotic (Cefazime), vagina was washed with an antiseptic solution. After clear intrauterine view was achieved using 0.9% normal saline solution, instillation of fluid was stopped in order to decrease the risk for hydro-dissection of the gestational tissue. IUD was removed using semirigid 5F grasping forceps (Karl-Storz, Tuttinglen, Germany). Ultrasound examination at the end of procedure was performed to ensure fetal pulse.

Measurements and Main Results: All IUD were copper covered, timing of IUD extraction was between 6-9 weeks of gestation. All 7 pregnancies carried on after the procedure. In our cohort, all 7 women delivered at term (37-42 weeks). All deliveries were spontaneous vaginal deliveries of healthy babies at appropriate weight for gestational age (2859-3756gr). No marked complications during pregnancy or delivery were noted. Conclusion: Hysteroscopic removal of IUD in the first trimester is a safe procedure not linked to major adverse pregnancy outcomes. This procedure should be offered to gravid women in the first trimester who desire to preserve pregnancy.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

11:21 AM

Determining Optimal Time Interval Between Operative Hysteroscopy for Intrauterine Adhesions and Transfer of Single Euploid Embryos

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Study Objective: There is limited data assessing optimal timing between operative hysteroscopy for intrauterine adhesions (IUAs) and embryo transfer (ET). Prior studies have demonstrated an association between IUAs and infertility. This study aims to assess whether increasing time intervals between hysteroscopy for IUAs and ET affects pregnancy outcomes in the ideal study group of those undergoing euploid ET. Design: Retrospective cohort. Setting: Academic center.

Patients or Participants: 375 women undergoing hysteroscopy prior to single euploid ET over a 3 year period.

Interventions: Hysteroscopy for IUAs and single euploid ET.

Measurements and Main Results: 55.6% (n=209) had a diagnosis of IUAs and 44.4% (n=166) had normal intrauterine findings. Patients were stratified based on number of menstrual cycles (1, 2, or 3 cycles) between hysteroscopy and ET and categorized by outcome of pregnant, not pregnant, and ongoing pregnancy. Student’s and nonparametric t-tests, and Chi-square tests were used with p < 0.05. There was no difference in baseline demographics between groups. In those undergoing hysteroscopy for IUAs, 68.7% were pregnant overall and 46.5% were ongoing. There were an insufficient number of patients undergoing ET 1 menstrual cycle after hysteroscopy for intrauterine adhesions to draw conclusions in this group. There was no difference in the pregnancy rate between groups who underwent ET after 2 or 3 menstrual cycles from hysteroscopy for IUAs as compared to those who waited a longer period or as compared to those who underwent diagnostic hysteroscopy. These same findings were also confirmed for the rate of ongoing pregnancy between groups.

Conclusion: The time between hysteroscopy for IUAs and single euploid ET did not have an effect on pregnancy outcome. Clinicians can proceed with ET as early as in the second menstrual cycle after hysteroscopy for IUAs. Further research is needed to examine patients undergoing ET in shorter intervals given small sample size.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

11:28 AM

Transvaginal Laparoscopic Resection of Large Abdominal Mass

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Video Objective: To demonstrate transvaginal laparoscopic removal of 22 cm adnexal mass.

Setting: 60 year old woman with 22 cm mass.

Interventions: Transvaginal laparoscopic hysterectomy and bso with drainage and removal of large mass.

Conclusion: This is a safe alternative to transabdominal laparoscopy resulting in less pain, quicker recovery and better cosmesis.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

11:35 AM

Reproductive and Obstetric Outcomes Following Operative Hysteroscopy for Treatment of Retained Products of Conception: Does Time from Surgery to Conception Matter?

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Study Objective: To evaluate reproductive and obstetric outcomes following operative hysteroscopy for treatment of retained products of conception (RPOC). We also investigated the effect of time interval between operative hysteroscopy and pregnancy on these outcomes.

Design: Retrospective cohort study.

Setting: The study was conducted at the gynecology department of a tertiary teaching hospital between January 2012 and December 2016.

Patients or Participants: Women who underwent operative hysteroscopy for treatment of RPOC and who conceived following the procedure.

Interventions: All women in the study underwent operative hysteroscopy with resection of RPOC.

Measurements and Main Results: Demographic, pre-operative, intra-operative, post-operative, reproductive and obstetric data were retrieved from electronic medical records. All patients were contacted via telephone questionnaire during which data regarding reproductive and obstetric outcomes of the pregnancy following the surgical procedure were collected. To determine the effect of time interval between operative hysteroscopy and pregnancy on reproductive and obstetric outcomes the cohort was divided into two groups: women who conceived 6 months or less following surgery and women who conceived more than 6 months after operative hysteroscopy. Eighty-two women who underwent operative hysteroscopy for treatment of RPOC and who conceived later were included. Mean time from women’s attempt to conceive to conception was 4.32 (SD=5.31) months. Conception rate was 84.2% at 6 months and reached 92.7% at 12 months post-surgery. Miscarriage rate for the consecutive pregnancy following hysterectomy was 16.7% and delivery rate was 83.3%. Two cases of obstetric complications including one case of retained placenta and one case of
post-partum hemorrhage were noted. Time interval between operative hysteroscopy and pregnancy did not affect reproductive or obstetric outcomes.

**Conclusion:** Women treated by operative hysteroscopy for RPOC have been associated with poor reproductive performance. Hysteroscopic metroplasty may improve reproductive performance in these patients.

**Interventions:** A retrospective multicenter study of the first 30 vNOTES hysterectomy and USLS surgeries performed between October 2018 and April 2019 at Rambam Health Care Campus (Israel) by a single surgeon (L.L.) and Imelda Hospital (Belgium) by (J.B).

**Setting:** Retrospctive study

**Patients or Participants:** Women who underwent utero-sacral ligament suspension for treatment of uterovaginal or vaginal apical prolapse

**Interventions:** Vaginal hysterectomy and utero-sacral ligament suspension

**Measurements and Main Results:** The primary outcomes were hysterectomy and USLS times. Secondary outcomes included intra-operative bleeding, length of hospitalization, post-operative pain and need for analgesia. Sociodemographic and clinical data were retrieved from patients’ electronic charts. Patients’ median age was 55 years (range 40-81); Median hysterectomy time was 38 minutes (range 15-55) from first cut to completion of hysterectomy; Median USLS time was 17 minutes (range 14-27).

The median estimated intra-operative blood loss was 20 ml (range 20-250). Length of hospital stay was 2 days (2-3). Comparisons between median USLS time in the first 15 and in the 15 sequential procedures demonstrated a significant decrease: 25 minutes (range 18-39) vs. 15 minutes (range 13-28) respectively (P=0.03). The median estimated intraoperative blood loss decreased from 70 ml (range 40-100) in the first 15 suspensions to 20 ml (range 10-70) in the 15 sequential procedures (P=0.011)

**Conclusion:** vNOTES hysterectomy followed by USLS is a feasible procedure with an marked improvement in surgical performance in a short period as expressed by the improvement in surgical times with minor associated perioperative complications. This technique allows surgeon to expose the ureter well and lower the risk of ureter injury, Outcomes of long-term follow-up should be investigated.

**Open Communications 3: Hysteroscopy**

**11:00 AM — 12:45 PM**

**Benign Endometrial Polyp Recurrence after Office Hysteroscopic Polypectomy According to Surgical Procedure**

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**Study Objective:** To compare the recurrence of benign endometrial polyps after hysteroscopic polypectomy performed with bipolar electrode (BE) or a small diameter hysteroscopic tissue removal system (HTRs).

**Design:** Prospective randomized study approved by the Institutional Review Board.

**Setting:** University-Hospital.

**Patients or Setting:** From January to December 2017, 93 of 120 fertile women, with a single endometrial polyp (between 10 and 20 mm) accepted to participate in the study and were randomized into two groups according to the type of surgical procedure assigned them by “QuickCalcs” of “Graphpad Software”. Only women with removed polyps, classified as “benign” after pathological assessment, were considered.

**Interventions:** A 4mm hysteroscope (Karl Storz, Germany) with BE (Versapoint, Gynecare) was used for 51 women (BE Group). The 5mm HTRs (TruClear 5C System, Medtronics, Ireland) was used for 42 patients (TruClear Group). All hysteroscopic polypectomies were performed in an office setting with the vaginoscopic approach during the early proliferative phase. Patients were scheduled for a 12-month postoperative transvaginal ultrasound evaluation.

**Measurements and Main Results:** Polyps were completely removed in 48 out of 51 (94.12%) BE group and in 40 out of 42 HTR group (95.24%).

The median time for polypectomy was significantly lower for HTR group (3.6 ± 1.7 minutes) compare to 8.7 ± 2.8 minutes for the BE Group, p < 0.05. Sixty-six, non pregnant women, completed the evaluation at one-year ultrasound follow-up, four single polyps (size from 10 to 15 mm) were identified in BE Group and two (12 and 16 mm) in HTR Group. All polyps were hysteroscopically confirmed and simultaneously removed (4/37 vs. 2/29, p = 0.999). Polyps were confirmed as “benign” by the pathologist.

**Conclusion:** In this prospective randomized study, hysteroscopic endometrial polypectomy resulted significantly quicker with small HTRs compared to BE without differences in terms of complete removal and recurrence of polyps.

**Open Communications 3: Hysteroscopy**

**11:00 AM — 12:45 PM**

**Hysteroscopic Metroplasty may Improve Fertility Performance in Patients with Dysmorphic Uterus**

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**Study Objective:** The new ESHRE/ESGE classification system of female genital anomalies defines class U1 or dysmorphic uterus as anomalies that have been associated with poor reproductive performance. Hysteroscopic metroplasty may improve reproductive performance in these patients.

**Design:** Retrospective cohort study.

**Setting:** A tertiary medical center.

**Patients or Participants:** A cohort of 40 women who have a dysmorphic uterus (non DES) and infertility or repeated IVF failures (RIF).

**Interventions:** These patients underwent hysteroscopic metroplasty between the years 2014 and 2016. The patients from the study group served as their own control, comparing fertility performance before and after the hysteroscopy, respectively.

**Measurements and Main Results:** Average follow-up time lasted three years. All women were identified as having U1 type dysmorphic uterus according to ESHRE-ESGE classification by diagnostic hysteroscopy. The average time to conception was 3.028 ± 2.756 years, compared to 1.003 ± 0.91 years post procedure (P=0.001). A total of 27 women (67.5%)
conceived during the three years after the hysterectomy. Six (15%) conceived only after the intervention.

Abortion rate declined from 1.45 ± 1.276 prior to hysterectomy to 0.45 ± 0.510 post hysterectomy (P = 0.006).

The cumulative pregnancy rate during the first three years post hysterectomy increased significantly. Studying time intervals of six months, a year and three years; cumulative pregnancy rate increased from 1.042%, 15.63% and 52.1%, respectively, prior to hysterectomy to 45%, 53.182% and 67.5% post hysterectomy (P = 0.038).

The cumulative live birth rate also increased significantly during the study period, from 0, 5% and 15%, respectively, prior to hysterectomy to 27.5%, 30% and 30% post hysterectomy (P = 0.001).

**Conclusion:** Remodeling dysmorphic uterus by hysteroscopic metroplasty is a new approach to treat infertile patients, especially those with RIF. This new and promising approach may assist in shortening the time to pregnancy, increasing both cumulative pregnancy rates and cumulative live birth rates, and decreasing abortion rates in these patients. A larger study cohort is needed.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

12:03 PM

**Hysteroscopic Access and Uterine Cavity Evaluation 12 Months Post-Endometrial Ablation with the Cerene Cryotherapy Device**

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**Study Objective:** To evaluate if physical access and the ability to systematically assess the post-ablation uterine cavity were preserved at 12 months after endometrial ablation with the Cerene Cryotherapy Device (Channel Medsystems, Emeryville, CA).

**Design:** A prospective, multi-center, single-arm study.

**Setting:** In the clinic at 8 US sites and outpatient hospital setting at 2 sites in Canada and 1 site in Mexico.

**Patients or Participants:** 242 premenopausal women with heavy menstrual bleeding comprise the Intent-to-Treat (ITT) population. At the 12-month post-ablation follow-up, 223 subjects were available for a diagnostic hysteroscopic evaluation.

**Interventions:** Subjects in the ITT population were treated with a 2.5-minute cryoablation of the endometrium utilizing the Cerene Device. At the Month 12 follow-up visit, subjects underwent a diagnostic hysteroscopy.

**Measurements and Main Results:** The uterine cavity was accessible in 220 of 223 subjects (98.7%) and not accessible in 3 (2.3%) due to pain in 2 and cervical stenosis in 1. Complete visualization of the uterine cavity was possible in 204 subjects (93%) with one or both tubal ostia identified in 89.2% of subjects. Both tubal ostia were visible in 160 subjects (78.4%) and one ostium in 22 subjects (10.8%). The cavity was partially visualized in the remaining 16 subjects (7%) due to intrauterine adhesions (14), technical difficulties (1), or menstruation (1). In 95.6% of subjects, the hysteroscopic view was adequate to evaluate the uterine cavity for pathologic change. No significant complication occurred during the hysteroscopic evaluations. Of the 97 subjects that had a tubal ligation prior to cryoablation, none reported symptoms of post ablation tubal sterilization syndrome or hematometra.

**Conclusion:** This is the largest study conducted to hysteroscopically evaluate the post-ablation uterine cavity. Complete uterine cavity assessment with in-office hysteroscopy one year after the use of the Cerene Cryotherapy device is attainable enabling further diagnostic or therapeutic procedures to be performed within the endometrial cavity.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

12:10 PM

**There is no Correlation Between Long-Term Hysteroscopic Access to the Uterine Cavity and Menstrual Bleeding Status Following use of Water Vapor Ablation to Treat Heavy Menstrual Bleeding (HMB)**

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**Study Objective:** Endometrial ablation often results in uterine cavity adhesions which preclude later evaluation and/or treatment of uterine bleeding. Prior studies of available ablation technologies have found a correlation between the severity of intrauterine adhesions and menstrual bleeding reduction. This analysis evaluates the correlation, if any, between preservation of long-term hysteroscopic access to the uterine cavity and menstrual bleeding status after water vapor endometrial ablation.

**Design:** Prospective, multicenter, observational.

**Setting:** Eight office and outpatient centers in the U.S. and Mexico.

**Patients or Participants:** 70 subjects who underwent water vapor endometrial ablation a mean of 3.9 years earlier as part of the AEGEA Pivotal Clinical Trial (NCT01979861).

**Intervention:** All subjects were screened for infection and general health risks through an IRB-approved process. Menstrual bleeding status was reported at screening prior to the hysterectomy.

**Measurements and Main Results:** The mean duration since the endometrial ablation was 3.9 years. 27% (19/70) reported amenorrhea, 44% (31/70) light bleeding, 21% (15/70) moderate and 7% (5/70) heavy or very heavy bleeding. Overall cavity access for all subjects was 90% (63/70). The cavities were accessed in 89% of subjects reporting amenorrhea, 87% reporting light bleeding, 100% reporting moderate bleeding and 80% reporting heavy/very heavy bleeding. The Spearman Rank Correlation Coefficient was 0.19 (95% CI of -0.05 to 0.4), indicating no correlation of menstrual bleeding status with the ability to hysteroscopically access the uterine cavity. Selection bias analysis demonstrated comparability of subjects enrolled in this trial to the remaining subjects completing three-year follow-up in the Pivotal Trial.

**Conclusion:** Water vapor endometrial ablation provides lasting therapeutic effect for the treatment of HMB while preserving long-term uterine cavity access in the majority of subjects, irrespective of menstrual bleeding status.

Open Communications 3: Hysteroscopy (11:00 AM — 12:45 PM)

12:17 PM

**Comparison of Tissue Resection Rates of the Myosure, TruClear, and Aveta Hysteroscopic Tissue Removal Systems, A Three-Arm, Bench Study**

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*Corresponding author.

**Study Objective:** Evaluate and compare the tissue resection rate of the MyoSure, TruClear, and Aveta All-in-One hysteroscopic tissue removal systems.

**Design:** A Three-Arm, Bench Study.

**Setting:** Study was conducted in a laboratory environment, by five separate users.

**Patients or Participants:** N/A

**Interventions:** All procedures were conducted using two models of representative tissue density and in accordance with the FDA approved Instrucrions for Use (IFU). Employing porcine liver as a surrogate for polypoid endometrial tissue, the MyoSure-Lite, TruClear-UltraMini, and Aveta-2.9 hysteroscopic devices were used to resect this tissue model. Employing
porcine myocardium as a surrogate for fibroid tissue, the MyoSure-XL, TruClear-Plus, and Aveta-3.9 devices were similarly used to resect this tissue model.

**Measurements and Main Results:** Comparing the weight of the tissue specimen before and after one minute of resection, the rate of tissue removal was calculated. In the endometrial polyp model, the rate of tissue removal using the TruClear-UltraMini, Aveta-2.9 and MyoSure-Lite was 9.74, 9.72 and 6.66 grams/min respectively. The advantage of both TruClear-UltraMini and Aveta-2.9 for resection was statistically significant (p<0.001). In the fibroid model, the rate of tissue removal using the Aveta-3.9, TruClear-Plus and MyoSure-XL was 22.14, 6.6, and 6.64 grams/min respectively. The superior rate of resection with the Aveta-3.9 was statistically significant (p<0.001).

**Conclusion:** Using tissue surrogates, efficiency and performance of the Aveta systems compare favorably to the MyoSure and TruClear systems for both fibroid and polyp resection. Safety and efficacy during hysteroscopic myomectomy and polypectomy can potentially be enhanced by faster tissue resection rate.

**Open Communications 3: Hysteroscopy**

(11:00 AM — 12:45 PM)

**12:24 PM**

**Hormonal Support after Adhesiolysis in Women with Asherman’s Syndrome: Life Birth and Obstetrical Outcome**

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**Study Objective:** Does post adhesiolysis oral administration of estrogen and progesterone prevent or reduce the recurrence of adhesions and increase the life birth rate.

**Design:** Randomized controlled trial.

**Setting:** Asherman Expertise Center an academic affiliated hospital.

**Patients or Participants:** Women with M. Asherman, undergoing successful hysteroscopic adhesiolysis in the operation theater. The follow-up length was two years.

**Interventions:** Consented patients underwent hysteroscopic adhesiolysis and were randomly allocated in two groups. In the intervention group women were given hormonal support with estrogen and progesterone post operative adhesiolysis and in the control group women received no tablets.

**Measurements and Main Results:** A total of 120 patients were included with a dropout of 5 cases. 115 patients were analyzed. At the second look hysteroscopy, the uterine cavity was completely restored in 73.2% with a dropout of 5 cases. 115 patients were analyzed. At the second look hysteroscopy, the uterine cavity was completely restored in 73.2% with a dropout of 5 cases. The take home baby rate was not influenced by the administration of hormones. There was a remarkable high rate of post partum problems seen in both groups.

**Conclusion:** Administration of hormones did not improve the risk of recurrence of adhesions by second look hysteroscopy, menses or endometrial thickness. The take home baby rate was not influenced by the administration of hormones. There was a remarkable high rate of post partum problems seen in both groups.

**Open Communications 4: Laparoscopy**

(11:00 AM — 12:45 PM)

**11:00 AM**

**Reduced Opioid use in Benign, Minimally Invasive Gynecologic Surgery with Eras Protocol - A Resident initiated Quality Improvement Project**

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*Corresponding author.

**Study Objective:** To determine if implantation of an Enhanced Recovery After Surgery (ERAS) protocol would decrease narcotic consumption in postoperative patients following minimally invasive gynecologic surgery.

**Design:** Prospective Cohort

**Setting:** Sinai Hospital of Baltimore is a community-based teaching hospital. Surgeries included laparoscopic, robotic, and vaginal hysterectomy, robotic sacrocolpopexy, anterior/posterior colporrhaphy, and colporceleisis. All patients in the study were hospitalized for at least one night. Post-operative patients received pain medication based on their pain score, 0-10 (Validated Numeric Rating Scale).

**Patients or Participants:** Participants included all patients undergoing benign, minimally invasive, gynecologic surgery at our institution from 01/01/2017-10/31/018 compared to those after initiation of our intervention on 11/01/2018 (to present).

**Interventions:** Preoperative analgesics: Gabapentin 600 mg, Acetaminophen 1 gm, Celebrex 200mg, Scopolamine patch.

**Postoperative analgesics:** Acetaminophen 1 gm q6h, Ibuprofen 400-600 mg q6h, Gabapentin 100 mg TID, Lidoderm patch q24h. For moderate pain scores of 4-6, Tramadol 50 mg PO q4h pm. For severe pain score (7+), 5 mg oxycodone PO PRN q6hrs.

**Measurements and Main Results:** An unpaired two-tailed T-Test was used to compare the average OMEs administered to patients before the ERAS intervention and after the intervention. There was a statistically significant difference noted (P Value = 0.0015) between the groups. The average OMEs in the pre-intervention group was 42.3 (n = 90) compared to 22.9 (n = 48) in the post-intervention group.

**Conclusion:** With the implementation of an ERAS protocol, the amount of post-operative narcotics was significantly reduced in patients who had undergone minimally invasive gynecologic surgeries. Hospitals providing gynecologic surgery care should adhere to an ERAS protocol to reduce narcotic use in the postoperative patient.
Conclusion: An isthmocele is a cesarean scar defect associated with abnormal bleeding, pain, and infertility. Treatment depends on the thickness of the residual myometrium and the patient’s goals. A combined approach may be helpful for patients with minimal residual myometrium.

Open Communications 4: Laparoscopy
(11:00 AM — 12:45 PM)

11:14 AM
Clinical Anatomy Required in Identifying Pelvic Autonomic Nerve System
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Video Objective: Comprehension of structure of pelvic autonomic nerve system is mandatory for constant preservation of voiding function while maintaining oncological outcome of radical hysterectomy.

Setting: 47 years old, cervical cancer T1bN0M0. Total laparoscopic nerve sparing radical hysterectomy is presented.

Interventions: Superior hypogastric nerve plexus and inferior hypogastric nerves are in the same layer between pararectal space of Latzko and Okabayashi. Two subperitoneal fasciae are identified in pelvic retroperitoneal space: pre-hypogastric nerve fascia in ventral side, ureterohypogastric fascia in dorsal side of ureter and hypogastric nerves. Pelvic splanchnic nerves are identified in lateral side of pre-hypogastric nerve fascia, so preservation of these fasciae during operation result in protection of hypogastric and pelvic splanchnic nerves. Pelvic nerve plexus is identified in dorsal side of deep uterine vein and superior vesical vein. Careful slice up of these veins and preserve underlying fasciae result in protection of pelvic nerve plexus. Vesical nerve branch is identified in caudal side of posterior leaf of vesicouterine ligament (VUL). Division of posterior leaf of VUL is required to visualize vesical nerve branch, but constant preservation of voiding function is feasible once location of vesical nerve branch is understood. Outline of surgical procedure to identify and preserve hypogastric nerves and vesical nerve branch is presented in the video of TLRH for cervical cancer stage IB1.

Conclusion: Once visualization of pelvic autonomic nerve system is experienced, stable preservation of voiding function in radical hysterectomy is realized.

Open Communications 4: Laparoscopy
(11:00 AM — 12:45 PM)

11:21 AM
Laparoscopic Resection of Ovarian Vessel Coils and a Tubal Occlusion Device
Dixon Shambley K, Elkattah RA*, Obstetrics and Gynecology, University of Illinois College of Medicine Peoria, Peoria, IL
*Corresponding author.

Video Objective: To describe the anatomy of the ovarian vessels cephalad to the pelvic brim.

Setting: A 45 year old multiparous woman presents with chronic right pelvic pain following hysteroscopic tubal sterilization. Bilateral ovarian vein embolization was performed for suspected pelvic congestion syndrome. Her pain worsened post-embolization. After an extensive pelvic pain evaluation, the decision was made to remove her embolization and tubal occlusion coils.

Interventions: Laparoscopic dissection and removal of the right ovarian vessels above the pelvic brim is described. Multiple steps are required for a safe and complete resection: 1- Retroperitoneal access; 2- Maintaining hemostasis; 3- Traction/counter-traction; 4- sharp and blunt dissection; 5- judicious use of electrosurgical energy.

Conclusion: Successful dissection/resection of ovarian vessels is feasible and safe with in-depth knowledge of neighboring structures cephalad to the pelvic brim.

Open Communications 4: Laparoscopy
(11:00 AM — 12:45 PM)

11:28 AM
Achieving Type C2 (Type III) Laparoscopic Radical Hysterectomy with Preservation of Nerves: A Possibility
Puntambekar S.*, Pattanaik S, Goel A, Puntambekar SP. Galaxy CARE Laparoscopy Institute Pvt. Ltd, PUNE, India
*Corresponding author.

Video Objective: This video is a demonstration of nerve sparing radical hysterectomy done laparoscopically but what makes it unique is that we could achieve complete parametrectomy which is the most vital step to prevent pelvic recurrences. As we know, the lymphatics follow the veins, removal of parametrium and paracervix on both the sides becomes crucial in achieving complete tumor clearance. Preservation of the nerves helps in the maintenance of bladder, anorectal and sexual functions making the postoperative period better, less morbid & uneventful. In contrast to open surgery, where you have to palpate the tissues to know the extent of dissection of the parametrium, laparoscopy helps us to have an extra edge with pelvic anatomy and magnification of the same.

Setting: A 70 year old post-menopausal lady had presented to us with white P/V discharge and post-menopausal spotting. Cervical biopsy reported well differentiated squamous cell carcinoma and imaging revealed that there was no extension into the parametrium.

Interventions: This video highlights the efforts made for hemostasis during the procedure and the relationship of ureters with the uterine vessels on either side. Following the dictum, “fat belongs to the bladder” and “fat belongs to the rectum” that we have always followed, we achieve a bloodless field with preservation of the innervation to bladder and rectum on both the sides. Post-operative course of the patient was unremarkable and she didn’t have any bowel and bladder complaints.

Conclusion: With proficient surgeons, we can achieve complete parametrectomy, equal survival rates and less pelvic recurrences in comparison to open surgery in a rebut to the LACC trial which has taken the world by a storm. It is all about the anatomy and the anatomy of parametrium is the key to achieve a laparoscopic nerve sparing radical hysterectomy with no local recurrences and no lifestyle changes postoperatively.

Open Communications 4: Laparoscopy
(11:00 AM — 12:45 PM)

11:35 AM
Postoperative Narcotic use After Ambulatory Gynecologic Surgery
Ragino AL, Lass K, Grandi C, Caruso D, deMartelly V, Iyer S. Obstetrics and Gynecology, University of Chicago, Chicago, IL
*Corresponding author.

Study Objective: The number of narcotics the average patient requires from ambulatory gynecologic surgery has not been clearly defined. This study aims to investigate the average number of narcotics used after common ambulatory gynecologic surgeries to better guide post-surgical prescribing practices in the future.

Design: Through a prospective observational cross-sectional study, patients undergoing benign gynecologic surgery were recruited pre-operatively, signed consent, and completed a baseline pain and demographic survey. They were then given a diary to record narcotic use in the immediate postoperative period (7 days) and contacted to provide information regarding amount of narcotic medications used as well as additional medications used for pain. There were no standards on narcotic regimen or medications prescribed postoperatively.

Setting: Patients identified via the gynecologic surgery schedule from an urban academic-based institution were enrolled from 10/2018 to 4/2019.

Patients or Participants: Inclusion criteria included patients aged 18-99, English speaking, and undergoing a benign gynecologic ambulatory
surgery (ie, midurethral sling placement or laparoscopic benign adnexal surgery). Patients were excluded if they had a cancer diagnosis, history of chronic pain, chronically used narcotics, non-english speakers, surgery converted to laparotomy or the subject was admitted to the hospital post-operatively for pain control.

**Interventions:** NA

**Measurements and Main Results:** Sixty-four subjects were enrolled and information regarding narcotic use was obtained from 58 subjects. Subjects on average were prescribed 15.5 tablets of narcotics (most often Norco) correlating to 77.5 morphine equivalents whereas subjects on average used 4.4 (correlating to 22 morphine equivalents) with 75% of patients using 6 tablets or less after surgery. Our study suggests that patients recover from the postoperative period with an average excess of 11 narcotic tablets (70% of prescribed pills) from ambulatory benign gynecologic surgeries.

**Conclusion:** Gynecologic surgeons tend to prescribe narcotics in excess of patients’ needs.

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**Open Communications 4: Hysteroscopy**

**11:00 AM — 12:45 PM**

**Hysteroscopic Management of Cystic Adenomyosis**

Demirel LC,1,4 Kaya DG,1,2 Tulet F,1 Lembet A,3 Ergin T,1 IVF and Minimally Invasive Surgery, Atasehir Memorial Hospital, Istanbul, Turkey;2IVF and Minimally Invasive Surgery, Liv Hospital, Istanbul, Turkey

*Corresponding author.

**Video Objective:** To demonstrate a case of cystic adenomyosis treated by hysteroscopic intervention and the course of the lesion thereafter.

**Setting:** The patient is a 42 years old, G3 P1 woman complaining of heavy menstrual bleeding of 6 months duration with concomitant severe dysmenorrhea. Ultrasound examination revealed a 32 × 30 mm cystic mass in the anterior uterine wall at the junctional zone.

**Interventions:** Following hysteroscopic resection with a wire loop resectoscope and rollerball coagulation of the inner surface of the adenomyotic cyst, there was complete disappearance of the anterior myometrial defect and resolution of symptoms 4 months after the surgery.

**Conclusion:** Symptomatic cystic adenomyosis on the junctional zone can be managed by hysteroscopic resection. Following creation of an opening on the cyst wall, internal surfaces may be treated with rollerball coagulation. Healing appears complete with no residual dead space on the junctional zone.

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**Open Communications 4: Laparoscopy**

**11:00 AM — 12:45 PM**

**11:42 AM**

**Hysteroscopic Management of Cystic Adenomyosis**

Demirel LC,1,4 Kaya DG,1,2 Tulet F,1 Lembet A,3 Ergin T,1 IVF and Minimally Invasive Surgery, Atasehir Memorial Hospital, Istanbul, Turkey;2IVF and Minimally Invasive Surgery, Liv Hospital, Istanbul, Turkey

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**Open Communications 4: Laparoscopy**

**11:00 AM — 12:45 PM**

**11:49 AM**

**Interstitial Ectopic Cornuostomy**

Whitmore G,1,2,4 Stickrath E,1 Obstetric and Gynecology, University of Colorado, Denver, CO;2Obstetrics and Gynecology, Denver Health Medical Center, Denver, CO

*Corresponding author.

**Video Objective:** The objective of this video is to demonstrate a laparoscopic technique for surgical management of an interstitial ectopic pregnancy.

**Setting:** A patient with a history of a right ectopic pregnancy that was treated with methotrexate administration 4 years prior, presents with a right two-centimeter interstitial ectopic pregnancy. After extensive counseling, the patient declined medical treatment with methotrexate and desired surgical management with preservation of her fertility.

**Interventions:** Laparoscopically, the fallopian tube and utero-ovarian ligament were ligated. In a purse string fashion, the interstitial ectopic pregnancy was isolated. A monopolar hook was used to incise the cornua and the ectopic pregnancy tissue was evacuated using a suction irrigator. The uterine defect was closed to insure hemostasis.

**Conclusion:** In a selective patient population, a laparoscopic cornuostomy is an option for treatment of an interstitial ectopic pregnancy. This is particularly true for a small interstitial ectopic where a wedge resection may be impossible without significant damage to the uterus. It is still important to follow the quantitative beta human chorionic gonadotropin levels to zero to insure resolution of the pregnancy.
**Open Communications 4: Laparoscopy**  
(11:00 AM — 12:45 PM)

12:10 PM

**A Surgical Snapshot of Myomectomies in the United States from 2010-2014 using the National Inpatient Sample**  
Frost AS,*,1 McMahon ME,1 Smith AJB,1 Patzkowsky KE,2 Department of Gynecology & Obstetrics, Johns Hopkins School of Medicine, Baltimore, MD; 3 Division of Minimally Invasive Gynecologic Surgery, Johns Hopkins School of Medicine, Baltimore, MD  
*Corresponding author.

**Study Objective:** To examine the surgical approach to myomectomy and describe patient factors including geography, race, and length of stay.

**Design:** Data was abstracted from the 2010-2014 National Inpatient Sample of women ages 18-50 years undergoing myomectomy for fibroids. We used weighted statistics to characterize the number and proportion of women undergoing inpatient myomectomy (abdominal, laparoscopic, and robotic) as well as geographic and racial subgroups. We used multivariate logistic regression to analyze trends in myomectomy route over time.

**Setting:** United States.

**Patients or Participants:** 124,880 women ages 18-50 years undergoing inpatient myomectomy for fibroids.

**Interventions:** N/A

**Measurements and Main Results:** Of 124,880 women undergoing myomectomy for fibroids, 7% underwent minimally invasive myomectomy (MIM) and 93% underwent abdominal myomectomy. Over time, the proportion of MIM remained low and decreased slightly from 8.2% in 2010 to 6.0% in 2014 (p-for-trend: 0.001). The majority of hospitals perform very few MIM per year, with 75% performing three or fewer per year, and 25% performing less than one per year. The largest percentage of MIM were performed in the South (37.6%; 95%CI 35.4-39.8) followed by the West (22.7%; 95%CI 20.8-24.6) and North (21.8%; 95%CI 19.9-23.7) and the least amount in the Midwest (17.9%; 95%CI 16.1-19.6). The largest percentage of MIM were performed in white women (41.4%; 95%CI 39.1-43.8) followed by black (34.3%; 95%CI 32.1-36.6), Hispanic (13.6%; 95%CI 12.0-15.2) and women of other races (10.7%; 95%CI 9.2-12.1). Average length of stay regardless of approach was 2.62 days (95%CI 2.59-2.65) and marginally different for MIM versus abdominal myomectomy (2.51 days; 95%CI 2.42-2.61 and 2.63 days; 95%CI 2.60-2.66, respectively).

**Conclusion:** Despite availability and patient benefit, MIM remains an underutilized modality, accounting for <10% of myomectomies. The lowest rates are seen in the Midwest and among women of races other than white or black.

**Open Communications 4: Laparoscopy**  
(11:00 AM — 12:45 PM)

12:17 PM

**Laparoscopic Management of 12cm Parasitic Fibroid on the Pelvic Brim**  
Wagner EM,*,1 Mupombwa T,1 Simianu VV,2 Dahlman M,1 Gynecology, Virginia Mason Medical Center, Seattle, WA; 2 General and Thoracic Surgery, Virginia Mason Medical Center, Seattle, WA  
*Corresponding author.

**Video Objective:** Demonstrate laparoscopic management of a parasitic fibroid located on the pelvic brim with identification of relevant retroperitoneal anatomy.

**Setting:** 55 year old presenting for laparoscopic hysterectomy for fibroid uterus. 12 cm pedunculated fibroid was in fact a parasitic fibroid attached to the sidewall over the bifurcation of the iliac vessels.

**Interventions:** Using traditional laparoscopy, the fibroid was resected. Retropitoneal dissection and ureterolysis were performed to facilitate safe removal. The fibroid was then removed transvaginally.

**Conclusion:** Parasitic fibroids can present unique challenges for surgical management due to aberrant blood supply and distorted anatomy. Knowledge of retroperitoneal pelvic anatomy is critical for safe laparoscopic management of parasitic fibroids.

Open Communications 4: Laparoscopy  
(11:00 AM — 12:45 PM)

12:24 PM

**Cell Salvage System use in Minimally Invasive Myomectomy**  
Wa HY,*,1 Yen TT,2 Singh B,3 Lau BD,4,5,6,7 Chaves KK,2 Maher J,*,1 Patzkowsky KE,1 Simpson K,1 Wang KC,1 Division of Minimally Invasive Gynecologic Surgery, Johns Hopkins School of Medicine, Baltimore, MD; 2 Gynecology and Obstetrics, Johns Hopkins University School of Medicine, Baltimore, MD; 3 Division of Reproductive Endocrinology and Infertility, Department of Gynecology and Obstetrics, Johns Hopkins University School of Medicine, Baltimore, MD; 4 Radiology and Radiological Science, Johns Hopkins University School of Medicine, Baltimore, MD; 5 Health Sciences Informatics, Johns Hopkins University School of Medicine, Baltimore, MD; 6 Armstrong Institute for Patient Safety and Quality, Johns Hopkins Medicine, Baltimore, MD; 7 Health Policy and Management, Johns Hopkins School of Public Health, Baltimore, MD  
*Corresponding author.

**Study Objective:** The role of cell salvage use in gynecologic procedures, such as myomectomy, is not well established. We assessed the utilization and cost of cell salvage use in patients undergoing minimally invasive myomectomy from 2015 to 2018.

**Design:** Retrospective cohort study.

**Setting:** Academic medical center.

**Patients or Participants:** Patients who underwent minimally invasive myomectomy.

**Interventions:** Cell salvage use in minimally invasive myomectomy.

**Measurements and Main Results:** 382 patients underwent minimally invasive myomectomy; 67 cases (18%) had cell-salvage setup, with 30 of those patients (45%) reinfused. Nineteen units of perioperative allo-genic blood transfusions occurred: 11U in the no cell-salvage set-up group, 5U in the cell-salvage set-up group, and 3U in the cell-salvage reinfusion group. The total volume of cell-salvage reinfusion was 9.5L (±2U PRBC). Patients with cell-salvage setup, compared to those without cell-salvage setup, had significantly higher median BMI (29.8 vs 27.6, p=0.02), larger mean maximum fibroid size (8.8cm vs.7.5cm, p=0.001), higher median specimen weight (330g vs 178g, p=0.0001), higher median EBL (400cc vs 100cc, p=0.0001), and longer operative time (236min vs 204min, p<0.001). Patients who had cell-salvage reinfusion, compared to those with cell-salvage setup only, had significantly larger mean maximum fibroid size (9.8cm vs 8.0cm, p=0.02), higher median total specimen weight (367g vs 304g, p=0.03), higher median EBL (375cc vs 300 cc, p=0.0001), and longer mean operative time (261min vs 215min, p=0.04). Cost analysis scenarios were examined per institutional costs (cell-salvage setup $55, cell-salvage setup/reinfusion $115, IU blood transfusion including processing $760): study results (37 setup only/30 reinfused/19IU=$19,925; all cases with cell-salvage setup (subtracting units of blood transfused in the non-cell-saver setup group-352 setup only/30 reinfused/8U) = $28,890; no cell-saver setup (added cell saver reinfusion volume-51 cases with cell-salvage setup (subtracting units of blood transfused in the non-cell-saver setup group-352 setup only/30 reinfused/8U) = $28,890; no cell-saver setup (added cell saver reinfusion volume-51

**Conclusion:** Cell-salvage system setup may be cost-effective during minimally invasive myomectomy. Maximum fibroid size is a possible preoperative indicator for patients who ultimately receive cell-salvage reinfusion.
Open Communications 5: Basic Science/Research/Education
(2:00 PM – 3:00 PM)

2:00 PM

**ABCS of Cystoscopy**

Sandoval-Herrera C.1,2*, Livinova K.2, Salah M.1, Division of Minimally Invasive Gynecology, Mount Sinai Hospital and Medical Center, Chicago, IL; 2Ross University School of Medicine, Miramar, FL
*Corresponding author.

**Video Objective:** To provide an introduction to cystoscopy in gynecologic surgery by highlighting the significance of its use and covering:

A: anatomy review
B: bladder inspection technique
C: cystoscopic parts and assembly

**Setting:** Mount Sinai Hospital and Medical Center in Chicago, Illinois.

**Interventions:** Literature review and multiple cystoscopy cases from our institution are compiled to outline educational content on cystoscopy, focusing on pertinent anatomy, bladder inspection, and cystoscope instrumentation.

**Conclusion:** Cystoscopy has a valuable role in gynecologic surgery. It facilitates assessment of the urinary tract and is useful for detecting ureteral patency following surgical procedures, such as hysterectomy. This video simplifies the fundamentals of cystoscopy into:

A: anatomy review
B: bladder inspection technique
C: cystoscopic parts and assembly

Open Communications 5: Basic Science/Research/Education
(2:00 PM – 3:00 PM)

2:07 PM

**Comparison of the Technical Feasibility and Safety of Three Contained Morcellation Techniques: A Pilot Study in an Animal Model**

Aoki Y.1,2*, Cancer Institute Hospital, Tokyo, Japan
*Corresponding author.

**Study Objective:** To compare 3 laparoscopic contained morcellation techniques in terms of feasibility and safety.

**Design:** Pilot study in an animal model.

**Setting:** Department of gynecology oncology at a cancer institute in Japan.

**Patients or Participants:** Porcine model.

**Interventions:** Three contained morcellation techniques were tested, each multiple times in 1 of 3 anesthetized female pigs: manual morcellation (8 times), dual-site power morcellation (8 times), and single-site power morcellation (6 times). All were tested on beef tongue introduced abdominally.

**Measurements and Main Results:** The following variables were compared:

- Bag insertion time
- Morcellation time
- Bag removal time
- Total in-bag morcellation time
- Volume of pneumoperitoneum CO2

Measurements were compared to manual morcellation, which translate to an economic benefit, lead us to conclude that manual morcellation will remain advantageous into the future.

Open Communications 5: Basic Science/Research/Education
(2:00 PM – 3:00 PM)

2:14 PM

**How to Master the Complex Task of Laparoscopic Suturing and Intracorporeal Knot Tying Using the Novel Clock Face Logic**

Lam AM, Lowe JA.1*, Centre for Advanced Reproductive Endosurgery, Sydney, NSW, Australia
*Corresponding author.

**Video Objective:** The aim was to design a reproducible, easy to adopt method for teaching laparoscopic suturing and intracorporeal knot tying. The novel use of a clock face to guide the steps is proposed to simplify & accelerate skill acquisition. The technique appears far easier to conceptualize than many others and has been very positively received during laparoscopic masterclasses conducted at the Centre for Advanced Reproductive Endosurgery in Sydney, Australia.

**Setting:** Laparoscopic suturing requires very different and more advanced skill sets compared to suturing at open procedures. Proficiency with these skills is essential for the completion of advanced minimally invasive gynecological procedures such as hysterectomy, myomectomy and sacrocolpopexy.

Inadequate laparoscopic suturing skills have been identified as a key factor impeding the use and greater adoption of minimally invasive techniques for most gynecologists. Laparoscopic suturing is one of the most difficult skills in minimally invasive surgery due to multiple factors including a constrained working field, altered depth perception, the need for counterintuitive movements and also the lack of a standardized teaching technique.

**Interventions:** This video uses images and footage from a simulation laboratory to clearly illustrate the steps involved in mastering laparoscopic suturing and intracorporeal knot tying using novel clock face directions to guide the movements.

**Conclusion:** This technique has been successfully incorporated into masterclasses run at the Centre, where anecdotally participants have grasped the concepts involved in laparoscopic suturing more quickly than with previous techniques. A prospective study is planned to compare the use of the novel clock face instructional teaching to more conventional terminology.

Open Communications 5: Basic Science/Research/Education
(2:00 PM – 3:00 PM)

2:21 PM

**17 Years of Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS): Where are Graduates Now?**

Woo JJ.1,2*, Johnson ME.2, Kahn BS.1,1 Department of Gynecological Surgery, Scripps Clinic, La Jolla, CA; 2Virginia Commonwealth University School of Medicine, Richmond, VA
*Corresponding author.

**Study Objective:** FMIGS graduates are imperative for the training of modern endoscopic surgery techniques to the next generation of gynecologic surgeons. The recent implementation of Fundamentals of Laparoscopic Surgery (FLS) for board certification and the recent approval of MIGS Focused Practice Designation by the American Board of Medical Specialties only further emphasizes the importance of FMIGS graduates to training institutions, yet the current distribution of FMIGS graduates and their interactions with education is not well documented.
Design: An Internet based name search of 391 AAGL FMIG graduates from 2002-2018 conducted in April of 2019. Each physician’s website was investigated for current practice type, setting, location, and interactions with residents and/or fellows and then analyzed.

Setting: Current, April 2019, Internet-based name search for practice website.

Patients or Participants: 391 AAGL FMIGs Graduates.

Interventions: N/A

Measurements and Main Results: Of the 391 AAGL FMIG graduates, 381 were searchable on the Internet. The breakdown were as follows: Gender: Male 30.5%, Female 69.5%, Practice Type: Private 53.3%, Academic 46.7%, Practice Setting: Urban 59.3%, Suburban 35.4%, Rural 5.2%, Location: NE 31.5%, SW 25.2%, SE 17.1%, MW 16.5%, NW 3.7%, and Out of States 6.0%. More than half of all FMIGs graduates were involved in residency or fellowship education. There has been a positive trend of FMIGs graduates practicing in both OB/GYN residency and fellowship programs as the fellowship has matured with over 58% of 2015-18 graduates involved with resident education and over 34% involved with fellowship education.

Conclusion: The increasing trend of FMIGs graduates seeking job opportunities to educate residents and fellows supports the fellowships mission to train the next generation of minimally invasive gynecologic surgeons. The distribution and demographics of FMIGs graduates is not evenly distributed and this data may be utilized by the AAGL and prospective residents/fellows for decisions regarding future training and clinical practice location.

Open Communications 5: Basic Science/Research/Education (2:00 PM – 3:00 PM)

2:28 PM

Effect of Resident Participation on Hysterectomy

Outcomes in Morbidly Obese Patients

Whitley J,1,2* Moore KJ,2 Louie M,1 1University of North Carolina at Chapel Hill, Chapel Hill, NC; 2Epidemiology, Gillings School of Global Public Health, University of North Carolina Chapel Hill, Chapel Hill, NC; 3Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC. *Corresponding author.

Study Objective: To assess the effect of resident participation on hysterectomy-related complications in morbidly obese patients.

Design: Retrospective cohort study.

Setting: Tertiary-care academic medical center.

Patients or Participants: Patients with BMI > 40 kg/m2 who underwent any route of hysterectomy between 4/2014 and 3/2018 were eligible for inclusion. 225 patients were randomly selected, excluding patients with gynecologic malignancy or prior bariatric surgery.

Interventions: 108 patients with resident participation in hysterectomy were compared to 117 patients with no resident participation. Data was collected by manual chart review and polytomous logistic regression was used for analysis.

Measurements and Main Results: Mean BMI in the group with resident participation was 46.4 kg/m2, compared to 45.2 kg/m2 in the group with no resident (P=0.12). Mean operative time was 69 minutes longer in the group with resident participation (241.6 minutes v. 172.9 minutes, P<0.01). Resident participation was associated with a higher frequency of intra-operative hemorrhage/transfusion (5.6% v. 0%, P=0.01) and surgical site complication (7.4% v. 0.9%, P=0.02). Surgery with resident participation was associated with 2.5 times the odds of any complication within 30 days of hysterectomy (95% CI 1.28, 4.79). Even after adjusting for variables associated with increased case complexity including specimen weight, additional procedures performed, medical comorbidities, and prior abdominal surgery, cases with resident participation had 2.4 times the odds of any complication (95% CI 1.16, 5.17) and 4 times the odds of any intra-operative complication (95% CI 1.14, 14.56). When stratified by Clavien-Dindo class, there was no significant difference in major complications (Clavien-Dindo Grade 2+) between groups.

Conclusion: In this cohort of morbidly obese patients, resident participation in hysterectomy was associated with significantly longer operative time, substantially greater odds of complications occurring during surgery, and greater odds of any 30-day hysterectomy-related complication.

Open Communications 5: Basic Science/Research/Education (2:00 PM – 3:00 PM)

2:35 PM

Fundamentals of Laparoscopic Surgery: Tutorial and Tips

Ramirez CI,1,2* Baker T,1,2 MIGS Division, Obstetrics and Gynecology, San Antonio Military Medical Center, San Antonio, TX; 1MIGS Division, Department of OB/GYN, San Antonio Military Medical Center, San Antonio, TX. *Corresponding author.

Video Objective: To provide a stepwise tutorial and task-specific tips for trainees preparing for the manual skills component of the Fundamentals of Laparoscopic Surgery exam.

Setting: The American Board of Obstetricians and Gynecologists announced that starting in 2020 all OB/GYN residents must pass the Fundamentals of Laparoscopic Surgery (FLS) test in order to be eligible for board certification. This initiative is part of an effort to standardize knowledge and skill across programs.

Interventions: The manual skills component of FLS consists of five tasks: peg transfer, precision cutting, ligating loop, extracorporeal suturing, and intracorporeal suturing. For the peg transfer, the rotating dial on the Maryland graspers should be used to optimize the position of the graspers and rotate the objects into an optimal position for transferring and placement. For precision cutting, if right-handed, consider starting to the right of the midline. The left hand provides traction on the gauze and directionality must be adjusted throughout the task. Rotate the scissors as necessary to match the curve of the circle pattern. For the ligating loop, use a locking grasper to free both hands to break the endoloop. Trainees should be familiar with the multiuse trainer loops. Extracorporeal suturing can be performed with either an open or closed knot pusher but should always be performed by pushing 90 degrees off of the knot. The knot pusher can be gently rotated to reduce twisted sutures, and tension should be released if the knot pusher slips off. For intracorporeal suturing, the needle can be rotated to optimize the suture loop. Additionally, the needle should be aligned parallel to the needle driver.

Conclusion: The FLS manual tasks can easily be completed by trainees with the assistance of the tips depicted in this video.

Open Communications 5: Basic Science/Research/Education (2:00 PM – 3:00 PM)

2:42 PM

Continuous Hydrogen Sulfide Gas Monitoring During Laparoscopic Surgery to Detect Bowel Injury

Endicott S,* Lockrow EG. Walter Reed National Military Medical Center, Bethesda, MD. *Corresponding author.

Study Objective: To determine the feasibility of measuring hydrogen sulfide (H2S) gas in the insufflated abdomen during laparoscopic surgery after transmural bowel injury as a marker of unrecognized bowel injuries.
Design: This is a feasibility study performed on swine models during a robotic training course. We aimed to determine baseline H2S levels and subsequent elevations in H2S levels after enterotomy of the large and small intestine.

Setting: University based robotic training lab.

Patients or Participants: N/A

Interventions: During initial insufflation of the swine abdominal cavity, baseline H2S levels were recorded over 15 second intervals for 10 minutes using the Analytical Technology, Inc. PortaSens II Portable Gas Leak Detector Model C16. The same values were recorded in separate studies after transmural transection of the small intestine and large intestines using laparoscopic shears with and without monopolar electrosurgery.

Measurements and Main Results: Baseline H2S level over the initial 10 minutes of insufflation were 0 ppm. H2S levels after small and large bowel enterotomy without monopolar electrosurgery failed to show any elevation in H2S levels. H2S levels after small and large bowel enterotomy with monopolar electrosurgery both showed increases to 4 ppm with a duration of elevation measuring 3:45 minutes and 4:15 minutes respectively.

Conclusion: Our study demonstrates that H2S cannot be utilized as a detection method for unrecognized bowel injury during laparoscopic surgery. While our study did show elevations in H2S after transection with monopolar electrosurgery, this was later determined to be the result of cross contamination with carbon monoxide which was an unexpected and confounding factor. Further testing of other gases produced by the gastrointestinal tract or use of alternative detection methods may provide more clinically relevant results.

Open Communications 5: Basic Science/Research/Education (2:00 PM – 3:00 PM)

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<th>Time</th>
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| 2:49 PM| The Study of Polymorphisms Rs3020434, Rs11742635, Rs124577644, Rs12637801, Rs2861221, and Rs17677069 in Women with Familial Uterine Myoma  
Adamyan LV1,2, Sogoian N1, Kaznetsova M3, Stepanian AA3, Trofinov D4,  
1V.I. Kulakov National Medical Research Center for Obstetrics, Gynecology and Perinatology, Ministry of Healthcare of Russia, Moscow, Russian Federation; 2Academia of Women’s Health and Endoscopic Surgery, Atlanta, GA |
| *Corresponding author. |

Study Objective: To find genetic markers of family forms of myomas for the optimization of diagnostics, management of patients, and prediction of the risk of recurrence.


Patients or Participants: 106 patients with uterine myoma scheduled for hysterectomy or myomectomy were organized into 3 groups: group 1 with family history of myoma; group 2 without such history; group 3 - patients who did not have information about their anamnesis. 24 women represented the control group.

Interventions: Patients underwent hysterectomy or myomectomy for symptomatic uterine myoma. Individual fibroids and blood of all patients were collected during the surgery. DNA extraction and genotyping of six loci (rs3020434, rs11742635, rs124577644, rs12637801, rs2861221, rs17677069) of the ESR1, FBGN2, CELF4, KCWMB2 genes was undertaken.

Measurements and Main Results: 130 patients were included in the study (51, 36, and 19 women in the first, second, and third groups respectively and 24 patients in the control group). While rare alleles of polymorphisms rs3020434 (TT), rs11742635 (TT), rs2861221 (GG) and rs17677069 (GG) were not found in patients with familial myoma; common forms of these polymorphisms were found in this group and included: CC allele of rs3020434 polymorphism in 73 % (p=0.003), GG variant of rs11742635 in 82 % (p=0.008), and CC allele of rs2861221 and AA allele of rs17677069 in 82 % of these women (p=0.02 and p=0.001, respectively).

Conclusion: Rare alleles of rs3020434, rs11742635, rs2861221, and rs17677069 polymorphisms can potentially be protective variants in the development of family forms of uterine myoma. Common alleles identified could increase the risk of development of familial myoma. It may be possible to use these alleles as genetic markers for predicting the development of myoma in women with a family history of this disease.

Open Communications 6: Hysteroscopy (2:00 PM – 3:00 PM)

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<th>Time</th>
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| 2:00 PM| Transvaginal Laparoscopic Resection of Cul-De-Sac Mass  
Burnett AF*, OB/GYN, University of Arkansas for Medical Sciences, Little Rock, AR |
*Corresponding author. |

Video Objective: To demonstrate laparoscopic removal of benign ovarian mass through posterior colpotomy.

Setting: 33 year old with pelvic pain associated with cul-de-sac mass.

Interventions: posterior colpotomy with placement of gelpoint device followed by laparoscopic resection of dermoid cyst.

Conclusion: This is a safe alternative to transabdominal laparoscopy and results in less pain, quicker recovery and better cosmesis.

Open Communications 6: Hysteroscopy (2:00 PM – 3:00 PM)

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<th>Time</th>
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| 2:07 PM| Transvaginal Laparoscopic Appendectomy  
Burnett AF*, OB/GYN, University of Arkansas for Medical Sciences, Little Rock, AR |
*Corresponding author. |

Video Objective: To demonstrate transvaginal laparoscopic appendectomy at the time of transvaginal laparoscopic hysterectomy, bilateral salpingo-oophorectomy.

Setting: patient with early-stage endometrial cancer who was found to have the appendix adherent to the right ovary.

Interventions: after completion of the hysterectomy and bilateral salpingo-oophorectomy, appendectomy was performed by transvaginal laparoscopy.

Conclusion: this is a safe procedure that can be performed with transvaginal laparoscopy when an incidental appendectomy is required.

Open Communications 6: Hysteroscopy (2:00 PM – 3:00 PM)

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<th>Time</th>
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| 2:14 PM| Extraperitoneal Sacral Hysterectomy by Transvaginal Natural Orifice Transluminal Endoscopic Surgery: A Single-center Case Series Study  
Wang Y*, Department of Obstetrics and Gynecology, Southwest Hospital, Third Military Medical University, Chongqing, China |
*Corresponding author. |

Study Objective: This study evaluated the feasibility, safety and short-term clinical outcomes from extraperitoneal sacral hysterectomy by transvaginal natural orifice transluminal endoscopic surgery in treating uterine prolapse.
Design: Retrospective study.
Setting: The First Affiliated Hospital of Third Military Medical University, Chongqing, China
Patients or Participants: The medical records of patients with POP-Q stage 2 or greater uterine prolapse who were treated with vNOTES-ESH between December 2016 to June 2018 (to ensure 1-year follow-up or more) in the Southwest Hospital at the Third Military Medical University were reviewed retrospectively.
Interventions: Extraperitoneal sacral hysteropexy were performed by vNOTES.
Measurements and Main Results: 21 patients underwent surgery; 20 were successfully completed, and one that could not maintain pressure at the extraperitoneal cavity site due to peritoneal rupture during surgery who underwent multi-port laparoscopic surgery. Median patient age was 50 years. The body mass index (BMI) was 23.7 kg/m², the median operative time was 216 min, and the median intraoperative blood loss was 60 mL. One case had presacral hemorrhage that was circumvented by bipolar electrocoagulation. Preoperative POP-Q scores were: Aa-0, Ba-1, C-2, Ap-3, and Bp-3. The average post-operative follow-up was 12 months. The POP-Q scores were: Aa-2, Ba-2, C-7, Ap-3, and Bp-3. Associated symptoms disappeared or improved significantly without sexual discomfort or pain on intercourse, mesh erosion, exposure, infection or other complications. The objective cure rate was 100 percent.
Conclusion: vNOTES was a feasible approach in completing extraperitoneal sacral hysteropexy for apical support, with promising short-term efficacy and safety. However, further studies across multiple sites are needed in evaluating long-term efficacy and safety profile of vNOTES extraperitoneal sacrocolpopexy.

Open Communications 6: Hysteroscopy (2:00 PM – 3:00 PM)

2:21 PM

Functional (Dynamic Contrast-Enhanced) MRI Assists in the Evaluation of Blood Perfusion in Myometrium and Intrauterine Septi of Women with Symmetric Uterine Anomalies
Adamyan LV, Makiyan Z, Stepanian AA, Farkhat K, Miroshnikova N, V.I. Kalakov National Medical Research Center for Obstetrics, Gynecology and Perinatology, Ministry of Healthcare of Russia, Moscow, Russian Federation; 2Academia of Women’s Health and Endoscopic Surgery, Atlanta, GA

Study Objective: Successful reproductive outcomes of patients with uterovaginal anomalies remain in the range of 25–37%, despite applying minimally invasive surgical corrections and assisted reproductive methods. The objective of our study is to introduce functional/dynamic enhanced MRI evaluation of the vascular circulation of the myometrium and intrauterine septum in patients with symmetric uterine anomalies.

Design: Prospective cohort study.
Setting: National Medical Research Center for Obstetrics, Gynecology and Perinatology, Moscow, Russia.
Patients or Participants: 213 patients of patients with symmetric uterine anomalies were evaluated between 2015 and 2017 at our department.
Interventions: Surgical correction of genitai malformations was performed in accordance with clinical manifestations: obstruction of menstrual outflow, abdominal pain, infertility, miscarriage, sexual problems. The new method of functional/dynamic contrast enhanced (DCE) MRI was employed in order to estimate uterine blood perfusion in symmetric uterine malformations. Dynamic monitoring of serial images evaluated the blood supply in the myometrium and septum by digital diagram and color-mapping.
Measurements and Main Results: The functional MRI was performed in 42 patients requiring surgery, and 30 patients managed without surgical correction. Microcirculation was reduced by over 32% in most patients with sub-septate uterus, and in 46% of patients with complete uterine septum, increasing the need for hystero-resectoscopic metroplasty in these patients. Histopathologic evaluation of the resected septi identified the presence of significant uterine dysmorphogenesis, vascular malformations, and deep myometrial fibrosis. The asymmetric perfusion of the duplicate uterus was detected in 85% of patients. Successful pregnancy progressed in hemi-uteri with better perfusion results (p<0.001), indicating a potential need for surgical transfer to the cavity with more optimal blood supply.
Conclusion: Functional/dynamic-enhanced MRI identifies the degree of blood perfusion in the myometrium and intrauterine septi of women with symmetric uterine anomalies and may assist in development of surgical and assisted reproductive strategies in the management of these patients.

Total Hysteroscopic Treatment of Cervical Pregnancy: “The Two Steps Technique”
Romano F,1,2 Mangino FP,3 Di Lorenzo GM,4 Buonomo F,1 Scrimin F,1 de Santo D,1 Ricci G2,1 Gynecology, Institute for Maternal and Child Health, IRCCS Burlo Garofolo, Trieste, Italy; 2Department of Medical, Surgical, and Health Sciences, University of Trieste, Institute for Maternal and Child Health, IRCCS Burlo Garofolo, Trieste, Italy

Video Objective: To evaluate the efficacy of a total surgical treatment of ectopic cervical pregnancy, with a minimally invasive approach performed by hysteroscopy.
Setting: Step-by-step video demonstration of the surgical technique using 5 mm hysteroscopy followed by 10 mm resectoscope.
41-year-old woman with an US diagnosis of ectopic cervical pregnancy at 6+6 weeks of gestation with β hCG serum level of 55.951 μIU/mL.
Interventions: We performed a two steps technique using 5 and 10 mm hysteroscopy. The study was approved by the Institutional Review Board. During the first step a 5 mm BETOCCHI hystoscope (Storz) with 5 Fr bipolar electrode Versapoint Twizzle, (Gynecare) was used. In this phase, the gestational sac was identified in order to confirm the diagnosis and its site of implantation. Later the gestational sac was opened and the pregnancy terminated by cord section under embryoscopic view. Finally, was performed a partial vessels coagulation. Afterwards the cervix was dilated and a resectoscope performed. During the second step, a 10 mm GYNECARE resectoscope with bipolar GYNECARE VERSAPONIRM was used. In this phase as first the gestational sac with embryo was removed, subsequently, a complete chorial villi resection was achieved. At last, a coagulation of bleeding vessels on implantation site, in order to control the hemostasis, was performed.

Conclusion: The patient was discharged 24 h after the procedure. The β hCG serum level became negative in 20 days. After 40 days ultrasound cervical findings were regular. After five months the patient was pregnant with regular intrauterine implantation.

The total hysteroscopic approach with a two steps technique offers an effective, safe and minimally invasive surgical treatment to ectopic cervical pregnancy.

Considering that this approach without any medical treatment is reported for the first time in literature, more clinical data are needed to confirm these findings.
Open Communications 6: Hysteroscopy
(2:00 PM – 3:00 PM)

2:35 PM

Hysteroscopic Enlargement Metroplasty of the Dysmorphic Uterus
Chaba N, Pierson R, Archer JS, Bicette SM. "OB/GYN, University of Louisville, Louisville, KY; Reproductive Endocrinology and Infertility, University of Louisville, Louisville, KY; Minimally Invasive gynecologic surgery, University of Louisville Hospital, Louisville, KY"

Video Objective: To demonstrate the diagnosis and surgical management of the dysmorphic uterus for in patient with primary infertility.

Setting: Urban academic hospital.

Interventions: Hysteroscopic enlargement metroplasty.

Conclusion: Hysteroscopic enlargement metroplasty is safe and effective to restore uterine cavity contour and volume to improve reproductive outcomes.

Open Communications 6: Hysteroscopy
(2:00 PM – 3:00 PM)

2:42 PM

IR-Guided Access to Uterine Cavity in a Case of Severe Cervical Stenosis
Lee C, Mehta N. "Obstetrics & Gynaecology, University of British Columbia, Vancouver, BC, Canada; Obstetrics & Gynaecology, University of British Columbia, Vancouver, BC, Canada"

*Corresponding author.

Video Objective: To demonstrate a case of interventional radiology-guided access to uterine cavity in a case of severe cervical stenosis.

Setting: A 42-year-old G1P1 woman presented to a tertiary referral centre with a history of adenocarcinoma in situ and a previous complete LEEP excision. She had severe cervical stenosis with no external or visible that prevented ongoing endocervical monitoring. Due to a desire to preserve fertility, she declined a hysterectomy. She underwent multiple attempted hysteroscopies without any success.

Interventions: Interventional radiology-guided cannulation of her cervix and hysteroscopic release of cervical stenosis.

Conclusion: We demonstrate a successful case of IR-guided cervical and uterine cannulation in a patient with complete external cervical os stenosis. This technique is a useful alternative method to consider in cases of failed hysteroscopic attempts due to cervical stenosis.

Open Communications 6: Hysteroscopy
(2:00 PM – 3:00 PM)

2:49 PM

Hysteroscopic Enlargement Metroplasty for Hypoplastic Uterus
Neveu ME, Scethun E, Fernandez H, Capmas P, CESP, Le Kremlin Bicetre, France; CESP, Le Kremlin Bicetre, France; Gynaecology, Hospital Bicetre, Le Kremlin Bicetre, France; CESP, Villejuif, France

*Corresponding author.

Study Objective: Evaluation of enlargement metroplasty on obstetrical outcome and fertility in women with hypoplastic uterus.

Design: Unicentric retrospective study.

Setting: From 2012 to 2018 in the gynecologic department of a teaching hospital.

Patients or Participants: Women who had a metroplasty for hypoplastic uterus.

Interventions: Hysteroscopic enlargement metroplasty were performed using a 5mm operating hystroscope with a bipolar Versapoint electrode. The myometrium was incised on both sides from the fundus to the isthmus. Incisions were less than 7mm.

Measurements and Main Results: Thirty three women were included. Mean age was 36 (+/-0.85) years old. Before enlargement metroplasty, 29 women (85%) had an infertility with a previous IVF failure in 9 women (31%). Out of these 29 women, 19 didn’t achieve any pregnancies, 8 had one or more previous early fetal loss and 2 had a previous late fetal loss. Only 4 women had a live child, one with a premature delivery between 24 and 31, 2 with a delivery between 32 and 36 and one after 37 weeks of gestation.

After enlargement metroplasty, 1 woman was lost for follow-up and 4 didn’t try to be pregnant. Out of the 28 remaining women, 15 were pregnant (54%) and gave birth to 19 living children (11 were spontaneous (60%) and 8 after IVF including 5 after oocyte donation) and 2 are still pregnant, 2 had only early or late fetal loss (11%), 1 had an ectopic pregnancy and 10 didn’t achieve pregnancy (4 despite IVF including 2 oocyte donation).

Conclusion: Enlargement metroplasty for hypoplastic uterus seems useful to achieve spontaneous or post IVF pregnancies. It also seems to improve obstetrical outcomes.

Open Communications 7: Laparoscopy
(2:00 PM – 3:00 PM)

2:00 PM

Posterior Colpotomy: A Technique for Myomectomy Specimen Removal that Does Not Require Enlargement of Abdominal Incisions or Intracorporeal Specimen Size Reduction
Walker S. Gynecology, Rhode Island Hospital, Providence, RI; Surgery, Alpert Medical School, Brown University, Providence, RI

*Corresponding author.

Video Objective: Laparoscopic or robotic myomectomy produces specimens that are typically larger than the abdominal incisions used for instrumentation. In the post electromechanical morcellation era, other options must be used for specimen removal.

Setting: MIS operating room.

Interventions: A posterior colpotomy incision is made, through which myomectomy specimens are removed intact vaginally. The colpotomy incision is closed laparoscopically, but could also be closed vaginally.

Conclusion: This video demonstrates the technique for intact vaginal removal of myomectomy specimens, through a posterior colpotomy incision, obviating the need for enlargement of abdominal incisions or intracorporeal specimen size reduction.

Open Communications 7: Laparoscopy
(2:00 PM – 3:00 PM)

2:07 PM

Laparoscopic-assisted Transversus Abdominis Plane (TAP) Block in Patient Undergoing Laparoscopic Gynecologic Surgery: Randomized Controlled Trial
Seif F, Messeyn I, Tierney CH, Kim S, Silasi DA, Azodi M. "OB/GYN, University of Medicine, New Haven, CT; Bridgeport Hospital, Bridgeport, CT; Obstetrics and Gynecology, Yale New Haven Health, Bridgeport Hospital, Bridgeport, CT; Yale, New Haven Hospital, New Haven, CT"

*Corresponding author.

Study Objective: To compare the analgesic efficacy of laparoscopic-assisted posterior Transversus Abdominis Plane (TAP) block versus lateral TAP block for post-operative pain control in patients undergoing laparoscopic gynecologic surgeries.
Frost AS, Predictors of Surgical Approach to Myomectomies by Race, Among Women Undergoing Minimally Invasive and Abdominal Myomectomies. Open Communications 7: Laparoscopy, (2:00 PM − 3:00 PM)

### Open Communications 7: Laparoscopy

(2:00 PM − 3:00 PM)

**2:14 PM**

**Predictors of Surgical Approach to Myomectomies by Race**

**Frost AS,1,2 *McMahon ME,1 Smith AJB,1 Patzkowsky KE1, Department of Gynecology & Obstetrics, Johns Hopkins School of Medicine, Baltimore, MD; 2 Division of Minimally Invasive Gynecologic Surgery, Johns Hopkins School of Medicine, Baltimore, MD**

*Corresponding author.

**Study Objective:** To analyze patient and hospital characteristics, stratified by race, among women undergoing minimally invasive and abdominal myomectomies.

**Design:** Data was abstracted from the 2010-2014 National Inpatient Sample of women ages 18-50 years undergoing myomectomy for fibroids. We used a multivariate logistic regression to analyze temporal trends in minimally-invasive (laparoscopic and robotic) by patient factors (age, insurance, and income subgroups) and hospital factors (teaching status, for-profit status, size) and stratified by race (White, Black, Hispanic).

**Setting:** United States.

**Patients or Participants:** 124,880 women ages 18-50 years undergoing inpatient myomectomy for fibroids.

**Interventions:** N/A

**Measurements and Main Results:** Of the 124,880 women undergoing myomectomy for fibroids, 7% underwent minimally invasive myomectomy (MIM) and 93% underwent abdominal myomectomy. Black women had a total of 55,960 myomectomies performed of which 3,360 (6.0%) were MIM. Black women had lower odds of undergoing MIM at teaching hospitals [OR.79 95%CI.64-.96] and in the highest income bracket [OR.69 95%CI.54-.89]. White women had a total of 39,560 myomectomies performed of which 4,870 (12.3%) were MIM. White women had lower odds of MIM with private insurance [OR.75 95%CI.60-.93], highest income bracket [OR.71 95%CI.55-.92], at large hospitals [OR.82 95%CI.69-.97], or at teaching hospitals [OR.66 95%CI.56-.79]. Hispanic women had a total of 15,930 myomectomies performed of which 1,140 (7.2%) were MIM. Hispanic women had lower odds of undergoing MIM at for-profit hospitals [OR.62 95%CI.39-.97]. Across all races, women ages 41-50 were more likely to have MIM [White OR 6.5 95%CI 4.73-8.96, Black OR 2.6 95%CI 1.98-3.44, Hispanic OR 3.73 95%CI 2.28-6.08].

**Conclusion:** Racial disparities exist with access to MIM. Black women undergo the majority of myomectomies, but only 6% are minimally invasive compared to white women (12.3%).

**Open Communications 7: Laparoscopy**

(2:00 PM − 3:00 PM)

**2:21 PM**

**Occult Uterine Malignancy at the Time of Surgery for Uterine Fibroids: A Systematic Review**

**Masrghati S,1,2 *Davenport ER,1 James L,1 Howard DL,1 Obstetrics and Gynecology, LVMIS-UNLV, Las Vegas, NV; 2Obstetrics & Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV, School of Medicine, University of Nevada, Las Vegas, Las Vegas, NV**

*Corresponding author.

**Study Objective:** Previous systematic reviews have focused specifically on the prevalence of leiomyosarcoma at the time of surgery for uterine fibroids. Recognizing that the other subtypes of uterine cancer are more prevalent, we wanted to conduct a systematic review to estimate the prevalence of occult uterine malignancy, of any subtype, among women undergoing surgery for uterine fibroids.

**Design:** Systematic Review.

**Setting:** N/A

**Patients or Participants:** Women undergoing surgery for uterine fibroids.

**Interventions:** Hysterectomy and Myomectomy.

**Measurements and Main Results:** The PRISMA guidelines were followed in this systematic review. The search terms used were “occult malignancy” or “occult uterine pathology” paired with “morcellation” or “hysterectomy.” March 25, 2019 was the last date that articles were searched. We did not restrict articles based on language or publication date. Inclusion criteria included any peer-reviewed journal articles reporting occult uterine malignancy rates at the time of surgery for benign conditions, regardless of whether morcellation was used or not. We excluded articles that were reported exclusively on women with pre-operatively diagnosed or suspected uterine malignancies. Our search yielded a total of 233 journal articles, of which 53 met the criteria for a full-text review and 27 were included in the final systematic review. Of these 27 studies, 8 specifically provided data on occult uterine malignancy among women undergoing surgery for uterine fibroids. These 8 studies incorporated 105,890 patients, across 5 countries, with presumed fibroids. A total of 578 occult uterine malignancies were found. The overall crude prevalence of occult uterine malignancy was 0.55% (95% CI 0.50 − 0.59%).

**Conclusion:** This is the first systematic review to estimate the prevalence of occult uterine malignancies (all subtypes combined) at the time of surgery specifically for uterine fibroids. Based on our systematic review, the crude prevalence of occult uterine malignancy across this population is 0.55%.

**Open Communications 7: Laparoscopy**

(2:00 PM − 3:00 PM)

**2:28 PM**

**Robotic Assisted Laparoscopic Resection of Anterior Adenomyoma**

**Sarkar P,1 *Imudia AN,2 1Obgyn, University of South Florida, Tampa, FL; 2Obgyn, University of South Florida, Tampa, FL**

*Corresponding author.

**Video Objective:** This video demonstrates a unique technique of anterior adenomyoma resection and repair of the defect laparoscopically.
**Setting:** Our patient is a 40 yo G 3P020 with secondary infertility and had multiple failed euploid frozen embryo transfers. She was diagnosed to have an anterior adenomyoma and decision was taken to excise the adenomyoma to optimize the fertility outcome.

**Interventions:** We performed a robotic assisted laparoscopic anterior adenomyomectomy where we excised the adenomyoma leaving approximately 1 cm of myometrium to the endometrium and serosa and then closed the defect by the overlap flap technique.

**Conclusion:** We describe an unique technique for optimal adenomyoma resection and then the effective way to close the uterine defect. This technique is easily adaptable and reproducible. This repair technique achieves good myometrial thickness after closure that reduces the chance of uterine rupture and the addition of extra suture layer decreases the chance of hematoma formation.

**Open Communications 7: Laparoscopy**
(2:00 PM − 3:00 PM)

**Vaginal Cuff Closure: Tips for Ipsilateral Port Suturing**
Frost AS, 1, * McMahon ME, 1 Simpson K, 2 Patentowsky KE, 2 Wu HY, 2 Wang KC, 1 Department of Gynecology & Obstetrics, Johns Hopkins School of Medicine, Baltimore, MD; 2 Division of Minimally Invasive Gynecologic Surgery, Johns Hopkins School of Medicine, Baltimore, MD *Corresponding author.

**Video Objective:** To outline the steps and techniques for laparoscopic vaginal cuff closure with a focus on ipsilateral port suturing.

**Setting:** Female with abnormal uterine bleeding who desired definitive management with total laparoscopic hysterectomy.

**Interventions:** Laparoscopic vaginal cuff closure following hysterectomy.

**Conclusion:** Hysterectomies are one of the most common surgeries performed in the United States each year. Minimally invasive surgery has transformed this procedure with improved outcomes, shorter hospital stays, faster recovery, decreased blood loss, and decreased morbidity when compared to abdominal approach. With laparoscopic hysterectomy, there are multiple techniques for vaginal cuff closure including both laparoscopic and vaginal approaches, often determined by surgeon comfort. In general, data suggests both methods are safe with no significant differences. Within laparoscopic cuff closure, there are various approaches. Intracorporeal suturing remains one of the most challenging laparoscopic tasks. However, it is also an essential skill not just for vaginal cuff closure but a variety of gynecologic minimally invasive surgeries including myomectomies and cystectomies. This video focuses on a laparoscopic suturing approach when two ipsilateral ports are used for cuff closure, which is often more ergonomic for the surgeon. The video highlights proper ergonomics, ipsilateral ports placement, techniques for suture insertion and removal and ipsilateral suture techniques with the goal to improve surgeon knowledge and comfort.

**Open Communications 7: Laparoscopy**
(2:00 PM − 3:00 PM)

**Temporary Uterine Artery Occlusion at Laparoscopic Myomectomy – A Simple Technique to Reduce Blood Loss**
Alhadhoud F, 1 * Zhu CR, 2 Singh SS, 3 Minimally Invasive Gynecology, The Ottawa Hospital, Ottawa, ON, Canada; 2 Obstetrics and Gynecology, The Ottawa Hospital, London, ON, Canada; 3 Department of Obstetrics and Gynecology, University of Ottawa, Ottawa, ON, Canada *Corresponding author.

**Video Objective:** Demonstrate a simple, temporary and reversible method for uterine artery occlusion at the time of laparoscopic myomectomy

**Setting:** Tertiary level Academic center.

**Interventions:** Temporary uterine artery occlusion has been shown to reduce blood loss at myomectomy. The technique demonstrated shows a simple approach for using laparoscopic bulldog clamps at myomectomy

**Conclusion:** To reduce intraoperative blood loss for women undergoing laparoscopic myomectomy: Intra-myometrial injection of dilute vasopressin, Temporary placement of uterine artery clamps, Tranexamic acid, Misoprostol (PGE1).
extensive and severe adhesion. Laparoscopic skills for this reconstruction such as laparoscopic suturing and knowledge of fundamentals like tension and torsion free anastomosis are vital for the success of the surgery. No patients experienced stenosis or leaks and no other complications occurred and no blood transfusions were required. The fistulas were repaired without sequel. The patients were able to ambulate and take a normal diet the day after the surgery and could be discharged 4 days after surgery.

**Conclusion:** Although knowledge of reconstruction and laparoscopic skills such as intracorporeal suturing and ligation are difficult to master, this technique is valuable in its feasibility and patient friendliness.

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**Open Communications 8: Laparoscopy**

(3:05 PM – 4:05 PM)

**Phase 3 Trial Results: Efficacy and Safety of Elagolix in a Subset of Women with Uterine Fibroids and Adenomyosis**


**State University of New York, Brooklyn, NY; 2East Virginia Medical School, Norfolk, VA; 3Columbia University, College of Physicians and Surgeons, New York, NY; 4AbbVie Inc., North Chicago, IL; 5Wayne State University School of Medicine, Detroit, MI

**Corresponding author.**

**Study Objective:** Adenomyosis is a benign lesion within the myometrium associated with heavy menstrual bleeding (HMB) and dysmenorrhea, and commonly co-exists with uterine fibroids (UF). This analysis evaluated the efficacy and safety of elagolix, an oral, gonadotropin-releasing hormone receptor antagonist, with add-back therapy in a subset of women with UF, HMB and co-existing adenomyosis.

**Design:** Data were pooled from two 6-month, randomized, double-blind, placebo-controlled phase 3 studies, Elaris UF-1 and UF-2.

**Setting:** Outpatient in clinic/office

**Patients or Participants:** Premenopausal women (18-51 years) with HMB (>30 mL menstrual blood loss [MBL]/cycle) associated with UF and co-existing adenomyosis diagnosed by ultrasound and/or MRI at baseline (BL).

**Interventions:** Women were randomized 1:1:2 to placebo, elagolix 300mg twice daily (BID), or elagolix 300mg BID with 1mg estradiol/0.5mg norethindrone acetate (E2/NETA) once daily.

**Measurements and Main Results:** The primary endpoint was the proportion of women with >30mL MBL during the final month and ≥50% reduction in MBL from BL to the final month. MBL and the diagnosis of HMB was assessed with the alkaline hematin method. Adverse events (AEs) were monitored. Of 790 women treated, 16% had ultrasound and/or MRI diagnosed adenomyosis at BL. Pooled data demonstrated that the proportion of responders for the primary endpoint was significantly greater (P<0.001) for elagolix+E2/NETA [76.8% (95% CI, 65.84, 87.82)] compared to placebo [12.1% (95% CI, 0.97, 25.150)]. AEs reported in the adenomyosis subset included hot flushes, night sweats, headache, and nausea.

**Conclusion:** In women with HMB associated with UF and co-existing adenomyosis at BL, elagolix+E2/NETA significantly reduced MBL versus placebo similar to the all-subject group. AEs reported in this group were similar to the all-subject group. These data suggest that further studies investigating the effect of elagolix in women with HMB associated with UF and adenomyosis may be warranted.

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**Open Communications 8: Laparoscopy**

(3:05 PM – 4:05 PM)

**Management of Aberrant Vasculature During Hysterectomy of Bicornuate Uterus**

*Miles S, Lee T, UPMC, Pittsburgh, PA; 2UPMC, Pittsburgh

**Corresponding author.**

**Video Objective:** Demonstrate laparoscopic management of patient with unanticipated anomalous vasculature and recovery from potentially catastrophic hemorrhage during laparoscopic hysterectomy.

**Setting:** Woman with bicornuate uterus and history of multiple cesarean sections on right uterine horn undergoing total hysterectomy in a tertiary care center.

**Interventions:** Extensive dissection in attempt to identify anatomic landmarks resulting in subsequent partial ligation of major artery of unknown origin. Subsequent intraoperative hemorrhage managed with mass transfusion protocol, vascular clamps, and ultimately incorporation of the artery into an angle stitch during vaginal cuff closure.

**Conclusion:** Maintaining a mental framework and strategy of approaching surgical cases from known to unknown is key to successful management of cases that deviate from the “norm.”

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**Open Communications 8: Laparoscopy**

(3:05 PM – 4:05 PM)

**National Technicity on the Rise: Ten Year Minimally Invasive Hysterectomy Trends for Women with Benign Uterine Disease in Canada**

*Cullen L, Mallick R, Alaire C, Bajzak K, Belland LM, Bougie O, Cassell KA, Choudhry AJ, Cundiff GW, Kroft J, Leblanc NA, Mahexx-LaCroix S, Rajakumar C, Randle E, Robertson D, Thiel JA, Talandi T, Yong P, Laberge PY, Department of Obstetrics and Gynecology, University of Ottawa, Ottawa, ON, Canada; 2Ottawa Hospital Research Institute, Ottawa, ON, Canada; 3Obstetrics & Gynaecology, University of British Columbia, Vancouver, BC, Canada; 4Obstetrics and Gynecology, Memorial University, St. John’s, NF, Canada; 5Obstetrics and Gynecology, Peter Lougheed Centre, University of Calgary, Calgary, AB, Canada; 6Obstetrics and Gynecology, Queen’s University, Kingston, ON, Canada; 7Obstetrics and Gynecology, Queen Elizabeth Hospital, Charlottetown, PE, Canada; 8Obstetrics and Gynecology, University of British Columbia, Vancouver, Canada; 9Obstetrics and Gynaecology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada; 10Obstetrics and Gynecology, McMaster University, Hamilton, ON, Canada; 11Département d’obstétrique et de gynécologie, CHU de Québec-Université Laval, Quebec City, QC, Canada; 12Obstetrics and Gynecology, University of Calgary, Calgary, AB, Canada; 13Dalhousie University, Halifax, NS, Canada; 14Obstetrics and Gynecology, St. Michael’s Hospital, Toronto, ON, Canada; 15Obstetrics and Gynecology, University of Saskatchewan, Regina, SK, Canada; 16Obstetrics and Gynecology, McGill University, Montreal, QC, Canada; 17Obstetrics and Gynecology, CHU de Quebec, Quebec City, QC, Canada

**Corresponding author.**

**Study Objective:** Hysterectomies are the most commonly performed gynecologic procedure and are associated with faster recovery and decreased complications when performed minimally invasively compared with abdominally.

The objectives were to measure temporal trends in minimally invasive hysterectomy for Canada and each province/territory and to determine whether provincial/territorial differences exist.

**Design:** National population-based retrospective study using federal administrative data from the Canadian Institute for Health Information. Technicity index (proportion of vaginal and laparoscopic hysterectomies) was calculated. Cochrane-Armitage test was applied for temporal trends and 2-sided p-values<0.05 were significant. Relative risk for abdominal hysterectomy and 95% confidence intervals were calculated for FY2016/17.

**Setting:** Canada

**Patients or Participants:** All patients undergoing hysterectomy for benign indications in Canada from FY2006/7 to FY2016/17

**Interventions:** Hysterectomy
Measurements and Main Results: 369,740 hysterectomies were included (48.4% abdominal; 28.3% laparoscopic; 23.3% vaginal). Mean age was 48.5 years (SD 11.2 years), and indications for surgery were menstrual bleeding disorders (29.7%), fibroids (23.7%), pelvic organ prolapse (19.8%), other (17.4%), endometriosis (5.8%) and pelvic pain (3.6%).

National technicity index (proportion of vaginal and laparoscopic hysterectomies) increased (40.5% → 63.2%). Abdominal hysterectomy decreased (59.5% → 36.8%); laparoscopic increased (10.8% → 38.6%); while vaginal decreased (29.7% → 24.5%). (p<0.05, all trends).

Increasing technicity index was observed in all provinces, though with variable increase over time. (p<0.05, all trends), and variation was seen in relative risk (RR) of abdominal hysterectomy for FY2016/17. Manitoba (36.9% → 44.4%); RR 1.50 [0.95; 1.43-1.58] *, Nova Scotia (46.4% → 48.5%); RR 1.39 [1.31-1.48] *, New Brunswick (43.7% → 50.3%); RR 1.34 [1.26-1.44] *, Newfoundland (35.3% → 55.2%); RR 1.21 [1.10-1.33] *, Ontario (39.4% → 63.0%); RR 1.00 (reference), Quebec (42.0% → 61.8%); RR 1.03 [0.99-1.07], Prince Edward Island (54.9% → 64.3%); RR 0.96 [0.81-1.15], Alberta (34.0% → 64.3%); RR 0.96 [0.92-1.01], British Columbia (43.4% → 72.1%); RR 0.75 [0.71-0.79] *, Saskatchewan (47.5% → 83.9%); RR 0.44 [0.39-0.49] *.

Conclusion: Minimally invasive hysterectomy for benign indication has increased significantly in Canada over the past decade. However, the increase reflects increasing use of laparoscopic hysterectomy with a declining use of vaginal hysterectomy. The variation between provinces represents a technicity gap that warrants further study and intervention.

Open Communications 8: Laparoscopy
(3:05 PM – 4:05 PM)

3:33 PM

New Approach to Laparoscopic Peritoneal Pull through Vaginoplasty
Saxena A.*, Arora A, Teja GND, Jaiswal E. Tulip Multispeciality Hospital Pvt. Ltd. Sonipat, India
*Corresponding author.

Video Objective: To evaluate the outcome of new technique of laparoscopic peritoneal pull through vaginoplasty.

Setting: Tertiary referral centre (Tulip Multispeciality Hospital).

Interventions: The peritoneum was mobilized as much as possible from all around lateral pelvic wall we applied 4 stay sutures to the mobilized peritoneum (ant, post, Rt, Lt) and the same sutures were pulled through the peritoneum (ant, post, Rt, Lt) and the same sutures were pulled through the parietal peritoneum. Mesoureter. This procedure allows entry into Okabayashi’s pararectal space. The entry point is at about 1cm medially to the root of the lateral umbilical ligament. This space is avascular and stretches to easily find the mesoureter containing the ureter above it.

Conclusion: Mastering an anterior approach and recognizing fascial layers contributes to our surgical toolbox in coping with more complicated hysterectomies.

Open Communications 8: Laparoscopy
(3:05 PM – 4:05 PM)

3:40 PM

Mastering the Anterior Approach of Laparoscopic Hysterectomy for the Huge Uterus
Shirane A.*, Andou M, Ichikawa F, Shirane T, Sawada M, Sakate S. Obstetrics and Gynecology, Kurashiki Medical Center, Kurashiki, Japan
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Video Objective: To expand laparoscopic surgical skills, we need to strategies to cope with the very large uterus. Traditionally, there are three techniques to detect and mobilize the ureter and uterine artery: the anterior, lateral and posterior approach. Generally, the lateral approach is most common as one can easily detect the ureters transperitoneally at the rim of psoas muscle. But, in the case of a large and bulky uterus, advanced techniques are required.

Design: Laparoscopic demonstration of fascial planes and surgical techniques used to cope with the huge uterus.

Setting: Kurashiki medical center, private hospital, in Japan.

Patients: Total laparoscopic hysterectomy for uterus greater than 800 grams.

Interventions: In anterior approach, by making a bladder flap one can firstly detect and ligate uterine arteries to reduce bleeding.

Measurements and Main Results: In the case of adenomyosis and endometriosis, bleeding from severe fibrosis may be encountered in the parametrium. Ligation of the uterine arteries first will help to avoid bleeding. Open the bladder flap wide and lifting it sufficiently and cutting the loose connective tissue caudally will expose the palpable ascending and inward vessel. That is the uterine artery. The separation between the uterine artery and the ureter opens Latzko’s pararectal space. In the case of fibroid, we find the ureter first as the broad ligament is more elastic allowing for stretching. By making the broad ligament tense, you can elevate the posterior leaf of broad ligament to separate the mesouter. This procedure allows entry into Okabayashi’s pararectal space. The entry point is at about 1cm medially to the root of the lateral umbilical ligament. This space is avascular and stretches to easily find the mesouter containing the ureter above it.

Conclusion: Mastering an anterior approach and recognizing fascial layers contributes to our surgical toolbox in coping with more complicated hysterectomies.

Open Communications 8: Laparoscopy
(3:05 PM – 4:05 PM)

3:47 PM

EMIG Simulation Systems Construct Validation Trial: Laparoscopic Component
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*Corresponding author.

Study Objective: Construct validation of the EMIG Laparoscopic Surgery Simulation System.

Design: A prospective, controlled cohort comparison.

Setting: Thirteen teaching institutions in the US and Canada and an AAGL Congress

Patients or Participants: 221 subjects who fit one of 4 categories of exposure to laparoscopic surgery and surgical simulation: 77 novices within 100 days of starting PGY-1 (PGY-1); 71 within the first 100 days of starting PGY-3; 30 American Board of Obstetrics and Gynecology (ABOG) certified and no additional fellowship training (“Proficient”); 43 who had completed the two-year Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS).

Interventions: Subjects were oriented to the simulation system and then tested under proctor supervision on the 5 EMIG laparoscopic exercises. These included the sleeve to peg transfer (L-1); the circular pattern cut (L-2); extracorporeal knotting (L-3); intracorporeal knotting (L-4); and a running suture (L-5). Time and accuracy scoring were entered electronically on site, but sessions were video recorded and study materials such as cutting and suturing targets were labeled and stored for subsequent review to optimize data quality.

Measurements and Main Results: Each exercise was timed, and a number of objective metrics recorded that reflected cutting and suturing accuracy and technique. Each exercise had a “time cap”; if a subject had not completed the exercise by the end of the allotted time, they were categorized “Did Not Complete” and the maximum time was entered for data analysis. Preliminary data analysis demonstrates that the novice group consistently demonstrated the poorest performance and the FMIGS cohort consistently the best. The PGY-3 and “Proficient” cohorts were generally similar to each other but each performed better than the PGY-1 group and well below the FMIGS group.

Conclusion: The EMIG Laparoscopic Simulation System can be used to distinguish amongst PGY-1, PGY-3, Proficient and FMIGS subjects. FMIGS-trained subjects consistently had the best results with almost no “Did Not Complete” outcomes.
Open Communications 8: Laparoscopy
(3:05 PM – 4:05 PM)

3:54 PM

Effectiveness of Letrozole (LE) Combined with Cabergoline (CE) on Uterine Submucous Myomas (USM) in Women with Abnormal Uterine Bleeding (AUB) Prior to Hysteroscopic Resection
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Study Objective: To evaluate the effect of LE combined with CE, on (USM) in women of reproductive age and with AUB prior to hysteroscopic resection (HR) of these myomas.

Design: Prospective controlled clinical trial.

Setting: Tertiary clinical care centers.

Patients or Participants: 22 patients, (24-39 years old), with single USM (1.5-3 cm) in diameter, not associate with polyps were enrolled in hospitals based clinical trial over a period of 6 months.

Interventions: Divided randomly & equally into 2 groups of 11 each: group (A) received 5 mg LE daily & CE 0.5 mg once weekly from 1st day of menstrual cycle for 6 weeks before HR. Those in group (B) were subjected directly to surgery without medical treatments before. Outcomes: surgery duration, fluid absorption, myoma reduction, blood loss, intra & postoperative complications, vaginal flow reduction, VFR, and patients satisfaction. Follow-up visits were arranged for all. Data analyses were performed using SPSS software & P-value considered to be significant if < 0.05.

Measurements and Main Results: Treatments well tolerated in both groups, 3 patients lost during follow-up period, 1 from (A) & 2 from (B) groups. Patients in (A) had significantly shorter operative times (P < 0.024) & significantly reduced fluid absorption (235/±75 mL vs. 460/±145 mL). Compared with baseline values, myoma size was reduced significantly (P<0.027) in (A). (A) patients expressed more myoma shrinkage in comparison to those in (B) (P<0.05). Blood loss was significantly less in (A) than in (B) (P<0.031). Negligible intra & postoperative complications in (A) when compared to (B). Patients satisfaction & (VFR) were more in (A) than (B).

Conclusion: Combination of LE and CE in management of (USM) is a reliable, safe & more effective than no treatment prior to (HR), leading to symptomatic improvements, and should be considered for short term treatments before surgery.

Open Communications 9: Basic Science/Research/Education
(3:05 PM – 4:05 PM)

3:05 PM

Satisfaction among Participants Completing a Fellowship in Minimally Invasive Gynecologic Surgery (FMIGs) Program
Carrubba AR,1, a Jigon AJ,2 Heckman MG,2 Johnson PW,2 DeStephano CC,1 Dinh TA,1 Gynecologic Surgery, Mayo Clinic Florida, Jacksonville, FL; 2Biomedical Statistics and Informatics, Mayo Clinic Florida, Jacksonville, FL
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Study Objective: Determine satisfaction among AAGL FMIGs participants.

Design: Cross-sectional survey. Statistical analyses included Fisher’s exact tests for dichotomous variables and Wilcoxon rank sum tests for ordered categorical variables.

Setting: An anonymous survey was distributed in November 2018.

Patients or Participants: Current participants in an FMIGS program.

Interventions: N/a

Measurements and Main Results: A total of 57 of 83 (67.7%) FMIGs participants in AAGL-accredited programs completed a survey regarding fellowship characteristics and experiences. Of these, 29 (50.9%) were in their first year and 28 (49.1%) were in their second year. The majority of fellows work with residents (80.7%), work with 2 to 5 attending surgeons (67.3%), and work 40 to 60 hours per week (59.6%). Overall, 70.2% of respondents were satisfied with their experience. If given the opportunity, 68.4% would apply for fellowship again and would hope to match to the same program. Factors associated with satisfaction include fewer number of fellows (19 of 21 satisfied with 2 fellows, versus 3 that satisfied with 4 fellows, p=0.017); participation in more hysterectomies per week (1 of 5 satisfied with <1 hysterectomy versus 16 of 18 satisfied with 4 to 6 hysterectomies, p=0.014); application to fellowship for personal fulfillment (77.5% in satisfied group versus 33.3% in unsatisfied group, p=0.011); less burnout and frustration (45.0% in satisfied group versus 100% in unsatisfied group, p<0.001); and contentment with time allotted for the operating room (85.0% in satisfied group versus 50.0% in unsatisfied group, p=0.020).

Conclusion: FMIGs is gaining popularity as a post-graduate career option for trainees in obstetrics and gynecology residency programs. However, each program has a unique structure and organization. The results of this study identify characteristics associated with participant satisfaction in order to improve overall training experience.

Open Communications 9: Basic Science/Research/Education
(3:05 PM – 4:05 PM)

3:12 PM

Utility of a Cadaveric Simulation Based Teaching Model On Surgeon Comfort with Urerteral Re-Implantation Procedures
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Study Objective: Describe a cadaveric simulation model for teaching ureterouretorhomy, ureteroneocystostomy, and Psoas hitch. Secondly, we sought to evaluate the impact of this model on surgeon comfort with these procedures.

Design: Survey study.

Setting: Cadaver lab.

Patients or Participants: Eleven Female Pelvic Medicine and Reconstructive Surgery (FPMRS) fellows and one Urology resident.

Interventions: Participants were given a prelab survey which assessed prior surgical experience with three ureteral repair procedures (ureteroureterostomy, ureteroneocystostomy, and Psoas hitch). Additionally, participants were queried about their baseline comfort with surgical steps for each procedure and associated anatomy. During the cadaver lab, participants performed ureteroureterostomy, ureteroneocystostomy, and Psoas hitch supervised by experienced FPMRS attending physicians. Participants completed a postlab survey assessing the perceived benefit of the cadaveric model in teaching the associated procedural steps and anatomy. Participants’ comfort and likelihood of performing these procedures in the future was assessed. Pre and post surveys included self assessment measures and Likert scale questions regarding satisfaction with the course.

Measurements and Main Results: The majority reported never previously performing ureteroureterostomy, ureteroneocystostomy, or Psoas hitch as primary surgeon (83.3%, 83.3%, and 91.7% respectively). Few participants had prior experience as assisting surgeon in these procedures (41.6%, 50%, and 50%). Baseline comfort performing these procedures independently was low (16.7%, 16.7%, and 8.3%). After lab completion, reported comfort with the surgical steps for each procedure increased (16.7% to 91.6%, p<0.01; 41.7% to 100%, p<0.01; 33.3% to 91.6%, p<0.01 respectively). Participant comfort with the anatomy related to these procedures improved from 41.7% to 100% (p=0.017).

Conclusion: A cadaveric simulation based teaching model improves FPMRS trainees’ reported comfort with the surgical steps and anatomy related to ureteral repair procedures.
Open Communications 9: Basic Science/Research/Education
(3:05 PM – 4:05 PM)

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Impact of Minimally Invasive Gynecology Fellowship Training on Patient Outcomes for Hysterectomy Procedures
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Study Objective: Evaluate differences in patient outcomes for hysterectomies performed by Fellowship-trained surgeons compared to Generalists.

Design: Retrospective review.

Setting: 5 Toronto hospitals.

Patients or Participants: Patients undergoing hysterectomy from July 2016-June 2018.

Interventions: Patient outcomes for surgeries with 6 months (minimum) of fellowship training in minimally invasive gynecology (Fellowship) were compared to those without post-residency training (Generalist). Hysterectomies performed by urogynecologists were excluded.

Measurements and Main Results: Primary outcome was complications (in-hospital and within 30-days of discharge). Secondary outcomes were grade of complication, return to emergency room (ER), surgeon case volume. Binary logistic regression analysis was performed comparing hysterectomies by Fellowship versus Generalist surgeons controlling for factors associated with case complexity. Odds ratios (OR), 95% confidence intervals (CI) and p-values were calculated. 1379 hysterectomies were included (702 cases by 17 Fellowship surgeons and 677 cases by 41 Generalists). Fellowship cases were more likely to have endometriosis (19.9% vs. 7.9%, p<0.001), adhesions (46.1% vs. 31.2%, p<0.001) and additional procedures (resection of endometriosis (22.9% vs. 4.4%, p<0.001); ureterolysis (27.2% vs. 3.2%, p<0.001) and lysis of adhesions (28.1% vs. 8.9%, p<0.001). Fellowship surgeons had higher overall technicinity (84.9% vs. 66.7%, p<0.001), but lower vaginal hysterectomy rate (5.0% vs. 16.9%, p<0.001). After controlling for patient and surgical factors, there was no difference in all complications (OR 1.30, 95% CI 0.89-1.90, p=0.18) or ≥ grade 2 complications (OR 1.18, 95% CI 0.75-1.86, p=0.47). Fellowship surgeons had decreased odds of patients returning to ER (OR 0.45, 95% CI 0.25-0.81, p=0.01). Surgeon case volume (per 6 months) was higher for Fellowship surgeons (13.9 ± 9.2 vs. 8.02 ± 6.07, p=0.02).

Conclusion: There was no difference in complications for hysterectomies performed by Fellowship compared to Generalist surgeons. Fellowship surgeons had greater technicity rate. Cases performed by Fellowship surgeons were more complex with higher chance of additional procedures.

Open Communications 9: Basic Science/Research/Education
(3:05 PM – 4:05 PM)

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Evaluating the Incidence of Urinary Tract Infection after Hysterectomy for Benign Conditions
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Study Objective: To report rates and identify risk factors for urinary tract infection (UTI) following hysterectomy for benign conditions.

Design: Retrospective cohort study.

Setting: American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database.

Patients or Participants: Women undergoing benign hysterectomy by any modality between 2010 and 2017.

Interventions: Abdominal hysterectomy (AH), total laparoscopic hysterectomy (TLH), laparoscopic supracervical hysterectomy, laparoscopic assisted vaginal hysterectomy (LAVH), vaginal hysterectomy (TVH).

Measurements and Main Results: 67,243 women included in the analysis with 1,310 postoperative UTIs identified, at a rate of 19.5 per 1000 hysterectomies. Women who developed UTIs were more likely to smoke (19.6% vs 15.7%, p<0.001), have insulin dependent diabetes mellitus (IDDM) (3.7% vs 2.0%, p<0.001), chronic obstructive pulmonary disease (1.5% vs 0.8%, p=0.007), use systemic steroids (2.2% vs 1.4%, p=0.01), had previous abdominal-pelvic surgery (71.1% vs 63.5%, p<0.001), and be American Society of Anesthesiology (ASA) class ≥3 (26.1% vs 21.2%, p<0.001).

Procedures complicated by UTI were longer (148.1min +/-79.4 vs 135.5min +/-65.6, p<0.001). Patients with a postoperative UTI were more likely to undergo TVH (12.9% vs 9.2%, p<0.001), LAVH (13.5% vs 11.5%, p=0.02) and TLH (43.7% vs 40.4%, p=0.02); and less likely to undergo AH (25.5% vs 21.7%, p=0.004). Patients with UTIs were more likely to have surgeries complicated by cystotomy (1.5% vs 0.3%, p<0.001), have endometriosis identified (15.7% vs 13.5%, p=0.02) and undergo adnexectomy (80.5% vs 77.9%, p=0.02). Perioperative transfusions were more common in women with postoperative UTI (5.8% vs 3.7%, p<0.001).

Following regression analysis, cystotomy (aOR=4.16, 95%CI=2.57-6.73) and TVH (aOR=2.45, 95%CI=1.99-2.99) were significant independent predictors of associated with an increased risk of post-hysterectomy UTI.

Conclusion: The risk of UTI after hysterectomy is low. Intraoperative cystotomy and vaginal hysterectomy are the most significant predictors of subsequent urinary tract infection.

Open Communications 9: Basic Science/Research/Education
(3:05 PM – 4:05 PM)

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Factors Associated with Burnout and Frustration among Minimally Invasive Gynecologic Surgery Fellows
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Study Objective: Determine the incidence of burnout and frustration among participants currently completing a fellowship in Minimally Invasive Gynecologic Surgery (FMIGS).

Design: Cross-sectional survey. Statistical analyses performed with Fisher’s exact tests for dichotomous variables and Wilcoxon rank sum tests for ordered categorical variables.

Setting: An anonymous survey was distributed to fellows in November 2018.

Patients or Participants: Current Minimally Invasive Gynecologic Surgery fellows.

Interventions: N/A

Measurements and Main Results: A total of 57 of 83 (67.7%) FMIGS participants in AAGL-accredited programs completed a survey regarding fellowship characteristics and experiences. Overall, 40/57 participants (70.2%) indicated that they were satisfied with their fellowship program. There were 33 fellows (57.9%) who reported subjective burnout. Of these, 26 (76.5%) reported they did not receive any assistance or support from their fellowship program.

In addition, 66.7% have experienced anxiety, depression, or extreme fatigue during the previous month. Fellows who
Subjects Who Have Large Cavities, Uterine Myoma Access Results Following Water Vapor Endometrial Long-Term Bleeding Status And Hysteroscopic Cavity

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Open Communications 9: Basic Science/Research/Education

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Long-Term Bleeding Status And Hysteroscopic Cavity Access Results Following Water Vapor Endometrial Ablation for Heavy Menstrual Bleeding (HMB) In Subjects Who Have Large Cavities, Uterine Myoma and/or Intratubal Contraceptive Inserts

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Study Objective: To assess long-term menstrual status and hysteroscopic uterine cavity access a mean 4 years after water vapor endometrial ablation in a subset of patients traditionally not indicated for endometrial ablation treatment.

Design: Prospective, multicenter, observational.

Setting: Eight private practice and outpatient locations in North and Central America.

Patients or Participants: 29 women with large uterine cavities (10-12 cm uterine cavity lengths), non-cavity obstructing myoma up to 4 cm in diameter and/or intratubal contraceptive inserts underwent water vapor endometrial ablation for HMB. Three women had both large cavities and myomas. These 29 women completed 3-year follow-up as part of the AEGEA Pivot Clinical Trial (NCT01979961). All patients consented to a diagnostic hysteroscopy a mean 4 years from the ablation procedure. Self-reported menstrual status was captured prior to diagnostic hysteroscopy. The degree of hysteroscopic access was judged by an Independent Reviewer blinded to subject history and procedural details.

Interventions: Diagnostic hysteroscopy.

Measurements and Main Results: At a mean 4 years post ablation, 93% (27/29) of subjects reported a return to normal, light or no menstrual bleeding. Cavity access was achieved in 90% (26/29) of subjects. Cornua / ostia were visualized in 88% (23/26) of subjects with cavity access.

Conclusion: While both age and obesity are risk factors for endometrial hyperplasia and malignancy, obesity appears to be a risk factor for disease in the premenopausal period while age does not. Our study suggests that BMI may be a more important risk factor to prompt screening. Further study of risk factors for endometrial malignancy in a contemporary demographic setting is needed.

Open Communications 9: Basic Science/Research/Education

3:05 PM – 4:05 PM

The Use of Intraoperative Cystoscopy for Detection of Lower Urinary Tract Injury

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Video Objective: To review the use of cystoscopy by OB/GYN generalists for detection of lower urinary tract injury during hysterectomy. This includes the basic steps to diagnostic cystoscopy, the relevant anatomy, indications and limitations.

Setting: Cystoscopy is routinely used in prolapse and incontinence repair procedures due to the relatively high risk of bladder or ureteral injury during these surgeries. While some recommend the routine use of intra-operative cystoscopy as a part of laparoscopic hysterectomy to detect bladder or ureteral injury, this is still not routine practice among OB/GYNs generalists. Whether this is due to decreased familiarity with the technique, or it’s limitations in sensitivity for detection of ureteral injury, remains unclear. To achieve the above objectives, this video reviews the details of the equipment involved, relevant anatomy, role of the bladder survey and visualization of ureteral jetting. Tips for detecting jetting and restoring normal anatomy are discussed. A brief review of the literature is used to outline indications for cystoscopy in general gynecology as well as its limitations.

Interventions: NA

Conclusion: Intra-operative cystoscopy is a useful tool for the general gynecologist. Simple steps can be taken to make it straightforward and diagnostic. However, it’s also important to realize the limitations of cystoscopy, particularly in the detection of non-obstructive ureteral injury.
Open Communications 10: Hysterectomy 
(3:05 PM – 4:05 PM)

3:05 PM

Models to Predict Unsuccessful Endometrial Ablation: External Validation

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Study Objective: External validation of previously presented prediction models to help counsel patients for failure of endometrial ablation (EA) or surgical re-intervention within 2 years after EA.

Design: Retrospective cohort study, minimal follow-up time of 2 years.

Setting: Data from Medisch Spectrum Twente, Enschede and Ziekenhuis-groep Twente, Almelo/Hengelo, both non-university teaching hospitals in the Netherlands, were used for external validation.

Patients or Participants: Premenopausal women (18+) who had an EA for complaints of heavy menstrual bleeding during January 2010 & November 2012. A total number of 329 patients were eligible for analysis.

Interventions: Novasure (Hologic, Marlborough, MA) and ThermaChoice III (Ethicon, Sommerville, NJ). Both interventions had the same outcomes including operative time (95.5 ± 51.9 minutes vs. 98.7 ± 44.4 minutes, p = 0.1059) or estimated blood loss (138.2 ± 134.4 mL vs. 152.0 ± 141.2 mL, p = 0.5106). Postoperative outcomes including length of hospitalization (n = 10, 11.2% vs. n = 92, 14.1% same-day discharge; n = 59, 66.3% vs. n = 415, 63.6% postoperative day 1; n = 20, 22.5% vs. n = 146, 22.4% ≥ postoperative day 2; p = 0.7572) and 30-day readmission rates (n = 1, 1.1% vs. n = 23, 3.5%; p = 0.3436) were similar.

Conclusion: EA in patients with the general population. Furthermore, we’re investigating the influence of pre-operative counseling, so that both prediction models can be used in our hospital, because of previous internal validation.

The re-intervention model appeared to be not useful after external validation, but can still be used in our hospital, because of previous internal validation.

Open Communications 10: Hysterectomy 
(3:05 PM – 4:05 PM)

3:12 PM

Perioperative Outcomes of Total Vaginal Hysterectomy in Women with Prior Cesarean Section

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Study Objective: To compare rates of perioperative complications of total vaginal hysterectomy (TVH) in women with and without prior cesarean section (CS).

Design: Retrospective cohort.

Setting: Tertiary care academic institution.

Patients or Participants: 742 women who underwent TVH over a five-year period.

Interventions: TVH.

Measurements and Main Results: Among 742 women, 89 had a prior CS and 653 had no prior CS. CS did not increase rates of complications including cystotomy (n = 2, 2.2% vs. n = 7, 1.1%, p = 0.2948), ureteral injury (n = 1, 1.1% vs. n = 1, 0.2%, p = 0.2256), proctotomy (n = 1, 1.1% vs. n = 1, 0.2%, p = 0.2256), postoperative bleeding (n = 1, 1.1% vs. n = 0, 0.6%, p = 0.4731), reoperation (n = 0, 0.0% vs. n = 2, 0.3%, p = 1.0000), or conversion to laparotomy (n = 2, 2.2% vs. n = 4, 0.6%, p = 0.1549). However, there was an increase in perioperative complications with increasing number of prior CS (n = 18, 2.3% no prior CS; n = 5, 10.0% 1 prior CS; n = 4, 10.3% ≥ 2 prior CS, p = 0.0048). Prior CS did not affect intraoperative outcomes including operative time (95.5 ± 51.9 minutes vs. 98.7 ± 44.4 minutes, p = 0.2256), or estimated blood loss (138.2 ± 134.4 mL vs. 152.0 ± 141.2 mL, p = 0.5106). Postoperative outcomes including length of hospitalization (n = 10, 11.2% vs. n = 92, 14.1% same-day discharge; n = 59, 66.3% vs. n = 415, 63.6% postoperative day 1; n = 20, 22.5% vs. n = 146, 22.4% ≥ postoperative day 2; p = 0.7572) and 30-day readmission rates (n = 1, 1.1% vs. n = 23, 3.5%; p = 0.3436) were similar.

Conclusion: In TVH patients, prior CS did not increase risk of perioperative complications. However, with increasing number of prior CS, rates of perioperative complications increased. Prior CS should not preclude the gynecologic surgeon from performing TVH.

Open Communications 10: Hysterectomy 
(3:05 PM – 4:05 PM)

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Transvaginal Laparoscopy for Management of Low-Grade Endometrial Cancer

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Study Objective: to report on our experience with transvaginal laparoscopic management of low-grade endometrial cancer.

Design: a study of transvaginal natural orifice endoscopy to manage patients with grade 1 or grade 2 endometrial cancer. This is descriptive of the surgical findings and consequences.

Setting: a single institution academic center

Patients or Participants: 32 women with low-grade endometrial cancer were consented for hysterectomy, bilateral salpingo-oophorectomy (BSO) by a transvaginal approach utilizing laparoscopy.

Interventions: Anterior and Posterior cul-de-sacs were opened through the vagina. A gel point device was used under laparoscopic visualization to cauterize and cut the paracervical tissue, uterosacral ligaments, uterine vasculature, broad ligament and posterior cul-de-sac. The tubes and ovaries were then removed laparoscopically and the entire abdominal cavity was inspected. Patients with deep invasion underwent trans-abdominal laparoscopic lymphadenectomy.

Measurements and Main Results: a total of 32 women underwent the procedure. The mean age was 60 (26 – 90). The mean BMI was 34 (22 – 58). 19 had prior pelvic surgery including eight with one or more prior cesarean deliveries. The mean uterine weight was 119 g (27 – 436). 12 patients were discharged home that day and 20 stayed overnight. One patient had a thermal injury to the small bowel requiring over sewing. Two patients had bladder injury during entry to the Anterior cul-de-sac, both of whom had had two prior cesarean deliveries. One patient required lymphadenectomy. Patients did not require narcotic analgesia.

Conclusion: transvaginal laparoscopic hysterectomy, BSO is feasible and permits rapid recovery with minimal postoperative pain and is cosmetically appealing.
Open Communications 10: Hysteroscopy
(3:05 PM – 4:05 PM)

3:26 PM

A Clinical Study to Evaluate the Safety and Effectiveness of the Cerene Device to Treat Heavy Menstrual Bleeding (Clarity Study)
Carlin HL,1* Anderson TL,1 Vanderbilt University Medical Center, Nashville, TN; 2Vanderbilt University Medical Center, Nashville
*Corresponding author.

Study Objective: To evaluate the safety and effectiveness of a novel cryoablation device (Cerene Cryotherapy Device, Channel Medsystems, Emeryville, CA) in premenopausal women with heavy menstrual bleeding due to benign causes.

Design: A prospective, multi-center, single-arm, open-label, non-randomized study

Setting: At 11 academic and private practices in North America: 8 clinic sites in the US, and 3 outpatient hospital sites (1 in Mexico and 2 in Canada).

Patients or Participants: 242 subjects comprise the Intent-to-Treat (ITT) population. Subject demographics were similar to other published endometrial ablation studies performed.

Interventions: Subjects were treated with the Cerene Device, a single-use disposable device requiring no capital equipment, which delivers a 2.5-minute cryoablation of the endometrium. Analgesia and local anesthesia were administered per investigator discretion; IV sedation was used in only 3% of subjects and no general anesthesia was used.

Measurements and Main Results: There were no device- or procedure-related serious adverse events, nor unanticipated adverse device effects. The Cerene Device was effective in reducing menstrual blood loss measured by pictorial blood loss assessment chart (PBLAC) score. Mean score dropped from 360.6 pretreatment (± 332.1; range 150-4506) to 51 at 12 months post treatment (±64.1), with 81% of 230 evaluable subjects reporting a PBLAC score of ≤ 75 and 85% of evaluable subjects reporting a PBLAC score of ≤ 100. The median pain rating was ≤ 2 (mild) throughout the treatment. Of 223 subjects that underwent hysterectomy evaluation at 12 months, the uterine cavity was accessible and visualized in 220 subjects (98.2%); 100. The median pain rating was ≤ 2 (mild) throughout the treatment. Of 223 subjects that underwent hysterectomy evaluation at 12 months, the uterine cavity was accessible and visualized in 220 subjects (98.2%) and preserved access to the uterine cavity.

Open Communications 10: Hysteroscopy
(3:05 PM – 4:05 PM)

3:33 PM

A Simulation Curriculum for Teaching Obstetrics and Gynecology Residents the Management of Asherman’s Syndrome
Hsiao LH,* Prollius A, Eguzo K. Obstetrics and Gynecology, University of Saskatchewan, Saskatoon, SK, Canada
*Corresponding author.

Study Objective: To describe a simulation-based curriculum and evaluate its effect on OB/GYN residents’ knowledge and confidence about the management of Asherman’s Syndrome.

Design: A prospective cohort study.

Setting: A Canadian OB/GYN residency program.

Patients or Participants: Twenty OB/GYN residents.

Interventions: OB/GYN residents participated in three targeted simulation-training sessions on the management of Asherman’s Syndrome in the following sequence: didactic teaching with surgical videos and demonstration of safe dissection techniques; hysteroscopic dissection of intrauterine adhesions; insertion of intrauterine balloon to prevent adhesion reformation. Participants completed a pre-simulation and post-simulation survey assessing knowledge level of Asherman’s Syndrome using a 20-point questionnaire and their self-reported confidence level in each of the simulation components using a Likert scale. (Component 1: Overall knowledge of Asherman’s Syndrome; Component 2: Dissection of intrauterine adhesions; Component 3: Identifying the severity of intrauterine adhesions; Component 4: Insertion of a Cook’s catheter.) Additional qualitative feedback was used to evaluate the strengths and weaknesses of the simulation curriculum.

Measurements and Main Results: Twenty OB/GYN residents at the University of Saskatchewan participated in the study. The mean percentage of correct answers was 54.5% (+/- 18.3%) on the pre-simulation survey compared with 84.5% (+/- 12.5%) post-simulation (p<0.001). There was significant improvement in the median self-reported confidence measures for each of the simulation components between the pre and post-simulation periods (Component 1: 3 vs 6.5, p<0.001; Component 2: 1 vs 4, p<0.001; Component 3: 0 vs 4.5, p <0.001; Component 4: 0 vs 5, p<0.001). Participants stated that one of the strengths of the simulation was: "the video presentation of Asherman’s Syndrome followed by hands-on hysteroscopic dissection on a realistic model". Participants also recommended: "adopting more simulation sessions into the residency curriculum".

Conclusion: Simulation teaching is an effective method of increasing OB/GYN residents’ knowledge and confidence about the management of Asherman’s Syndrome.

Open Communications 11: Laparoscopy
(3:05 PM – 4:05 PM)

3:05 PM

Single Site Robotic Bilateral Salpingectomy for Removal of Sterilization Micro-Insert
Khamvongsa PA, Gold J,* Gotluru C. Florida International University Herbert Wertheim College of Medicine, Miami, FL
*Corresponding author.

Video Objective: This video outlines the crucial steps in performing a single-site robotic salpingectomy with partial cornectomy. This is presented as an alternative method for microinsert removal that is both minimally invasive and aesthetically pleasing.

Setting: This procedure was completed on women who were previously sterilized with hysteroscopic insertion of tubal microinsert and began experiencing pelvic pain or autoimmune-like symptoms. The procedures were performed in an ambulatory setting with some or next day discharge.

Interventions: Single-port bilateral salpingectomy with partial cornectomy and closure of defect.

Conclusion: The women who originally opted for a microinsert sterilization had opted for a minimally invasive sterilization that did not require entry into the abdominal cavity. These women are likely to prefer a minimally invasive option with aesthetic results to reverse this procedure. Fewer incisions theoretically reduces risk of postoperative pain and reduces visible scars leading to reported patient satisfaction. Single-site robotic salpingectomy with partial cornectomy provides these benefits in addition to preventing coil fragmentation by removing the cornua in addition to the fallopian tubes which permits avoidance of excessive manual traction on the insert that may result in fragmentation.

Open Communications 11: Laparoscopy
(3:05 PM – 4:05 PM)

3:12 PM

Single-Site Laparoscopy: Expediting the Learning Curve
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Video Objective: The objective of this video is to understand the advantages and disadvantages of single site versus multiporat laparoscopy and identify the key steps to simplify the single site approach.
Setting: Academic medical center.

Interventions: Multiple studies have evaluated single-site versus traditional laparoscopy. While there are no differences in conversion rate, estimated blood loss, postoperative pain and length of hospital stay; it has been shown that single site laparoscopy has an increased operating time but is the preferred cosmetic approach. Using the same basic principles of laparoscopy and implementing them into single site laparoscopy, the surgery dynamics can be simplified and expedite the learning curve. This video will demonstrate these techniques of triangulation, visualization, traction-countertraction and purposeful movements. By visualizing this skill set directly, it will be easier to implement the key steps of single site laparoscopy when put into practice.

Conclusion: Executing this knowledge of simplification and fundamentals, surgeons will be able to avoid the frustrations of single-site laparoscopy so that these skills may be applied to better serve our patients.

Open Communications 11: Laparoscopy
(3:05 PM – 4:05 PM)

3:19 PM

Laparoscopic Resection of a Hydropic Leiomyoma
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*Corresponding author.

Video Objective: We describe a resection of an asymptomatic hydropic leiomyoma presenting as either a post-surgical change or a uterine malformation, and briefly review the literature for similar case presentations.

Setting: A 34-year-old otherwise healthy woman was referred for resection of a uterine mass after it was incidentally discovered at the time of laparoscopic cholecystectomy. Imaging revealed a 17-cm fluid-containing mass arising from a uterine mass after it was incidentally discovered at the time of laparoscopic cholecystectomy. Imaging revealed a 17-cm fluid-containing mass arising from the cervix that was thought to either be a residual cyst from her prior cesarean scar or an obstructed horn of a didelphys or bicornuate uterus.

Interventions: The patient was taken for diagnostic hysteroscopy that revealed a normal intrauterine cavity, and diagnostic laparoscopy with laparoscopic resection of the mass using blunt bipolar dissection. The defect was repaired with 0-PDS and the mass was removed via a mini-laparotomy after enclosed morcellation in a specimen bag. Chromoperturbation was performed at the end of the procedure ensuring tubal patency.

Conclusion: Hydropic leiomyomas are rare variants of uterine mesenchymal tumors that present in reproductive-aged women as large, indolent pelvic masses with imaging features of cystic or degenerating changes often concerning for malignancy. We describe the first case to be managed laparoscopically, and to present as a possible uterine malformation or post-surgical change, further showing the degree of the diagnostic challenge posed by hydropic leiomyomas and the importance of preoperative imaging.

Open Communications 11: Laparoscopy
(3:05 PM – 4:05 PM)

3:26 PM

Percutaneous Versus Laparoscopic Hysterectomy: A Prospective Comparison
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Study Objective: To evaluate the feasibility of percutaneous approach, we prospectively compared our percutaneous hysterectomy (PPS-H) experience with a series of laparoscopic hysterectomies (LPS-H).

Design: Multicentric comparative prospective study.

Setting: Fondazione Policlinico Universitario A. Gemelli IRCCS, in Rome, a tertiary health-care center, was the coordinator center.

Patients or Participants: From May 2015 to September 2017, 160 patients affected by benign and malignant gynecological conditions were considered eligible for minimally invasive surgery (MIS). Eighty patients received PSS-Hand 80 LPS-H. In each group, 30 cases of low/intermediate risk endometrial cancer were enrolled.

Interventions: hysterectomy ± bilateral salpingo-oophorectomy with or without lymph nodal staging.

Measurements and Main Results: No statistically significant differences were noted in baseline characteristics or operative time (OT) between the two groups. We observed significant differences in estimated blood loss (EBL); median of 50 cc (PSS-H) and 100 cc (LPS-H), P=0.0001. In LPS-H, we reported 4 (5%) intraoperative complications and one (1.3%) in PSS-H. One post-operative fever for each group was reported. Thirty-day complications were 4 (5%) in PSS-H and 11 (13.8%) in LHS-H, P=0.058. No significant differences were found in VAS (Visual Analogue Scale) score, despite a relevant disparity in cosmetic outcome (P=0.0001). For oncological cases, the two techniques had comparable intraoperative outcomes and oncological accuracy. Five (16.7%) 30-days complications occurred (P=0.052) in LPS-H. No significant differences were noted in FIGO stage or post-operative management. All patients enrolled were alive at the time of follow-up.

Conclusion: PSS-H is comparable to the LPS-H for intra and peri-operative outcomes and post-operative pain. Our study indicates PSS-H seems to be superior to LPS-H in cosmetic outcomes and patient satisfaction. We conclude PSS-H is a promising alternative in ultra-MIS in Gynecology.

Open Communications 11: Laparoscopy
(3:05 PM – 4:05 PM)

3:33 PM

The Impact of Enhanced Recovery after Surgery on Outpatient Recovery after Laparoscopic Hysterectomy
Ronen I,1,*, Wright KN2, Cass I3, Siedhoff MT3, 1Obstetrics & Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA; 2Division of Minimally Invasive Gynecologic Surgery, Cedars Sinai Medical Center, Los Angeles, CA; 3Obstetrics and Gynecology, Division of Gynecologic Oncology, Cedars-Sinai Medical Center, Los Angeles, CA *Corresponding author.

Study Objective: Enhanced Recovery after Surgery (ERAS) pathways have led to improved perioperative outcomes in hospital quality of care and cost parameters in gynecologic surgery. There is less data on the impact of ERAS on patient-reported recovery experience after laparoscopic hysterectomy in the outpatient setting.

Design: An IRB-approved single-blinded non-randomized prospective cohort study compared two cohorts of patients who underwent laparoscopic hysterectomy: perioperative ERAS protocol or standard perioperative care at a single institution. Surveys were distributed to patients at their initial postoperative appointment.

Setting: Urban academic-affiliated community tertiary care center.

Patients or Participants: Women undergoing laparoscopic hysterectomy by high volume surgeons (>10 hysterectomies per year).

Interventions: Perioperative ERAS protocol: postoperative self-administered survey 2 weeks after surgery.

Measurements and Main Results: Between 8/1/18 and 4/9/19, 73 patients undergoing laparoscopic hysterectomy were surveyed: 37 (ERAS) cases and 44 under standard perioperative care (controls). 8 surveys from
the control group were excluded due to predefined criteria. The patients responded to Likert scaled questions regarding ability to perform daily activities (ascending difficulty from 1 to 5).

<table>
<thead>
<tr>
<th>Measured Categories</th>
<th>ERAS Mean (variance)</th>
<th>Control Mean (variance)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Activity Score (walk, dress oneself, etc.)</td>
<td>1.39 (0.81)</td>
<td>1.31 (0.43)</td>
<td>0.67</td>
</tr>
<tr>
<td>Postop Days until 1st Bowel Movement</td>
<td>2.62 (1.85)</td>
<td>2.67 (0.86)</td>
<td>0.87</td>
</tr>
<tr>
<td>Bowel Habits Score (straining, completing bowel movement, etc.)</td>
<td>2.97 (1.62)</td>
<td>2.90 (1.15)</td>
<td>0.80</td>
</tr>
<tr>
<td>Appetite &amp; Diet Score (frequency of nausea, feeling bloated, etc.)</td>
<td>2.47 (0.64)</td>
<td>2.44 (0.67)</td>
<td>0.89</td>
</tr>
<tr>
<td>Narcotics tablets used</td>
<td>5.08 (15.96)</td>
<td>3.69 (24.22)</td>
<td>0.19</td>
</tr>
<tr>
<td>Narcotics, days used</td>
<td>3.03 (6.92)</td>
<td>2.42 (9.22)</td>
<td>0.36</td>
</tr>
<tr>
<td>Non-narcotics, days used</td>
<td>10.11 (75.5)</td>
<td>4.64 (17.55)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Conclusion: Implementation of ERAS does not adversely affect self-reported patient recovery. At two weeks following laparoscopic hysterectomy, the majority of patients returned to baseline physical activity, bowel function, appetite & diet, and required no additional narcotic medications.

Open Communications 11: Laparoscopy (3:05 PM – 4:05 PM)

3:40 PM

Laparoscopic Vecchietti - Minimally Invasive Treatment for Vaginal Agenesis


*Corresponding author.

Video Objective: To describe the surgical steps and postoperative care utilized when performing a laparoscopic Vecchietti procedure for the treatment of complete vaginal agenesis.

Setting: 21 year old female with complete vaginal agenesis (Mayer-Rokitansky-Kuster-Hauser syndrome) who desires surgical management and creation of a neovagina.

Interventions: The laparoscopic Vecchietti procedure is a simple, minimally-invasive technique for the creation of a neovagina in patients with complete vaginal agenesis. Unlike other vaginoplasty techniques, this method does not rely on the use of grafts or surgical flaps. Instead, this procedure creates a neovagina through continuous invagination of the vaginal dimple by an olive-shaped vaginal dilator. The vaginal “olive” is connected to a spring-loaded tensioning device on the patient’s abdomen via surgical energy devices, compression of the interstitium, and temporary occlusion of the uterine vessels.

Conclusion: The laparoscopic Vecchietti is a simple and effective procedure to treat complete vaginal agenesis using a minimally-invasive approach.

Open Communications 11: Laparoscopy (3:05 PM – 4:05 PM)

3:47 PM

Interstitial Pregnancy and Laparoscopic Cornual Resection

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*Corresponding author.

Video Objective: We describe the diagnosis and treatment of interstitial pregnancy, discuss methods of surgical intervention, and demonstrate a laparoscopic cornual resection.

Setting: The patient was a 30 year old G3P013 incidentally found to have an 8 week live interstitial pregnancy on ultrasound at a tertiary medical center.

Interventions: We performed a laparoscopic cornual resection and repair using dilute vasopressin, harmonic and bipolar energy, and barbed sutures for repair.

Conclusion: Interstitial ectopic pregnancy is rare and challenging to diagnose. Treatment depends on gestational age, clinical picture, and surgical expertise. Both cornual resection and cornuotomy are described for treatment. Many techniques can be used for hemostasis, including vasopressin, surgical energy devices, compression of the interstitium, and temporary occlusion of the uterine vessels.

Open Communications 11: Laparoscopy (3:05 PM – 4:05 PM)

3:54 PM

Uterine Artery Embolization Prior to Laparoscopic Hysterectomy for a Large Fibroid Uterus

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*Corresponding author.

Video Objective: The objective of this video was to present the use of uterine artery embolization prior to supracervical hysterectomy of a large fibroid uterus.

Setting: A 40 year old woman, gravida 0, with a history of heavy menses, bloating, back pain and pelvic pressure presented to her primary care physician for symptomatic anemia and notable family history of fibroids. The patient reported a history of regular, monthly menses however noted an interval increase in her vaginal bleeding. Her past medical history was notable for anemia for which she was taking iron supplementation. She was found to have numerous large uterine leiomyomas on magnetic resonance imaging, with the largest measuring 12.6 centimeters on the anterior body of the uterus. Physical examination was notable for a 26cm, bulky uterus extending up to the liver edge and xiphoid process. The patient declined uterine artery embolization and LUPRON as initial treatment for fibroids. She instead elected for definitive surgical management, and strongly desired a minimally invasive approach.

Interventions: Uterine artery embolization and ureteral stent placement immediately followed by laparoscopic supracervical hysterectomy, unilateral salpingectomy and cystoscopy with stent removal.

Conclusion: This case is unique in its collaboration between interventional radiology, urology and gynecology to ensure the safest outcome for the patient. Use of uterine artery embolization immediately prior to laparoscopic hysterectomy for large uterine leiomyomas is beneficial in decreasing intraoperative blood loss and thereby improving visualization as well as decreasing morbidity during minimally invasive laparoscopic surgery. Furthermore, placement of ureteral stents intraoperatively allows identification of the ureters when pelvic anatomy is distorted by fibroid location and size. Distortion of pelvic anatomy can limit the use of a ureteric manipulator but is not a contraindication to proceeding with minimally invasive technique.
Open Communications 12: Laparoscopy
(4:10 PM – 5:15 PM)

4:10 PM

Risk of Complication at the Time of Laparoscopic Hysterectomy: A Prediction Model Built from the National Surgical Quality Improvement Program (NSQIP) Database
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*Corresponding author.

Study Objective: Create a prediction model for complication at the time of benign laparoscopic hysterectomy.

Setting: United States hospitals contributing to NSQIP.

Patients or Participants: Patients undergoing laparoscopic hysterectomy for benign indications between 2014 and 2017.

Interventions: All patients underwent a hysterectomy by a laparoscopic approach. Data about peri-operative complications (intraoperative complications, readmission, reoperation, need for transfusion, operative time greater than 4 hours, postoperative medical complication or length of stay greater than 2 days) and uterine weight at the time of pathologic examination were collected retrospectively. Postoperative uterine weight was used as a proxy for preoperative uterine weight estimate. The sample was randomly split to create two patient populations, one for deriving the model and the other to validate the model.

Measurements and Main Results: A total of 33,123 women met inclusion criteria. The rate of composite complication was 9.5%. Complication rates were similar in the derivation and validation cohorts (9.4% vs 9.7%, p=0.3485). The logistic regression risk-prediction tool for hysterectomy complication identified 5 variables predictive of complication; history of prior laparotomy (increases odds of complication by 30%), predicted pre-operative uterine weight (each 100 gram increase in weight increases the odds of complication by 0.06%) and race (when compared to white women, black women had a 30% increased odds and women of other races had a 24% increased odds of complication). Age and body mass index also had a statistically significant quadratic relationship with odds of complication. The c statistics for the derivation and validation cohorts were 0.57 and 0.55, respectively. The model is well calibrated, especially for patients at lowest risk of hysterectomy complication (<20%).

Conclusion: The laparoscopic hysterectomy complication prediction model can be transformed into a user-friendly tool for predicting complications in patients planning hysterectomy, with a strength in identifying patients at low risk of complication. This model can be applied to clinical practice.

Open Communications 12: Laparoscopy
(4:10 PM – 5:15 PM)

4:17 PM

Prevention of Uterine Injury & Laparoscopic Uretero-Neo-Cystotomy
Trivedi SP.* Trivedi PH. Obstetrics & Gynecology, Dr. Trivedi’s Total Health Care Centre, Mumbai, India

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Video Objective: To elucidate the precautions involved in preventing uterine injury in laparoscopy. To demonstrate management of uterine injury and technique of uterine re-implantation in diseased third of ureter.

Setting: 39 yr old female with dysmenorrhoea & dyspareunia, diagnosed as having advanced endometriosis with recto-vaginal and ureteric involvement at our Tertiary Care University recognised Endoscopy Referral Unit.

Interventions: Uretero – Neo - Cystotomy with Pooja Hitch to excise diseased distal third of ureter. Double cystotomy technique to draw in the ureter and suture internally to the bladder mucosa after achieving adequate mobilisation of the bladder and ureter in a tension free manner.

Conclusion: Precautions and pre-operative planning and imaging can help avert injuries to vital structures. Utereric injury, if encountered, can be handled laparoscopically if correct principles are followed, with a urologist for medico-legal purposes.

Open Communications 12: Laparoscopy
(4:10 PM – 5:15 PM)

4:24 PM

Resection of a Type III Leiomyoma
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*Corresponding author.

Video Objective: To demonstrate the appropriate preoperative evaluation and intraoperative steps for the management of a type III leiomyoma for fertility enhancement.

Setting: A 33-year-old G2P020 with recurrent miscarriages and a recently identified type 3 leiomyoma on pelvic ultrasound desiring hysteroscopic myomectomy prior to undergoing in vitro fertilization.

Interventions: Hysteroscopic resection of a type III fibroid

Conclusion: The association between intramural fibroids and infertility remains a controversial area of investigation. Recent evidence demonstrating that intramural fibroids without any intracavity component may still negatively impact both clinical pregnancy rates and live birth rates following in vitro fertilization has reignited this debate (Behbehani et al). We hope to demonstrate that in the hands of a skilled surgeon, hysteroscopic resection of type 3 leiomyoma can be carefully performed for the purposes of fertility enhancement.

The goal for hysteroscopic myomectomy should include complete removal of all fibroid tissue. Preoperative imaging is critical in correctly identifying appropriate surgical candidates with intraoperative review of the imaging as needed to safely identify the type III leiomyoma. Careful resection of the fibroid within the boundaries of the pseudo-capsule to help reduce the risk of uterine perforation.

Open Communications 12: Laparoscopy
(4:10 PM – 5:15 PM)

4:31 PM

An Educational Video for Laparoscopic Abdominal Entry.
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*Corresponding author.

Video Objective: Minimally invasive surgery requires reliable and safe laparoscopic abdominal entry. Despite this, there are no comprehensive, reliable educational videos for teaching this procedure. With the decrease in resident work hours and increased emphasis on patient safety, there is a focus on moving the initial stages of learning outside of the operating room. Curated instructional videos to teach surgical procedures are one way to accomplish this.

Setting: Academic Obstetrics and Gynecology Department.

Interventions: This is an excerpt from a full-length teaching video demonstrating the key steps important for establishing laparoscopic abdominal entry. This video will focus specifically on Veress needle insertion at the umbilicus, at Palmer’s point, and open entry with the Hasson technique. The video combines real-time operating room footage with high fidelity 3-D animation to illustrate the important anatomic considerations.
Open Communications 12: Laparoscopy (4:10 PM – 5:15 PM)

4:38 PM

A Study of Sentinel Lymph Node Biopsy in Laparoscopic Radical Hysterectomy for Early Invasive Cervical Cancer with Nano-Carbon Combined with Indocyanine Green

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Study Objective: This study was the first to investigate the application of phthalocyanine green and nano-carbon suspension injection as a lymphatic tracer in laparoscopic radical resection of cervical cancer. The comparative value of its application in lymphatic imaging and sentinel lymph node identification was analyzed. The factors of the tracer results provide a reference for the application of clinical tracers.

Design: The patients were divided into nano-carbon group and indocyanine green group.

Setting: Xinxiang City Central Hospital Gynecologic Oncology, China.

Patients or Participants: Seventy-five patients with early stage cervical cancer were enrolled.

Interventions: Nano-carbon suspension injection and indocyanine green were injected from the cervix before operation, and black was recognized under laparoscopy. Lymph nodes and fluorescent lymph nodes were taken as SLN and excised. All patients underwent laparoscopic pelvic lymphadenectomy plus extensive hysterectomy (+ abdominal para-aortic lymph node sampling). All specimens were sent to routine examination.

Measurements and Main Results: There were no significant differences in age, tumor stage, and histological type between the two groups (P>0.05). SLN was detected in 25 cases of phthalocyanine green group, totaling 1006, the detection rate was 100%; the accuracy of SLN biopsy was 100%. There were 50 cases of nano-carbon suspension group, 39 cases of SLN were detected, a total of 1476, the discovery rate was 78%, the specificity was 76%; there was no statistical difference between the two groups (P>0.05). However, the difference in the operation time between the two groups was statistically significant (P<0.05).

Conclusion: The application of phthalocyanine green and nano-carbon suspension in the detection of SLN in cervical cancer is feasible, but the phthalocyanine green fluorescence detection method is more prominent in visual effect, which can significantly shorten the operation time.

Open Communications 12: Laparoscopy (4:10 PM – 5:15 PM)

4:45 PM

Perceptions of Operating Room Recording Among Surgical Staff

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Study Objective: Recording in the operating room (OR) is an important tool to improve team performance. It is becoming feasible in gynecology with use of the Operating Room Black Box (ORBB), a comprehensive recording platform. Recording of OR staff, however, can be challenging as individual concerns can overshadow the educational and organizational benefits. Our objective was to assess OR staff’s perceptions of recording and how they relate to factors such as patient safety, impostor syndrome, and privacy concerns.

Design: Prospective observational survey.

Setting: Academic tertiary care centre, prior to implementing a recording system in the gynecology OR.

Patients or Participants: Gynecologists, OR nurses, and anesthesiologists.

Interventions: A questionnaire assessing perceptions of OR recording was developed including sections on demographic information, previous experience with OR recording and three previously validated tools (5 points scales): Safety Attitudes Questionnaire (SAQ), Clance Imposter Syndrome Index (CI), and Dispositional Privacy Concern (DPC). Further measurements included staffs’ opinions of the ORBB and its potential effect on safety, team collaboration, and litigation.

Measurements and Main Results: Descriptive statistics were performed for variables and SAQ, CI, and DPC scales and correlations between demographic factors, SAQ, CI and DPC scales, and attitude towards the ORBB. Response rate: 45% (n=43/96, 20/22 Nurses, 9/11 Gynaecologists, 14/63 Anaesthesiologist). Opinions of recording were generally positive (mean=3.8, SD=0.91). Nurses tended to have more favourable opinions of the ORBB compared to gynaecologists and anaesthesiologists (4.2 vs. 3.7 vs 3.4, p=0.06). Individuals most affected by impostor syndrome were more likely to be concerned about litigation (r=−0.32, p=0.04).

Conclusion: Opinions of ORBB were most favourable among nurses and least among anesthesiologists. Those with high measures of impostor syndrome were more concerned about litigation. Addressing concerns around ORBB data should be accommodated to facilitate successful implementation of the ORBB, improve team communication and patient safety in gynecology.

Open Communications 12: Laparoscopy (4:10 PM – 5:15 PM)

4:52 PM

Laparoscopic Approach to the Difficult Trachelectomy: Surgical Tips and Tricks

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Video Objective: The objective of this video is to present a stepwise approach to completing difficult trachelectomies and to review relevant anatomy.

Setting: Supracervical hysterectomy was once a popular procedure, accounting for 7.5% of hysterectomies in 2004, secondary to purported benefits over total hysterectomy. With mounting evidence that there are no advantages to this technique, in addition to limitations on the use of power morcellators, the supracervical approach has fallen out of favor. Five to 10% of patient will continues to have bothersome bleeding following a supracervical hysterectomy. In this video we present a patient with complaints of pelvic pain and vaginal bleeding nine years after undergoing supracervical hysterectomy for dysmenorrhea. She reports that the planned procedure was a total hysterectomy, however at the time of surgery, obliteration of the anterior culdesac was encountered and the planned procedure was not completed. She desired definitive management.
Interventions: Laparoscopic trachelectomy with ureteral stent placement and removal via cystoscopy.

Conclusion: Post-hysterectomy laparoscopic trachelectomies can be challenging in the presence of known pelvic adhesive disease. Success is achievable through familiarity with key anatomical structures and relationships along with following a stepped approach.

Open Communications 12: Laparoscopy (4:10 PM – 5:15 PM)

4:59 PM

Superior Hypogastric Plexus Block for Pain Relief After Laparoscopic Hysterectomy: A Randomized Controlled Trial

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Study Objective: To assess the efficacy of a superior hypogastric plexus block (SHPB) for pain relief following laparoscopic hysterectomy.

Design: Multi-center, single-blind, randomized controlled trial.

Setting: Brigham and Women’s Hospital, Boston, MA. University of North Carolina Medical Center, Chapel Hill, NC, and George Washington University Hospital, Washington, D.C.

Patients or Participants: 100 patients undergoing laparoscopic hysterectomy for benign indications were recruited between January 2018 and February 2019.

Interventions: Patients were randomized to receive a SHPB (n = 50) or no block (n = 50) at the start of laparoscopic hysterectomy. The block contained 10 mL of 0.25% bupivacaine injected in the presacral space.

Measurements and Main Results: The proportion of patients with a mean VAS (visual analogue scale) pain score less than 4 within 2 hours postoperatively was defined a priori as the primary outcome and compared between the groups. An intention to treat analysis was performed. Patients in the SHPB group were 1.6-times more likely to have a mean VAS < 4 within 2 hours postoperatively compared to women in the no block group (52.0% of women in the block group compared to 40.0% in the no block group), however this did not reach statistical significance (OR 1.63, 95% CI 0.74 to 3.59). Patients in the SHPB group were significantly more likely to have a mean VAS < 4 within 1 hour postoperatively (OR 2.90, 95% CI 1.29 to 6.53). Total postoperative opioid use within four hours postoperatively, total recovery unit time, and hospital length of stay were no different between the two groups. Mean daily VAS pain scores were also no different for one week postoperatively.

Conclusion: SHPB reduces immediate postoperative pain after laparoscopic hysterectomy however this effect does not extend to two hours postoperatively. SHPB does not impact opioid consumption, long-term pain, or recovery unit time.

Open Communications 12: Laparoscopy (4:10 PM – 5:15 PM)

5:06 PM

Laparoscopic Hysterectomy with Cervicovaginal Agenesis

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Video Objective: We present a laparoscopic surgical approach for hysterectomy in Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome with cervicovaginal agenesis. Laparoscopic approaches for removal of uterine remnants have been published with only reports of laparotomy described for hysterectomy with cervicovaginal agenesis.

Setting: We discuss the diagnosis, management considerations and preoperative planning for definitive surgical treatment of a patient with MRKH with cervicovaginal agenesis presenting with hematometra and pain. Patient initially presenting with primary amenorrhea and pain, with previous medical treatment to achieve amenorrhea.

Interventions: Laparoscopic hysterectomy with bilateral ureterolysis and uterine artery ligation in a patient with cervicovaginal agenesis.

Conclusion: We show that laparoscopic hysterectomy is a viable and safe option in patients with cervicovaginal agenesis. The importance of preoperative imaging to rule out associated anomalies and assist in surgical planning is stressed. We highlight necessary alterations in surgical technique to overcome the lack of traction, identify potential anomalous vasculature and ultimately maintain hemostasis, clear delineation of surgical anatomy, and avoid injury. Tissue extraction through laparoscopic bag morcellation is performed thus avoiding mini laparotomy altogether.

Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)

4:10 PM

Validated Intraoperative Bleeding Scale (VIBE Scale): Relevance and Utility in Gynecological Surgery

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Study Objective: This study investigates the reliability and repeatability of using a Validated Intraoperative Bleeding Scale (VIBE SCALE) to assess intraoperative bleeding by gynecological surgeons. This scale describes bleeding using rate and nature of blood loss, which are thought to improve blood loss estimates.

Design: Through an online platform, surgeons self-trained on the VIBE SCALE and then graded 15 videos with known rates of blood loss. A Kendall’s W was calculated for inter-observer agreement (reproducibility) using ten unique videos within the video set and intra-observer agreement (repeatability) using five duplicate videos within the video set.

Setting: N/A

Patients or Participants: Eight surgeons board certified in obstetrics/gynecology and eight board certified in gynecological oncology participated. Mean years of experience was 16.1 years (range 4-30, N=16), and majority reported using hemostatic agents in practice (15/16, 94%).

Interventions: N/A

Measurements and Main Results: Inter- and intra-observer agreement was “excellent” with values of 0.92 and 0.99, respectively. Majority of surgeons accurately graded blood loss in 5 of 10 unique videos; accuracy improved when a video was repeated, with majority correctly grading blood loss in 4 of 5 duplicate videos. Of the four domains within the scale, visual presentation was the most used (16/16, 100%) and considered most relevant (12/16, 75%). Rate of blood loss was the second most used (13/16, 81%) and considered the second most relevant (3/16, 19%).

Conclusion: Surgeons can grade bleeding using the VIBe SCALE with excellent reliability, and their accuracy improved with use. This supports that surgeons can more accurately assess blood loss by considering the rate and nature of blood loss rather than volume. Use of the VIBe SCALE may also improve early recognition of bleeding, increase communication within the operating room about bleeding and expedite the treatment of bleeding.
Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)

4:17 PM

X Marks the Knot: Simplified Laparoscopic Intra-Corporeal Knot Tying

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Video Objective: The objectives of this video are to present a novel technique for simplified laparoscopic intra-corporeal knot tying and to demonstrate the importance of laparoscopic simulation in learning new techniques.

Setting: Traditional intra-corporeal knot tying can be difficult, depending on the angle of the suture, port placement, or other technical difficulty. Many surgeons have turned to alternatives to circumvent this procedure, including the use of barbed suture, knotless suture re-load devices, Lapray’s, and extra-corporeal knot tying. However, this remains an important skill to for the gynecologic surgeon. This video presents a step-by-step technique of a novel intra-corporeal knot tying method. The setting includes both a simulation trainer for laparoscopy and a live surgery. The patient in the surgery is a 48-year-old female with abnormal uterine bleeding undergoing total laparoscopic hysterectomy; we use our laparoscopic knot to reinforce the vaginal cuff closure.

Interventions: The simplified extra-corporeal knot starts with placement of an interrupted suture. The primary surgeon crosses the suture to create an X, which is stabilized by the assistant surgeon. The primary surgeon passes the tail of the suture through the loop created by the X twice to create a surgeon’s knot. The ends are then pulled downward to create a flat knot. This process is repeated. In order to create square knots, the tail should be passed in front of or behind the loop with each alternating throw.

Conclusion: The simplified intra-corporal knot is a useful resource for surgeons who experience difficulty with traditional laparoscopic knot tying. The maneuvers are intuitive and are similar to open two-handed knot tying. There is a learning curve associated with this procedure, and it is important to practice in a simulated setting. We hope this video will provide an alternative method for surgeons planning to tie intra-corporeal knots.

Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)

4:24 PM

Proximal Uterine Artery Ligation in a Large Fibroid Uterus

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Video Objective: Basic techniques of retroperitoneal dissection to isolate the proximal uterine artery.

Setting: Large fibroid uterus and complicated pelvic surgeries like extensive adhesions or deeply infiltrative endometriosis

Interventions: Hysterectomy or myomectomy of a large multi fibroid uterus

Conclusion: Proximal uterine artery ligation at its origin can be a valuable tool while performing difficult hysterectomy or myomectomy. This should be routinely practiced by a MIGS fellow under supervision to learn the vital retroperitoneal anatomy and dissection techniques. With adequate practice, it can be safely and efficiently performed at the start of a complicated pelvic surgery and thus decrease the overall blood loss as well as identify the key anatomical structures, thus avoiding the risk of inadvertent injuries. This video demonstrates the proximal uterine artery ligation technique in a patient with large multifibroid uterus as well as stage 4 endometriosis. The retroperitoneum is relatively well preserved despite a frozen pelvis and distorted anatomy elsewhere. Thus, by isolating key structures in the retroperitoneal space, we can simplify an otherwise challenging dissection.

Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)

4:31 PM

Basic Laparoscopic Skills Training is Equally Effective Using Either 2d or 3d Visualization: A Randomized Controlled Trial

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Study Objective: To assess whether basic laparoscopic skills (BLS) training on a standard laparoscopic box trainer using 2D visualization is at least equally effective compared to 3D.

Design: Randomized controlled trial.

Setting: Tertiary care center, Vienna, Austria.

Patients or Participants: A total of 32 medical students of the Medical University of Vienna were recruited.

Interventions: Participants were randomized to BLS training using either 2D or 3D visualization and trained four Fundamentals of Laparoscopic Surgery (FLS) tasks for one hour twice a week for four weeks. Baseline and post training tests were performed. Improvement in total test scores and the scores for the four individual FLS tasks within the assigned visualization modality was assessed. The non-inferiority margin was set as 10% of the mean improvement in the 3D group.

Measurements and Main Results: Data of 31 participants were analysed (n=16 in the 2D, n=15 in the 3D group, n=1 drop out). Baseline test scores did not differ significantly between groups except for the peg transfer task and total scores, where participants in the 3D group scored better than those in the 2D group. Total scores as well as the scores for all four tasks separately improved significantly in both groups. Post training test total and single task scores did not differ significantly between the groups. Non-inferiority of 2D compared to 3D training modality could be demonstrated for the improvement in total scores and in all individual FLS tasks, except for the suturing with extracorporeal knot tying task. Only the peg transfer task showed superiority in score improvement in the 2D compared to the 3D group.

Conclusion: Learning BLS using standard 2D visualization is at least equally effective as with 3D visualization. 3D visualization seems to offer a slight advantage at baseline testing, but does not translate to better test scores at post training testing.

Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)

4:38 PM

Trends of Hysterectomies Performed by Graduating Residents Using American College of Graduate Medical Education Case Log

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Study Objective: We sought to evaluate the overall trend in hysterectomies for obstetrics and gynecology (OB/GYN) resident surgeons from 2002 through 2017 using the data from the Accreditation Counsel for Graduate Medical Education (ACGME). The data stratifies hysterectomy type by abdominal (TAH), vaginal (TVH), and laparoscopic (TLH). We hypothesize that the rates of TVH and TAH will decrease during this time period with a concurrent increase in TLH.

Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)
Open Communications 13: Basic Science/Research/Education (4:45 PM – 5:00 PM)

Minimally Invasive Surgical Considerations for the Obese Patient

- Video Objective: This video is to review surgical considerations for the obese patient undergoing minimally invasive surgery.
- Setting: The obese patient is considered. This video addresses risks of laparoscopic surgery, differences in patient counseling, prophylactic measures, patient positioning, laparoscopic entry, management of the panniculus, and prevention of conversion to an open procedure.
- Interventions: Interventions for prophylactic measures include placement of an orogastric/hanasagastic tube prior to intubation, increased dose of antibiotics, and optimization of hemoglobin A1c for diabetic patients. Interventions for optimized patient positioning include alloting extra time for procedures, utilizing bariatric beds and stirrups, anti-skid material and padding during surgery, tucking the patient’s arms, and applying a chest strap. Interventions for laparoscopic entry include utilization of bariatric trocars, placing trocars more laterally and cephalad, left upper quadrant or supraumbilical entry, and inserting ports at a 90 degree angle to the abdomen. Interventions for panniculus management and prevention of conversion to an open procedure include limiting the use of steep Trendelenberg, decreasing the insufflation pressure, mechanically retracting the panniculus, and performing a tilt test.
- Conclusion: Gynecologic surgeons will inevitably be operating on more obese patients with coming years given the rising prevalence of obesity. Thus, they should be prepared for preoperative evaluation of the obese patient, surgical preparation, patient counseling, and surgical optimization to prevent conversion to an open procedure, all of which are addressed in this video. Preventing conversion is a balancing act between improving surgical visualization and maintaining stable cardiovascular and respiratory status of the patient. With increasing volume of cases, gynecologic surgeons can become proficient at minimally invasive surgery for the obese patient, thus, decreasing their operative morbidity and post-surgical quality of life.

Open Communications 13: Basic Science/Research/Education (4:10 PM – 4:59 PM)

Eliminating Opioid Use After Mini-Laparoscopic Gynecologic Surgery: Effectiveness of a Multimodal Pain Management Approach Adopted into Clinical Practice.
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- Video Objective: The objective of this video is to identify an effective, non-opioid, multimodal pain medication regimen, in women undergoing mini-laparoscopic gynecologic surgery, defined in this study as using laparoscopic instrument ports with an inner diameter of ≤ 5 mm.
- Setting: A 1 year quality improvement, single-institution study was conducted on consecutive patients undergoing laparoscopic gynecologic surgery procedures, using 3 laparoscopic instrument ports with an inner diameter measuring 5 mm or less.
- Interventions: A multimodal pain medication regimen was given in the perioperative period, consisting of one oral dose of gabapentin 300 mg the evening prior to surgery. Oral Acetaminophen 1000 mg and a second dose of oral gabapentin 300 mg given the morning of surgery. Intraoperative infiltration of local Ropivacaine was administered at the incision sites. Postoperatively, patients were started on around-the-clock oral gabapentin 300 mg every 12 hours, acetaminophen 500 mg every 6 hours, and ketorolac 30 mg IV for 3 doses, followed by celecoxib 200 mg every 12 hours.
- Conclusion: When combined with reduced (≤ 5 mm) diameter laparoscopic instrumentation, a non-opioid, multimodal pain medication regimen, consisting of ropivacaine local anesthesia, and an around-the-clock oral regimen consisting of acetaminophen, NSAIDS, and gabapentin is able to effectively eliminate the need for postoperative opioid use in patients undergoing laparoscopic gynecologic surgery.
displayed them on a screen. Participants manipulated the forceps in the training box and imitated the motion of expert’s forceps while watching the videos. This is the training system of reliving an expert’s operation.

**Interventions:** 2 residents received the reliving training for a week and a resident did not receive this training. Before and after the training, every resident joined an operation of total laparoscopic hysterectomy as an assistant. They practically performed isolation of the uterine artery and ureter. The number of errors and the time required the procedure were measured.

**Conclusion:** Both residents groups had comparable characteristics. After the training of reliving an operation, object residents showed improved laparoscopic skills compared with resident who did not receive the training. Although it was difficult to learn expert’s tacit skills with conventional box training, the expert’s surgical movie simulator had the potential to acquire such skills. Future research will need longer period of training and more participants to strengthen these conclusions.

**Open Communications 13: Basic Science/Research/Education (4:10 PM – 5:10 PM)**

**Practice Patterns and Learning Curves of Obgyn Residents Preparing for the Fundamentals of Laparoscopic Surgery (FLS) Exam**

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**Study Objective:** As of 2018, all graduating OBGYN residents are expected to complete and pass a Fundamentals of Laparoscopic Surgery (FLS) exam. Very few studies on FLS implementation in OBGYN residency programs exist. The aim of this study is to describe practice patterns and learning curves of OBGYN residents preparing for the manual skills portion of the FLS exam.

**Design:** Prospective cohort study.

**Setting:** OBGYN residency program at a large urban academic medical center.

**Patients or Participants:** 33 OBGYN residents, post-graduate years one (PGY1) to three (PGY3).

**Interventions:** An FLS curriculum, consisting of coached and self-practice sessions.

**Measurements and Main Results:** Residents recorded time spent on each training session, as well the type of trainer used and amount of supervision. For every task, residents recorded proficiency metrics, such as time to completion and penalties. Preliminary analysis of four PGY3 residents who took the exam showed that recorded number of repetitions for tasks 1-5 ranged from 1 to 22 and best time without penalties ranged from 30 to 315 seconds. Performance data and learning curves for each task will be presented for every resident. None of the residents met FLS suggested proficiency criteria for all tasks prior to the exam, and all residents passed the manual portion of FLS exam with wide margins (score range 527-673, with 356 as the national passing score). Correlational analyses of performance on each individual task with final exam score, as well as improvement in scores with each repetition, will be calculated when more participants complete training and have final exam scores available.

**Conclusion:** Our study compares FLS practice times, modality, and learning curves with final manual exam scores, which will be of great use to OBGYN residencies across the country as they implement FLS curricula into their programs.

**Open Communications 14: Laparoscopy (4:10 PM – 5:15 PM)**

**Association between Pelvic Inflammatory Disease and Endometriosis. Outcomes on 311 Minimally-Invasive Procedures over 14 years’ Experience in a Third-level Referral Center**

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**Study Objective:** to investigate possible associations between deep infiltrating endometriosis (DIE) and pelvic inflammatory disease (PID).

**Design:** retrospective cohort analysis of surgical procedures in a tertiary care referral center.

**Setting:** Tertiary care reference center for endometriosis

**Patients or Participants:** Retrospective analysis on 17016 women submitted to laparoscopy in our Unit between January 2004 and June 2018.

**Interventions:** A total of 311 cases were considered for analysis. Intra-operative data about complications and fertility-impairing procedures, intra-, peri- and post-operative complications were recorded. The study population was divided into two groups: Group 1 included women with concomitant PID and no endometriosis (n = 115); Group 2 included women with PID and DIE (n = 96).

**Measurements and Main Results:** Endometriosis had a prevalence of 63% in patients submitted to surgery for PID, significantly higher than the one reported in general population and than the one reported in a Tertiary Care Endometriosis Unit. Patients with concomitant endometriosis had statistically significant longer-lasting procedures (213.31 mins versus 88.02 mins, p < 0.0001) and more intra-operative blood loss (177.9 mL versus 89.7 mL, p < 0.0001). A significantly higher number of salpingectomies was needed in group 2 patients (208 versus 80, p < 0.0001). Hospital-stay was significantly longer in the patients carrying endometriosis and PID (7 versus 4 days, p < 0.01). More bowel complications in group 2 when compared to group 1 (6 versus 0, p<0.05%): Also significantly more urinary complications were reported in the PID-endometriosis group (6 versus 0, p<0.05%).

**Conclusion:** This study seems to confirm an higher prevalence of PID in endometriosis patients. When PID needs to be treated surgically, intra-operative finding of DIE is significantly more represented than in general population. Intra-operative findings of PID with associated DIE show more aggressive patterns than PID alone, more frequently requiring demotivic procedures such as salpingectomy with longer operating times, higher blood loss and more complications.

**Open Communications 14: Laparoscopy (4:10 PM – 5:15 PM)**

**Wise Techniques for Excision of Severe Ureteric and Rectal Endometriosis**

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**Video Objective:** To provide logical steps and demonstrate wise techniques to minimise complications during laparoscopic surgery for severe ureteric and rectal endometriosis.

**Setting:** A 40 year old para 2 (normal vaginal deliveries) with no significant past medical history, presented with 2 year history of dysmenorrhea, abdominal bloating with constipation. Her pelvic ultrasound showed a 13 cm left endometrioma. Recently, she also developed urinary frequency, urgency and nocturia, consistent with the pressure effect of her large cyst.
Abdominal palpation revealed an 18 week size mass and pelvic examination demonstrated a tender fixed uterus. Her CA 125 was within normal range (21 U/ml).

The diagnosis is severe endometriosis.

**Interventions:** The patient underwent laparoscopic excision of endometriosis including ovarian cystectomy.

**Conclusion:** Stage 4 endometriosis was confirmed by laparoscopy. Surgical steps and techniques to manage severe endometriosis are discussed as follow:

The first step of surgery is to decompressthe large ovarian cyst in order to obtain adequate space for the surgical working field. During decompression, we used an endo-loop to prevent spillage of the large endometrioma. The next step is to normalize pelvic anatomy with good dissection technique.

In this case, an active bleeding point was very close to the left ureter on the pelvic side wall. Due to the risk of thermal damage to the ureter, direct surgical diathermy on the pelvic side wall without identifying the ureter should be avoided. Therefore, to achieve temporary haemostasis and gain an optimal surgical view, the assistant used a grasper to clamp the bleeding point during ureterolysis.

To avoid rectal injury, the use of a rectal probe during rectovaginal adhesiolysis to delineate the rectum is a wise technique. In addition, appropriate uterine manipulation is important to delineate the uterosacral ligaments, so we have anatomical landmarks to safely excise endometriotic nodules.

Open Communications 14: Laparoscopy

(4:10 PM – 5:15 PM)

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**Robotic Assisted Laparoscopic Myomectomy-5**

**Modifications at Apollo Hospital Hyderabad, India**

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**Study Objective:** To make Robotic Assisted Laparoscopic Myomectomy (RALM) feasible and cost effective.

**Design:** We discuss 5 modifications over 7 years.

**Setting:** Apollo Hospital using DaVinci SI system.

**Patients or Participants:** 158 cases who underwent RALM were included.

**Interventions:** The first modification was a preoperative MRI in each case, for accurate myoma mapping, differentiated myomas from adenomyosis and helped plan precise incisions. Reducing the number of robotic instrument was the next step. Laparoscopic myoma screw via 5 mm assistant port instead of robotic tenaculum. The fenestrated bipolar during suturing instead of prograss or second needle holder. Instead of SIX instruments, we now use only THREE instruments. The third modification was to reduce the number of ports by Rail Road technique. We have one 12 mm port for the camera, one 8 mm on right side for scissors and on the left side we combine the 8mm over 11 mm as one port by a rail road technique. The fourth modification was to use a single 30 or 45 cm barbed suture. This is contrary to what is taught during laparoscopy to barbed suture.

To avoid rectal injury, the use of a rectal probe during rectovaginal adhesiolysis to delineate the rectum is a wise technique. In addition, appropriate uterine manipulation is important to delineate the uterosacral ligaments, so we have anatomical landmarks to safely excise endometriotic nodules.

Open Communications 14: Laparoscopy

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**Vaginal Cuff Dehiscence with Bowel Evisceration**

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**Video Objective:** To present a case of vaginal cuff dehiscence and evisceration, review important clinical aspects of this postoperative complication, and demonstrate surgical techniques for treatment.

**Setting:** Mount Sinai Hospital and Medical Center in Chicago, Illinois.

**Interventions:** A 46yo G2P2 s/p total laparoscopic hysterectomy 6 months prior presented for lower abdominal pain after recent intercourse, and a bulge concerning for bowel was seen on exam. Diagnostic laparoscopy revealed an entirely dehisced vaginal cuff and a portion of large bowel to be protruding through the defect, which was next lifted and inspection showed no evidence of ischemia. Using cold scissors, granulation and non-viable tissue was excised to freshen the vaginal cuff and reveal viable tissue with excellent blood supply. The vaginal cuff was reaproximated and sutured using a two-layer, imbricated closure with 0 PDS Stratafix suture. Uterosacral ligament suspension was then performed bilaterally. Integrity and closure of the vaginal cuff were confirmed. The patient had a stable postoperative course.

**Conclusion:** Vaginal cuff dehiscence with evisceration is a rare complication following hysterec tomy and requires emergent surgical treatment. Our case demonstrates laparoscopic vaginal cuff revision and repair with uterosacral ligament suspension.

Open Communications 14: Laparoscopy

(4:10 PM – 5:15 PM)

4:38 PM

**Vesico-Ureteral Injury During Benign Hysterectomy:**

Minimally-Invasive Laparoscopic Surgery Versus Laparotomy

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**Study Objective:** Previous studies have been inconsistent as to whether benign hysterectomy via minimally-invasive laparoscopic surgery increases risk of vesico-ureteral injury when compared to laparotomy. We examined the impact of surgical approach (minimally-invasive laparoscopy versus laparotomy) on vesico-ureteral injury during inpatient hysterectomy for benign gynecological disease.

**Design:** Retrospective population-based observational study.

**Setting:** The Nationwide Inpatient Sample.

**Patients or Participants:** 501,110 women who underwent hysterectomy for benign gynecological disease from 2012-2015 were included: total abdominal hysterectomy (TAH, n=284,365 [56.7%]), total laparoscopic hysterectomy (TLH, n=60,410, [12.1%]), abdominal supra-cervical hysterectomy (AbD-SCH, n=55,655 [11.1%]), laparoscopic-assisted vaginal hysterectomy (LAVH, n=45,620 [9.1%]), total vaginal hysterectomy (TVH, n=34,865 [7.0%]), and laparoscopic supracervical hysterectomy (LSC-SCH=20,195 [4.0%]).

**Interventions:** A comprehensive risk assessment for vesico-ureteral injury by hysterectomy mode was performed, adjusting for patient demographics and gynecologic disease types. Propensity score inverse probability of treatment weighing (PS-IPTW) was used to compare (i) TLH versus TAH and (ii) LSC-SCH versus AbD-SCH with generalized estimating equations.

**Measurements and Main Results:** Vesico-ureteral injury was reported in 1,045 (0.21%) women overall. LAVH (0.28%) had the highest bladder injury rate among the groups compared.
injury rate, whereas laparoscopic SCH had the lowest (0.10%) (P < 0.001). TLH (0.13%) had the highest ureteral injury rate, whereas TAH had the lowest (0.04%) (P < 0.001). In PS-IPTW models, TLH was associated with increased risk of ureteral injury (odds ratio [OR] 3.95, 95% confidence interval [CI] 2.03-7.67, P < 0.001) but not bladder injury (OR 1.04, 95% CI 0.57-1.90, P = 0.897) compared to TAH. In contrast, LSC-SCH was not associated with increased risk of vesico-ureteral injury when compared to Abd-SCH (OR 0.62, 95%CI 0.19-1.98, P = 0.419).

Conclusion: The risk of vesico-ureteral injury varies widely by the surgical approach to benign hysterectomy but is overall low regardless of modality. TLH may be associated with an increased risk of ureteral injury when compared to TAH.

Open Communications 14: Laparoscopy
(4:10 PM – 5:15 PM)

4:59 PM

Risk Prediction Model for Patients Undergoing Laparoscopic Hysterectomy
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Study Objective: Develop a model for predicting complications at the time of laparoscopic hysterectomy (LH) for benign indications.

Design: Retrospective cohort study.

Setting: Academic medical center.

Patients or Participants: Patients undergoing LH for benign indications, at our institution, between 2009 and 2015.

Interventions: All patients underwent a LH. Data about the patient, the surgeon, peri-operative complications (intraoperative complications, readmission, re-operation, estimated blood loss greater than 500 cc, operative time greater than 4 hours, postoperative medical complications or length of stay greater than 2 days) and uterine weight were collected retrospectively. Pathologic uterine weight was used as a surrogate for predicted pre-operative uterine weight. The sample was randomly split into two cohorts, one for deriving the model and the other to validate the model.

Measurements and Main Results: A total of 2,430 women met inclusion criteria. The rate of composite complication was 18.7%. Complication rates were similar in the derivation and validation cohorts (19.2% vs 18.3%, p = 0.5501). The logistic regression risk-prediction tool for hysterectomy complication identified 5 variables predictive of complication: race (53% increased odds for black women and 86% increased odds of complication for women of other races when compared with white women), Body Mass Index (BMI) (odds of complication increases by 3% with each 1 kg/m2 increase in BMI), history of laparotomy (38% increased odds of complication), predicted preoperative uterine weight (16% increased odds of complication for every 100 grams of predicted weight) and surgeons’ annual case volume (1% decreased odds of complication for each LH performed annually). The c statistics for the derivation and validation cohorts

4:52 PM

Genitofemoral Nerve Sparing Adhesiolysis
Nuan TYT, 1, 2, 3 Thiel JA, 1, 2 Rattroy DD 1, 2, 3. 1 Obstetrics and Gynecology, Regina General Hospital, Regina, SK, Canada; 2Obstetrics and Gynecology, University of Saskatchewan, Regina, SK, Canada;

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were 0.69 and 0.64, respectively. The model is best calibrated for patients at low risk (<10%) for hysterectomy complication.

**Conclusion:** The LH complication risk predictor model is a potentially powerful tool for predicting complications in patients planning hysterectomy, with a strength in identifying patients at low risk of complication.

**Open Communications 14: Laparoscopy (4:10 PM – 5:15 PM)**

**5:06 PM**

**Laparoscopic Management of Vaginal Vault Fibroids**

Trivedi SP,* Trivedi PH. Obstetrics & Gynecology, Dr. Trivedi’s Total Health Care Centre, Mumbai, India

*Corresponding author.

**Video Objective:** To demonstrate a rare case of vaginal vault fibroids post hysterectomy presenting 7 years after primary surgery.

**Setting:** Tertiary Care University recognised Endoscopy Referral Unit.

**Case Details:** 49 year old patient who underwent Total laparoscopic hysterectomy 7 years back with intermittent spotting and frequency of urination with ultrasound demonstrating multiple well defined hypo-echoic masses at the vault region.

**Interventions:** Laparoscopic management of multiple parasitic fibroids at the vaginal vault. Pre-operative cystoscopy was undertaken and it was found that the fibroid was bulging into the posterior wall of the bladder with close association to the right ureter. Use of dilute vasopressin as in normal myomectomy was done. Fibroids were enucleated which remained hidden in the recto-vaginal and vesico-vaginal plane. As one fibroid was enucleated another came into view representing a tip of the iceberg phenomenon. Vault which got opened during fibroid enucleation was sutured back with standard techniques.

**Conclusion:** Such a rare entity like vaginal vault fibroids can pose a diagnostic dilemma with confusing differentials like stump carcinoma, vault granulomas, chronic infections or endometriotic nodules. Dealing with such fibroids is usually easy but can pose a challenge if large in size distorting the ureteric anatomy and its close association with bladder or the rectum. It also highlights the non-sarcomatous hazards of uncontained morcellation, be it trans-abdominal or vaginal morcellation.

**TUESDAY, NOVEMBER 12, 2019**

**Open Communications 15: Basic Science/Research/Education (12:00 PM – 12:45 PM)**

**12:07 PM**

**Correlation of Surgical Case Volume and Fellowship Training with Simulated Procedural Tasks**

Palvia V,* Doneza JA, Mathews SS, Ascher-Walsh CJ. Minimally Invasive Gynecologic Surgery Department, Mount Sinai Hospital, New York City, NY

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**Study Objective:** To determine an association of surgical case volume and fellowship training with simulated procedural tasks

**Design:** Quality initiative via simulation

**Setting:** Two academic hospitals

**Patients or Participants:** Obstetric and gynecologic (Ob-Gyn) surgeons.

**Interventions:** All 109 participants were required to complete a pre-test survey followed by tasks on the Surgical Science LapSim® laparoscopic simulator. A post-test survey was administered.

**Measurements and Main Results:** The pre-test survey inquired about average monthly laparoscopic case volume and prior training. Simulation included a basic skills task (peg transfer) followed by a procedural task (salpingectomy). Spearman correlation and Wilcoxon tests determined correlations between survey responses and performance parameters. Participants included generalists and fellowship-trained specialists (38%). Surgeons with higher surgical volume (6-10 and 11+ monthly cases) completed the salpingectomy task quicker and with less blood loss than surgeons who operated less frequently (p=0.001, 0.004). Economy of movement (instrument path length) was more efficient among high volume surgeons (p=0.003). Surgeons with fellowship training performed more quickly, efficiently, and with less blood loss compared to generalists (p=0.001, 0.001, 0.004).

There was no difference in ovarian thermal damage regarding case volume and fellowship background (p=0.67, 0.43). Additionally, there was no difference among most performance parameters for the peg transfer task.

**Conclusion:** Surgical experience regarding higher case volume and fellowship training correlate with higher performance scores during simulated procedural tasks. In a prior study, we found similar correlation with simulated basic skills
tasks. In the current study, there was no such correlation with the peg transfer task, likely due to familiarity of the task from the prior study. The current study is a continuation of an ongoing quality initiative to establish a validated simulation program for maintenance of credentials among Ob-Gyn surgeons. Future studies will compare prior simulation scores with validated surgical assessments, operative metrics, and surgical outcomes.

Open Communications 15: Basic Science/Research/Education (12:00 PM – 12:45 PM)
12:14 PM
Effect of Fellowship-Trained Surgeon Involvement on Hysterectomy Outcomes in Morbidly Obese Patients
Whitley J,1,4 Moore KJ,3 Louie M,1 University of North Carolina at Chapel Hill, Chapel Hill, NC; 2Epidemiology, Gillings School of Global Public Health, University of North Carolina Chapel Hill, Chapel Hill, NC; 3Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC
*Corresponding author.

Study Objective: To assess the effect of fellowship-trained surgeons (FTS) on hysterectomy-related complications in morbidly obese patients.
Design: Retrospective cohort study
Setting: Tertiary-care, academic medical center with generalist obstetricians/gynecologists, gynecologic oncologists, urogynecologists, and minimally invasive gynecologic surgery trained surgeons
Patients or Participants: Patients with BMI > 40 kg/m² who underwent any route of hysterectomy between 4/2014 and 3/2018 were eligible for inclusion. 225 patients were randomly selected, excluding patients with malignancy or bariatric surgery.
Interventions: 105 patients who underwent hysterectomy with a FTS were compared to 120 patients with no FTS. Data was collected by chart review and polytomous logistic regression was used for analysis.
Measurements and Main Results: Patients in the FTS group were more obese (BMI 46.7 v. 45.0, P=0.01), had a higher prevalence of obesity-related medical comorbidities (80% v. 55%, P<0.01), and had greater specimen weight (649.9 g v. 320.7 g, P=0.01). ASA class and history of previous abdominal surgery were similar between groups. There were more abdominal hysterectomies (15.2% v. 6.7%, P=0.04) and operative time was longer (230.2 minutes v. 184.5 minutes, P<0.01) in the FTS group. We found no difference in the odds of any complications within 30 days of hysterectomy between groups. After adjusting for factors representing case complexity including hysterectomy route, operative time, medical comorbidities, and specimen weight, there remained no difference despite a suggestion of lower odds of any complication (aOR 0.88; 95% CI 0.39, 1.98) and intra-operative complications (aOR 0.45; 95% CI 0.10, 1.83) in the FTS group.
Conclusion: In morbidly obese patients, hysterectomy by fellowship trained surgeons was not associated with a difference in 30-day complications. It is possible that in this high-risk cohort, there are small differences in outcomes, which we are unable to detect.

Open Communications 15: Basic Science/Research/Education (12:00 PM – 12:45 PM)
12:21 PM
Hysterectomies Completed in General Gynaecology: Can We Predict Likelihood of a Surgical Complication?
Shirreff L,1,2 Mathews A,1 Shapiro J,1 Cipolle AR,3 Lee SK,3 Po L,3 Murji A,4 Obstetrics and Gynecology, Mount Sinai Hospital, Toronto, ON, Canada; 2Obstetrics and Gynecology, Trillium Health Partners, Toronto, ON, Canada; 3Obstetrics and Gynecology, North York General Hospital, Toronto, ON, Canada; 4Obstetrics and Gynecology, Sunnybrook Health Sciences Centre, Toronto, ON, Canada

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Study Objective: To determine hysterectomy complication rate and patient, surgical and provider factors associated with complications.
Design: Retrospective review
Setting: 5 Toronto hospitals
Patients or Participants: Patients undergoing hysterectomy from July 2016-December 2017
Interventions: Hysterectomy procedure
Measurements and Main Results: Retrospective review of Generalist hysterectomies at 5 Toronto hospitals from July 2016 to Dec 2017. Data was extracted from health records coding (ICD-10) and electronic medical records. Complications (in-hospital to 30 days of discharge) were classified using Clavien-Dindo Scale. Patient characteristics (BMI, anemia status), surgical factors (technicity, uterine presence of endometriosis and adhesions, uterine weight) and provider characteristics (case volume) were obtained. Logistic models were used to evaluate variables associated with complications. 1328 hysterectomy cases were performed by 67 surgeons over 1.5 years. The 294 recorded complications were classified as: 119 (40%) Grade 1, 102 (35%) Grade 2, 12 (4%) Grade IIIA, 61 (21%) Grade IIIB. Presence of endometriosis increased odds of any complication (OR 1.87, 95%CI 1.05-3.35, p=0.035). For every 100g increase in uterine weight, odds of ≥ Grade II complication increased by 4.5% (95%CI 0.3% - 9.4%, p=0.035). Low volume surgeons (≤1 hysterectomy/month) had higher unadjusted complication rate (28.6% vs 15.3%, p=0.01). After adjusting for case complexity (composite score incorporating BMI, presence of adhesions, endometriosis and uterine weight) and technicity, low volume surgeons had 2.21 OR (95% CI 1.08 – 4.52, p=0.03) of having ≥ Grade II complication.
Conclusion: Endometriosis and uterine weight increase risk of hysterec-

tomy complications. Low volume surgeons perform more challenging hysterectomies and have lower technicity rates. After adjusting for patient and surgical factors, low volume surgeons have higher odds of complications.

Open Communications 15: Basic Science/Research/Education (12:00 PM – 12:45 PM)
12:28 PM
Post-Operative Opioid Prescribing and Consumption Patterns After Hysterectomy: A Prospective Cohort Study
McEntee K,* Crawford K, Wilson M, Nejad B, Waetjen LE. OBGYN, UC Davis Medical Center, Sacramento, CA
*Corresponding author.

Study Objective: To examine opioid prescribing and consumption patterns after hysterectomy and whether a brief pre-operative survey predicts post-operative opioid consumption.
Design: Prospective cohort study; duration of study participation 3 weeks.
Setting: Single university medical center.
Patients or Participants: From February 2018 to January 2019, we enrolled 99 women undergoing hysterectomy for benign, non-obstetric indications.
Interventions: Pre-operatively, participants reported their baseline pain score (0-10 scale). During the third post-operative week, they completed a telephone interview, including direct count of remaining opioid pills. We assessed factors associated with number of pills taken equivalent to oxycodone 5mg.
Measurements and Main Results: 81 participants completed the post-operative survey after hysterectomy: robotic assisted (n=35), conventional laparoscopic (n=29), vaginal (n=9), or abdominal (n=8). On average, participants took 14.8 pills (std 13.2), were prescribed 27.8 pills (std 11.3), and took 50% of their prescription (std 36.4). Mean duration of use varied significantly by route, however amount taken did not. Higher baseline pain scores and larger prescriptions were associated with more pills taken. For
Open Communications 15: Reproductive (11:00 AM – 12:00 PM)

11:00 AM

Resection of Noncommunicating Rudimentary Uterine Horn
Cesta MA, 1* Biscette SM 2, 1 Department of OB GYN and Women’s Health, University of Louisville Hospital, Louisville, KY; 2 Minimally Invasive gynecologic surgery, University of Louisville Hospital, Louisville, KY
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Video Objective: Learn the preoperative investigation and retroperitoneal dissection required for safe surgical resection of a rudimentary uterine horn associated with unicornuate uterus.

Setting: 19 year old female with increasing right gluteal pain subsequently found to have a cavitary rudimentary uterine horn with concomitant renal anomaly.

Interventions: Robotic assisted laparoscopic dissection of retroperitoneal spaces and resection of rudimentary uterine horn.

Conclusion: Unicornuate uterus can be associated with rudimentary uterine horn and renal anomalies. A surgical approach which incorporates retroperitoneal dissection is necessary for safe resection of rudimentary uterine horn.

Open Communications 15: Reproductive (11:00 AM – 12:00 PM)

11:07 AM

A New Perspective on the Problem of Concomitant Endometriosis and Genital Malformations: Surgical and Embryogenetic Aspects
Adamyans LV, 1* Arakelyan A, 1 Stepanian AA, 2 Farkhat K, 1 Makiyan Z, 1 Popyryadkin A 1, V.I. Kulakov National Medical Research Center for Obstetrics, Gynecology and Perinatology, Ministry of Healthcare of Russia, Moscow, Russian Federation; 2 Academy of Women’s Health and Endoscopic Surgery, Atlanta, GA
*Corresponding author.

Study Objective: To optimize the results of surgical treatment and rehabilitation of patients with genital tract malformations combined with external genital endometriosis.

Design: Prospective study. Level II.


Patients or Participants: 453 patients with utero-vaginal malformations underwent surgery from 2013 to 2018. Based on the presence of endometriotic foci, two groups of patients were created: group 1 included 240 patients with uterine and vaginal malformations and external genital endometriosis; group 2 included 213 patients with uterine and vaginal malformations without concomitant endometriosis.

Interventions: All patients underwent surgical treatments using laparoscopic and hysteroscopic approaches for correction of congenital malformations and endometriosis excision.

Measurements and Main Results: The indications for surgical treatment of patients with utero-vaginal anomalies included primary infertility in 41.5%, secondary infertility in 18.6%, recurrent miscarriages in 26.2%, dysmenorrhea in 45.4%, menorrhagia in 23.2%, pain syndrome in 17.2%, and dyspareunia in 8.1% cases. External genital endometriosis was diagnosed in 53.0% of these patients. We revealed no significant difference in the incidence of endometriosis in patients with utero-vaginal anomalies with or without the obstruction to the menstrual flow.

Conclusion: Implantation theory cannot explain the development of endometriosis in all patients with utero-vaginal malformations. Therefore, all pathogenetic theories must be considered in the investigation of possible mechanisms of endometriosis development in patients with genital tract malformations.
Open Communications 15: Reproductive (11:00 AM – 12:00 PM)

11:21 AM

Cesarean Ectopic Scar Revision

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*Corresponding author.

Video Objective: To present a laparoscopic approach to secondary surgical management of cesarean scar pregnancy through removal of retained products of conception and scar revision.

Setting: We present the case of a 29-year-old G4P3 at 6w5d by LMP referred to a tertiary care facility for cesarean scar ectopic pregnancy. Ultrasound revealed a fetal pole with cardiac motion located at the site of patient’s previous cesarean section scar, with bHCG 112,000.

Interventions: The patient underwent primary medical management with intra-sac and intra-placental administration of methotrexate, followed by intra-embryonic potassium chloride injection to achieve cessation of fetal cardiac motion. bHCG down-trended precipitously, but was persistently positive three months following treatment. Repeat imaging was obtained, which demonstrated retained products of conception (POCs) at the cesarean scar measuring 4.7 cm. Given patient’s desire for future fertility, she underwent laparoscopic removal of POCs and scar revision. We emphasize the following features of secondary surgical management: temporary bilateral uterine artery ligation, lysis of adhesions between the bladder and lower uterine segment, injection of dilute vasopressin adjacent to defect, enucleation of POCs, and two-layer closure of the myometrial defect.

Conclusion: There is limited large-scale data or clinical consensus surrounding optimal management for cesarean scar pregnancies. For patients who desire future fertility, little is known about recurrence and subsequent pregnancy outcomes. We present a safe and effective option for secondary surgical management of retained products of conception, which allows for repair of the defect and restoration of normal uterine anatomy.

Open Communications 15: Reproductive (11:00 AM – 12:00 PM)

11:28 AM

Interval Robotac: Herlyn-Werner-Wunderlich Syndrome

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*Corresponding author.

Video Objective: The objective of this video is to indicate the indications and demonstrate the techniques for the placement of a transabdominal cerclage robotically in a patient with Herlyn-Werner Wunderlich syndrome.

Setting: This case presentation discusses a 33 year old G1P0010 with a history of a missed abortion and uterine anomaly. She was diagnosed with Herlyn-Werner-Wunderlich syndrome based on MRI findings. After a failed D&C, the patient had a hysteroscopy and laparoscopy which showed findings consistent with this syndrome and concern for cervical insufficiency.

Interventions: Due to this uterine anomaly and her cervical abnormalities, the patient was recommended a prophylactic cerclage. A transabdominal cerclage was indicated in this setting.

Conclusion: A transabdominal cerclage can successfully be placed robotically in a patient with a uterine anomaly in the non-pregnant state.

Open Communications 15: Reproductive (11:00 AM – 12:00 PM)

11:35 AM

Laparoscopic Management of Tubal Disease to Improve Fertility Outcomes

Cholkeri-Singh A.,* Miller CE, The Advanced Gynecologic Surgery Institute, Chicago, IL; The Advanced Gynecologic Surgery Institute, Naperville, IL

*Corresponding author.

Video Objective: This video demonstrates decision making and surgical techniques for tubal disease to improve fertility outcomes. Three scenarios are shown demonstrating surgical techniques of fallopian tubes deemed to have good, intermediate and poor prognosis.

Setting: Private infertility practice in the suburbs of Chicago, Illinois

Interventions: Laparoscopic management of tubal disease

Conclusion: Tubal disease is responsible for 25-30% of all female infertility. Several risk factors exist. The utilization of preoperative assessment tools as well as intraoperative findings, can allow a surgeon to make an informed decision of whether to repair and restore versus remove the fallopian tube to improve fertility outcome.

Open Communications 15: Reproductive (11:00 AM – 12:00 PM)

11:42 AM

Minimally Invasive Abdominal Cerclage Compared to Laparotomy: An Updated Comparison of Surgical and Obstetric Outcomes

Kim S.,* Menderes G, Calix R, Bahiyar MO, Azodi M, Yale, New Haven Hospital, New Haven, CT; Obstetrics, Gynecology & Reproductive Sciences, Yale School of Medicine, New Haven, CT; Yale Obstetrics, Gynecology, & Reproductive Sciences, Yale School of Medicine, New Haven, CT

*Corresponding author.

Study Objective: The objective of this study is to report surgical and obstetric outcomes of patients following abdominal cerclage placement through either minimally invasive (MIS) or open techniques. We previously published a study comparing eleven MIS and nine open abdominal cerclage recipients, and here we give an updated report on this infrequently performed procedure.

Design: Retrospective cohort study.

Setting: Referral centers specializing in high risk pregnancy and minimally invasive gynecologic surgery.

Patients or Participants: Women who underwent abdominal cerclage placement either during pregnancy or prior to conception via laparoscopy or laparotomy at Yale New Haven or Bridgeport Hospital between December 2011 through December 2019.

Interventions: One cohort of women had their abdominal cerclage placed using conventional or robotic-assisted laparoscopy. The other cohort consisted of women whose abdominal cerclage was placed through laparotomy. Electronic medical charts were reviewed to collect baseline demographic and pre-procedure obstetric information, as well as surgical and post-procedure obstetric outcomes.

Measurements and Main Results: Twenty-three minimally invasive and 14 open abdominal cerclages were performed during the study period. Fifteen of the MIS and three open cerclages were performed as interval procedures, when patients were not pregnant. Average operative time was longer in the minimally invasive cohort by 40 minutes. Estimated blood loss was lower in the minimally invasive group (45mL in MIS vs 167mL in open cohorts). Length of hospital stay was shorter in the MIS group (0.2 days vs 2.1 days). Post-procedure obstetric outcomes were similar between the two cohorts, and cerclages placed during pregnancy resulted in live birth or maintenance of pregnancy in 88% of MIS and 82% of open cases.
Conclusion: Minimally invasive abdominal cerclage is a safe alternative to laparotomy, when performed by a surgeon with appropriate training and technical skills, providing patients with improved surgical outcomes without impairing the obstetric outcomes.

Open Communications 15: Reproductive
(11:00 AM – 12:00 PM)

11:49 AM

Outcomes After Uterine Artery Embolization and Other Treatment Modalities for Uterine Arteriovenous Malformation: A Multicenter Review from the Society of Gynecologic Surgeons Fellows Pelvic Research Network

Arvizo C,1,6 Chicura A,2 Plewniak KM3 McCaffrey C,4 Miagga E,5 Ladanyi C,6 Yunker AC,1 1Vanderbilt University Medical Center, Nashville, TN; 2Cleveland Clinic, Cleveland, OH; 3OB/GYN (Minimally Invasive Gynecologic Surgery), Montefore Hospital/Albert Einstein College of Medicine, Bronx, NY; 4Division of Urogynecology, Department of Obstetrics and Gynecology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada; 5University of Toronto, Toronto, ON, Canada; 6Minimally Invasive Gynecologic Surgery, University of Tennessee College of Medicine Chattanooga, Chattanooga, TN; 7Division of Gynecologic Minimally Invasive Surgery, Vanderbilt University Medical Center, Nashville, TN

*Corresponding author.

Study Objective: To compare treatment outcomes between women managed with uterine artery embolization (UAE) and women treated with other modalities for uterine arteriovenous malformations (AVM)

Design: Retrospective cohort

Setting: Five academic centers participating in the Fellows’ Pelvic Research Network (FPRN)

Patients or Participants: Women 18 years or older with pelvic ultrasound or other imaging diagnosis of uterine AVM between January 2006 and December 2013

Interventions: Patients received either UAE or other conservative treatment options, which varied based on provider preference. Other treatment options included expectant management, hormones, methylergonovine, dilation and curettage (D&C), tranexamic acid. Women who underwent hysterectomy as first-line treatment were excluded.

Measurements and Main Results: Chart review was performed to gather data. Preliminary data analysis of 23 patients who met inclusion criteria at 3 different sites was performed. Twenty-one women (91.3%) underwent ultrasound and 6 (26.1%) ultimately had angiography while one patient had magnetic resonance angiography (MRA) performed. Of the 7 patients who had angiography or UAE, 5 confirmed a true uterine AVM. The majority of women presented with abnormal bleeding (82.6%). For first-line treatment, 5 patients underwent UAE, 14 had expectant management, 3 were given methylergonovine (1 patient was administered IV conjugated estrogen concomitantly), 3 were given oral contraceptive pills, 2 underwent D&C, 1 patient underwent hysteroscopic resection, 1 received tranexamic acid and 1 patient received medroxyprogesterone acetate. Five patients were managed with a second-line treatment, 13 did not require additional treatment and 5 patients were lost to follow up. Fourteen patients had documented resolution.

Conclusion: Uterine AVM occur very infrequently but should be considered in the differential diagnosis of abnormal uterine bleeding. Although initial imaging showed concern for a uterine AVM, at least 2 of 7 patients who underwent subsequent angiography did not confirm the diagnosis. In women with concern for AVM, confirmatory imaging should be performed prior to any treatment that may affect future fertility.

Open Communications 16: Robotics
(11:00 AM – 12:45 PM)

11:07 AM

The Impact of Robotic Assisted Total Laparoscopic Hysterectomy on Pelvic Floor Function and Sexual Function.

Forssgren C*, Department of Clinical Sciences, Danderyd Hospital, Karolinska Institute, Stockholm, Sweden

*Corresponding author.

Study Objective: To investigate the long-term effects of hysterectomy on benign indication on pelvic floor function and sexual function.

Design: Prospective clinical cohort study

Setting: Academic affiliated district general hospital.

Patients or Participants: Patients undergoing hysterectomy for benign disease between 2016 and 2018

Interventions: A comparison of robotic assisted total laparoscopic hysterectomy with traditional techniques of surgery regarding pelvic floor function and sexual function.

Measurements and Main Results: The study includes 259 women going through hysterectomy. Participants fills in validated questionnaires (PFIQ, PFDI-20, FSFI) on pelvic floor function and sexual function before surgery, six months, 1, 3, and 5 years after surgery. General health and obstetric history are registered in a separate protocol. Multivariate regression and nonparametric statistics are used.

The one-year results are not complete but will be presented in November 2019. The results for the six-months follow up of the first 150 women show that the mean age at surgery was 50.2 (SD 9.7), the mean parity was 1.8 (SD 1.2) and mean BMI was 26.4 (SD 4.9). Robotic assisted laparoscopic hysterectomy was performed in 37.3% of the women, laparoscopic hysterectomy in 22%, laparoscopically assisted hysterectomy in 11%, vaginal hysterectomy in 3.3% and abdominal hysterectomy in 36.7%.

There was a significant higher amount of bleeding at surgery 453 ml (range 50-1300) in the abdominal cohort. Urinary, bladder and pelvic symptoms...
were significantly reduced six months after hysterectomy. The reduction of symptoms was most prominent in the abdominal hysterectomy cohort but also significant in the robotic hysterectomy cohort. There were no significant changes in sexual function in the cohorts after six months.

Conclusion: There was a reduction of urinary, bladder and pelvic symptoms six months after hysterectomy but no differences in sexual function. Remaining analysis will show whether those results persist at the one-year follow-up.

Open Communications 16: Robotics (11:00 AM – 12:45 PM)

11:14 AM

Robotic-Assisted Laparoscopic Excision of C-Section Scar Ectopic Pregnancy with Bipolar Coagulation of Uterine Vessels
De Amorim Paiva CC,1, * Alagkiozidis I,1 Son MA,1 Elfeky A,1, * Minimally Invasive Gynecology Surgery Department, Maimonides Medical Center, Brooklyn, NY; 2Gynecologic Oncology, Maimonides Medical Center, Brooklyn, NY
*Corresponding author.

Video Objective: To describe a technique of robotic-assisted laparoscopic excision of c-section scar ectopic pregnancy (CSP) with bipolar coagulation of uterine vessels.

Setting: CSP occurs when a gestational sac (GS) is located in the anterior uterine wall with diminished myometrium between the sac and the bladder, and a discontinuity in the anterior wall of the uterus adjacent to the GS, with an empty uterus and cervical canal. It is estimated that 4.2% of ectopic pregnancies are CSP. Laparoscopic bipolar coagulation of uterine vessels is mostly described in myomectomies: it aids in decreasing blood loss, preserves the uterus, and there are pregnancies and term deliveries post-procedure reported in the literature, with approximately 40% early miscarriage rate. This is a video case report of a 35yo G6P3023 7weeks pregnant with an empty uterus and cervical canal. It is estimated that 4.2% of ectopic pregnancies are CSP. Laparoscopic bipolar coagulation of uterine vessels is mostly described in myomectomies: it aids in decreasing blood loss, preserves the uterus, and there are pregnancies and term deliveries post-procedure reported in the literature, with approximately 40% early miscarriage rate. This is a video case report of a 35yo G6P3023 7weeks pregnant with CSP on sonogram, failed multidose regimen methotrexate and developed lower abdominal pain with vaginal bleeding. She was counseled on surgical treatment of CSP.

Interventions: In this video, we describe the surgical approach opted for this patient. The minimally invasive surgery was recommended considering decreased blood loss, postoperative pain and hospital stay. Considering her history of prior 3 c-sections, the robotic approach would offer better visualization for lysis of adhesions and greater instruments range of motion. In anticipation of bleeding of difficult control, bipolar coagulation of uterine vessels was planned preoperatively. Preoperative imaging was also crucial. It was noted firm adhesions from the bladder to the lower uterine segment, carefully dissected off until identification and removal of GS, confirmed with frozen section. The hysterotomy was repaired with barbed suture. Excellent hemostasis with minimal blood loss (EBL 20ml) noted. Patient did well postoperatively, with beta HCG followed to zero.

Conclusion: Robotic-assisted laparoscopic excision of CSP should be considered as a valuable treatment option, and preparedness is paramount.

Open Communications 16: Robotics (11:00 AM – 12:45 PM)

11:28 AM

Robotic Isthmocele Repair with Hysteroscopic Assistance
Chuba N,1 * Thompson RE,2 Bisnette SM,1 OB/GYN, University of Louisville, Louisville, KY; 3OB/GYN, University of Louisville, Louisville, KY; 3Minimally Invasive gynecologic surgery, University of Louisville Hospital, Louisville, KY
*Corresponding author.

Video Objective: To highlight the diagnosis, excision and repair of a uterine isthmocele

Setting: Urban academic hospital

Interventions: Da Vinci assisted laparoscopic excision of isthmocele with hysteroscopic assistance

Conclusion: Isthmocele repair is feasible and safe for symptomatic patients and those desiring fertility preservation.

Open Communications 16: Robotics (11:00 AM – 12:45 PM)

11:35 AM

Robotic Assisted Laparoscopic Resection of Uterine Isthmocele
La O,1 * Lewis ML. Obstetrics and Gynecology, New York Presbyterian Brooklyn Methodist Hospital, Brooklyn, NY
*Corresponding author.

Video Objective: Uterine isthmocoeles are pouch-like defects in the anterior uterine wall, at the site of a prior cesarean section scar. Its prevalence has increased in direct relation to the increase in cesarean rates worldwide. Isthmoceles cause abnormal uterine bleeding, secondary infertility, and pain. There is no standard treatment for isthmocoeles. This video demonstrates a robotic assisted laparoscopic approach to the resection of a uterine isthmocele.

Setting: The patient is a 36 year old with a history of one cesarean section with abnormal uterine bleeding. She was diagnosed with an isthmocele by transvaginal ultrasound performed in preparation for embryo transfer. The patient was treated at a tertiary care centre in New York.

Interventions: The risks, benefits, and alternatives of a robotic assisted laparoscopic resection of a uterine isthmocele were discussed with the patient and consent was obtained. The robot was docked and simultaneous hysteroscopy was performed. The fenestrated bipolar and monopolar scissors were used to perform lysis of adhesions and dissection of the bladder off the uterine isthmus and cervix. Robotic fluorescence imaging was used to identify the isthmocele defect via the “lantern sign” where the hysteroscopic light shines through the tissue similar to a lantern. The isthmocele was excised and the defect was reaproximated with an absorbable monofilament suture. A barbed suture was then used for a second imbricating layer, with excellent hemostasis. Fluorescence imaging was used again and the hysteroscopic light could no longer be identified, as the isthmocele had been resected and repaired.

Conclusion: Uterine isthmocoeles are increasing in relation to the increased rate of cesarean sections. Symptomatic and asymptomatic women who desire future pregnancy should be offered surgical treatment. Robotic assisted
Robotic Hysterectomy for Placenta Increta in the Immediate Postpartum Period Post Cesarean Delivery.
Iskander G*, MIGS surgery, Inova fairoaks hospital, Fairfax, VA
*Corresponding author.

Video Objective: Rate of placenta increta is raising in the United States due to a higher number of cesarean deliveries performed in the United States. We present a case of placenta increta diagnosed post cesarean delivery day 3. Robotic hysterectomy performed successfully on postpartum day 3.

Setting: community hospital medical center.
Interventions: Robotic Hysterectomy.
Conclusion: Robotic Hysterectomy provide a better option for Dissection of fine tissue planes . And less blood loss during surgery specially in anticipated difficult cases.

Recognizing the challenges of large postpartum uterus, placenta increta, fresh cesarean section. And difficult bladder dissection. Using the robotic platform with 3D magnification made it easier to perform a rather more challenging surgery.
Conclusion: Mullerian anomalies may require modifications to typical surgical procedure in performing hysterectomy. If present, the rectovesical ligament should be resected. With uterine didelphys, it may only be feasible to place one uterine manipulator. This critically leaves one cervix without a colpotomy cup. Begin colpotomy posteriorly and on the hemivagin with a colpotomy cup. The surgeon can then pull cephalad on the specimen while completing the colpotomy around the contralateral hemivagina. Ureteral awareness is critical while performing cuff suspension and closure due to the wide lateral colpotomy resulting from two cervices. The ureter is much closer in proximity and risks getting kinked. Consider ureterolysis and more extensive bladder dissection before cuff closure, and cystourethroscopy to ensure ureteral jets after closure.

Open Communications 16: Robotics (11:00 AM – 12:45 PM)

12:10 PM

Novel Approach to Robotic Transabdominal Cervical Utilizing Hand Thrown Knots
Maas T.1, Cao C.1, Wang K.1, Pierce-William R.2, McCardy R.3
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Video Objective: The objective of this video is to present a novel approach to robotic transabdominal cerclage with the goal of maintaining tactile feedback utilizing a gelport mini device in lieu of a 12 mm robotic assist port.

Setting: The patient presented is a 29 year old G2P0101 with a history of a prior 16 week loss and a 22 week loss after placement of a history indicated transvaginal cerclage at 13 weeks. Having failed a transvaginal cerclage, the patient desired placement of a transabdominal cerclage to improve pregnancy outcomes. The procedure was performed at a tertiary care center.

Interventions: Placement of a robotic transabdominal cerclage utilizing a suprapubic gel port mini.

Conclusion: We demonstrate a novel technique which utilizes a suprapubic gel port mini to allow for hand tied knots at the time of robotic transabdominal cerclage placement. The surgeon is able to utilize tactile feedback ensuring both proper cerclage placement and sufficiently tied knots.

Open Communications 16: Robotics (11:00 AM – 12:45 PM)

12:17 PM

Cost Drivers for Benign Hysterectomy in a Healthcare System, 2013-2019
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*Corresponding author.

Study Objective: To analyze the association of patient factors and surgical indications with hospital charges between hysterectomy approaches (laparoscopic, robotic-assisted, abdominal, and vaginal).

Design: Retrospective study from 7/2013–2/2019 using the Premier Healthcare Database (clinical and financial data from hospital-based outpatient and inpatient encounters). Comorbidities were assessed using the Elixhauser Index. Total charges adjusted for inflation using Consumer Price Index. Multivariate linear regression performed to identify factors affecting total charges.

Setting: Integrated healthcare system including five academic and community hospitals in one region.

Patients or Participants: 4,523 women age 18–88 years underwent hysterectomy for benign indications (fibroids, abnormal uterine bleeding [AUB], endometriosis, pelvic organ prolapse [POP], and other indications).

Interventions: N/A

Measurements and Main Results: Most common indication across all approaches was fibroids (50%), then AUB (17%), endometriosis (9%), POP (9%) and other diagnoses (15%). Median age was 47 years (IQR 42-52 years). The sample was 53% White, 35% Black, and 12% other races; 7% were Hispanic. 51% had no comorbidities, 25% had one comorbidity, and 24% had two or more. 28% were discharged on POD#0, 47% on POD#1, 14% on POD#2, and 11% on POD#3 or later. Median charges were $11,908 for laparoscopic, $14,574 for robotic-assisted, $17,162 for abdominal, and $11,954 for vaginal. In regression, charges for hysterectomy were affected significantly by surgical approach, indication, year, age, race/ethnicity, comorbidities, length of stay, and hospital site (p<0.05 for all).

Additional charges for robotic-assisted hysterectomy compared to laparoscopic were smallest for fibroids and greatest for POP. Laparoscopic hysterectomy was less expensive than abdominal only for endometriosis.

Open Communications 16: Robotics (11:00 AM – 12:45 PM)

12:24 PM

Surgical Techniques: Tagging the Ureter for Improved Identification
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Video Objective: To illustrate a laparoscopic surgical technique of tagging the ureter for improved ureteral identification.

Setting: In patients with severe pathology such as stage IV endometriosis with an obliterated cul-de-sac, identification of the ureters can be challenging. Furthermore, the natural course of the ureter may be altered due to the distorted surrounding structures and significant fibrosis. Retroperitoneal identification of the ureter and ureterolysis is often required to avoid inadvertent injury to the ureter and safely complete a hysterectomy with or without an oophorectomy. The dissection involved may be both time-consuming and challenging. We describe a technique where a vessel loop can easily be placed around the ureter, used as a tag, and referenced throughout the remainder of a difficult surgical case. At the end of the case, the vessel loop is cut and removed through the laparoscopic port. This surgical technique is widely used in Urologic Surgery and may have applications within Minimally Invasive Gynecologic Surgery. Here, we present this surgical technique in a 38 year old woman who presents with pelvic pain and a known history of endometriomas.

Interventions: Robotic-assisted laparoscopic hysterectomy, bilateral salpingo-oophorectomy, ureterolysis, and cystoscopy with laparoscopic tagging of the ureter.

Conclusion: Laparoscopic tagging of the ureter is a technique that may be used in select challenging cases to efficiently and safely complete the procedure.
Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

11:00 AM
Laparoscopic Excision of Obturator Nerve Schwannoma
Nihlani H., Shetty T., Goel A., Puntambekar SP, Galaxy Care Laparoscopic Institute Pvt. Ltd, Pune, India; Galaxy Care Laparoscopic Institute Pvt. Ltd, Pune, India
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Video Objective: Obturator nerve schwannomas are extremely rare with only 11 cases being reported in the English-language literature. The pre-operative diagnosis is difficult due to non-specific symptoms and atypical imaging findings. The excision of an obturator nerve schwannoma is a challenging task because of the narrow obturalt fossa which is surrounded by vital structures and it is important to preserve the nerve to prevent any post-operative neurological disorders.

Setting: A 42 year old married lady presented to us with complaints of pain in the left leg for the past 4 years. The examination was unremarkable and MRI pelvis revealed a 6.1 x 6.3cm encapsulated retroperitoneal mass on left side with septations and cystic changes and it was displacing the internal iliac vessels medially.

Interventions: With the help of laparoscopy, we could achieve a magnified view of the pelvic anatomy and meticulous dissection could be done to enucleate the tumor and preserve the integrity of obturator nerve. The operative time was 40 minutes and there was no blood loss. The post-operative course was uneventful and the patient was discharged after 4 days. On follow-up, the patient did not have any neurological deficits and no bowel, bladder complaints.

Conclusion: Thus, laparoscopic surgery can be done with basic knowledge of surgical anatomy of pelvis and it helps in preserving the nerve function and faster recovery.

Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

11:07 AM
Minimal Blood Loss in Robotic Assisted Laparoscopic Myomectomy: Bulldog Clamp for Temporary Ligation of Uterine Arteries and Uteroovarian Vessels
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Video Objective: To demonstrate how to reduce the blood loss in minimally invasive myomectomy, with using laparoscopic Bulldog clamps for ligating the uterine arteries and utero-ovarian vessels.

Setting: 42 y/o patient with history of infertility, prior abdominal myomectomy, abnormal uterine bleeding with multiple fibroids largest one 6 cm in dimension, who underwent robotic-assisted laparoscopic myomectomy.

Interventions: Retroperitoneal dissection and ureterolysis were performed to isolate the uterine vessels, then fallopian tubes were isolated from utero-ovarian ligaments bilaterally. Laparoscopic Bulldog clamps were used to temporarily clamp uterine arteries and utero-ovarian ligaments.

Robotic Myomectomy was performed and total of 13 fibroids were removed. Uterus was repaired with 2-0 V-locks in multiple layers and reconstructed. At the completion of myomectomy the clamps were removed from the vessels. Total of estimated blood loss was 50 cc. Patient was discharged home in less than 24 hours with no complication.

Conclusion: Blood loss in myomectomy is related to location, and numbers of myoma. Clamping the uterine vessels and utero-ovarian can significantly reduce the blood loss. This technique requires retroperitoneal dissection and ureterolysis. Knowledge of anatomy is a master key to success.

Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

11:14 AM
Single-Site Laparoscopy Combined with Hysteroscopy for Large Cesarean Section Diverticulum Arising from Atypical Placental Site Nodule
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*Corresponding author.

Video Objective: To demonstrate a technique for single-site laparoscopic management combined with hysteroscopy of large cesarean section diverticulum arising from atypical placental site nodule.

Setting: Academic teaching hospital.

Interventions: The patient underwent single-site laparoscopic excision of a large cesarean section diverticulum arising from atypical placental site nodule. Hysteroscopy was performed before and after surgery.

Conclusion: Single-site laparoscopic management combined with hysteroscopy is feasible and safe for the management of CSD.

Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

11:21 AM
Up to 12 Months of Efficacy and Safety of Elagolix Treatment in Women with Heavy Menstrual Bleeding Associated with Uterine Fibroids
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Study Objective: To evaluate the efficacy and safety of elagolix, an oral gonadotropin-releasing hormone antagonist, with hormonal add-back therapy in women with heavy menstrual bleeding (HMB) associated with uterine fibroids (UF) for up to 12-months.

Design: Elaris UF-EXTEND, a phase 3 extension study of two pivotal 6-month phase 3 studies, Elaris UF-1 and UF-2, evaluated the efficacy and safety of an additional 6-months of treatment (up to 12-months total) with elagolix 300mg twice daily (BID) with add-back therapy (1mg estradiol/0.5mg norethindrone acetate [E2/NETA] once daily) and elagolix 300mg BID alone as a reference arm.

Setting: Outpatient setting.

Patients or Participants: Participants were premenopausal women age 18-51 with HMB (>80mL/cycle menstrual blood loss [MBL]) associated with UF. A total of 433 women who completed the 6-month treatment period in the pivotal studies were enrolled in Elaris UF-EXTEND.
Interventions: Women who received elagolix+E2/NETA or elagolix alone in the pivotal studies continued to receive the same treatment while women who received placebo were randomized 1:1 to receive one of the two elagolix treatments. Here, we report data from women who received elagolix+E2/NETA or elagolix alone in both pivotal and extension studies.

Measurements and Main Results: MBL was assessed by the alkaline hematin method. Baseline was defined as the measure obtained before dosing in pivotal studies. 87.9% of women who received elagolix+E2/NETA and 89.4% who received elagolix alone had <80mL MBL during final month and ≥50% MBL reduction from baseline to final month. 74.8% of women who received elagolix+E2/NETA and 89.2% who received elagolix alone had suppression of bleeding (no bleeding, spotting allowed) at final month. Majority of adverse events (AEs) were rated mild or moderate by investigators. Most frequently reported AEs among elagolix groups were hot flush, headache, nasopharyngitis, and nausea.

Conclusion: Treatment with elagolix+E2/NETA for up to 12-months provided sustained MBL reduction comparable to elagolix alone with a safety profile consistent with preceding pivotal studies.

Open Communications 17: Laparoscopy (11:00 AM – 12:45 PM)

11:28 AM

Effect of Fibroid Location and Size on Efficacy of Elagolix: Results from Phase 3 Clinical Trials

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Study Objective: Evaluate influence of uterine fibroid (UF) size/location on the efficacy of elagolix with add-back therapy in women with heavy menstrual bleeding (HMB) associated with UF.

Design: Data was pooled from two 6-month, randomized, double-blind, placebo-controlled phase 3 studies, Elaris UF-1 and UF-2.

Setting: Outpatient in clinic/office

Patients or Participants: Premenopausal women (18-51 years) with HMB [≥80mL menstrual blood loss (MBL)/cycle; alkaline hematin methodology] and ultrasound-confirmed UFD diagnosis.

Interventions: Women were randomized 1:1:2 to placebo, elagolix 300mg twice daily (BID), or elagolix 300mg BID with 1mg estradiol/0.5mg nor-ethindrone acetate (E2/NETA) once daily.

Measurements and Main Results: This subgroup analysis evaluated the influence of UF location and size on the efficacy of elagolix+E2/NETA, Uterine volume, and size and location of UF were assessed by ultrasound. Subgroups were defined by baseline (BL) FIGO categories which were grouped FIGO 0-3, FIGO 4, or FIGO 5-8, median BL primary fibroid volume and median BL uterine volume. The primary endpoint was the proportion of women with <80mL MBL during the final month and ≥50% MBL reduction from BL to the final month. Adverse events (AEs) were monitored. Overall 72.2% (95% CI, 67.65, 76.73) who received elagolix+E2/NETA were responders for the primary endpoint. Results were similar for all FIGO classified subgroups: FIGO 0-3, 77.7% (95% CI, 65.10, 90.22), FIGO 4, 68.1% (95% CI, 60.98, 75.18), and FIGO 5-8, 74.0% (95% CI, 67.21, 80.85). Similar results were seen in women with a primary fibroid volume of either < or ≥36.2 cm³ (median) and uterine volume of either < or ≥356.5 cm³ (median). Overall AEs for elagolix+E2/NETA included hot flushes (20.0%), nausea (9.4%), headache (9.4%), night sweats (8.6%), and fatigue (6.1%).

Conclusion: The effect of elagolix in reducing HMB associated with UF was not impacted by uterine volume, or UF location and size.

Open Communications 17: Laparoscopy (11:00 AM – 12:45 PM)

11:35 AM

Laparoscopic Vessel Clipping at Myomectomy - Uterine, Ovarian and Sampsons Artery

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*Corresponding author.

Video Objective: To demonstrate the occlusion of three areas: the uterine artery, the round ligament and the infundibulopelvic ligament during myomectomy as a blood-sparing technique.

Setting: Two young patients presented with severe dysmenorrhea, AUB and subfertility. They underwent laparoscopic myomectomy, for whom the uterine artery, infundibulo-pelvic ligament and round ligament were occluded prior to the first uterine incision.

Interventions: After a survey, it was decided to use the lateral approach to uterine artery occlusion. The landmark was identified with traction on the medial umbilical ligament. The peritoneum was incised, and the ureter and uterine artery were exposed with careful blunt dissection. Temporary surgical clips were placed on bilateral uterine arteries. Subsequently, bilateral IP and round ligaments were similarly occluded. With devascularisation achieved, a linear incision was made over the myoma using a unipolar hook and carried through the serosa right to the myoma. Myometrium was sutured using the baseball technique. Myopia was removed by morcellation. Surgical clips were successfully removed from the uterine arteries and both IP and round ligaments. Peritoneal lavage was carried out, and Intercede barrier (Ethicon, Johnson & Johnson, Neuchatel, Switzerland) was placed. Blood loss was estimated by subtracting the instilled rinsing volume from the volume of fluid collected in the suction drain at the end of procedure. There were no post-operative complications.

Conclusion: Occlusion both the infundibulo-pelvic and round ligaments prior to laparoscopic myomectomy is a simple, reversible procedure, and does not significantly increase operative times. When used in conjunction with transient uterine artery occlusion, it may serve to further limit blood loss during surgery and hasten recovery. Larger studies are needed to define surgical outcomes, and recognize short and long term complications, if any.

Open Communications 17: Laparoscopy (11:00 AM – 12:45 PM)

11:42 AM

Laparoendoscopic Single-Site Surgery Versus Conventional Laparoscopy for Cervicovaginal Reconstruction of Congenital Vaginal and Cervical Aplasia

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*Corresponding author.

Study Objective: To assess the safety and effectiveness of laparoendoscopic single-site surgery (LESS) compared to conventional laparoscopic surgery for cervicovaginal reconstruction of congenital vaginal and cervical aplasia.

Design: This was a retrospective study of 19 women who were diagnosed as congenital vaginal and cervical aplasia with a functional endometrial cavity and underwent cervicovaginal reconstruction using small intestinal submucosa graft between January 2013 and December
2018 at the Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China.

Setting: University hospital.

Patients or Participants: Four women underwent LESS and 15 women underwent conventional laparoscopic surgery for cervicovaginal reconstruction.

Interventions: In the LESS group, all surgical procedures were performed through a single umbilical multichannel port with 2.5 cm incision. In the conventional group, the procedures were completed using a 10-mm umbilical optical trocar and 3 additional 5-mm ancillary trocars.

Measurements and Main Results: Clinical characteristics, perioperative data, subsequent convalescence and body image were postoperatively assessed. The preoperative characteristics did not significantly differ between the two groups. The median operative time was 212 min in the LESS group and 180 min in the conventional group (P=0.49). The postoperative hemoglobin drop was similar in the two groups (9.75±3.26/dl VS 11.67±8.64 g/dl, P=0.69). There was no complication in the two groups. There was no difference in hospitalization and cost between the two groups. At a median follow-up of 38 (4–64) months, all patients experienced relief of abdominal pain and resumed menstruation. The vaginal-length gain was similar in the two groups (7.25±0.50cm VS 6.63±0.58 cm, P=0.71). The patients in the LESS group showed higher satisfaction with their body (11.50±1.00 VS 16.07±0.18 cm, P<0.01) and their scar (22.00±0.82 VS 19.53±2.13cm, P=0.40).

Conclusion: The single-port technique for cervicovaginal reconstruction is feasible, safe, and equally effective compared to the conventional technique.

Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

11:49 AM

Description of Patterns and Exploration of Risk Factors for Regret One Year After Hysterectomy: A Longitudinal Prospective Study
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Study Objective: To describe patterns of regret up to one year after hysterectomy and analyze associated risk factors

Design: Prospective cohort study, USPSTF II-2

Setting: Henry Ford Health System, Detroit, MI

Patients or Participants: Women who had planned to have a hysterectomy for non-cancer reasons, were recruited via telephone.

Interventions: Before and after hysterectomy, patients were administered validated surveys. The Patient Health Questionnaire-9 (PHQ-9) to measure depression severity. The Decision-Regret Scale for regret and the Comprehensive score for Financial Toxicity.

Measurements and Main Results: 459 women were enrolled, 91.9% completed questionnaires about their health and decision to have a hysterectomy within 14 days prior to surgery and at 3,6 and 12-months post-surgery. The latent class model investigated regret trajectories over time. Demographic and operative characteristics by latent class group were analyzed using Chi-squared test and one-way ANOVA.

Of these hysterectomies, 28.5% were via abdominal route. Three groups were identified by their patterns of repeated measured of self-reported regret (p<0.0001). Group 1 (7.41%) had the highest level of regret at baseline which increased further to a high one year after surgery. Group 2 (13.3%), had the same baseline level of regret as group 1, which rapidly declined right after. The largest group, Group 3, (79.4%) had the lowest regret score at baseline and a similar overall trajectory as group 2, with the lowest overall regret one year after surgery.

Important differences were found with regards to pain, depression, surgery satisfaction, insurance type, race and financial toxicity. Differences were however not found for route of surgery, BMI, age, length of stay, procedure duration, estimated blood loss, complications, concomitant oophorectomy, uterine weight, and indication for surgery.

Conclusion: This study emphasizes exploring pain and depression during preoperative counseling. Understanding that race, insurance type and financial toxicity may impact patient-perceived outcomes like regret after hysterectomy, could help reduce long-term regret after hysterectomy.

Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

11:56 AM

Laparoscopic Boari Flap for Inadvertent Ureteral Injury During Die Resection
Andou M*. Obstetrics and Gynecology, Kurashiki Medical Center, Kurashiki, Japan
*Corresponding author.

Video Objective: To demonstrate minimally invasive strategies for inadvertent intraoperative ureteral injury. This case report shows how we managed an extensive ureteral injury while dissecting DIE.

Setting: Urban general hospital in Japan.

Interventions: This patient suffered from DIE and extensive and severe fibrosis. As a result of the severe and extensive fibrosis, the surgeon performing the DIE resection misrecognized the ureter for the deformed sacrouterine ligament and this structure was coagulated and resected. The author of this report was called to take over the repair and reconstruction of the ureter. The laparoscopic Boari flap with psoas hitch technique was performed to compensate for the large ureteral defect. In the Boari flap technique, the ureter is mobilized cranially and the bladder is also dissected and mobilized. Then a flap is cut from the wall of the bladder and this flap is suture fixed to the psoas fascia and enveloped to make a tunnel for the cut end of the ureter.

Conclusion: The patient was able to ambulate and take and normal diet the next day. No stenosis or leaks occurred and no blood transfusions were required. Although the technique is demanding, we are able to avoid open surgery, making this strategy a good, patient friendly option when a repair scenario is needed.

Open Communications 17: Laparoscopy
(11:00 AM – 12:45 PM)

12:03 PM

Laparoscopic Ureteral Reconstruction- Three Steps for Any Ureteral Defect
Andou M*. Obstetrics and Gynecology, Kurashiki Medical Center, Kurashiki, Japan
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Video Objective: To demonstrate methods to compensate for large ureteral defects after extensive resection of ureteral endometriosis. I will present 3 methods, the psoas hitch, the Boari flap and ileal interposition.

Setting: Urban general hospital in Japan.

Interventions: These patients suffered from ureteral stenosis, hydronephrosis and hydrourerter. We performed laparoscopic extensive resection of DIE and the resection of the involved ureter. As a result of the resection, we needed reconstruction of the urinary tract. The type of reconstruction depends on the size of the defect. We need
intact and tension-free anastomosis of the ureter and the bladder. If the involved segment is small, we perform simple reimplantation of the ureter to the bladder. However, if the defect is larger, we need to perform a psasos hitch and sometimes a Boari flap in accordance with how much length of the ureter needs to be compensated for. In rare cases where there is a great deal of loss of ureteral length, we interpose a graft of the ileum. The harvest defect of the ileum in reconstructed with functional end-to-end anastomosis.

**Conclusion:** The laparoscopic psasos hitch, Boari flap and ileal ureter are reconstructive techniques that allow for more extensive resection of endometriosis by minimally invasive surgery. These techniques provide tension-free adaptation after extensive resection of the ureter.

Open Communications 17: Laparoscopy (11:00 AM – 12:45 PM)

**Getting Out of a Sticky Situation: Approaching Intra-Abdominal Adhesions**

*Corresponding author. Kulkarni A, TaggedP

Laparoscopic Myomectomy in the 2nd Trimester of Pregnancy

Kulkarni A.1,2 McCaffrey C.2 Bodley J.2 Kung R.C.1 1Department of Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC; 2Division of Urogynecology, Department of Obstetrics and Gynecology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada

**Video Objective:** The purpose of this video is to demonstrate surgical management of a symptomatic fibroid in the 2nd trimester of pregnancy.

**Setting:** This patient is a 26 year old G1P0 who presented to a tertiary care center at 18 weeks and 3 days gestational age with severe abdominal pain. This was her third presentation to hospital for abdominal pain during pregnancy. She was given intravenous and oral narcotics, which did not alleviate her pain. She was otherwise healthy, with no previous surgeries. This pregnancy was a spontaneous conception. She was incidentally diagnosed with a fibroid at approximately 7 weeks gestational age on her dating ultrasound. On presentation, she was uncomfortable at rest, with stable vitals. Her abdomen was soft, with involuntary guarding. She had severe pain on light palpation of her right lower quadrant. An MRI of her abdomen and pelvis delineated this to be a pedunculated fundal uterine fibroid, measuring 19.4 by 13.2 by 16.2cm, retroplacental in location.

Her pregnancy has otherwise been uncomplicated, with a normal enhanced first trimester screen and normal anatomy ultrasound. She continued to experience episodes of refractory severe pain. Ultimately, she was consented for a laparoscopic myomectomy, with mini-laparotomy and morcellation.

**Interventions:** Laparoscopic myomectomy, with mini-laparotomy and morcellation of the fibroid at 18 weeks and 5 days gestational age.

**Conclusion:** This case is an example of safe antenatal surgical management for symptomatic fibroids in patients who fail conservative medical management. Antenatal surgical management has generally been recommended against due to the risk of pregnancy loss. With proper patient selection, a myomectomy can be safely done in the antenatal period for patients who fail conservative medical management.

Open Communications 17: Laparoscopy (11:00 AM – 12:45 PM)

**Robotic Assisted Laparoscopic Cervical Myomectomy**

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**Video Objective:** The goal of this video is to describe and illustrate a laparoscopic approach to an exophytic cervical leiomysoma.

**Setting:** Academic tertiary care hospital.

**Interventions:** A robotic-assisted laparoscopic approach for a large cervical myomectomy is demonstrated in a patient with a complex surgical history. The use of a vaginal sponge-stick helps elevate and define the cervical myoma. Bladder is back-filled with sterile fluid to further assist in delineation of bladder edges with respect to the myoma. Vesico-uterine peritoneum is incised, and fibroid is dissected with the use of blunt and sharp dissection. Cystoscopy is performed at the completion of the case, given close proximity to bladder throughout dissection.

**Conclusion:** We depict a safe and reproducible robotic-assisted laparoscopic approach to cervical leiomyoma.

Open Communications 18: Basic Science/Research/Education (2:00 PM – 2:15 PM)

**Pain Management and Subject Comfort During an Endometrial Ablation Treatment with the Cerene Cryotherapy Device**

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**Video Objective:** To evaluate the use of medications to manage pain and/or anxiety and the subjects’ level of perioperative pain related to an endometrial ablation treatment with the Cerene Cryotherapy Device (Channel MedSystems, Emeryville, CA).

**Design:** A prospective, multi-center, single-arm, open-label, non-randomized study.

**Setting:** At 11 academic and private practice settings across North America: 8 sites in the US, 1 site in Mexico, and 2 sites in Canada.

**Patients or Participants:** 242 subjects comprise the Intent-to-Treat (ITT) population.

**Interventions:** Subjects were treated with the Cerene Device, which delivers a 2.5-minute cryoablation of the endometrium. Analgesia and local anesthesia were administered per investigator discretion. Subjects rated their pain at screening, 5 time points during treatment, and...
Interventions: The Cerene device was completed with only paracervical block (PCB) in 20 subjects (8.3%), PCB with nonsteroidal anti-inflammatory drugs (NSAIDs) in 48 subjects (19.8%), PCB with oral narcotics and/or anxiolytics in 167 subjects (69%), and IV sedation in 7 subjects (2.9%). No subject received general anesthesia or required airway management. Subjects reported a median pain rating of 2 or less throughout the Cerene treatment. The median pain score was 2 at discharge and 0 at twenty-four hours.

Conclusion: The use of general anesthesia and/or intravenous sedation was markedly less for the Cerene treatment than that reported in clinical studies of other commercially available heat-based non-resectoscopic endometrial ablation devices. The vast majority of subjects tolerated the procedure well with oral NSAIDs, anxiolytics, and/or pain medications. The study demonstrated the natural analgesic effect of cryoablation due to the freezing of pain receptors in the uterus. The Cerene device allows the endometrial ablation treatment of heavy menstrual bleeding to be performed comfortably as an office-based procedure without the support of an anesthesiologist.

Open Communications 18: Basic Science/Research/Education (2:00 PM – 2:15 PM)

2:07 PM

Safety and Efficacy of Hybrid Fractional Laser (1470nm And 2940nm) for Symptoms of Genitourinary Syndrome of Menopause: 12 Month Prospective Multi-Center Study

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Study Objective: Evaluate efficacy and safety of hybrid fractional laser treatment (1470nm diode and 2940nm Er:YAG) in women with genitourinary syndrome of menopause (GSM).

Design: Baseline demographics, quality-of life, exam data recorded including: pelvic exam, vaginal maturation index (VMI), vaginal health index scale (VHIS), female sexual function index questionnaire (FSFI), day-to-day Impact of vaginal aging questionnaire (DIVA) and histology (2/site).

Setting: Prospective, single arm, non-blinded, multi-center study was conducted across 5 clinical sites.

Patients or Participants: 55 peri- and post-menopausal females with mean age 58±7 years and at least 2 self-reported symptoms of GSM were enrolled. 40 patients completed 3 month, 38 completed 6 month and 31 completed 1 year follow up.

Interventions: Each patient received 3 treatments at 4 weeks interval (settings: 1470nm — 200-600 um [density 6-15%], 2940nm — 200-300 um [density 7-14%]) with follow-up visits at 1, 3, 6 and 12 months post third treatment.

Measurements and Main Results: FSFI scores demonstrated significant improvement in all domains and overall at 1, 3, 6 and 12 months (p<0.05) when compared to baseline. DIVA scores demonstrated significant improvement in all domains and overall (p<0.05). Maturation index improved at 3 and 6 months with marked increase in percent of superficial cells and decrease in parabasal cells and demonstrated a reversing trend at 12 months. VHIS improved in all domains changing from poor to good (p<0.05). Significant histological changes were observed with increase in epithelial thickness of 61.8% at 3 months, 114.5% at 6 months and 153.3% at 12 months. No adverse events were reported.

Conclusion: Hybrid fractional laser appears to be safe and effective for treatment of GSM.

Open Communications 18: Endometriosis (2:15 PM – 3:00 PM)

2:15 PM

Comparison of Diagnostic Accuracy of Transvaginal Ultrasound for Deep Endometriosis and Pouch of Douglas Obliteration in The Presence and Absence of Ovarian Endometriomas

Leonardi M,1,2 Lu C,3 Reid S,1,4 Espada M,1 Vanza K,1 Condous G,1,2
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*Corresponding author.

Study Objective: We aim to evaluate and compare the diagnostic accuracy of deep endometriosis transvaginal ultrasound (DE TVS) in the presence and absence of ovarian endometriomas (OEs).

Design: This is a multicenter observational study of prospectively collected data.

Setting: Patients attended one of two gynecology-focused ultrasound practices and underwent laparoscopy at one of nine hospitals in the Sydney metropolitan area between 2009 and 2017.

Patients or Participants: Patients referred with suspected endometriosis.

Interventions: A DE TVS was performed in all patients and reported in a systematic fashion.

Measurements and Main Results: Surgical findings were the defined reference standard. Data were analyzed to determine the prevalence of surgically-diagnosed DE and pouch of Douglas (POD) obliteration in the presence or absence of OEs. DE TVS was assessed in terms of accuracy, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and positive (LR+) and negative (LR-) likelihood ratios. Comparison of DE TVS prediction of DE and POD obliteration in patients with versus those without OEs was performed.

410 patients were included. An OE was noted in 91, 22.2% patients (left: 66, 16.3%; right: 58, 14.2%; bilateral: 53, 8.2%). When comparing those with and without an OE, DE prevalence was 62/91, 68.1% and 81/313, 25.9%, respectively, and POD obliteration prevalence was 55/91, 60.4% and 31/313, 9.9%, respectively (p<0.001). There was better sensitivity for DE (85.5 vs 59.3%) and POD obliteration (81.8 vs 64.5%) with an OE present versus absent, respectively (p<0.001). Conversely, specificity was higher for DE (92.7 vs 79.3%, p<0.001) and POD obliteration (98.6 vs 88.6%, p=0.13) with an OE absent vs present, respectively.

Conclusion: The prevalence of DE and POD obliteration in patients without OEs is lower, but not negligible. Diagnostic accuracy of DE TVS is poorer in patients without OEs, which is not well understood and concerning as many patients may be falsely reassured.

Open Communications 18: Endometriosis (2:15 PM – 3:00 PM)

2:22 PM

Ultrasound is Highly Accurate at Predicting the American Society of Reproductive Medicine (AARM)

Stage of Endometriosis

Leonardi M,1,2,4 Espada M,2 Vanza K,2 Choi S,1,4 Chou DCY,3 Chang TT,4,6 Smith C,7 Rowan K,4 Condous G,1,2,4
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Study Objective: We aimed to evaluate the diagnostic accuracy of deep endometriosis transvaginal ultrasound (DE TVS) in predicting a surgically-apportioned ASRM endometriosis stage.

Design: Multicenter retrospective diagnostic accuracy study.

Setting: Patients attended one of two gynecology-focused ultrasound practices and underwent laparoscopy by one of six surgeons in the Sydney metropolitan area between 2016 and 2018.

Participants: Patients with suspected endometriosis.

Interventions: DE TVS followed by laparoscopy.

Measurements and Main Results: An ASRM stage was apportioned to each patient based on the surgical report. An ultrasound-based ASRM stage was also apportioned using the preoperative DE TVS report. Where details on size of lesions was missing, the range of possible points for that region was used to calculate a minimum and maximum ASRM stage. The diagnostic accuracy (accuracy, sensitivity, specificity, positive predictive value, negative predictive value and positive and negative likelihood ratios) was calculated for each ASRM stage and dichotomized ASRM stages (0/1/2 and 3/4) at the minimal and maximum ASRM stages. An advanced ASRM stage, called ASRM +, was allocated when rectal, vaginal, or ureteral endometriosis was noted and combined with the base ASRM stage (1-4).

Conclusion: Ultrasound has excellent test performance in predicting a dichotomized ASRM stage state, which can have major positive implications on patient triaging to centers of excellence in minimally-invasive gynecology for advanced stage endometriosis. This may have a downstream positive effect on patient outcomes.

Open Communications 18: Endometriosis (2:15 PM – 3:00 PM)

2:29 PM

Associations Between Preoperative Depression, Hysterectomy, and Postoperative Opioid Use

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Study Objective: Preoperative depression has been linked to adverse outcomes following hysterectomy, including increased acute and chronic postoperative pain. The goal of this study was to determine whether preoperative depression is associated with increased opioid use following hysterectomy.

Design: Retrospective analysis of women who underwent benign hysterectomy between January 2001 and March 2015. Women without opioid prescriptions 180 days prior to surgery were identified in IBM Watson/Truven Health Analytics MarketScan database, a large claims database and were required to have continuous enrollment in one of these health plans for 180 days before and after hysterectomy. Persistent opioid use was defined as an opioid fill during the perioperative period (10 days before to 30 days after surgery) and an additional opioid fill 90-180 days after hysterectomy.

Setting: N/A

Patients or Participants: 531,059 women who underwent hysterectomy for non-cancer causes during the study period; 72% (n=383,243) were opioid naïve and included.

Interventions: N/A

Measurements and Main Results: Multivariable log-binomial regression was used to assess whether women with preoperative depression had a higher risk of persistent opioid use and 30-day complications, after adjusting for demographics, comorbidities, and surgical characteristics. The prevalence of pre-surgical depression was 20% (n=75,230), 74% of women were given an opioid prescription during the perioperative period and, of those that initiated, 8% had at least one additional opioid fill 90-180 days after their hysterectomy. After adjustment, women with depression were only 8% more likely to get an initial opioid fill (RR 1.08, 95% CI 1.07, 1.09) but were 43% more likely to have persistent opioid use (RR 1.43, 95% CI 1.39, 1.47). Women with depression were also more likely to have any surgical complication (RR 1.04, 95% CI 1.03, 1.06).

Conclusion: In our cohort, women with preexisting depression had a greater risk of persistent opioid use post-hysterectomy suggesting chronic pain beyond the immediate recovery period and potentially increased risk of opioid dependence.

Open Communications 18: Endometriosis (2:15 PM – 3:00 PM)

2:36 PM

Superior Hypogastric Nerve Block

Sims MJ,1 Hammond LM, Western Pennsylvania Hospital, Pittsburgh, PA 1Corresponding author.

Video Objective: To introduce a presacral nerve block for regional anesthesia in the pelvis.

Setting: Selected for patients with midline pelvic pain, endometriosis, and dysmenorrhea. The context of these procedures is in a high volume minimally invasive gynecologic surgery service with a single advanced laparoscopic surgeon at two hospitals within a health care system in an urban setting. The block is performed as part of an ERAS protocol for patients undergoing elective surgery with the outlined indications.

Interventions: The authors elected to modify the presacral neuractomy from a permanent transection of the superior hypogastric nerve plexus to a temporary medical neuractomy as a regional block. The block is a component of the regional anesthesia plan within a standardized ERAS protocol. The anesthesia solution used for the block is 10 cc of 0.5% bupivacaine with 1:200,000 epinephrine mixed with 10mg dexamethasone.

Conclusion: Given the ease in performing the nerve block, the historical context of the presacral neuractomy amongst gynecologic surgeons who care for chronic pelvic pain, the progress being made in ERAS protocols for gynecologic surgery services, and the extremely promising anecdotal experiencing for our institution, further study of this technique is warranted.

Open Communications 18: Endometriosis (2:15 PM – 3:00 PM)

2:43 PM

Profiling of Mirna and Mrna in Eutopic and Ectopic Endometrial Tissues in Patients with Endometrioma

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*Corresponding author.

**Study Objective:** Profiling of miRNA and mRNA in eutopic and ectopic endometrial tissues in patients with endometriosis.

**Design:** A prospective cohort study.

**Setting:** This study was conducted at the Department of Operative Gynecology of V.I. Kulakov National Medical Center for Obstetrics, Gynecology, and Perinatology.

**Patients or Participants:** This study included 136 women of reproductive age from 18 to 38 years with endometriomas (OE).

**Interventions:** Determination of the differences in the expression of miRNA and mRNA in the tissues of OE (EcE) and eutopic endometrium (EuE); bioinformatic analysis to evaluate the role of differentially expressed RNA in the pathogenesis of OE; analysis of microRNA transcriptome (TRA) performed by the sequencing method.

**Measurements and Main Results:** TRA revealed significant differences in the expression of miRNA and mRNA in EcE and EuE. It was found that the expression of miRNA and mRNA depends on the type of ovarian reserve (OVR). Lists of target genes were obtained for identified miRNAs and involved in the processes of proliferation, migration and invasion, and in the key cascades of intracellular signaling and inflammatory processes and in the processes of DNA repair and regulation of the mitotic cycle, which indicates the genotoxic effect of pathogenetic factors acting in the tissues of OE and on adjacent ovarian tissues.

**Conclusion:** The data obtained suggest that the change in the expression of microRNA in the tissues of the ectopic endometrium can make a significant contribution to the development of endometriosis and the associated reduction of the OVR.

**Open Communications 18: Endometriosis**

(2:15 PM – 3:00 PM)

**Self-Reported Efficacy of Cannabis for Endometriosis Pain**

Reinert AE, * Hibner M. OB/GYN, St Joseph’s Hospital and Medical Center, Phoenix, AZ
*Corresponding author.

**Study Objective:** To survey endometriosis patients about their experience with marijuana and cannabidiol (CBD) for management of pelvic pain symptoms, and to identify the prevalence of medical marijuana use among women with endometriosis.

**Design:** Survey.

**Setting:** Online REDCap survey accessed through email invitation survey link.

**Patients or Participants:** 137 clinic patients with an ICD-10 code for an endometriosis diagnosis, 347 patients from the mailing list of the Endometriosis Association (EA).

**Interventions:** A customized survey with 55 to 75 questions based on branching logic, inquiring about pelvic pain history, demographics, and experience with marijuana and CBD for management of pelvic pain.

**Measurements and Main Results:** Of 240 EA participants responding, 77 (32.1%) reported having tried marijuana, with the majority of these participants (52 of 77, 67.5%) reporting marijuana to be very or moderately effective. Of 124 clinic participants responding, 58 (46.8%) reported having tried marijuana, with the majority of patients (44 of 58, 75.9%) reporting marijuana to be very or moderately effective. 67 (27.8%) EA participants reported having tried CBD, with half (50%, 34 of 67) reporting CBD to be very or moderately effective. 57 (46.0%) clinic participants reported having tried CBD, with the majority (64.9%, 37 of 57) reporting CBD to be very or moderately effective. Amongst both participant groups, Marijuana was most likely to be reported as very effective (40.2% of EA participants, 53.4% of clinic participants), while CBD was most likely to be reported as moderately effective (31.4% of EA participants, 36.8% of clinic participants).

**Conclusion:** Use of medical marijuana and CBD amongst women with endometriosis is common. Both marijuana and CBD are reported as moderately or very effective for pelvic pain by the majority of women who have tried them, with marijuana reported as more effective than CBD.

**Open Communications 19: Robotics**

(2:00 PM – 3:00 PM)

**Demonstrating the Effectiveness of The Fundamentals of Robotic Surgery (FRS) on the Robotix Mentor Virtual Reality Simulation Platform**

Martin JR, 1 Stefandis D, 1 Dorin RP, 2 Goh AC, 3 Satava RM, 4 Levy J. 1 Indiana University School of Medicine, Indianapolis, IN; 2 Center for Education, Simulation and Innovation, Hartford Hospital, Hartford, CT; 3 Methodist Institute for Technology, Innovation, and Education (MITIE), Houston Methodist Hospital, Houston, TX; 4 University of Washington Medical Center, Seattle, WA; 5 Department of Obstetrics/Gynecology, Drexel University College of Medicine, Philadelphia, PA
*Corresponding author.

**Study Objective:** To determine if robotic surgery novices demonstrate improved technical skill after completing Fundamentals of Robotic Surgery (FRS) proficiency-based psychomotor skills training using the Robotix Mentor virtual reality (VR) platform.

**Design:** An observational, pre-post design, multi-institutional rater-blinded trial was conducted. Post-hoc comparisons were performed against previously published comparator groups.

**Setting:** Robotic surgery training facilities at the Methodist Institute for Technology, Innovation, & Education (Houston, TX) and the Center for Education, Simulation & Innovation at Hartford Hospital (Hartford, CT) were used for this study.

**Patients or Participants:** Residents (n=20) who were robotic surgery novices were enrolled to participate.

**Interventions:** Participants completed FRS online didactic modules and were required to pass the FRS cognitive exam. Participants’ baseline robotic surgery skills were assessed on an avian tissue model with previously published validity evidence (pre-test). Participants then trained using the FRS proficiency-based progression curriculum on the Robotix Mentor VR platform. Participants were required to perform each task to expert-derived benchmarks on consecutive attempts before proceeding to the next task. After training completion, participants were tested again on the avian tissue model (post-test). Pre- and post-tests were video recorded and assessed by blinded raters using the Global Evaluative Assessment of Robotic Skills (GEARS) and a 32-criteria psychomotor checklist.

**Measurements and Main Results:** On paired-samples T tests, participants demonstrated improved performance from pre- to post-test across all GEARS domains (depth perception, bimanual dexterity, efficiency, use of force, instrument control; p=0.01 to p<0.001) and for time (p<0.001) and errors (p=0.003) as measured by psychometric checklist. By ANOVA, improvement in novices’ robotic skill after training on the Robotix Mentor was not inferior to improvement reported after training on two currently-available VR platforms.

**Conclusion:** Completion of the FRS curriculum on the Robotix Mentor VR training platform resulted in improved robotic surgery skills among novices, proving effectiveness of training. The Robotix Mentor is recommended as a training platform for the FRS curriculum.
Open Communications 19: Robotics
(2:00 PM – 3:00 PM)

2:07 PM

Perioperative Narcotic Trends in Women Undergoing Minimally Invasive Hysterectomy for Benign Indications

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*Corresponding author.

Study Objective: Evaluate the utilization patterns for narcotic medication both intraoperatively and postoperatively at the time of benign minimally invasive hysterectomy, specifically as they relate to the opioid epidemic.

Design: Retrospective cohort study.

Setting: A single academic university hospital.

Patients or Participants: Women undergoing minimally invasive hysterectomy for benign indications.

Interventions: Laparoscopic or Robotic-Assisted hysterectomy.

Measurements and Main Results: 651 hysterectomies were included in the analysis between 2012 and 2018. For consistency all narcotics administered intraoperatively and in immediate postoperative period were converted to mean morphine equivalents (MME). For the entire cohort the change in pre-op to post-op hemoglobin during robot-assisted laparoscopic surgery using vaginal misoprostol with perivascular vasopressin versus perivascular vasopressin alone, during robotic assisted laparoscopic surgeries. Our primary outcomes were intraoperative blood loss (measured by volume in the suction canister minus amount of irrigation), operative time, surgeons’ estimated blood loss and change in postoperative hemoglobin and hematocrit from preoperative hematocrit. Our secondary outcome was to assess the side effects of misoprostol use.

Setting: Robotic myomectomy.

Patients or Participants: A total of 100 women were assessed for eligibility. 79 consented to participate in the study. Five consents were excluded for analysis due to missing information. Thereby 74 patients were used for analysis, 42 women were randomized into vasoprostol alone group (Group 1) and 32 were randomized into the vasoprostol and misoprostol group (Group II).

Interventions: The addition of 400mcg of vaginal misoprostol.

Measurements and Main Results: The change in pre-op to post-op hematocrit (HCT) was 2.5% in Group I and 3.2% in Group II, with a p value of 0.491. There were also non-statistical differences in estimated blood loss (EBL) by group, 247ml vs 246ml, respectively, p=0.983. Surgery time, between the two groups was non-statistically different as well, 173.9 min vs 181.3 min respectively, p = 0.6945.

Conclusion: In this randomized controlled trial, we did not observe a decrease in operative blood loss, operative time, and postoperative hemoglobin during robot-assisted laparoscopic myomectomy using vaginal misoprostol with perivascular vasopressin versus perivascular vasopressin alone.

Open Communications 19: Robotics
(2:00 PM – 3:00 PM)

2:14 PM

A Randomized Controlled Trial of Combined Vaginal Misoprostol and Pervascular Vasopressin vs. Vasopressin Alone During Robotic Myomectomy

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Study Objective: To compare the estimated blood loss, change in perioperative hematocrit, and operative time during robotic myomectomy when using either vaginal misoprostol with perivascular vasopressin or perivascular vasopressin alone.

Design: We conducted a single center, double blind randomized controlled trial to compare changes in blood loss using preoperative vaginal misoprostol and perivascular vasopressin with surgeries using perivascular vasopressin alone, during robotic assisted laparoscopic surgeries. Our primary outcomes were intraoperative blood loss (measured by volume in the suction canister minus amount of irrigation), operative time, surgeons’ estimated blood loss and change in postoperative hemoglobin and hematocrit from preoperative hematocrit. Our secondary outcome was to assess the side effects of misoprostol use.

Open Communications 19: Robotics
(2:00 PM – 3:00 PM)

2:21 PM

Mortality Rates in Laparoscopic and Robotic Benign Gynecologic Surgery- A Systemic Review and Meta-Analysis

Rahbani S,1,2* Suarez ME,2 Baras M,2 Magtibay PM,3 Magrina JF2. 1Gynecology, Mayo Clinic, Phoenix, AZ; 2Mayo Clinic, Phoenix; 3Corresponding author.

Study Objective: review mortality rates in benign gynecologic laparoscopic and robotic surgery (MIS), and to evaluate the mortality rates associated with commonly performed MIS procedures.

Design: Meta-analysis.

Setting: NA

Patients or Participants: An electronic-based search was performed on Pubmed, Embase, Scopus, Web of Science, and Cochrane Database. All MIS studies in benign gynecology reporting operative mortality (within 30 days) were reviewed. Meta-analysis was applied to calculate pooled mortality rates using the inverse-variance method. The relative risks (RRs) and their corresponding 95% confidence intervals (95% CIs) were calculated using the Mantel-Haenszel method.

Interventions: Meta-analysis.

Measurements and Main Results: 21 articles (12,5738 patients) were included. Operative mortality from any benign MIS (laparoscopy and robotics) procedure was 1:4243 (95% CI 1:1573–1:11450). Studies were then grouped based on surgical procedure. Mortality rate for hysterectomy (43,112 patients) was 1:4920 (95% CI 1:2233, 1:10845); for sacrocolpopexy was 1:1246 (95% CI 1:36, 1:44700); and for adnexal surgery and diagnostic laparoscopy was 1:2245 (95% CI 1:45, 1:113732). Seventeen studies reported operative mortality for laparoscopic surgery, and 4 for robotic surgery.

Conclusion: Operative mortality in benign minimally invasive gynecologic surgery is low. There is no major difference for laparoscopic and robotic approaches.
Single-Port Robotic-Assisted Sacrocolpopexy Using the Sp Surgical System: First Clinical Experience

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Objectives: To describe the result of robotic-assisted single port sacrocolpopexy (SCP) using the da Vinci SP surgical system.

Design: Retrospective case series study

Setting: Robot Surgery Center of Ewha Womans University Hospital.

Patients or Participants: 7 patients with advanced pelvic organ prolapse (POP-Q stage III and IV).

Interventions: Robotic-assisted single port SCP using the da Vinci SP surgical system performed by a single surgeon from January 8th-28th 2019.

Measurements and Main Results: The recently introduced da Vinci SP surgical system includes three multi-jointed wristed instruments with a fully wristed camera. This surgical system offers the patients the same cosmetic benefits and make surgeon to perform suturing and tying more easily compared to the da Vinci Single-Site platform. We present the operation results of the first seven cases of robotic-assisted single port SCP using the da Vinci SP system and provide a detailed description of the technique. All consecutive cases were completed successfully without conversion. The mean patient age was 65.3 years and the mean operative time was 140.71 minutes. The mean BMI was 23.8 kg/m². No operative or major postoperative complications occurred. To the knowledge of the authors, this is the first report of robotic-assisted single port SCP, and we found this procedure is feasible and safe.

Conclusions: Robotic-assisted single port SCP using the da Vinci SP surgical system is a feasible and safe option for advanced stage pelvic organ prolapse.

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Study Objectives: To investigate the incidence of post-operative urinary tract infections (UTIs) after routine cystoscopy in robotic-assisted gynecologic surgery and to compare the rate of reported incidence of similar gynecologic surgeries without the use of routine cystoscopy.

Introduction: The adoption of robotic surgery by Australian gynecologists has increased in the past seven years but remains dominated by the private sector. Robotic assisted laparoscopic hysterectomy (RALH) is associated with improved outcomes when compared with open surgery in women with endometrial cancer. However, the comparison of RALH with conventional laparoscopic hysterectomy (TLH) is met with conflicting data.

Study Objective: To evaluate the short-term operative outcomes of patients with endometrial cancer who underwent RALH and to compare these outcomes with those of a historical cohort who underwent TLH.

Design: Retrospective observational study.

Setting: Tertiary public hospital in New South Wales, Australia.

Patients or Participants: Outcomes of patients who underwent RALH for endometrial cancer by a single surgeon from June 2017 to November 2018 were compared with cases of TLH for endometrial cancer performed by the same surgeon from June 2013 to September 2018.

Interventions: N/A

Measurements and Main Results: Thirty-nine cases of RALH and 41 cases of TLH were performed for endometrial cancer. The cohorts were well-matched in age but women who underwent RALH were higher in...
BMI. RALH was associated with a longer total operative time (mean 132 minutes) than TLH (mean 107 minutes). There were no intra-operative complications and no conversions to laparotomy. Three minor post-operative complications occurred in each group. The average length of stay was significantly higher in the TLH group (1.78 days vs 1.26 days) than the RALH group. Six patients (15.4%) in the RALH group were discharged on the day of surgery. Majority of cases of RALH reported <200 mL EBL compared with average of 78 mL for TLH, a statistically significant difference.

Conclusion: The establishment of a robotic gynecological surgery program at our institution is safe and feasible. Complication rate and blood loss are low and patient recovery is excellent. Length of stay is reduced, and same-day discharge is achievable, allowing significant reductions in health care costs.

Open Communications 19: Robotics (2:00 PM – 3:00 PM)

2:49 PM

Retrorperitoneal Approach to Laparoscopic Hysterectomy in Patient with Complete Uterus Didelphys
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*Corresponding author.

Video Objective: Demonstrate how a retropertoneal dissection can facilitate hysterectomy in cases of uterine anomalies

Setting: University affiliated hospital

Interventions: 55 year old patient presented with severe abnormal uterine bleeding and dysmenorrhea. Imaging was suspicious for a Müllerian anomaly. A laparoscopic hysterectomy was planned. On entry into the abdomen, complete uterine didelphys was noticed. Using a retropertoneal dissection we were able to identify all critical structures and maintain adequate hemostasis during the case, resulting in a satisfactory outcome for the patient.

Conclusion: Developing the retropertoneal space is paramount in order to successfully perform surgery in a uterus with distorted anatomy

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:00 PM

Laparoscopic Uterine Cerclage: A 10 Year Experience at a Tertiary Referral Centre
Ma K, * Lim K, Majumder K, Edi-Osagie E. Gynaecology, Manchester Foundation Trust, Manchester, United Kingdom
*Corresponding author.

Study Objective: To determine the safety and efficacy of all cases of laparoscopic uterine cerclage performed in a tertiary referral center in the last 10 years.

Design: Retrospective Cohort Study.

Setting: Tertiary referral center and university teaching hospital.

Patients or Participants: All patients who underwent laparoscopic uterine cerclage from March 2010 to March 2019.

Interventions: Laparoscopic insertion of uterine cerclage.

Measurements and Main Results: A total of 14 cases were identified. 14/14 patients presented with a history of recurrent pregnancy loss or extreme premature labor (below 26 weeks). Indication included further mid-trimester loss or extreme premature labor despite elective cervical cerclage (8/14), failed rescue cerclage (3/14) and a short cervix on ultrasound or failure to insert cervical cerclage (3/14). No intra-operative complications were noted. Mean operating time was 98 minutes (Range 68-124). No post-operative complications or readmissions were noted. Of the 12 patients who underwent surgery greater than 12 months ago, there were 12 spontaneous conceptions (11/12 patients), 1 miscarriage and 11 livebirths after 37 weeks gestation by elective or emergency caesarean section. In the patient who suffered a miscarriage a surgical evacuation was carried out without complication.

Conclusion: Laparoscopic uterine cerclage remains a novel technique with a strict inclusion criteria requiring regular surveillance and audit of outcomes. This has limited the number of cases performed and there are currently no robust randomized control trials comparing management options for women with recurrent pregnancy loss after cervical cerclage. Despite the small numbers our results indicate that this technique has a good safety profile and outcomes in livebirth rates >34 weeks are good. Our results supports expansion of this service at a regional level through multi-disciplinary assessment to enable this technique can becoming established practice.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:07 PM

Laparoscopic Specimen Containment Using a Large Isolation Bag
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*Corresponding author.

Video Objective: To demonstrate laparoscopic specimen containment for extraction using a large isolation bag inserted through the vagina.

Setting: A 41-year-old G2P2 who presented with an enlarged 18 weeks size myomatous uterus desiring definitive surgical management.

Interventions: Specimen placement into a large containment bag introduced into the abdomen through the vagina after total laparoscopic hysterectomy with bilateral salpingectomy.

Conclusion: This video demonstrates a viable method of tissue containment for large specimens. This method allows for safe extraction and morcellation of contained specimens when required and appropriate.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:14 PM

The Inspire Comparative Cost Study: One-Year Medical Resource Utilization, and Payer Cost Analysis Associated with Hysterectomy and Myomectomy Compared to Sonography-Guided Transcervical Ablation for the Treatment Of Uterine Fibroids
Brooks E, 1 Mihalov LS, 2 Delvadia D, 3, 4 Hudgens JL, 3 Mama ST, 5 Makai GE, 6 Yuen M, 1 Little C, 7 Zambelli-Weiner A, 1 Levine DJ, 1 TTI Health Research & Economics, Westminster, MD; 8Gynecology, Virginia Mason Medical Center, Seattle, WA; 1Drexel University College of Medicine, Philadelphia, PA; 4Obstetrics and Gynecology, Eastern Virginia Medical School, Norfolk, VA; 1Ob/Gyn, Cooper Medical School of Rowan University, Camden, NJ; 6Obstetrics and Gynecology, Christiana Care Health Systems, Newark, DE; 7Gynecology Minimally Invasive Surgery, Mercy Clinical Minimally Invasive Gynecology, St. Louis, MO
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Study Objective: The INSPIRE study compared health care resource utilization (HCRU) and payer costs associated with transcervical radiofrequency (RF) ablation, hysterectomy, and myomectomy.

Design: Data for transcervical RF ablation were derived from a prospective, multicenter, single-arm clinical trial (the SONATA trial); data for hysterectomy and myomectomy arms were derived from the Truven Health MarketScan Commercial Claims Database.

Setting: 6 clinical sites in the US.
Patients or Participants: Premenopausal women between the ages of 25 and 50 with heavy menstrual bleeding secondary to fibroids treated prospectively with transcervical RF ablation; matched hysterectomy and myomectomy procedures of interest for uterine fibroids were identified using appropriate diagnostic and procedural codes.

Interventions: Ultrasound-guided transcervical, intrauterine radiofrequency ablation using the Sonata system performed on up to 10 fibroids per subject; hysterectomy and myomectomy (for the comparative payor data arms).

Measurements and Main Results: Mean total payor cost for treatment with the Sonata system and 12-month associated postoperative HCRU ($8,941) were significantly lower than that for hysterectomy ($24,156) or myomectomy ($22,784). Furthermore, the mean payor cost for the 12-month postoperative HCRU associated with Sonata ($143) was significantly lower than that associated with hysterectomy ($699) or myomectomy ($1,444). Finally, Sonata patients had significantly lower costs associated with complications, prescription medication, and radiology studies than either hysterectomy or myomectomy patients.

Conclusion: Transcervical RF ablation using the Sonata system is a lower-cost alternative to hysterectomy and myomectomy for the treatment of symptomatic uterine fibroids.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:21 PM

It is not all About Size. Incidence and Implications of Concurrent Endometriosis in Women Undergoing Laparoscopic Surgery for Fibroids

Lam AM, Lowe JA*. Centre for Advanced Reproductive Endosurgery, Sydney, NSW, Australia

*Corresponding author.

Study Objective: To assess the incidence and predictive factors associated with endometriosis co-occurrence in patients having surgery for fibroid pathology.

Design: Retrospective observational study of all premenopausal women who underwent fibroid surgery at the Centre for Advanced Reproductive Endosurgery in Sydney, Australia between October 2008 and December 2016.

Setting: A single center study from a high volume gynecological practice.

Patients or Participants: All premenopausal patients who underwent laparoscopic surgery (hysterectomy or myomectomy) who had histologically confirmed fibroids during the study period. Patients were identified from the database at the single pathology service where all surgical specimens were referred for histological analysis.

Interventions: Standardized demographic, clinical history, operative and pathological findings were collected from the electronic medical record. Descriptive statistics were used to describe baseline patient population characteristics as well as the prevalence of endometriosis and factors associated with higher co-occurrence of the two conditions.

Measurements and Main Results: 551 women were eligible for inclusion, with a median age of 43 years (range 21-59), 62.4% of the women had a prior pregnancy and 51.1% at least one delivery, 19.8% had previous endometriosis surgery. 61.5% had endometriosis that was identified and treated at the time of the fibroid operation. Factors significantly associated with endometriosis presence included a history of dysmenorrhea (OR 1.92, 95% CI 1.35 - 2.72), dyschezia (OR 7.29, 95% CI 3.05 - 18.06), and subfertility (OR 4.44, 95% CI 2.45 – 8.06). Multivariate analysis was undertaken with the aim of establishing a predictive model based on symptomatology however only marginal additional predictive value was gained.

Conclusion: There is a significant co-occurrence of endometriosis amongst women undergoing fibroid surgery, particularly those with subfertility, dysmenorrhea and dyschezia. Clinical awareness of this co-occurrence is essential for adequate pre-operative patient counselling and strategic surgical planning for women presenting with fibroids. This is especially pertinent for those with subfertility or chronic pelvic pain where symptoms may persist if the endometriosis remains untreated.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:28 PM

Laparoscopic Management of a Ruptured Interstitial Ectopic Pregnancy

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Video Objective: We demonstrate laparoscopic management of an interstitial ectopic pregnancy with ongoing rupture and describe different techniques for hemostasis.

Setting: The patient was a 40 year old G6P2032 found to have a live 10 week interstitial ectopic pregnancy on ultrasound. She had no symptoms or free fluid at the time of diagnosis, and at the start of the surgery had evidence of hemoperitoneum with ongoing rupture.

Interventions: We performed a laparoscopic cornual resection and repair using vasopressin, a harmonic scalpel and bipolar device, and multilayer closure with barbed suture. We describe additional methods for hemostasis including a purse string suture and lateral control of the uterine vessels.

Conclusion: With a hemodynamically stable patient, ruptured interstitial pregnancy can be managed laparoscopically. Many techniques can help decrease blood loss including using vasopressin, surgical energy devices, compression around the base of the ectopic, and lateral control of the uterine vessels.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:35 PM

Left Ovarian Transposition of Undescended Ovary with Unicornuate Uterus

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*Corresponding author.

Video Objective: To educate the minimally invasive gynecologist on the rare diagnosis of an undescended ovary and to demonstrate a laparoscopic technique for ovarian transposition to facilitate trans-vaginal oocyte monitoring and retrieval.

Setting: Community hospital in the suburbs of Chicago.

Interventions: Left ovarian transposition and ovarian drilling.

Conclusion: Laparoscopic ovarian transposition is a feasible, safe option to facilitate oocyte retrieval in cases of undescended ovaries.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

2:42 PM

Surgical Skills Across the Spectrum: Comparing Surgical Skill Based on Surgical Experience Using a Standardized, High-Fidelity Total Laparoscopic Hysterectomy Model

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Study Objective: To determine differences in surgical skills and confidence in the completion of a standardized total laparoscopic hysterectomy (TLH) between Ob-Gyns with different levels of training and expertise.

Design: Prospective, single-blinded, case-control study.

Setting: Simulated operating room.

Patients or Participants: Four categories of Ob-Gyns: (1) graduating residents (n=13), (2) graduating FMIGS fellows (n=11), (3) generalists (n=15), and (4) fellowship-trained MIGS specialists (n=19), totaling 58 participants.

Interventions: All participants completed pre-simulation questionnaires assessing laparoscopic surgical confidence. They then performed a video-recorded TLH on a standardized 250 gram novel biologic model developed by Gynesim and completed a post-simulation questionnaire.

Measurements and Main Results: The procedures were randomized and scored by blinded expert reviewers in MIGS and Gynecology Oncology using the validated Objective Structured Assessment of Technical Skills (OSATS). The surgery was divided into 5 standardized segments: (1) adnexa, (2) broad ligament, bladder flap, vascular pedicles, (3) colpotomy, (4) cuff closure, and (5) tissue extraction. Highest score = 35. Specialists (average 8.9 years in practice) scored highest in all categories (mean scores 30.95, 31.16, 32.21, 31.37 and 33.26, respectively [p<0.05 when compared to all participants]). Specialists served as controls. Residents scored lowest in all categories (mean scores 20.15, 20.23, 19.23, 15.69, and 23.15 [p<0.05]). Generalists (average 19.7 years in practice) and fellows were comparable (generalist mean scores 23.13, 23.67, 20.07, 17.13, 21.50. Fellow mean scores 22.55, 22.09, 19.55, and 25.09). Fellows scored higher on cuff closure (p<0.17) and tissue extraction (p<0.03) when compared to the generalists. Specialists were fastest in overall time and on each individual component. Fellows followed in cuff closure and tissue extraction. Residents were slowest in all categories (p<0.05).

Conclusion: When performing a TLH on a standardized 250g uterus, fellowship-trained experts achieved higher OSATS in all areas and completed all procedural components faster. Recent MIGS fellowship graduates performed similarly to generalists practicing an average of 20 years.

Open Communications 20: Laparoscopy (2:00 PM – 3:00 PM)

Dealing with Bladder Injuries in Laparoscopy
Trivedi SP,* Trivedi PH. Obstetrics & Gynecology, Dr. Trivedi’s Total Health Care Centre, Mumbai, India
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Video Objective: To highlight the precautions to be undertaken to avoid bladder injury in laparoscopy. To demonstrate techniques of managing intra-operative bladder injury and delayed vesico-vaginal fistula (VVF) repair.

Setting: Tertiary Care University recognized Endoscopy Referral Unit.

Case 1: Bladder injury in Total laparoscopic hysterectomy in an obese patient with surgical adhesions due to previous 3 caesarean sections with a large uterus of 32-34 weeks size 2600cc in volume.

Case 2: VVF in a 52 yr old patient who had undergone Total abdominal hysterectomy with persistent urine leak vaginally since 1 year of the procedure.

Interventions: Case 1: Intra-operative detection of bladder injury and its layered closure with barbed suture.

Case 2: Novel technique of transurethral stent used transurethral cystoscopically, drawn through the fistulous tract into the vaginal opening and principles of VVF repair highlighted.

Conclusion: Simple precautions can go a long way in preventing laparoscopic bladder injuries. Intra-operative injury or even delayed VVF can be tackled precisely laparoscopically with good outcomes and patient comfort.

Open Communications 21: Urogynecology (3:05 PM – 4:05 PM)

Innovative Biological Augmentation of Level Two Pelvic Organ Prolapse with Autologus Graft
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*Corresponding author.

Video Objective: This first segment of the video will describe the process involved in preparing an autologous graft derived from platelet rich plasma. The latter segment of video will demonstrate the surgical technique involved in the incorporation of autologous graft into a standard native tissue repair. We will then review our prospective cohort data with up to 18 months follow up.

Setting: Pelvic organ prolapse is a condition with a lifetime surgical risk of 10-20%. Native tissue repair alone is associated with a failure rate often quoted as around 30-50%. With the withdrawal of vaginal mesh and xenograft products from the market by the TGA and other regulatory bodies due to complications, Gynecologists are faced with managing complex pelvic organ prolapse cases with less tools in their armamentarium. Platelet rich plasma and autologous tissue grafts have been successfully used in plastic and reconstructive surgery, orthopedics and dentistry. We describe an innovative technique to biologically augment a native tissue vaginal repair.

Interventions: Patient blood is taken at the commencement of the procedure in the operating theatre and centrifuged to produce platelet rich plasma. This is then mixed with calcium gluconate in a pre-defined ratio prior to further processing in a centrifuge. This creates a 3-4cm autologous biological graft which is able to be sutured to the vesico-cervical or pararectal fascia to biologically augment a native tissue repair.

Results: There have been 30 cases of PRP membrane augmented vaginal repairs. Baseline characteristics was compared to follow-up. Results of the study and video of the autologous membrane will be presented at the conference.

Conclusion: This video demonstrates the preparation of the autologous graft which is being evaluated as a technique to be easily incorporated into standard practice to augment a vaginal native tissue repair and reduce the risk of recurrence.

Open Communications 21: Urogynecology (3:05 PM – 4:05 PM)

Postoperative Short-Term Outcomes of Robotic Sacrococcygeal Pneumolysis Versus Robotic Sacrococcygeal Pneumolysis
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*Corresponding author.

Study Objective: Sacrococcygeal pneumolysis has traditionally been the gold standard for apical prolapse repair. Sacrococcygeal pneumolysis has become increasingly prevalent for multicompartmental pelvic organ prolapse repair, however the impact of more radical pelvic dissections required for mesh along the entire vaginal length is unknown. Peri-operative and long-term outcomes of robotic-assisted laparoscopic sacrococcygeal pneumolysis (R-ASCPP) are not well documented in the medical literature. This study aims to compare peri-
operative outcomes associated with R-ASCPP compared to robotic-assisted sacrocolpopexy (R-ASCPP) with concomitant vaginal prolapse repair.

**Design:** Retrospective cohort study.

**Setting:** Academic-affiliated community hospital.

**Patients or Participants:** Cases of R-ASCPP were compared to R-ASCPP with concomitant anterior-posterior (A/P) compartmental repair controls between January 2013 and January 2019. A total of 126 women were identified.

**Interventions:** N/A

**Measurements and Main Results:** Cases of R-ASCPP (n=83) were compared to matched R-ASCPP with A/P repair controls (n=43) in a 2:1 ratio. Total operative time was 36 minutes shorter on average for cases (214mins vs. 250mins, p<0.05), with similar quantitative blood loss between groups (1.8g/dL vs. 2.1g/dL, p=0.61). Both cases and controls had similar narcotic requirements in the post-anesthesia care unit (1.72MME vs. 2.13MME, p=0.59) and the entire hospital admission (17.30MME vs. 20.79MME, p=0.81). Cases retained larger post-void residual (PVR) bladder volumes (204cc vs. 122cc, p=0.12), with a larger percentage discharged with outpatient catheterization (32.5% vs. 14.3%, p<0.05). Patient demographics were similar among groups.

**Conclusion:** R-ASCPP is a well tolerated procedure, however is associated with a statistically significant propensity for acute urinary retention. Surgeons should consider counseling R-ASCPP patients about the increased incidence for elevated PVRs requiring either intermittent or indwelling catheterization. Future investigation is warranted to better understand, prevent, and treat this increased incidence in a large population of R-ASCPP patients.

**Open Communications 21: Urogynecology**
(3:05 PM – 4:05 PM)

3:19 PM

**Patient Experience with Enhanced Recovery and Early Discharge for Minimally Invasive Sacrocolpopexy: A Qualitative Study**

Snook L, Evans S, Abimbola O, Yates T, Myers E, Atrium Health, Charlotte, NC; School of Medicine, University of North Carolina, Chapel Hill, NC; Obstetrics and Gynecology, Division of Female Pelvic Reconstructive Surgery, Atrium Health, Charlotte, NC. *Corresponding author.

**Study Objective:** To describe and compare patients’ experiences with same-day versus next-day discharge after minimally invasive sacrocolpopexy within an enhanced recovery protocol.

**Design:** Qualitative study using semi-structured interviews.

**Setting:** Academic institution.

**Patients or Participants:** Patients undergoing minimally invasive sacrocolpopexy within an enhanced recovery protocol – discharged the same day as surgery (n=7) or the day following surgery (n=7).

**Interventions:** Interviews were conducted between December 2018-February 2019, 2 to 6 weeks after hospital discharge. Topics included: patient preparedness, preoperative education, physical and emotional recovery, and overall perception of the enhanced recovery protocol. Interviews were audio-recorded, transcribed, and analyzed thematically. Investigators utilized a grounded theory approach in identifying emergent themes and concepts until saturation was achieved.

**Measurements and Main Results:** Patients discharged same day spent more time in the post-anesthesia care unit (314.4 vs 79.7 minutes, p<0.01) and were more likely to be discharged with a catheter (85.7% vs 14.3%, p<0.03). There were no other differences in demographic or procedural characteristics between groups. Less than half of participants (n=6) were aware they were part of an enhanced recovery protocol. Both groups felt well-informed about their procedures, prepared for what to expect perioperatively, and supported by providers. Both reported positive experiences with physical and emotional at-home recovery. Same-day discharge patients denied a desire to stay in the hospital longer. At-home support was an important consideration. Neither group reported major physical problems post-discharge. Same-day discharge patients spoke frequently about the challenges of returning home with a catheter, cited by some as a reason to stay in the hospital longer.

**Conclusion:** Although few participants realized they were part of a protocol, all reported benefit from enhanced recovery after minimally invasive sacrocolpopexy. Screening for the availability of a caregiver and providing information regarding postoperative catheter management are likely important to ensure successful compliance with early discharge goals.

**Open Communications 21: Urogynecology**
(3:05 PM – 4:05 PM)

3:26 PM

**Laparoscopic Uterosacral Ligament Suspension with the Use of Barbed Suture**

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**Video Objective:** To demonstrate the use of unidirectional barbed suture to perform uterosacral ligament suspension

**Setting:** L. is a 49 year old GSP4014 who initially presented to her primary provider with complaints of urinary discomfort and vaginal prolapse. At rest, her cervix rested at the introitus and with valsalva, the cervix rested 2cm beyond the introitus. Her POP-Q examination was significant for Stage 3 anterior prolapse and Stage 2 apical prolapse. She has a past surgical history significant for a supracervical hysterectomy, bilateral salpingectomy which was performed in 2010 for menorrhagia and dysmenorrhea. Patient was referred to Urogynecology for treatment.

**Interventions:** Patient underwent a laparoscopic trachelectomy, anterior/posterior repair, uterosacral ligament suspension, and cystoscopy. After trachelectomy is performed, the vaginal cuff is closed using a unidirectional barbed suture. Using K-technique, each angle of the vaginal cuff is then sutured to the ipsilateral uterosacral ligament. Successful uterosacral ligament suspension of the vaginal cuff was achieved. Ureteral patency was confirmed by cystoscopy at the end of the procedure via cystoscopy.

**Conclusion:** Uterosacral ligament suspension is an effective procedure for the treatment of pelvic organ prolapse and the use of barbed suture aids with the ease of this procedure as laparoscopic knot tying can be highly challenging. The K-technique has been shown to be an effective method of closing the vaginal cuff with 2 unidirectional barbed sutures. A case series examining this technique has shown a decreased rate of complications, such as ureteral or sacral nerve injury. Uterosacral ligament suspension has long been used for the treatment of pelvic organ prolapse, however, by implementing the use of unidirectional barbed suture the ease with which this procedure can be performed can be increased while also decreasing the risk of complications and morbidity.

**Open Communications 21: Urogynecology**
(3:05 PM – 4:05 PM)

3:33 PM

**Surgical Correction of Obstructed Defecation Syndrome**

Cui T, Matthews CA. Urology, Wake Forest School of Medicine, Winston Salem, NC. *Corresponding author.

**Video Objective:** Obstructed defecation syndrome (ODS) is a form of colonic constipation in which stool cannot effectively be evacuated from the rectum. ODS is usually caused by a combination of behavioral, functional, and anatomic factors. While many women with ODS can experience improvement with aggressive medical management, the anatomic contribution what we term a “posterior” enterocele to defecation obstruction can be significant.
Open Communications 21: Urogynecology (3:05 PM – 4:05 PM)

National Analysis of Perioperative Morbidity of Vaginal Versus Laparoscopic Hysterectomy at The Time of Uterosacral Ligament Suspension

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Study Objective: The objective of this study was to compare the morbidity of vaginal versus laparoscopic hysterectomy when performed with uterosacral ligament suspension (USLS).

Design: Retrospective cohort study.

Setting: American College of Surgeons National Surgical Quality Improvement Program database.

Patients or Participants: We included all patients who underwent USLS and concurrent vaginal or laparoscopic hysterectomy from 2010 to 2017. We excluded those who underwent laparoscopic-assisted vaginal hysterectomy, abdominal hysterectomy, other surgical procedures for apical pelvic organ prolapse, or had gynecologic malignancy.

Interventions: We compared 30-day complication rates in patients who underwent vaginal versus laparoscopic hysterectomy at the time of USLS.

Measurements and Main Results: We compared groups using chi-squared analysis and students t-test for categorical and continuous variables, respectively. Stepwise backward multivariate logistic regression was used to identify independent predictors of experiencing complications.

The cohort comprised of 3,349 patients who underwent vaginal hysterectomy with USLS and 484 who underwent laparoscopic hysterectomy with USLS. Patients who underwent the vaginal approach were older (58.3 vs 50.9 years), more likely to have hypertension, and to undergo concomitant minor urogynecologic procedures such as midurethral sling or colporrhaphy. Patients in the laparoscopic group had higher BMI and were more likely to smoke. Groups were otherwise similar. Patients who underwent the vaginal approach had a significantly higher rate of all complications (11.4% vs 6.4%, OR 1.9, 1.3-2.8, p=0.005) as well as serious complications (5.6% vs 3.1%, OR 1.9, 1.3-2.8, p=0.02). After controlling for confounding variables on multivariate regression, vaginal hysterectomy at the time of USLS remained a significant predictor of all complications (OR 2.0, 1.4-2.9, p=0.001), as well as serious complications (OR 2.1, 1.2-3.7, p=0.009).

Conclusion: In this large national cohort, after adjusting for known medical and surgical risk factors, vaginal hysterectomy at the time of USLS was associated with a higher complication rate than the laparoscopic route of surgery.

Open Communications 21: Urogynecology (3:05 PM – 4:05 PM)

Surgical Approach to a Retropubic Mid-Urethral Sling After Pelvic Trauma

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Video Objective: Demonstrate our approach to a patient desiring surgical incontinence treatment following pelvic trauma that significantly distorted the anterior pelvic anatomy.

Setting: Our patient is a 75-year-old female who presented to our quaternary referral center. She has a past medical/surgical history of mixed urinary incontinence, osteoporosis, and prior surgical repair of pelvic organ prolapse. In April 2018, she suffered a major trauma due to a tree falling on top of her, including 5 pelvic fractures. She subsequently had constant, profuse stress urinary leakage with any activity. CT abdomen/pelvis showed severe displacement of the right superior and inferior pubic rami, distortion of the urinary bladder, mild displacement of the pubic rami on the left, and sacral insufficiency fractures. Serial imaging was obtained and reviewed with orthopedic surgery until there was interval improvement. She then proceeded with surgery.

Interventions: Our video demonstrates successful retropubic mid-urethral sling placement. The procedure began with a rigid cystourethroscopy to identify the patient’s anatomy. At the dome of the bladder, a protrusion from the right superior pubic ramus is seen causing distortion. To avoid this, the targeted suprapubic incision is also adjusted towards the midline. The sling is placed with the trocar aimed in this trajectory. A post-insertion cystourethroscopy with both a rigid and flexible cystoscope was then performed to thoroughly rule out injury.

Conclusion: Some key learning points from our video are that in a patient with distorted pelvic anatomy, multidisciplinary management is critical and orthopedic surgery should determine stability of the pelvis. A thorough evaluation of anatomy before the procedure should be performed since typical landmarks are unreliable. Care should be taken to individualize the approach and realign the usual target sites to avoid injury. A thorough evaluation for injury after the procedure should also be performed.

Open Communications 21: Urogynecology (3:05 PM – 4:05 PM)

Surgical Repair of Vesicovaginal Fistula: A Variation of the Flap-Splitting Technique

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Video Objective: To describe and demonstrate a variation of the flap-splitting technique for surgical correction of both small and medium sized vesicovaginal fistulas (VVF).

Setting: Patient A is a 51 year old woman who had undergone abdominal hysterectomy 10 years prior, and developed 2.5mm VVF, from which she experienced symptomatic leakage for many years. Patient B is a 53 year old woman who had undergone abdominal hysterectomy for cervical dysplasia and developed a 1cm VVF 2 months later. Both underwent successful surgical vaginal fistula repair.

Interventions: Surgical correction of vesicovaginal fistula via an alternative approach to the traditional flap-splitting technique. The key steps consist of exposure, lateral incision, mobilization of defect with multiple layer repair, and confirmation of adequate watertight seal.

Conclusion: Vaginal approach to repair should be considered whenever feasible. This variation to the flap splitting technique allows for adequate tissue mobilization without extension of defect.
Social Media Use in Patients with Gynecologic Pain
Piszczek CC, 1, * Farag S, 2 Foley CE, 3 Overcash P, 3 Yunker AC, 3 Ecker AM. 3 Advanced Gynecology, Legacy Health, Portland, OR; 2 Minimally Invasive Gynecologic Surgery, Cleveland Clinic Florida, Weston, FL; 3 Obstetrics, Gynecology and Reproductive Sciences, Magee-Womens Hospital of UPMC, Pittsburgh, PA; 4 Division of Gynecologic Minimally Invasive Surgery, Vanderbilt University Medical Center, Nashville, TN; 5 Obstetrics and Gynecology, Oregon Health & Science University, Portland, OR
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Study Objective: To determine if patients with gynecologic pain are more likely than patients without gynecologic pain to use social media to learn about or manage their condition.

Design: Comparative prospective patient survey.

Setting: Six hospital systems across country, university-based and community-based.

Patients or Participants: 497 patients who presented to an FMIGS-affiliated clinic and consented to participate in the survey.

Interventions: Subjects self-determined if their gynecologic visit was related to pain. Those with pain were in the Study group. Those without pain were in the Control group. Subjects independently completed a survey regarding their internet and social media use in relation to their gynecologic care. The minimum number of subjects needed to detect a 10% difference in the primary outcome was 471 subjects. Fisher’s exact test was used to test for significance at a power of 80% and an alpha of 0.05.

Measurements and Main Results: 497 subjects enrolled in the study. 459 of 497 (92.4%) of enrolled subjects completed the study survey. 321 (69.6%) with pain (Study group) and 138 (30.1%) without pain (Control group). The median age of participants was 39 years (IQR 29-55) in the Pain group and 42 years (IQR 31-54) in the Control group. 119/321 (37.1%) subjects in the Pain group and 27/138 (19.6%) of subjects in the Control group reported using social media to learn about or manage their gynecologic condition; this difference was statistically significant (p<0.01). 284/321 (88.5%) of subjects in the Pain group and 95/138 (68.8%) of subjects in the Control group reported using the internet to learn about or manage their gynecologic condition (p<0.01). Forty-three percent of both Pain and Control group subjects reported using on-line physician rating sites prior to seeing their provider. Patients with gynecologic pain were more likely than those without pain to use social media to learn about or manage their condition.

Open Communications 22: Endometriosis (3:05 PM – 4:05 PM)

3:05 PM

Laparoscopic Excision of Transmural Rectal Endometriosis
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Video Objective: To demonstrate the feasibility of excision of a transmural rectal endometriosis nodule and repair of the rectal defect.

Setting: 26yo Gravida-0 with pelvic pain, cyclic hematochezia, and dyschezia presented with biopsy-proven rectal endometriosis. Pelvic MRI revealed a 2.3 × 2.0 × 1.8cm an endometriotic implant extending from the mesorectal fascia into the mucosa. There was also an adjacent 2.5cm endometrioma. Laparoscopic local excision was offered since the lesion was <3cm in greatest diameter, too large for discoid excision, and the procedure offered an alternative to bowel resection. Intraoperative findings were notable for an obliterated posterior cul de sac. There was a firm, 2-3cm nodule in the anterior rectum with an adjacent endometrioma.

Interventions: The case begins with mobilization of the ureters and the rectum bilaterally. The ultrasonic scalpel is used to dissect the rectovaginal septum and subsequently drain the endometrioma. The rectum overlying the nodule is injected with dilute vasopressin to maintain hemostasis. Cold scissors are used to open the rectal serosa, and the ultrasonic scalpel is then used to fully excise the transmural rectal nodule. Once the nodule is completely detached, it is removed through the rectal defect within in a laparoscopic specimen bag. The remaining rectal defect is closed in three layers, which involves reaproximation of the mucosa, an imbricating layer, and reinforcement of the serosa.

Copious warm irrigation is performed, and a medium EEA sizer is passed through the area of the repair to ensure normal caliber. An air-leak test is negative. At her postoperative visit, the patient endorsed complete resolution of her hematochezia and dyschezia.
Conclusion: Transmural rectal endometriotic nodules less than 3 cm in size may be amenable to resection with primary repair in select patients. Preoperative bowel prep is not recommended. After closure, checking for an air-tight closure and adequate lumen caliber is essential.

Open Communications 22: Endometriosis
(3:05 PM – 4:05 PM)

3:26 PM

Surgical Pelvic Neuroanatomy: An Overview of Commonly Encountered Nerves in Benign Gynecologic Surgeries and Safe Dissection Techniques


*Corresponding author.

Video Objective: A thorough understanding of the natural course and functions of the nerves in the pelvis is critical in complex benign gynecological surgery to avoid injury and morbidity to the patient. This video reviews how to locate and safely dissect common nerves found in the pelvis that may be encountered in complex gynecological cases.

Setting: Multiple patients at a large academic center with a robust team of minimally invasive gynecologic surgeons. Many patients have extensive adhesions or severe endometriosis.

Interventions: Multiple nerves, such as the superior hypogastric plexus, hypogastric nerves, pelvic splanchnic nerves, sacral nerve roots, and the genitofemoral nerves, are dissected out during the course of the surgery. Simple surgical techniques, such as traction-countertraction and blunt dissection are employed.

Conclusion: In complex gynecologic surgeries, the disease process may require extensive dissections in to the retroperitoneal spaces, where critical pelvic nerves are at risk for injury. With increased knowledge of the natural course of the nerves as well as having an array of dissection techniques, the surgeon can decrease the risk of inadvertent nerve injury and patient morbidity. If the disease is severely involved in areas where fragile nerves are, consideration needs to be given for a nerve preservation.

Open Communications 22: Endometriosis
(3:05 PM – 4:05 PM)

3:33 PM

Laparoscopic Resection Technique of Sacral Roots

Endometriosis

Indico W Jr*, Gynecology, São Luís Hospital, São Paulo, Brazil

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Video Objective: To describe a surgical procedure, performed to completely resect an endometriotic lesion that tackles s2 sacral root.

Setting: A 34 years old patient, previously submitted to surgery for deep endometriosis, with recurrence, that led to a strong intensity burning pain, on the right medial buttoc during the menstruation time, with no irradiation, alteration of motor function or bowel and urinary habits.

Interventions: It was performed laparoscopic surgery for the complete resection of the endometriotic lesion.

Conclusion: The complete resection of the endometriosis lesions of sacral nerves, through the appropriate technique, performed by an experienced surgeon, leads to the cure of the symptoms and preserves the nerve function.

Open Communications 22: Endometriosis
(3:05 PM – 4:05 PM)

3:40 PM

2 Methods for Identification and Preservation of Hypogastric Nerve During Laparoscopic Die (Deep Infiltrating Endometriosis) Surgery

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Video Objective: In this video, we are going to introduce two methods for proper identification and preservation of the hypogastric nerves within the USL (uterosacral ligament) DIE (deep infiltrating endometriosis) complex during laparoscopic nerve-sparing DIE surgery.

Setting: Single institute, single surgical team’s experience.

Interventions: USL is the mostly frequently involved area of pelvic endometriosis. Hypogastric nerves just lie between USL and pelvic ureter, locate in the Okabayashi pararectal space. They are frequently involved (either direct infiltration, or just encasement by surrounding tissue fibrosis) by the DIE lesions. En-bloc excision of USL DIE lesions frequently result in inadvertent hypogastric nerve injury, or even pelvic plexus injury. Proper identification and preservation of the hypogastric nerves is mandatory during nerve-sparing DIE surgery. We develop two methods to identify the hypogastric nerve within the USL DIE complex. (1) “Contralateral nerve traction test”: If we can clearly identify and isolate the hypogastric nerve on the more healthy side, by gentle pulling on this side hypogastric nerve, we can see the contralateral hypogastric nerve move on the other side. Thus we can have a good mapping of the course of hypogastric nerve within the DIE complex. (2) “Antegrade tracing from pre-sacral region”: If we move upward to the pre-sacral region, starting dissection from the virgin site, proximal part of hypogastric nerve can be easily identified. Antegrade tracing along the hypogastric nerve, un-roofing and bi-half the overlying DIE USL tissue, the whole course of hypogastric nerve can be safely traced and the nerve can be well-preserved.

Conclusion: Proper identification and preservation of the hypogastric nerves within the USL (uterosacral ligament) DIE (deep infiltrating endometriosis) complex during laparoscopic nerve-sparing DIE surgery is important. By this two simple methods and concepts (“contralateral nerve tract test” and “antegrade tracing”), we can minimize the risk of inadvertent nerve injury.

Open Communications 22: Endometriosis
(3:05 PM – 4:05 PM)

3:47 PM

Ureterolysis, Vasolysis and Neurolysis: The Trifecta in Deep Infiltrating Endometriosis

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Video Objective: To describe the surgical approaches and techniques employed in an extreme case of deep infiltrating endometriosis (DIE) affecting the lateral pelvic side wall.

Setting: A 32-year-old gravida 2, para 1 presented for definitive surgical management of pelvic pain due to endometriosis at an academic tertiary care center. Intraoperatively, severe retroperitoneal fibrosis tethered the external iliac vein, internal iliac artery, obturator nerve, medical umbilical ligament and ureter together.

Interventions: We demonstrate the surgical method and tools required to overcome a unique endometriotic nodule that would not allow for traditional lysis of adhesions from the pelvic side wall. Instead, we tunneled
under the external iliac vasculature to approach the dissection from a lateral to medial direction in order to free the obturator nerve and internal iliac artery from the ureter and endometriotic nodule.

**Conclusion:** Extreme cases of DIE involving the pelvic side wall require surgical finesse when normal planes of dissection are obliterated. Knowledge of retroperitoneal anatomy is critical in order to overcome unexpected lateral pelvic side wall endometriosis as the disease is rarely confined to the surface. Innovative surgical thinking complemented by an array of surgical tools will ultimately allow the surgeon to master even the most difficult endometriotic resections.

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**Open Communications 22: Endometriosis**

(3:05 PM – 4:05 PM)

**3:54 PM**

**Gastrointestinal Symptoms as a Predictor of Deep Infiltrating Endometriosis of the Posterior Compartment of the Pelvis on MRI Imaging**

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**Study Objective:** To determine if gastrointestinal symptoms can predict deep infiltrating endometriosis (DIE) of the posterior compartment of the pelvis on magnetic resonance imaging (MRI).

**Design:** Retrospective cohort study. Presenting gastrointestinal symptoms were collected from the modified International Pelvic Pain Society Pelvic Compartment of the Pelvis on MRI Assessment Form (mIPPS-PPAF). MRI reports and interdisciplinary conference notes were reviewed to identify DIE of the posterior compartment (rectosigmoid, uterosacral ligaments, posterior cul de sac, and pelvic side walls). Associations between symptoms and DIE were evaluated using logistic regression.

**Setting:** Academic tertiary care center.

**Patients or Participants:** Patients with suspected endometriosis undergoing an endometriosis protocol MRI with interdisciplinary conference review between 9/1/2015 and 7/31/2018 were identified from a clinical database. Patients with a pre-treatment mIPPS-PPAF were included.

**Interventions:** N/A

**Measurements and Main Results:** 104 patients met inclusion criteria: 89 (85.6%) presented with at least one gastrointestinal symptom. DIE of the posterior compartment was identified on MRI in 47 patients (45.2%). A bowel movement resulting in pain relief was the gastrointestinal symptom that most strongly predicted DIE (OR 3.36, 95% CI 1.31–8.61, p=0.012). For this symptom, sensitivity, specificity, positive and negative predictive values were 0.42, 0.82, 0.67, and 0.63, respectively. Other gastrointestinal symptoms such as nausea, emesis, rectal bleeding, and increased pain with change in frequency of bowel movements did not have a statistically significant association with DIE; a trend towards significance was seen for bowel movements making pain worse (OR 2.33, 95% CI 0.97–5.58, p=0.059). Of the 15 patients with no gastrointestinal symptoms, 5 were found to have DIE of the posterior compartment.

**Conclusion:** In patients with suspected endometriosis, those who noted that bowel movements relieved their pain had more than 3 times the odds of having DIE of the posterior compartment on an endometriosis protocol MRI. Preoperative evaluation with MRI may be of value in these patients; however, lack of gastrointestinal symptoms does not exclude the possibility of posterior compartment DIE.

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**Open Communications 23: Robotics**

(3:05 PM – 4:05 PM)

**3:05 PM**

**Ultrasound Guided Robotic Assisted Myomectomy**

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**Ultrasonic Guided Robotic Assisted Laparoscopic Myomectomy: A Video Presentation**

**Video Objective:** The purpose of this video is to demonstrate how intraoperative sonography can assist during robotic myomectomy. Ultrasound can help better determine the location of the myoma and used at the end of the procedure to make sure all myomas are removed. It is easy to use and a helpful resource during myomectomies, especially when tactile feedback is lost during robotic surgery.

**Setting:** Two patients were selected for this video. The first patient is a 39 year old female with pain for years found to have a 14cm intramural myoma. The second patient is a 33 year old referred from REI clinic for surgery when myomas were incidentally found during infertility work up.

**Interventions:** Both patients underwent a ultrasound assisted robotic myomectomy.

**Conclusion:** Intraoperative ultrasound is safe and easy to use. It is extremely helpful for intramural myomas (type 2-4). The ultrasound images are seen easily on the surgeon console without reducing the optics. The BK sono allows for real time imaging during surgery to evaluate the depth of myometrial invasion as well as location of myomas that may not be clearly visible intraoperatively. It provides a real time visual that can be used in conjunction with preoperative imaging.

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**Open Communications 23: Robotics**

(3:05 PM – 4:05 PM)

**3:12 PM**

**Partial Cystectomy for Deeply Infiltrating Endometriosis of the Bladder with Cystotomy Repair**

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**Video Objective:** To demonstrate safe surgical technique and management of partial bladder cystectomy and simple cystotomy repair due to deeply infiltrating endometriosis (DIE) using the Xi DaVinci robot.

**Setting:** A 32yo patient with dysmenorrhea and dyspareunia found to have DIE of the bladder undergoing surgical management at a large academic center.

**Interventions:** The bladder lesion was initially found on preoperative MRI and confirmed during robotic assisted surgery. The lesion was felt to be full thickness and required partial bladder cystectomy for adequate excision of the implant. The DaVinci robot was used to remove the lesion with good margins. The resulting cystotomy repair was repaired, with good seal noted when the bladder was backfilled and on cystoscopy. A Foley catheter was maintained for 7 days postoperatively and removed after a cystogram showing adequate bladder recovery.

**Conclusion:** Deeply infiltrating endometriosis of the bladder is rare but can be safely managed with laparoscopic partial bladder cystectomy and cystotomy repair. Adequate preoperative planning and thorough inspection of the lesion during surgery can assist with full removal of the lesion, which improves patient symptoms and decreases incidence of recurrence.
Open Communications 23: Robotics  
(3:05 PM – 4:05 PM)

3:19 PM

Surgical Management of Genitofemoral Neuralgia  
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Video Objective: This video reviews the etiology, diagnosis, and management of genitofemoral neuralgia which is defined as pain along the distribution of the genitofemoral nerve.

Setting: The patient in this video began having symptoms of genitofemoral neuralgia following a laparotomy. A common mechanism of iatrogenic injury to this nerve is crush injury from poorly placed self-retaining retractors during abdominopelvic surgery. A neurctomy can be offered because the genitofemoral nerve has only sensory function and no motor function.

Interventions: We review the surgical technique for resection of the genital branch of the genitofemoral nerve. This technique involves retroperitoneal dissection over the psoas muscle, identification of the bifurcation of the nerve into its femoral and genital branches, isolation of the nerve, resection of the nerve, and implantation of the proximal nerve ending into the psoas muscle for nerve regeneration and neuropathy prevention.

Conclusion: This technique is 66-100% successful in relieving symptoms including the case of this patient.

Open Communications 23: Robotics  
(3:05 PM – 4:05 PM)

3:26 PM

Robotic Resection of Abdominal Wall Endometriosis  
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Video Objective: To describe surgical techniques used to resect abdominal wall endometriosis.

Setting: The patient is a 49 year old female who presents to a tertiary care academic institution with complaints of cyclic pelvic pain.

Interventions: Minimally invasive excision of extrapelvic endometriosis.

Conclusion: The goals of resection of abdominal wall endometriosis are to decrease risk of recurrence. Robotic excision of abdominal wall endometriosis.

Open Communications 23: Robotics  
(3:05 PM – 4:05 PM)

3:33 PM

Efficient Myometrial Defect Closure in a Layer By Layer Fashion After Robot-Assisted Laparoscopic Adenomyomectomy: A Novel Technique  
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Video Objective: Previous methods of myometrial defect closure were associated with an increased risk of uterine rupture due to incorrect alignment of uterine layers. We aim to present a technique which maintains adequate myometrial wall thickness, uterine layer alignment, and endometrial integrity. In this video we provide a detailed description of our novel technique for myometrial defect closure in robot-assisted laparoscopic surgery following adenomyomectomy.

Setting: A forty-seven-year-old, single, female, who came to our tertiary university hospital with severe dysmenorrhea, not responding to medical therapy, and wishing to preserve her uterus.

Interventions: After removal of the adenomyotic tissue, the myometrial defect is closed in three steps. First the defect between the anterior and posterior innermost myometrial layers is closed using a 2-0 Strataplex suture, 36 mm needle. Next, the two sides are approximated using a 2-0 PDS suture, 36 mm needle. Finally, the serosa is sutured in a baseball fashion using a 2-0 PDS suture, 26 mm needle in a baseball fashion.

Conclusion: This technique was successful in greatly improving the patient’s symptoms. It also maintained the integrity of the endometrial cavity, posterior myometrial thickness and uterine layer alignment. Thus we believe this technique is feasible, and maybe the solution for adenomyosis in those seeking fertility preservation.

Open Communications 23: Robotics  
(3:05 PM – 4:05 PM)

3:40 PM

An Analysis of the Food and Drug Administration Maude Database for Approved Devices in Obstetrics and Gynecology  
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Study Objective: To evaluate the accuracy of the postmarket surveillance process in the MAUDE database for devices approved via the Food and Drug Administration (FDA) premarket (PMA) and 510(k) approval processes and used in Obstetrics and Gynecology, comparing the accuracy of death and injury reports.

Design: A retrospective observational study.

Setting: Medical devices used in Obstetrics and Gynecology.

Patients or Participants: Two hundred and nine product codes encompassing over 12,000 FDA approved devices.

Interventions: n/a

Measurements and Main Results: Death and injury reports were collected from November 1, 2002 to April 25, 2018 in the MAUDE database. This raw data was adjusted to improve accuracy. There was a total of 1,732 raw death reports of which 350 were attributed to the PMA process and 1,382 attributed to the 510(k) process. The adjusted death reports generated a total of 218 death reports of which 26 were attributed to PMA and 192 to 510(k). There was a total of 161,376 raw injury reports of which 36,033 were approved via PMA and 125,343 via 510(k). The adjusted injury reports generated a total of 2,254 reports, of which 440 were approved via PMA and 1,814 via 510(k). There was an 87% drop in number of adjusted death reports and a 98% drop in the number of adjusted injury reports as compared to raw data (p=0.0015).

Conclusion: Death reports in the MAUDE database are more accurate than injury reports, whether approved by the PMA or 510(k) process, and more likely to contain an actual death, as compared to actual injuries in injury reports. Raw death reports overestimated deaths 7.9 times as compared to adjusted death reports; injury reports overestimated total injuries by 71.9 times as compared to adjusted injury reports. The warrants a call for a more accurate a national device registry with concurrent robust statistical analysis so trends of potentially harmful devices can be identified.
Open Communications 23: Robotics
(3:05 PM – 4:05 PM)

3:47 PM

Acceptability of a Robotic Hysterectomy Simulation System - Who Is the Target Audience?
Cope AG, Lindstrom ED, Lazaro JJ, DeStephano CC, Mara KC, Green IC.

Study Objective: To assess acceptability of the Simbionix (3D) Hysterec-
tomy Modules for the DaVinci Xi simulation system. These simulation
modules became available in 2017. Little validation evidence exists to
guide incorporation of this tool into surgical education.

Design: Prospective cohort.

Setting: Multi-center, academic medical institutions.

Patients or Participants: Residents, fellows, and faculty in Obstetrics and
Gynecology were invited to participate at 3 institutions. Participants were
categorized by experience level: less than 10 hysterectomies (novice), 10
to 49 hysterectomies (intermediate), and 50 or greater hysterectomies (expert). A total of 10 novice, 9 intermediate, and 15 expert surgeons were
included.

Interventions: Participants completed 4 simulator modules (uteri identi-
fication, bladder flap development, colpotomy, and complete hysterect-
tomy) and a qualitative survey assessing agreement or disagreement with
evaluative statements using a Likert scale.

Measurements and Main Results: The majority felt the simulator real-
istically simulated robotic hysterectomy (64.7%) and that it should be
used to provide feedback to residents (67.6%). The majority thought
the feedback provided by the simulator was as or more helpful than
feedback from previous surgical simulations (88.2%) but less helpful
than feedback provided in the operating room (73.5%). The majority
agreed that residents should be required to pass modules prior to com-
pleting a robotic hysterectomy as a primary surgeon (52.9%), but dis-
agreed that they should be used for licensing purposes (58.8%). There
were no significant differences in opinion between experience levels
(p-value >0.05 for all questions using Fisher’s exact test). Participants
felt this simulator would be helpful for teaching general steps to
junior residents.

Conclusion: Simbionix (3D) Hysterectomy Modules were well
received by subjects of all experience levels. Subjects identified early
residency education as an area where this tool can be used to provide
feedback and determine readiness to perform robotic hysterectomy.
Feedback from the simulator was not felt to replace real-time, clinical
feedback. Further study is needed to determine its role in surgical
training.

Open Communications 24: Laparoscopy
(3:05 PM – 4:05 PM)

3:05 PM

Laparoscopic Mesh Sacrohysteropexy: A Uterine
Conserving Technique for Uterovaginal Prolapse
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Video Objective: The purpose of the video is to describe the surgical tech-
nique involved in performing laparoscopic mesh sacrohysteropexy. A brief
review of the outcomes from a 10 year retrospective single centre cohort
study will be discussed.

Setting: Laparoscopic mesh sacrohysteropexy is a uterine conserving sur-
gical technique for the management of apical vaginal prolapse.

Interventions: Laparoscopic mesh sacrohysteropexy involves fixing non-
absorbable mesh from the posterior cervix to the sacral promontory. This
is then covered with peritoneum from the para-rectal space.

Conclusion: A ten year retrospective cohort study has demonstrated
success in 86% of patients with no further vaginal surgery required
during the follow up period. This technique is useful for women wish-
ing uterine preservation or for women who would be unable to toler-
ate a longer procedure such as a laparoscopic hysterectomy and
sacrocolpopexy.
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Video Objective: This educational video reviews the important retroperitoneal anatomy of the pelvic sidewall, including the ureter, the uterine artery as it emanates from the internal iliac artery, and the pararectal and paravesical spaces.

Setting: Knowledge of retroperitoneal anatomy and the ability to safely explore the pelvic sidewall are essential skills for any gynecologic surgeon.

Interventions: A simple schematic is shown to demonstrate the anatomic relationship between important retroperitoneal structures. Then, a surgical video is presented to demonstrate the same anatomy in an actual case.

Conclusion: This video presents the essential retroperitoneal anatomy of the pelvic sidewall in a clear manner, and demonstrates a simple technique for laparoscopically identifying these structures.

Open Communications 24: Laparoscopy (3:05 PM – 4:05 PM)

3:26 PM

Association Between Myomectomy and Placenta Accreta Spectrum

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Study Objective: To examine the relationship between prior myomectomy and placenta accreta spectrum (PAS).

Design: A retrospective chart review of all laparoscopic and abdominal myomectomies performed between 2014 - 2016. Obstetrical outcomes following surgery were collected through April 2019.

Setting: An academic hospital with a comprehensive fibroid treatment center and a multidisciplinary treatment team dedicated to the management of placenta accreta.

Patients or Participants: All patients who underwent a laparoscopic myomectomy (standard and robotic-assisted) or abdominal myomectomy between 2014 - 2016.

Interventions: Demographics, pelvic imaging, intraoperative findings, fibroid burden on final pathology, and future mode of delivery recommendations were collected for each procedure. Subsequent obstetrical outcomes including clinical pregnancy, antepartum imaging suspicious for PAS, mode of delivery, clinical diagnosis of PAS, and pathologic PAS were collected for all patients.

Measurements and Main Results: Of 315 patients who underwent myomectomy between 2014 - 2016, 43 patients subsequently became pregnant, resulting in 23 deliveries (7.3%). 16 of 20 patients underwent a cesarean delivery due to history of a prior myomectomy, 13 of which had a documented endometrial cavity entry at time of myomectomy. There were three cases of clinical PAS at time of delivery, all associated with a prior abdominal myomectomy. Two cases had PAS confirmed on final pathology. Two cases were associated with possible intrauterine synchiea identified during a uterine cavity evaluation following myomectomy, prior to conception. Only one case had antepartum imaging concerning for PAS. There were no cases of PAS amongst patients who had undergone a laparoscopic myomectomy.

Conclusion: PAS was associated with prior abdominal but not laparoscopic myomectomy. The subsequent development of intrauterine synchiea following abdominal myomectomy may be an identifiable finding during postoperative uterine cavity evaluation. This finding may help stratify the risk of PAS following myomectomy prior to conception, and better guide preoperative risk counseling prior to cesarean delivery.

Open Communications 24: Laparoscopy (3:05 PM – 4:05 PM)

3:33 PM

Laparoscopic Management of Exogenic Cesarean Section Pregnancy with Transient Uterine Artery Clipping

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Video Objective: To show the laparoscopic management of a c-section scar pregnancy aided by transient uterine artery clipping to limit bleeding.

Setting: 31 year old patient with a 7 week exogenic form of c-section scar pregnancy.

Interventions: Laparoscopic resection of a c-section scar pregnancy.

Conclusion: Laparoscopic management of C-section scar pregnancy provides the opportunity to repair the cesarean scar, thus avoiding future scar pregnancies.

Open Communications 24: Laparoscopy (3:05 PM – 4:05 PM)

3:40 PM

Predictors of Surgical Approach to Myomectomies by Geographic Location

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Study Objective: To analyze patient and hospital characteristics, stratified by geographic location, among women undergoing minimally invasive and abdominal myomectomies.

Design: Data was abstracted from the 2010-2014 National Inpatient Sample of women ages 18-50 years undergoing myomectomy for fibroids. We used a multivariate logistic regression to analyze temporal and geographic trends in minimally-invasive (laparoscopic and robotic) and abdominal myomectomy by patient factors (age, race, insurance, income subgroups) and hospital characteristics (teaching status, for-profit status, size).

Setting: United States.

Patients or Participants: 124,880 women ages 18-50 years undergoing inpatient myomectomy for fibroids.

Interventions: N/A

Measurements and Main Results: Of the 124,880 women undergoing myomectomy for fibroids, 7% underwent minimally invasive myomectomy (MIM) and 93% underwent abdominal myomectomy. The percentage of MIM by geographic region was: South 37.6%, West 22.7%, North 21.8%, and Midwest 17.9%. In all geographic regions, women aged 41-50 had higher odds of undergoing MIM compared to younger women [North OR 2.21 95%CI 1.57 – 3.12, South OR 4.15 95%CI 3.14 – 5.50, Midwest OR 7.25 95%CI 4.36 – 12.05, West OR 4.57 95%CI 3.00- 6.96]. White women also had higher odds of undergoing MIM in the North, South, and West compared to women of other races.
Open Communications 24: Laparoscopy
(3:05 PM – 4:05 PM)

Trends and Risk Factors for Vaginal Cuff Dehiscence
After Laparoscopic Hysterectomy
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Study Objective: Primary objective: Assess the effect of the route of vaginal cuff closure on the incidence of vaginal cuff dehiscence (VCD) in laparoscopic hysterectomy. Secondary objectives: Assess patient and surgical risk factors associated with VCD, the rate of intra- and perioperative complications by route of closure, and the impact of surgeon volume on complications.

Design: Retrospective chart review with case-control component.

Setting: Tertiary care referral center.

Patients or Participants: 1277 women underwent laparoscopic (LH) or robotic-assisted (RAH) hysterectomy in 2016 and met inclusion criteria. 26 cases of VCD were identified from 2009 through 2016.

Interventions: A retrospective comparison of patients with vaginal cuff (VCC) and laparoscopic (LCC) cuff closure undergoing LH and RAH in 2016. Patients with VCD (n=26) were matched by route of cuff closure to the next seven hysterectomies (n=182) which became controls.

Measurements and Main Results: In 2016, there were 8 cases of VCD (0.63%). There was no difference between LCC=7/988 (0.71%) and VCC 1/289 (0.35%); p=0.49). 7 VCD cases were performed by high volume surgeons (>30 hysterectomies per year) who were more likely to perform LCC and use barbed suture (p<0.001). However, there were no significant differences in rates of perioperative complications or surgeon volume between routes of cuff closure. Case-control patients differed in smoking status (p=0.010) and history of prior laparotomy (p=0.017). Logistic regression showed increasing age (OR 0.95, CI 0.91-0.99) and increasing BMI (OR 0.98, CI 0.83-0.97) were protective for VCD.

Conclusion: VCD is a rare but serious complication of laparoscopic hysterectomy. Despite previous studies, we did not find a significant difference in VCD or intra- and perioperative complications by route of cuff closure or surgeon volume. Given the lack of evidence favoring one route of cuff closure, we recommend surgeons employ the closure technique they are best accustomed with to optimize patient outcomes.

Open Communications 24: Laparoscopy
(3:05 PM – 4:05 PM)

Approach to Uterine Artery Occlusion at Myomectomy
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Video Objective: The purpose of this video is to demonstrate three approaches to uterine artery occlusion at time of myomectomy as a blood-sparring intra-operative technique.

Setting: Patients undergoing laparoscopic myomectomy underwent a uterine artery occlusion prior to any uterine incision.

Interventions: A step-wise approach is applied prior to beginning the myomectomy portion of the procedure which includes the following: 1) Selecting the appropriate approach to uterine artery occlusion (lateral vs. posterior vs. anterior) based on individual anatomy; 2) Identification of relevant anatomy and important landmarks for the procedure 3) Isolating the uterine artery and identifying the ureter; 4) Occluding the uterine artery.

Conclusion: Uterine artery occlusion can be performed by three different approaches, as have been demonstrated in this video. As evidenced in the literature, this represents a safe and effective method of limiting blood loss and blood transfusion, albeit at slightly longer operative times.

Open Communications 25: Urogynecology
(4:10 PM – 5:10 PM)

Laparoscopic Creation of a Neovagina in Mayer-Rokitansky-Küster-Hauser Syndrome
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Video Objective: To show the step by step procedure of a neovagina creation in Mayer-Rokitansky-Küster-Hauser Syndrome.

Setting: 22-year-old patient with primary amenorrhea, normal feminine phenotype development and vaginal agenesis on clinical examination. Pelvic ultrasound noted uterine agenesis. Mayer-Rokitansky-Küster-Hauser Syndrome was diagnosed.

Interventions: A Neovagina was created with simultaneous laparoscopic and perineal approach. Surgery lasted 1 hour. Patient uses dilators to maintain a functional neovagina.

Conclusion: We believe this technique is simple, requires no special instruments and is fully reproducible with basic laparoscopic and vaginal surgical training. A correct understanding of surgical anatomy in each individual case warrants excellent results.

Open Communications 25: Urogynecology
(4:10 PM – 5:10 PM)

Levator Avulsion: A Review of Surgical Anatomy and Repair Technique for Primary Posterior Perineal Hernias
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Video Objective: Perineal hernias are exceptionally uncommon gynecologic pathologies that may have a drastic impact on women’s health. Hernias that contain pelvic visceral structures present an especially unique challenge that requires immediate attention. Evidence is lacking as to the
optimal surgical approach. Our objective is to describe our minimally-invasive technique for the repair of primary posterior perineal hernias with symptomatic bladder prolapse.

**Setting:** This patient is a sixty-two-year-old female who presented with a large bulge in her left buttock and a chief complaint of difficulty urinating that required reduction in order to void. Her medical history is significant for a prior vaginal delivery without complications, and a prior rectocelect repair. Outpatient workup that included cystogram, CT and MRI imaging revealed a left perineal hernia that involved the entire bladder. She was diagnosed with a posterior perineal hernia.

**Interventions:** This patient’s condition was treated via surgical management. Due to the large defect size and absent levator ani musculature, re-approximation for pelvic support was not feasible and thus a 5 x 4 cm segment of propylene mesh was placed and sutured between the left vaginal sidewall and left pelvic sidewall periosteum. Following, a sacrocolpopexy was performed to repair her perineal descent, and the prolapsed bladder was replaced with a psoas hitch procedure to the contralateral side.

**Conclusion:** Primary posterior perineal hernias with concomitant symptomatic bladder prolapse may be repaired with a sacrocolpopexy, paravaginal mesh placement, and a psoas hitch procedure. Using a robotic-assisted, minimally-invasive repair technique has been proven to have favorable short-term outcomes regarding symptomatology as well as anatomic replacement of pelvic viscera. Patients should be counseled about the option for surgical management of perineal hernias, as well as the need for future research to evaluate the long-term outcomes and quality of life markers following transabdominal laparoscopic perineal hernia repairs with use of mesh placement.

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**Open Communications 25: Urogynecology (4:10 PM – 5:10 PM)**

**4:24 PM**

**Sacral Colpopexy after a 20 Years Sacral Colpopexy. A Robotic Minimally Invasive Approach**

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**Video Objective:** To demonstrate a robotic approach to identify the surgical planes, exposure and mesh removal from the vagina in a patient with a sacral colpopexy performed more than 2 decades ago and vault prolapse recurrence.

**Setting:** Tertiary care center.

**Interventions:** A 63-year-old G3 P3 with a history of a total vaginal hysterectomy with uterosacral ligament suspension with prolapse recurrence that was treated by an abdominal sacral colpopexy 20 years ago, presented to our practice with vault prolapse recurrence. Considering her prior mesh procedure decision was made to perform another sacral colpopexy through a minimally invasive approach. In addition to her condition patient had bladder stones for no apparent reason. Urology performed a bladder stone extraction prior to the prolapse procedure. Careful examination of the urethral orifice revealed no mesh or suture fibers from the previous colpopexy. Mesh and suture removal from the vagina was performed to allow the placement of the new mesh.

A type I polypropylene mesh was attached to the vagina using polydioxanone sutures. The mesh was tension and attached to the anterior longitudinal ligament in regular fashion with a polypropylene suture.

**Conclusion:** Newer generations of surgeons should be trained to expect how to handle prolapse recurrences when a prior mesh procedure was performed.

This procedure can be challenging but feasible through a robotic minimally invasive approach.

**Open Communications 25: Urogynecology (4:10 PM – 5:10 PM)**

**4:31 PM**

**Feasibility of Outpatient Combined Laparoscopic Apical and Vaginal Prolapse Repair.**

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**Study Objective:** To assess the feasibility of outpatient laparoscopic management of apical pelvic organ prolapse along with indicated vaginal repairs and anti-incontinence procedures.

**Design:** Retrospective cohort study.

**Setting:** Tertiary-care academic center, Boston, MA.

**Patients or Participants:** 112 patients seen in the Minimally Invasive Gynecologic Surgery (MIGS) and Urogynecology clinics with symptomatic pelvic organ prolapse.

**Interventions:** Laparoscopic hysterectomy, sacro (cervico- or colpo-) pexy along with vaginal prolapse and anti-incontinence procedures as indicated from 2013-2017 at Brigham & Women’s Hospital and Brigham & Women’s Faulkner Hospital performed by a MIGS and Urogynecology team.

**Measurements and Main Results:** Of the 112 patients, 52 were outpatient and 60 were admitted (median stay in admission group = 1 day; range 1-3). Patient baseline characteristics, ASA class, and POP-Q stage were similar between the outpatient and admitted cohorts. Most patients underwent hysterectomy at the time of the sacropexy (65.4% outpatient vs 73.3% admitted, p = .08). Concomitant AP repair was more common in the outpatient group (98.1% vs 85%, p = .02). The proportion of outpatient procedures increased from 17% in 2013 to a peak of 70% in 2016. OR time was shorter for the outpatient cohort (103.9 mins vs 115.5 mins, p = .04), but other peri-operative outcomes were similar. There were no intra-operative complications. Post-operative complications, readmission and re-operations were low and similar between outpatient and admitted cohorts. No factor was predictive of admission on regression analysis.

**Conclusion:** Laparoscopic apical prolapse repair with concomitant vaginal repairs can be performed safely as an outpatient procedure. A unique team approach may foster a shorter, more efficient procedure without compromising short term outcomes.

**Open Communications 25: Urogynecology (4:10 PM – 5:10 PM)**

**4:38 PM**

**Laparoscopic Sacrocolpopexy with Vaginal Prosthetic Adhesive: Multicenter Prospective Study of 45 Patients**

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**Study Objective:** To evaluate the effectiveness and safety of using a liquid adhesive solution for prosthetic bonding during laparoscopic sacrocolpopexy.

**Design:** Multicenter observational prospective study conducted in three French gynecological surgery centers between June 2015 and February 2017. The effectiveness of the intervention was assessed by means of validated symptom and quality of life questionnaires (PFDI-20 including POPDI-6, CRADI-8 & UDI-6, and PISQ-12) and a clinical examination one year after surgery.
Open Communications 25: Urogynecology (4:10 PM – 5:10 PM)

4:45 PM

Comparison of 30-Day Complication Rate Between Minimally Invasive Hysterectomy with and Without Concomitant Urogynecologic Procedure

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Study Objective: Primary objective was to evaluate risk of perioperative complications when performing concomitant urogynecologic surgery at time of minimally invasive hysterectomy for large uterus (>250gm).

Design: Retrospective cohort study of existing national database. Patients were followed for complications 30 days after hysterectomy.

Setting: Data was extracted from the NSQIP database.

Patients or Participants: Patients were included who underwent laparoscopic or vaginal hysterectomy for benign indications with uterine weight of at least 250gm from 2014-2017. Patients with gynecologic malignancy and those who underwent abdominal hysterectomy were excluded. The total cohort included 7,428 patients.

Interventions: We assessed the effect of concomitant urogynecologic procedure on 30 day complication rates after laparoscopic or vaginal hysterectomy for large uterus (>250gm).

Measurements and Main Results: Chi-square analysis and Student’s t-test were used to describe the population and compare groups. Primary outcome was composite rate of all 30 day complications. Stepwise backward multivariate logistic regression was used to control for confounders of the primary outcome. 301 of the 7,428 total patients (4.1%) underwent concomitant urogynecologic procedures. This population was older (49.7 vs 46.6 years, p<0.001), had lower uterine weight (429.2g vs 489.5g, p<0.001), had lower BMI (30.5 vs 31.5, p=0.02), was more likely to have a urogynecologist involved, and was more likely to undergo vaginal hysterectomy. Groups were otherwise similar. With regard to primary outcome, the 30 day complication rate was higher in patients who underwent a concomitant urogynecologic procedure (13.3% vs 9.0%, p=0.02). After controlling for confounders including uterine weight, demographic and medical characteristics, operative time, hysterectomy route, and urogynecologic surgeon, concomitant urogynecologic procedure remained an independent predictor of complications (aOR 1.53, 1.07-2.18, p=0.02).

Conclusion: In this retrospective analysis of a large national cohort, the 30 day complication rate was greater than 50% higher when concomitant urogynecologic procedure was performed at the time of minimally invasive hysterectomy for a uterus >250gm.

Open Communications 25: Urogynecology (4:10 PM – 5:10 PM)

4:52 PM

Robotic Sacrospinous Ligament Suspension

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Video Objective: To describe a robotic approach for performing a sacrospinous ligament suspension.

Setting: A 78 year-old woman presented with stage 3 uterine prolapse with the sole complaint of vaginal pressure. She had no urinary or bowel dysfunction. Her gynecologic surgical history included anterior and posterior vaginal wall mesh-augmented repairs. On examination, she had uterovaginal prolapse with underlying palpable uterus and calcified fibroid and the leading edge of the cervix at +6 cm from the hymen. Anterior, posterior and introital measurements on PO-P were normal. This represented an isolated stage 3 Uterine Prolapse.

Interventions: A robotic hysterectomy with bilateral salpingo-oophorectomy was completed. Uterosacral ligaments were attenuated and could not be utilized for vaginal apical support. Alternatively, a robotic right sacrospinous ligament suspension was attempted successfully. Steps for this procedure include: developing the right pararectal space, identifying the levator ani muscles and sacrospinous ligament followed by suspension of the vaginal cuff to the sacrospinous ligament using resorbable suture. This surgical clip demonstrates the technique.

Conclusion: A robotic approach can be utilized for vaginal apical suspension to the sacrospinous ligament when uterosacral ligaments are attenuated. Pelvic floor and sidewall anatomic knowledge is required for successful completion of this procedure.

Open Communications 25: Urogynecology (4:10 PM – 5:10 PM)

4:59 PM

Prophylactic Laparoscopic Uterosacral Ligament Suspension

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Video Objective: To demonstrate the benefit and feasibility of prophylactic uterosacral ligament suspension at time of hysterectomy, in hopes of reducing post-hysterectomy vaginal vault prolapse.

Setting: Hospital.

Interventions: Hysterectomy and Uterosacral ligament Suspension.

Conclusion: Laparoscopic uterosacral ligament suspension may be performed during laparoscopic hysterectomy to reduce the risk of post-hysterectomy vaginal vault prolapse.
Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

**4:10 PM**

**Technique for Rectosigmoid Resection with Total Intracorporeal Anastomosis in Colorectal Endometriosis**

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**Video Objective:** To demonstrate step-by-step technique for laparoscopic rectosigmoid colectomy with total intracorporeal anastomosis in stage IV endometriosis, eliminating the need for laparotomy to complete the procedure.

**Setting:** A subspecialty gynecologic surgery practice focused on complex endometriosis care, with collaboration from subspecialty surgery colleagues.

**Interventions:** Stage IV endometriosis with colorectal involvement is frequently managed in subspecialty endometriosis practices. In most cases, segmental resection and anastomosis requires a small laparotomy or port extension for installation of the stapler anvil. In recent years, general surgeons managing colon cancer or other general surgical disease states have demonstrated techniques for total intracorporeal laparoscopic colectomy without the need for minilaparotomy, often using the anus as an access point for stapler/anvil installation and specimen extraction. We demonstrate two cases using similar techniques in stage IV endometriosis, using a hysterectomy associated colpotomy as an access point, eliminating the need for laparotomy to complete colorectal anastomosis. Similar techniques can be accomplished via vaginotomy or transanally in cases that do not involve hysterectomy. We describe a repeatable 12 step process for consistent performance of this procedure.

**Conclusion:** Total intracorporeal colorectal resection and anastomoses are feasible and reproducible in stage IV endometriosis cases, using the vagina as an access point. In our experience, elimination of minilaparotomy for anastomosis completion promotes early discharge from hospital, surgical recovery, and patient satisfaction.

**Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)**

**4:17 PM**

**Assessing Pain and Sleep Patterns in Endometriosis: A Pilot Study Using Passive Radio Sensors**

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**Study Objective:** The goal of this pilot study is to explore the relationship between sleep and pain in endometriosis patients undergoing laparoscopic surgery using novel radio-wave sensing technology.

**Design:** Sleep patterns of three endometriosis patients were monitored in their home on a nightly basis for 4 weeks prior to and 6 weeks after laparoscopic surgery. Emerald, a novel non-contact sensor developed at MIT, was installed in patients’ homes to monitor sleep. Emerald transmits low power radio signals, 1000x lower than WiFi, and uses signal reflections off the subject’s body to extract their sleep stages. Participants also recorded daily numerical rating scale (NRS) of their recent pain level and sleep quality.

**Setting:** Patients were recruited from an endometriosis specialty practice at an academic community hospital. Non-contact monitoring occurred in the patients’ homes using Emerald.

**Patients or Participants:** Three women aged 23–39 with pelvic pain and suspected endometriosis planning laparoscopic excisional surgery.

**Interventions:** N/A

**Measurements and Main Results:** Pearson correlation coefficients were computed between pain level and sleep variables computed from the Emerald device. Sleep variables include continuity (e.g. total sleep time), architecture (e.g. time in each sleep stage) and fragmentation (e.g. number of awakenings). Deep sleep onset latency, defined as the time from the sleep onset to the first epoch of deep sleep, showed a significant (p<0.01), positive correlation with pain scores in all three subjects: r=0.45, 0.50, and 0.55. The other sleep variables showed no statistically significant correlation.

**Conclusion:** Results indicate that increased deep sleep onset latency is a correlate of poor sleep and furthermore, poor sleep leads to higher pain sensitivity the following day. A follow-up study is needed to validate these results in a larger pelvic pain population and to evaluate whether sleep assessments should be integrated into pain treatment plans as another target for intervention.

**Open Communications 26: Endometriosis (4:24 PM – 5:15 PM)**

**Patient Outcomes Following Initiation of Medical Cannabis in Women with Chronic Pelvic Pain**

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**Study Objective:** The aim is to evaluate the efficacy and side effects of medical cannabis for chronic pelvic pain (CPP).

**Design:** We conducted a retrospective cohort study between 2012 and 2018.

**Setting:** N/A

**Patients or Participants:** Three gynecologists specialized in pelvic pain who prescribe medical marijuana in their practice for analgesia participated. Only patients with CPP were included.

**Interventions:** 3 grams of medical cannabis daily was prescribed.

**Measurements and Main Results:** A descriptive analysis assessing patient baseline characteristics was performed. The usage of medical cannabis was recorded. Patient outcomes following initiation of medical cannabis were studied. Primary outcome was pain response; secondary outcomes were side effects and resulting patterns of opioid use. Chi-square test was used to compare association between different variables. P-value of <0.05 was considered significant.

A total of 135 women, with mean age of 35.4 years old, were prescribed medical cannabis. 92.6% were premenopausal. 8.9% underwent hysterectomy. A total of 135 women, with mean age of 35.4 years old, were prescribed medical cannabis. 92.6% were premenopausal. 8.9% underwent hysterectomy. 48.2%, 60.0% and 57% tried at least one type of NSAID, opioid, or medical cannabis. 92.6% were premenopausal. 8.9% underwent hysterectomy. A total of 135 women, with mean age of 35.4 years old, were prescribed medical cannabis. 92.6% were premenopausal. 8.9% underwent hysterectomy. 48.2%, 60.0% and 57% tried at least one type of NSAID, opioid, or medical cannabis. 92.6% were premenopausal. 8.9% underwent hysterectomy.

The route of cannabis administration was documented in 38 charts. Some patients used more than one formulation. 25 patients used cannabis oil, 10 ingested edibles, 9 vaporized cannabis and 6 smoked marijuana. Change in pain was documented in 82 cases: 79 experienced improvements, and 3 reported no change. No patient had worsening of pain. Of the patients who had improvement, 39 reduced their opioids use. Side effects were reported by 9 patients—the most common being headache. No significant relationship between patient baseline characteristics and change in pain was found.
Conclusion: This is the first study reporting use of medical cannabis in CPP. Medical cannabis is a safe treatment with minimal side effects that can improve CPP and reduce opioids use. Future studies evaluating the pharmacokinetics and optimal regimen in the management of CPP are needed.

Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

4:31 PM

Zakhari A,1* Mabrouk M,2,3 Raimondo D,4 Mastronardi M,2,4 Seracchioli R,5 Mattei B,6 Papillon-Smith J,3 Solnik MJ,1 Murji A,1 Lemos N,1,6 1Department of Obstetrics and Gynecology, Mount Sinai Hospital, Toronto, ON, Canada; 2Dipartimento di Scienze Mediche e Chirurgiche (DIMEC), S. Orsola Hospital, University of Bologna, Bologna, Italy; 3Department of Obstetrics and Gynecology, Faculty of Medicine, University of Cambridge, Cambridge, United Kingdom; 4Dipartimento di Scienze Biomediche e NeuroMotorie (DIBINEM), University of Bologna, Bologna, Italy; 5Obstetrics and Gynecology, McGill University Health Centre, Montreal, QC, Canada; 6Department of Gynecology, Universidade Federal de São Paulo, São Paulo, Brazil
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Video Objective: Extensive resections for endometriosis can cause damage to the autonomic nervous system of the pelvis resulting in urinary, anorectal, and sexual dysfunction. This educational video seeks to describe the autonomic neuroanatomy of the pelvis, illustrate the predictable location of the hypogastric nerve in relation to other pelvic landmarks, and demonstrate a technique for identifying, dissecting, and ultimately sparing the hypogastric nerve and consequently, the inferior hypogastric plexus.

Setting: Using didactic schematics and medical drawings, we discuss and illustrate the autonomic neuroanatomy of the pelvis. With annotated laparoscopic footage of patients undergoing surgery for endometriosis in tertiary care centers, we demonstrate a stepwise approach for identifying, dissecting, and preserving the hypogastric nerve during pelvic surgery.

Interventions: The superior hypogastric plexus is described, receiving contributions from the lower lumbar splanchnic nerves of the sympathetic trunk. The paired hypogastric nerves are shown, originating from the superior hypogastric plexus and joining sacral splanchnic nerves from S2, S3, and S4 to form the inferior hypogastric plexus. This latter plexus provides autonomic innervation to the bladder, uterus, and rectum.

With laparoscopic footage, we detail the following stepwise approach: 1) transperitoneal identification of the hypogastric nerve, with a pulling maneuver for confirmation. 2) Opening of the retroperitoneum at the level of the pelvic brim and retroperitoneal identification of the ureter. 3) Medial dissection and identification of the hypogastric nerve. 4) Lateralization of the hypogastric nerve, allowing for safe peritoneal resection.

Conclusion: The hypogastric nerve follows a predictable course and can be identified, dissected, and spared during pelvic surgery, making it an important landmark for the preservation of pelvic autonomic innervation.

Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

4:38 PM

Long Term Outcomes of Post-Operative Hormonal Suppression in Patients with Endometriosis: A Systematic Review and Meta-Analysis
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Study Objective: To determine the impact of postoperative hormonal suppression on recurrence and pain following conservative endometriosis surgery.

Design: Systematic review and meta-analysis of prospective observational and randomized controlled trials.

Setting: The following databases were searched: MEDLINE, Embase, Cochrane CENTRAL, and Web of Science from inception until October 2018.

Patients or Participants: Pre-menopausal women undergoing surgical treatment of endometriosis, conserving at least one ovary.

Interventions: Post-operative medical treatment of at least 6 months with oral contraceptive pills (OCP), levonorgestrel intra-uterine device (LNG-IUD), progestin therapy, or gonadotropin releasing hormone agonist (GnRH-a).

Measurements and Main Results: Post-operative hormonal suppression decreased the odds of disease recurrence (OR: 0.40; 95% CI: 0.27 – 0.60, p < 0.001, 14 studies, 1678 patients). Odds of recurrence for individual interventions were as follows: GnRH-a OR: 0.58; 95% CI: 0.37 – 0.93, p = 0.02, 6 studies, 761 patients; OCP OR: 0.37; 95% CI: 0.14 – 0.95, p = 0.04, 5 studies, 721 patients; LNG-IUD OR: 0.26; 95% CI: 0.09 – 0.75, p = 0.01, 3 studies, 170 patients; progesterins OR: 0.25; 95% CI: 0.09 – 0.60, p = 0.008, 2 studies, 165 patients.

Hormonally suppressed patients had greater reductions in pain versus controls (SMD -0.54; 95% CI: -0.68 – -0.39, p < 0.001, 8 studies, 775 patients). SMD for individual interventions were as follows: GnRH-a SMD: -0.22; 95% CI: -0.41 – -0.04, p = 0.02, 4 studies, 501 patients, OCP SMD: -1.11; 95% CI: -1.50 – -0.72, p < 0.001, 1 study, 51 patients, LNG-IUD SMD: -0.85; 95% CI: -1.17 – -0.54, p < 0.001, 3 studies, 175 patients, progesterins SMD: -1.34; 95% CI: -1.92 – -0.77, p < 0.001, 2 studies, 61 patients.

Conclusion: Post-operative hormonal suppression following conservative endometriosis surgery decreases the odds of disease recurrence and results in greater reductions in pelvic pain/dysmenorrhea compared to expectant management.

Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

4:45 PM

Pelvic Pain Targeted Physical Exam
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Video Objective: To describe a step by step approach physical exam in a patient with chronic pelvic pain.

Setting: Clinic.

Interventions: An systems-based physical exam in a patient with chronic pelvic pain.

Conclusion: A systematic systems-based approach is helpful in uncovering one or multiple etiologies which could convert into one vague complaint. Performing a non-comprehensive or disorganized exam could lead to inaccurate diagnoses.

Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

4:52 PM

EndoSearch: The International Clinical Trial to Test a Cluster of Biomarkers to Diagnose Endometriosis
Belgium; 21 France; 19 Bronovo, The Hague, Netherlands; 12 6 7 Endometriosis, Saint Louis; 45 Methods *Corresponding author. Clinical trial registered with Clinical Trial.gov. Interventions: cluster of biomarkers. Patients with predominant adenomyosis and/or fibroids of same age group without any endometriosis-related clinical sign, endocrine diseases are excluded. The Control Group includes patients laparoscopy. Patients with predominant adenomyosis and/or fibroids the Indian Ocean, granted by the European Union aiming to validate a control group). Endometriosis group have already had at least one and up to 4 previous laparoscopies. Almost 50% of the patients had Endometriosis of the control group had severe endometriosis. Those preliminary results with others show the necessity of development of accurate biological tests to diagnose endometriosis and avoid unnecessary laparoscopies.

Conclusion: We present the first large prospective multicentric international clinical trial aiming to test a cluster of biomarkers to diagnose endometriosis by recruiting over 1000 patients all around Europe, the US and Canada. Even in major referral centers almost 14% of the pre-op diagnosis were negative at pathology while 2% of the control group had severe endometriosis at laparoscopy and were excluded.

Study Objective: The aim of our study is to test a combination of biological markers differentially expressed in samples from women with or without endometriosis.

Methods Design: ENDOSEARCH is a prospective multicentric international clinical trial registered with Clinical Trial.gov. Setting: 20 renowned specialized centers in Europe, USA, Canada, and the Indian Ocean, granted by the European Union aiming to validate a cluster of biomarkers. Patients or Participants: 1000 patients. The Patient Group includes women between 18 and 45 with suspected endometriosis undergoing laparoscopy. Patients with predominant adenomyosis and/or fibroids diagnosed by imaging, chronic, malignant, infectious, metabolic or endocrine diseases are excluded. The Control Group includes patients of same age group without any endometriosis-related clinical sign, with planned laparoscopic surgery for other indications. Samples of endometriosis lesions and endometrial biopsies for both groups are sent to a unique center (Endodia, Paris, France) to be tested with the cluster of biomarkers.

Interventions: Laparoscopy for endometriosis or benign conditions (Control group).

Measurements and Main Results: 40% of the patients recruited in the Endometriosis group have already had at least one and up to 4 previous laparoscopies for endometriosis. Almost 50% of the patients had an AFS score of III or IV. 14% of the patients suspected of endometriosis had negative pathology while 2% of the control group had severe endometriosis at laparoscopy and were excluded.

Conclusion: This stepwise approach for vagal cuff revision in patients with symptomatic rectovaginal endometriosis provides a roadmap for the effective and safe excision of vaginal cuff nodules, while minimizing the risks of injury to the bladder, the ureters, the rectum and the risk of vaginal cuff dehiscence, persistent dyspareunia and recurrent endometriosis.

Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

4:59 PM

Roadmap to Safe Vaginal Cuff Revision for Endometriosis
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Study Objective: This video describes a systematic stepwise approach for vaginal cuff revision associated with vaginal cuff endometriosis and rectovaginal disease.

Setting: 39 year-old presented with persistent cyclic vaginal bleeding, pelvic pain and deep dyspareunia following laparoscopic hysterectomy. She was noted to have a 2 cm vaginal cuff nodule with posterior cul de sac obliteration. The patient failed medical management and desired surgical management.

Interventions: Laparoscopic vaginal cuff revision was performed using a systematic approach with bilateral ureterolysis, excision of uroserosal ligament fibrosis, opening the rectovaginal space, shaving of rectal endometriosis and resection of the vaginal cuff nodule.

Conclusion: This stepwise approach for vaginal cuff revision in patients with symptomatic rectovaginal endometriosis provides a roadmap for the effective and safe excision of vaginal cuff nodules, while minimizing the risks of injury to the bladder, the ureters, the rectum and the risk of vaginal cuff dehiscence, persistent dyspareunia and recurrent endometriosis.

Open Communications 26: Endometriosis (4:10 PM – 5:15 PM)

5:06 PM

Incidence and Predictors of Persistent Pelvic Pain Following Hysterectomy in Women with Chronic Pelvic Pain
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Study Objective: To describe the incidence and risk factors for persistent pelvic pain 6 months following hysterectomy in women with chronic pelvic pain (CPP).

Design: Prospective, observational cohort study of women with chronic pelvic pain undergoing hysterectomy.

Setting: Academic tertiary care center.

Patients or Participants: 126 women with CPP undergoing hysterecomy for benign indications.

Interventions: Patients completed validated assessments of pain, anxiety, depression, and centralized pain (using the 2011 fibromyalgia survey criteria, 0-31 points) preoperatively and 6-months after hysterectomy. Demographic information, surgical history, intraoperative findings and surgical pathology were abstracted from the electronic medical record. Preoperative CPP was defined as average pelvic pain ≥3/10 for >3 months. Multivariate logistic regression was used to identify independent predictors of persistent pelvic pain 6 months following hysterectomy, defined as <50% improvement in pelvic pain severity.

Measurements and Main Results: Among 176 participants with CPP, 126 (71.6%) were retained at 6-months, and 15 (11.9%) reported persistent pelvic pain. There was no difference in age (p=0.46), race (p=0.55), pain severity (p=0.10) or pain duration (p=0.80) in those with and without persistent pelvic pain. While intraoperative findings of
endometriosis (p=0.045) was associated with a higher incidence of persistent pain, surgical route (p=0.46), uterine fibroids (p=0.34), adenomyosis (p=0.23), pelvic adhesions (0.51), uterine weight (p=0.66) were not related to risk of persistent pain. Higher preoperative centralized pain scores (p=0.01), but not depression (p=0.13) or anxiety (p=0.28) were more common in women with persistent pelvic pain. Multivariate logistic regression controlling for age, anxiety, and endometriosis indicated that every 1-point increase in centralized pain was associated with a 23% increase in odds of persistent pelvic pain (OR 1.23, 95%CI 1.03, 1.48).

**Conclusion:** While the majority of women with CPP report considerable improvement in pain following hysterectomy, higher degrees of centralized pain prior to hysterectomy is a robust predictor of persistent pain, even among women whose score falls below the diagnostic criteria for fibromyalgia.

**Open Communications 27: Endometriosis**

**(4:10 PM – 5:10 PM)**

**4:10 PM**

**Typical Opioid use After Minimally Invasive Hysterectomy**

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**Study Objective:** To describe typical narcotic requirements after benign minimally invasive hysterectomy and evaluate patient risk factors for higher narcotic use.

**Design:** In a prospectively collected data set as part of a randomized controlled trial comparing single-dose preoperative gabapentin use to nonusers, women undergoing a benign minimally invasive hysterectomy were assessed for total narcotic use and subjective pain scores at 2 weeks postoperatively via phone. Results from this trial resulted in no difference between groups, therefore the data set was utilized to assess typical narcotic use at 2 weeks postoperative. Total narcotic use was then compared across surgical specialties (generalist, urogynecology, minimally invasive gynecology [MIGS]). Patient demographics and operative details were compared between top quartile users versus regular users.

**Setting:** Single academic affiliated community hospital.

**Patients or Participants:** From June 2016 to June 2017, women undergoing hysterectomy for benign indications via a minimally invasive approach were approached to participate. Inclusion was limited to patients of high volume surgeons (more than 20 hysterectomies annually) within the generalist, MIGS, and urogynecology divisions. Women were excluded if known to have a contraindication to gabapentin, acetaminophen, or celecoxib use, or if their procedure was converted to laparotomy for any indication.

**Interventions:** N/A

**Measurements and Main Results:** A total of 109 women had data at 2 weeks postoperative to be analyzed for cohort analysis. The median oral narcotic requirement was 40 morphine milligram equivalents [MME] (interquartile range 0 – 96). Patients undergoing surgery with MIGS providers required less postoperative narcotics than those with a generalist trained surgeon (15 MME versus 75 MME, p = 0.007). Younger age and prior laparoscopic surgery were also found to be associated with high narcotic utilization after benign hysterectomy.

**Conclusion:** Typical oral narcotic requirements after benign minimally invasive hysterectomy are minimal with median use equivalent to approximately five tablets of oxycodone (5 milligrams).

Open Communications 27: Endometriosis

**(4:10 PM – 5:10 PM)**

**4:17 PM**

**Superficial Endometriosis can be Seen on Ultrasound: A Pilot Application of Saline-Infusion Sonopodography**

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**Study Objective:** Saline-infusion sonoPODography (SPG) is a novel ultrasound procedure that involves introducing fluid into the pouch of Douglas (POD) via the uterus and tubes to create an acoustic window and enhance contrast between tissues in the posterior compartment. We aim to demonstrate that SPG has utility in diagnosing superficial endometriosis (SE) in a non-invasive fashion.

**Design:** Prospective diagnostic accuracy study.

**Setting:** Tertiary healthcare center in Sydney, Australia from September 2018-March 2019.

**Patients or Participants:** Patients with symptoms of endometriosis planned for laparoscopy were recruited.

**Interventions:** SPG was done intra-operatively.

**Measurements and Main Results:** Laparoscopy was initiated to ascertain a reference standard visual diagnosis of endometriosis and to suction free fluid from the pelvis. The single SPG operator was blinded to this part of surgery. If fluid collected in the POD, SE of the posterior compartment was evaluated and compared to laparoscopic findings. SE on TVS was defined relative to peritoneal surfaces: 1) superficial hypoechoic areas, 2) hyperechoic projections, 3) cystic areas, 4) pockets of fluid, 5) filmy, irregular adhesions.

15/19 patients underwent successful SPG. Prevalence of overall endometriosis was 15/19 (79%); deep endometriosis (DE) 5/19 (26%); ovarian endometromas 3/19 (16%); POD obliteration 2/19 (11%); SE 14/19 (74%). SPG diagnostic accuracy results are depicted in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>SE</th>
<th>POD SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>73%</td>
<td>90%</td>
</tr>
<tr>
<td>Prevalence</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>67%</td>
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<tr>
<td>Negative predictive value</td>
<td>43%</td>
<td>50%</td>
</tr>
<tr>
<td>Positive likelihood ratio</td>
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<td>N/A</td>
</tr>
<tr>
<td>Negative likelihood ratio</td>
<td>0.33</td>
<td>0.11</td>
</tr>
</tbody>
</table>

**Conclusion:** SPG was successfully completed in the majority of patients. In those without advanced endometriosis (i.e. POD obliteration), SPG is even more achievable and provides a reasonable sensitivity for overall SE and very good sensitivity for POD SE, which is the second most common site of SE. At present, SPG needs to be further evaluated but offers hope for a novel non-invasive diagnostic tool for SE.

**Open Communications 27: Endometriosis**

**(4:10 PM – 5:10 PM)**

**4:24 PM**

**The Role of Shaving Technique in the Treatment of Recto-Vaginal Endometriosis**

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Study Objective: To report the results of laparoscopic surgical treatment in patients treated for Deep Infiltrating Endometriosis (DIE) with Urinary Tract involvement (bladder and ureter) and to provide an accurate decision-making algorithm, reporting a large case-series and follow-up data.

Design: Collection of all the data about radical laparoscopic treatment of DIE that underwent parametrectomy with ureterolysis, ureteral reconstructive surgery, nephrectomy, bladder shaving or resection from July 2004 to December 2017.

Setting: Department of Gynecology and Obstetrics of IRCCS Sacro Cuore Don Calabria Hospital, Negrar, Verona, Italy.

Patients or Participants: 6280 consecutive laparoscopic surgical procedures for DIE with parametrial and Urinary Tract involvement were collected.

Interventions: 2740 patients had Bladder Endometriosis (BE): 264 patients with mucosal involvement were treated by bladder resection; 2476 without mucosal infiltration received a bladder shaving. 5535 patients had Ureteral Endometriosis (UE) with a different grade of involvement: 239 patients underwent an elective ureteral resection with ureteral reconstructive surgery; 26 patients received a total laparoscopic nephrectomy. 5070 patients presented a non-obstructive ureteral involvement and received mono- or bilateral ureterolysis.

Measurements and Main Results: A surgical complication occurred in 26 patients treated for BE and in 14 patients undergoing elective ureteroneocystostomy. About patients with UE receiving extensive ureterolysis, in 137 a Double-J stent was placed intra or post-operatively, 57 of these had a post-operative complication and in 11 cases there was no need for a re-intervention. We reported a 2 year recurrence rate of 2.4% and 4.1% regarding UE and BE, respectively.

Conclusion: This is the largest series of patients with DIE with Urinary Tract involvement that received a total laparoscopic radical treatment in literature. Our surgical experience encourages minimally invasive nerve-sparing techniques for the surgical management of BE and UE when it’s necessary, providing good results in terms of symptoms’ control and relapses, with a low post-operative complications’ rate.
Conclusion: Diaphragmatic nodules can be easily classified in one of the proposed groups. Considering this classification, different methods of surgical treatments of DE can be chosen, in order to allow a total and safe removal of the lesions, with low complications rate and a significant improvement of patients’ symptoms.

Open Communications 27: Endometriosis (4:10 PM – 5:10 PM)

4:45 PM

Excision of Ovarian Remnant Causing Chronic Pelvic Pain

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Video Objective: To demonstrate effective excision of ovarian remnant in chronic pelvic pain following hysterectomy and bilateral salpingo-oophorectomy for endometriosis.

Setting: A 38 year-old G0 was diagnosed with endometriosis aged 17, subsequently undergoing 37 laparoscopies for pelvic pain. Total laparoscopic hysterectomy and bilateral salpingo-oophorectomy was performed aged 32, reported as technically difficult due to deep infiltrating endometriosis and adhesions. She continued to suffer with pelvic pain, with multiple admissions with subacute small bowel obstruction. A trial of progesterone and GnRH was unsuccessful. In 2017 ultrasound showed a cystic structure in the right pelvis, suggesting ovarian remnant confirmed by FSH and oestradiol levels.

Interventions: Laparoscopic adhesiolysis and excision of ovarian remnant was scheduled and Clomiphene 50mg prescribed 2 weeks preoperatively to stimulate the ovarian tissue, allowing easier identification and excision. Intraoperative ultrasound demonstrated increased ovarian volume. On entry there were dense adhesions and the pelvis obliterated. Methodical adhesiolysis was achieved with a mixture of blunt dissection and monopolar diathermy. The ovarian remnant was seen on the right side surrounded by thickened peritoneum. The ureter was identified and unexpectedly found pulled medially by adhesions. Ureterolysis was performed down to the bowel loops, allowing a laparoscopic or robotic approach to full dissection of the peritoneum.

Conclusion: Consider remnant ovarian tissue in endometriosis patients who have had previous difficult hysterectomy and bilateral salpingo-oophorectomy with continued pain. Clomiphene enlarges remnant ovarian tissue to aid identification and excision. Before excising pathology it is important to identify normal structures when presented with distorted anatomy to ensure a safe approach.

Open Communications 27: Endometriosis (4:10 PM – 5:10 PM)

4:59 PM

Laparoscopic Management of Rectus Muscle Endometriosis

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Video Objective: To demonstrate technique for laparoscopic management of abdominal wall endometriosis contained within the rectus muscle.

Setting: A private practice specialized in the care of women with endometriosis.

Interventions: A 41 year old woman complained of severe cyclic pain in the abdominal wall. She had had two previous cesarean deliveries, and noted this mass and the resulting pain after the second surgery. The mass was only palpable to her during her menses, but otherwise was not palpable. Previous imaging via MRI demonstrated a mass within the abdominal wall. An outside surgeon had performed a laparotomy but did not encounter any mass to resect, resulting in no improvement for the patient. Review of the images demonstrated that the mass was entirely retrofascial within the rectus muscle, explaining the previous surgeon’s failure to find a mass. A laparoscopic approach was discussed with the patient and consent was obtained. At laparoscopy, the mass was entirely resected, including portions of rectus muscle and parietal peritoneum, without the need to breach the rectus fascia. Rectus muscle and peritoneum was brought together over the defect.

Conclusion: At three months, the patient reports near complete resolution of her pain, and a dramatically improved quality of life. Abdominal wall endometriosis is a relatively rare presentation of the disease but presents with some frequency to expert endometriosis practices. In most cases it is the result of iatrogenic seeding of the abdominal wall with native endometrium at the time of cesarean delivery or other surgery. In most cases, subcutaneous tissue and anterior rectus fascia is involved, demanding an open approach to resection. In rare cases such as this, the entire lesion may be under the fascia within the rectus muscle or abdominal oblique, allowing a laparoscopic or robotic approach to full resection.
Open Communications 28: Laparoscopy
(4:10 PM – 5:15 PM)

4:10 PM

A Simple Method For Ovarian Approximation and Hemostasis Cystectomy following
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Video Objective: This video describes a simple method for ovarian approximation and hemostasis following cystectomy.

Setting: A 31 year old patient with 1 year history of LLQ pelvic pain, deep dyspareunia and nausea. She has had a simple left ovarian cyst that was managed conservatively for several years, but recently increased in size. Ultrasound showed a large cyst in the midline measuring 9.2 x 6.3 x 9.1 cm. Laparoscopy showed a large 10 cm left ovarian mass that is cystic with serous fluid. A laparoscopic cystectomy was performed.

Interventions: A laparoscopic cystectomy was performed with ovarian approximation and hemostasis with polysorb endoloops.

Conclusion: This video demonstrates a simple and efficient method for approximating the ovarian tissue after large cystectomy, that provides adequate hemostasis without excessive thermal damage to the ovarian tissue, as well as potentially minimizing the risk of postoperative adhesions.

Open Communications 28: Laparoscopy
(4:10 PM – 5:15 PM)

4:17 PM

Ovarian Ectopic Pregnancy: Laparoscopic Excision and Ovarian Conservation
Ma K.,* Kaur N. Gynaeology, Manchester Foundation Trust, Manchester, United Kingdom
*Corresponding author.

Video Objective: Demonstrate technique of laparoscopic excision of ovarian ectopic pregnancy with ovarian conservation.

Setting: Tertiary Referral Centre and University Teaching Hospital.

Interventions: A 23-year-old primigravida presentation at 6 weeks of gestation with a 7-day history of light bleeding and intermittent abdominal pain. Examination findings were unremarkable and the serum human chorionic gonadotropin level was 7157 IU/L. An ultrasound scan showed an ectopic pregnancy in the right adnexa, and primary surgical management was recommended. At laparoscopy, both fallopian tubes were noted to be normal with an ectopic pregnancy within the right ovary. 20 IU argiopressin diluted in 80 mL 0.9% sodium hypochlorite was injected between the normal ovarian tissue and the ectopic pregnancy to assist hemostasis and hydro dissection. An ultrasonic device was used to incise the ectopic cortex to identify a plane of dissection between the ectopic pregnancy and the normal ovarian tissue. The ectopic pregnancy was excised with preservation of the ovary. The ovary was subsequently closed with absorbable sutures to ensure hemostasis. The ectopic pregnancy was removed in a bag through a 10-mm incision. The patient made an uneventful recovery. The serum human chorionic gonadotropin level in 7 days was <5IU/L and no further medical management was indicated. Histology confirmed a primary ovarian ectopic pregnancy. Ovarian function was not assessed post-operatively; however, she conceived 6 weeks later with an intrauterine pregnancy.

Conclusion: This case highlights the importance of considering non-tubal ectopic pregnancies when making a diagnosis based on an ultrasound scan. Ovarian preservation with excision of ectopic pregnancy can be achieved using techniques commonly used for ovarian cystectomy. Recourse to oophorectomy should only be considered in the event of acute hemorrhage.

Open Communications 28: Laparoscopy
(4:10 PM – 5:15 PM)

4:24 PM

Efficacy of the Block in the Transverse Abdominal Plane in Laparoscopic and Robot-assisted Hysterectomy.
Systematic Review and Meta - Analysis
Vargas CB*, Antioquia, Clinica Del Prado, Medellin, Colombia
*Corresponding author.

Study Objective: Effectiveness of TAP block both in pain reduction and opioid requirements in post-operative period and to identify the frequency of the associated effects in the use of opiates in patients who underwent laparoscopic or robotic hysterectomy.

Design: Systematic review with meta-analysis of randomized controlled clinical trials, the manual for systematic reviews of Cochrane was followed. Protocol was registered in PROSPERO CRD42018103573.

Setting: N/A

Patients or Participants: The search strategy identified 221 relevant bibliographical references: 43 Pubmed, 106 Embase, 67 Cochrane Library, 1 LILACS, 4 Gray. 7 were to perform a quantitative analysis, 227 patients with TAP block with 262 patients blockade with placebo or did not undergo intervention.

Interventions: Eligibility criteria: Controlled clinical trials, TAP blockade was compared to placebo or no treatment patients who underwent laparoscopic or robot-assisted hysterectomy, benign or malignant pathology and evaluated as outcomes, postoperative pain and opioid requirements, without language restriction, until July 31, 2018.

Measurements and Main Results: The weighted least squares meta-analysis model was used.

Immediate post-surgical pain: 7 studies, 518 patients showed a difference in means (DM): -1.17 (95% CI -1.87; -0.46) I2 = 68%, which was statistically significant in favor of the TAP block, is considered minimal and without clinical relevance.

Late Pain: 7 studies, 518 patients: DM 0.001 (95% CI -0.43; 0.44) I2 = 69%.

Opioid requirements: 6 studies, 447 patients: DM 0.36 (95% CI -0.94, 1.68) I2 = 80% and incidence of nausea and vomiting with a difference of 95% CI = -0.11 (-0.215; -0.006) in favor of the TAP.

Conclusion: The TAP block slightly decreases early postoperative pain without being maintained over time and does not modify the opioid requirement.

Open Communications 28: Laparoscopy
(4:10 PM – 5:15 PM)

4:31 PM

Clinical Study of Nano-carbon Combined With 3D Laparoscopic Sentinel Lymph Node Biopsy for Early Cervical Cancer
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*Corresponding author.

Study Objective: To investigate the feasibility and clinical application of early cervical application of nano-carbon tracer imaging of sentinel lymph node (the SLN) under laparoscopic 3D.

Design: 50 patients diagnosed with early cervical cancer patients, cervical injection nanometers from preoperative Carbon-suspended injection.3D
laparoscopic direct recognition of black-stained lymph nodes as SLN and excision, followed by laparoscopic pelvic lymphadenectomy + extensive hysterectomy (+ abdominal para-aortic lymph node sampling).

**Setting:** Xinxiang City Central Hospital Gynecologic Oncology, China.

**Patients or Participants:** 50 patients diagnosed with early cervical cancer patients were enrolled.

**Interventions:** 3D laparoscopic direct recognition of black-stained lymph nodes as SLN and excision, followed by laparoscopic pelvic lymphadenectomy + extensive hysterectomy (+ abdominal para-aortic lymph node sampling).

**Measurements and Main Results:** A total of 1476 lymph nodes were removed from 50 patients. SLN was successfully detected. The detection rate of SLN was 100% (50/50). A total of 445 SLNs were detected, accounting for 43.20% (445/1030) of the total number of lymph nodes. SLNB detection sensitivity 100% (50/50), specificity 100.00% (50/50), SLN prediction of pelvic lymph node status and postoperative pathological examination coincidence rate of 100% (50/50), negative predictive value of 100.00% (50/50).

**Conclusion:** The metastatic state of SLN in early cervical cancer is consistent with the true metastatic state of pelvic lymph nodes, which has a more accurate pathological representative significance. Laparoscopic detection of SLN in early cervical cancer using nano-carbon tracer is a comparative method. Safe and feasible, SLNB has to replace traditional cervical cancer pelvic lymphadenectomy, narrowing the scope of surgery and reducing trauma.
Video Objective: This video gives tips and tricks for performing a colpotomy during a total laparoscopic hysterectomy when a colpotomizer cup cannot be placed.

Setting: The patients shown in this video had their total laparoscopic hysterectomies at two academic tertiary care centers. Some patients who are otherwise good total laparoscopic hysterectomy candidates cannot have a colpotomizer cup placed. This most commonly occurs due to distorted cervical anatomy from the presence of fibroids, prior cervical surgeries, or even extremes of cervical size. The techniques reviewed may also be utilized based on the surgeon’s preference regardless of cervical anatomy.

Interventions: Three techniques for performing a colpotomy are reviewed in this video. The first shows a Breisky Navratil retractor, that mimics the shape of a colpotomizer cup, as an option to aide with bladder dissection and anterior colpotomy. The cervix is then everted, with the help of a tenaculum, and the rest of the colpotomy is made by directly visualizing the cervico-vaginal junction. The second technique uses a dyed sponge stick as a landmark for the anterior colpotomy. A lighted lucite rod is used in the third technique. The rod is used circumferentially to achieve colpotomy.

Conclusion: Total laparoscopic hysterectomy can safely be completed without the use of a colpotomizer cup. Three options to simulate a colpotomizer cup are the use of a Breisky Navratil retractor, dyed sponge on a stick, and a lighted lucite rod.

Open Communications 28: Laparoscopy
(4:10 PM – 5:15 PM)

4:59 PM

Transversus Abdominis Plane (Tap) Block With Liposomal Bupivacaine for Laparoscopic Hysterectomy With Umbilical Contained Tissue Extraction: A Retrospective Study
Young L.*, Lou K, Kasper KM, Obstetrics & Gynecology, Indiana University School of Medicine, Indianapolis, IN

Study Objective: To determine if liposomal bupivacaine TAP blocks affected perioperative opioid requirements and self-reported pain scores.

Design: Retrospective cohort study.

Setting: Academic tertiary care hospital.

Patients or Participants: Women undergoing laparoscopic hysterectomy for uteri >250g with contained tissue extraction via a 3-to 4cm umbilical incision.

Interventions: 70 laparoscopic hysterectomies over 250g were identified between July 1,2017 and February 15,2019; 30 were excluded. 40 were analyzed for outcomes (21control, 19 liposomal bupivacaine TAP).

Measurements and Main Results: Demographics including age, race, body mass index, preoperative diagnosis, procedure, complication rate, and pathology were similar between groups. Median estimated blood loss was 250cc for the control group and 300cc for the TAP group (p=0.85). Median uterine weight was 881g versus 781g (p=0.33). More than 50% of patients were discharged on day of surgery (13control, 9TAP). All opioids were converted to intravenous milligram morphine equivalents (MME). Median intraoperative opioid requirements were 24.02MME for the control group and 20.36MME for the TAP group (p=0.24). Median post-anesthesia care unit (PACU) requirements were 4.67MME versus 5.5MME (p=0.28). Among admitted patients, median inpatient requirements were 10.43MME versus 15MME (p=0.35), and median total hospital requirements were 40.7MME versus 37.95MME (p=0.93). Median opioids prescribed were 46.67MME versus 60MME (p=0.12), and zero patients in either group required a refill prescription. No difference was seen in pain scores between groups (maximum PACU, first inpatient, maximum inpatient, average inpatient, and last prior to discharge).

Conclusion: Conflicting evidence exists regarding efficacy of short acting anesthetic TAPs at laparoscopic hysterectomy. To the authors’ knowledge, only one prior study examined liposomal bupivacaine TAPs and no prior study assessed TAPs for contained tissue extraction via an extended umbilical incision. Liposomal bupivacaine TAPs do not appear to reduce perioperative opioid consumption nor improve postoperative pain scores. Its use should be weighed against operative time and increased cost.

Open Communications 28: Laparoscopy
(4:10 PM – 5:15 PM)

5:06 PM

Single-Port Laparoscopic Surgery for Huge Ovarian Cyst Using Foley Catheter
Kim YW*, Obstetrics and Gynecology, The Catholic University of Korea, Incheon St. Mary’s Hospital, Incheon, Korea, Republic of (South)
*Corresponding author.

Video Objective: The aim of this video presentation is to show that single-port laparoscopic surgery for huge ovarian cysts using Foley catheter is effective in removing huge ovarian cysts with minimal leakage.

Setting: A 32 year-old gravida 0 para 0 female with a huge ovarian cyst of 33 × 28 cm in size.

Interventions: We performed single-port laparoscopic right salpingo-oophorectomy through a single 1.0- to 1.5-cm umbilical incision. A Foley catheter was inserted into the huge ovarian cyst through the umbilical incision. The balloon of the Foley catheter was inflated. After the liquid content of the ovarian cyst was aspirated, the ovarian cyst was inserted into a specimen retrieval bag. The ovarian cyst was extracted transumbilically by cutting with a knife in the bag. The amount of fluid drained from the ovarian cyst was about 12,000 cc. The patient was discharged from the hospital on the third postoperative day, with an uneventful postoperative period.

Conclusion: Single-port laparoscopic surgery for huge ovarian cysts using a Foley catheter is feasible and the leakage of the liquid content is minimized.
Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION A

1511 Short-Term Outcomes of Non-Robotic Single-Incision Laparoscopic Sacrocolpopexy: A Surgical Technique
Liu J,1, * Kohn J,2 Wu C,1 Guan Z,1 Guan X,3 Gynecology, Third Affiliated Hospital of Guangzhou Medical University, Guangzhou, China; 2Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX
*Corresponding author.

Study Objective: Our main purpose is to describe surgical technique and short-term outcomes of single-incision laparoscopic sacrocolpopexy (S-LSC) for the treatment of pelvic organ prolapse (POP).

Design: This study will consist of a retrospective analysis of 49 consecutive cases.

Setting: This study is set at the Third Affiliated Hospital of Guangzhou Medical University from October 2016 to November 2017.

Patients or Participants: The population for this study will consist of women with stage II–IV POP, who met eligibility criteria for laparoscopic surgery.

Interventions: S-LSC included the use of V-loctm barbed suture and retroperitoneal tunneling, in addition to standard single-incision laparoscopic surgery techniques. All 49 cases were successfully completed. All cases included concomitant procedures: 42 (85.7%) had removal of uterus and adnexa. The main measured outcomes include patient characteristics, perioperative outcomes, and change in pelvic floor support (POP-Q) and quality of life (PFIQ-7).

Measurements and Main Results: All patients were parous and 42.9% had a history of previous abdominal surgery. Mean operative duration from skin to skin was 201.20 ± 46.53 minutes. Mean estimated blood loss was 27.0 ± 16.6 mL. Mean pre- and post-operative POP-Q scores were 2.2 ± 1.1 cm versus -2.6 ± 0.5 cm for the Aa point and 3.2 ± 2.8 cm versus -4.6 ± 0.8 cm for the C point (p < 0.05 for both). Mean pre- and post-operative PFIQ-7 scores were 106.4 ± 18.9 versus 8.9 ± 4.26 (p < 0.05), suggesting that S-LSC significantly improved physical prolapse and quality of life. Four patients suffered from postoperative complications (three mesh exposure, one lumbosacral pain). Six patients complained of new onset of SUI.

Conclusion: Single-incision laparoscopic sacrocolpopexy is a feasible method to manage POP. However, the long-term effects and complications need to be further investigated.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION B

2521 Post-Market Surgeon Safety Outcomes and Experience Performing Laparoscopic Ultrasound-Guided Radiofrequency Ablation using the Acessa™ System
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*Corresponding author.

Study Objective: 1) Evaluate intraoperative and near-term safety outcomes following laparoscopic radiofrequency ablation of fibroids (LapRFA) performed by gynecologic surgeons new to the procedure, using the Acessa™ system (Acessa Health, Austin, TX, USA). 2) Compare observed complication rates with those from the pivotal study.

Design: Post-market, prospective, single-arm, multicenter analysis; 4-8 weeks’ follow-up.

Setting: Community and university hospitals in the U.S. and Canada.

Patients or Participants: Surgeons (N=29) with varying levels of laparoscopic surgery experience participating in the ongoing, multinational Treatment Results of Uterine Sparing Technologies (TRUST) randomized clinical trial. Patients were premenopausal women (N=110), aged ≥18 years, enrolled as either run-in patients or randomized to the TRUST Lap-RFA arm.

Interventions: During run-in, surgeons received proctored Lap-RFA training. Following training, and after performing ≥2 procedures, surgeons provided feedback using a standardized form.

Measurements and Main Results: The primary endpoints were acute intraoperative and serious near-term postoperative complications, defined as occurring <48 hours and 48 hours to ≤30 days post-procedure, respectively, and to compare these outcomes to pivotal study results. Per protocol, surgeons performed 105 procedures (mean number proctored cases per surgeon, 2.48); 100 of the 105 patients were followed at all time points to 30 days. No intraoperative or acute serious complications were reported in this study, unlike the pivotal study where there were 2 acute serious complications (atelectasis and colon injury, 1.46%). Similar to the pivotal study, 1 near-term complication (0.96%) related to uterine entry/manipulation occurred (fever of unknown origin requiring hospitalization), and was categorized as probably device-related. The patient was treated and discharged. Twenty-six surgeons completed the evaluation form; none reported experiencing any problems with the procedure.

Conclusion: There were no significant differences in safety outcomes when comparing the pre- and post-market studies. Minimally invasive gynecologic surgeons can safely learn the Lap-RFA procedure with acceptable outcomes after 2-3 proctored cases.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION C

2526 Utilizing Quality and Value Metrics to Improve Patient Outcomes Through the Kaiser Permanente Minimally Invasive Hysterectomy Initiative
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Study Objective: 1) Evaluate intraoperative and near-term safety outcomes following laparoscopic radiofrequency ablation of fibroids (Lap-RFA) performed by gynecologic surgeons new to the procedure, using the Acessa™ system (Acessa Health, Austin, TX, USA). 2) Compare observed complication rates with those from the pivotal study.

Design: Post-market, prospective, single-arm, multicenter analysis; 4-8 weeks’ follow-up.

Setting: Community and university hospitals in the U.S. and Canada.

Patients or Participants: Surgeons (N=29) with varying levels of laparoscopic surgery experience participating in the ongoing, multinational Treatment Results of Uterine Sparing Technologies (TRUST) randomized clinical trial. Patients were premenopausal women (N=110), aged ≥18 years, enrolled as either run-in patients or randomized to the TRUST Lap-RFA arm.

Interventions: During run-in, surgeons received proctored Lap-RFA training. Following training, and after performing ≥2 procedures, surgeons provided feedback using a standardized form.

Measurements and Main Results: The primary endpoints were acute intraoperative and serious near-term postoperative complications, defined as occurring <48 hours and 48 hours to ≤30 days post-procedure, respectively, and to compare these outcomes to pivotal study results. Per protocol, surgeons performed 105 procedures (mean number proctored cases per surgeon, 2.48); 100 of the 105 patients were followed at all time points to 30 days. No intraoperative or acute serious complications were reported in this study, unlike the pivotal study where there were 2 acute serious complications (atelectasis and colon injury, 1.46%). Similar to the pivotal study, 1 near-term complication (0.96%) related to uterine entry/manipulation occurred (fever of unknown origin requiring hospitalization), and was categorized as probably device-related. The patient was treated and discharged. Twenty-six surgeons completed the evaluation form; none reported experiencing any problems with the procedure.

Conclusion: There were no significant differences in safety outcomes when comparing the pre- and post-market studies. Minimally invasive gynecologic surgeons can safely learn the Lap-RFA procedure with acceptable outcomes after 2-3 proctored cases.
Study Objective: We present a case study in improving quality metrics with the Kaiser Permanente Minimally Invasive Hysterectomy Initiative to address the high rates of abdominal hysterectomies.

Design: Quality Improvement Project.

Setting: Route of hysterectomy (abdominal, laparoscopic, vaginal, robotic).

Patients or Participants: 31,385 patients who underwent surgical hysterectomy at Kaiser Permanente Northern California between 2008-2015.

Interventions: We initiated a four-pronged quality improvement program to increase the rate of minimally invasive hysterectomies, including: 1) Leadership engagement to set goals and achievable targets; 2) Surgeon education and training; 3) Utilization of targeted medical data to track outcomes and drive performance; and 4) Delineation of Obstetrics and Gynecology surgical teams and establishment of criterion-based credentialing.

Measurements and Main Results: Total abdominal hysterectomy percentages decreased from 50.5% to 6.9%, and total laparoscopic hysterectomy percentages increased from 21.9% to 61.9%. Robotic hysterectomy percentages only increased from 0.1% to 7.8%, and total vaginal hysterectomy percentages were maintained.

Conclusion: Our experience indicates that a quality improvement program to reduce abdominal hysterectomies while improving patient care can be successfully initiated on a large scale with limited reliance on less cost-effective robotic technology. The core aspects of the strategy should be highly incentivized under programs like Medicare Access and CHIP Reauthorization Act (MACRA). Moreover, this model can be used to address other quality issues in gynecologic surgery. It is our hope that the future of gynecologic surgery moves towards such a model that prioritizes optimal patient care. Please note that this abstract includes information that was presented in the paper, “Measuring Quality in Minimally Invasive Gynecologic Surgery: What, How, and Why?” by Abel et. al. in JMIG February 2019.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION D

1569 The Efficacy and Safety of Long-Term Management of Uterine Fibroids with Ulipristal Acetate
Kim HG,1 Yang J,1 Na YF,2, *Obstetrics and Gynecology, Pusan National University Yangsan Hospital, Yangsan, Korea, Republic of (South); 2Department of Obstetrics and Gynecology, Pusan National University School of Medicine, Busan, Korea, Republic of (South)
*Corresponding author.

Study Objective: To investigate the efficacy and safety of four repeated 12-week courses of 5 mg daily ulipristal acetate for intermittent treatment of symptomatic uterine fibroids.

Design: A retrospective, single-center observational study.

Setting: A university tertiary referral center.

Patients or Participants: One hundred seventy-one premenopausal women with symptomatic uterine fibroids.

Interventions: Four repeated 12-week treatment courses of daily 5 mg ulipristal acetate.

Measurements and Main Results: After four repeated 12-week courses, uterine bleeding was controlled in 93% of the women receiving 5 mg of ulipristal acetate. The rates of amenorrhea were 83% occurring within 9 days in the majority of patients receiving ulipristal acetate. The median changes in total fibroid volume were −17%. Headache and breast tenderness were the most common adverse events associated with ulipristal acetate but did not occur significantly more frequently. Pain showed marked changes in laboratory parameters during the study. The safety profile of ulipristal acetate was confirmed, and repeated treatment courses did not increase the occurrence of adverse reactions. There were no significant changes in laboratory parameters during the study.

Conclusion: The results of this study demonstrate the efficacy and further support the safety profile of four repeated 12-week courses of 5 mg daily ulipristal acetate for intermittent treatment of symptomatic uterine fibroids.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION E

1612 Comparison of Short Term Outcomes after Laparoscopic Salpingostomy Versus Salpingectomy for the Surgical Management of Ectopic Pregnancy
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Study Objective: To investigate the differences in complication rates between laparoscopic salpingostomy and salpingectomy.

Design: Propensity score matched retrospective cohort study.

Setting: American College of Surgeons National Surgical Quality Improvement Program database.

Patients or Participants: Women with surgical management of ectopic pregnancy between 2010-2017.

Interventions: Laparoscopic salpingostomy and salpingectomy.

Measurements and Main Results: Of 8,092 ectopic pregnancies, 989 were treated with laparoscopic salpingostomies and matched to laparoscopic salpingectomies at a ratio of 1:2 using propensity scores for the likelihood of undergoing salpingostomy. Propensity scores were calculated using preoperative demographic and clinical characteristics. After matching, no significant differences exist between salpingostomy and salpingectomy in preoperative hematocrit (56.1±4.4% vs 53.8±4.7%, p=0.91), transfusion rate (1.9% vs 2.0%, p=0.19), age (29.8±5.7yrs vs 30.1±5.7yrs, p=0.31), and comorbidities (5.8% vs 4.7%). Mean operating times between salpingostomy and salpingectomy showed no difference, (60.7±27.2min vs 58.9±36.4 min, p=0.78) or conversion to laparotomy (0.2% vs 0.06%, p=0.99). Wound contamination was higher with salpingectomies (3.4% vs 0.02%). The composite complication rate was 10.1%. Postoperative transfusions (6.5% vs 5.8%, p=0.003), reoperation (2.0% vs 0.5%, p<0.001), and readmissions (1.9% vs 0.8%, p=0.005), were more common in the salpingostomy group. There was no difference in infectious, cardiovascular and pulmonary morbidity between groups. After logistic regression, there was a slightly increased risk of complications with salpingostomies compared to salpingectomies (aOR=1.63, 95%CI:1.36-1.95). Preoperative transfusion was the most significant risk factor of postoperative complications (aOR=8.67, 95%CI:6.32-11.91), followed by American Society of Anesthesiology class ≥3 (aOR=2.75, 95%CI:2.23-3.37), preoperative WBC ≥10.0 cells/mL (aOR: 2.51, 95%CI:2.13-2.96), and wound class ≥3 (aOR=2.54, 95%CI:1.04-6.19).

Conclusion: Laparoscopic salpingostomy is associated with higher risk of complications compared to laparoscopic salpingectomy when treating ectopic pregnancies; though the magnitude of this effect is small given the cohort size. This should be considered when counseling patients on salpingectomy versus salpingostomy.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION F

2263 Surgical Experience in Patients with Von Willebrand Disease Diagnosis Operated in a Minimally Invasive Gynecological Surgery Unit
Guarin CB,* Villegas-Echeverri JD, Lopez, JD, Lopez, JD, Arturo V. Risaralsd, Clínica Comfamiliar, Pereira, Colombia
*Corresponding author.

Study Objective: To describe the post-surgical outcome in patients with a history of von Willebrand’s disease undergoing minimally invasive surgery.

Design: Case reports, a review of the medical records of the patients who underwent gynecological surgery in the period from 2013 to 2017, reporting the intra and post operative complications.
Measurements and Main Results: Intra and postoperative complications of patients with von Willebrand’s disease, reoperation, need for laparocconversion, hospital stay, surgical time and bleeding.

Conclusion: All surgeries were elective and a plan was prepared for the treatment of hemostasis for each patient. During this period, 6 stories of patients with Vwd undergoing surgical procedures were found, there was no registry of complications, there were no deaths or major hemorrhages and there was no need for laparocconversion. The results of this report indicate that surgery can be performed safely by providing adequate and timely haemostasis before and after the procedure.

Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

2570 What’s the Limit of Total Laparoscopic Myomectomy?
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Study Objective: To assess what limit to complete surgical procedure of laparoscopic myomectomy (LM), I review surgical outcomes of cases performed LM, laparoscopy-assisted myomectomy (LAM) and abdominal myomectomy (AM), and present the cases converted from LM to LAM.

Design: Retrospective cohort study.
Setting: Urban general hospital in Japan.
Patients: All women who were underwent myomectomy, between 2014 to 2018.

Interventions: Medical records were reviewed for baseline characteristics and perioperative outcomes.

Measurements and Main Results: First, I present our operative procedure of LM. We have modified diamond trocar placement. After the vasopressin injection into the myometrium of fibroid surface, we make incisions with ultrasonic or electric scalpel and enucleate fibrseids. After the suturing of myometrium, we make posterior colotomy and carry out them transvaginally. If fibrseids are too large to be carried out, we perform intracorporeal or intravaginal manual morcellation. Second, A total of 1123 patients were
undergone myomectomy in our hospital between 2014 to 2018. The mean ±SD specimen weight of LM, LAM, AM was 180.5±153, 597.0±389.1, 972.9±738.9g, dominant myoma diameter was 6.7±2.4, 10.3±3.6, 12.8±5.8cm. 4 out of 1029 (0.39%) LM cases were shifted to LAM during surgery, one case due to numerous myoma and three cases due to severe intraabdominal adhesion. No difference in perioperative complications was found for LM group with other procedures. All cases were performed blood test and imaging test by ultrasonography or magnetic resonance imaging (MRI) preoperatively. When a malignancy is suspected, the specimen is extracted using a protection bag. In 1123 cases performed uterus-preserving surgery, only 1 case (0.09%) was revealed as malignant postoperatively.

Conclusion: LM is feasible and safe surgical procedure with appropriate selection of patients.

Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

9:50 AM: STATION J

1424 Impact of a “Blood Conservation Bundle” on Perioperative Transfusion Rates During Myomectomy
Nensi A,1, 2 Gill P,3 Simpson A, 1 Sholzberg M, 3 Hare G, 4 Robertson D, 3
1 Obstetrics and Gynecology, St. Michael’s Hospital, Toronto, ON, Canada; 2 Obstetrics and Gynecology, University of Toronto, Toronto, ON, Canada; 3 Department of Medicine, St. Michael’s Hospital, Toronto, ON, Canada; 4 Department of Anesthesia, St. Michael’s Hospital, Toronto, ON, Canada
*Corresponding author.

Study Objective: Myomectomy is a common gynecologic procedure that is associated with high rates of intraoperative blood loss and subsequent blood transfusion. An intraoperative Blood Conservation Bundle (BCB) was developed as a standardized approach to decreasing blood loss during myomectomy. This study aimed to introduce the care bundle into clinical practice and assess its impact on transfusion rates and other perioperative parameters.

Design: Prospective cohort study with retrospective control group.

Setting: Canadian tertiary care academic hospital.

Patients or Participants: Women who underwent myomectomy between November 2018-2019 were included in the prospective portion of the study. Women who underwent myomectomy between January 2015-December 2016 were included as a retrospective control group.

Interventions: We assessed perioperative transfusion rates (primary outcome), intraoperative blood loss and complication rates over a 6-month period following introduction of the BCB. This data was compared to baseline data collected retrospectively over a 24-month period prior to bundle introduction. The BCB is a physical checklist attached to the patient chart and consists of evidence-based medical and surgical interventions.

Measurements and Main Results: In the 24-month period prior to the introduction of the BCB, 137 myomectomies were performed (90 open, 31 robotic, 16 laparoscopic). Overall transfusion rate during that time period was 16% (18/90 open, 4/31 robotic, 0/16 laparoscopic) and mean intraoperative blood loss was 484 mL. During the study period, 27 myomectomies were performed (15 open, 7 robotic, 5 laparoscopic). Overall transfusion rate was 3.7% (0/15 open, 1/7 robotic, 0/5 laparoscopic), four-fold lower than prior to bundle introduction, and average intraoperative blood loss was 340 mL. There was no increase in intraoperative/postoperative complications.

Conclusion: Best practice care bundles can improve knowledge translation of guidelines into care delivery. The introduction of a Blood Conservation Bundle was associated with a reduction in blood loss and transfusion rates during myomectomy at our institution.

Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

9:50 AM: STATION K

2149 Long Term Outcome of Mr Guided Focused Ultrasound Treatment and Laparoscopic Myomectomy for Symptomatic Uterine Fibroids
Mehr-Sasson A,1, 2 Machtinger R,1, 2 Mashiah R,1, 2 Nir O,1, 2 Inbar Y,1, 3 Malisyanker N,1, 2 Goldenberg M,1, 2 Rabinovici J,1, 2 1 Department of Obstetrics and Gynecology, Sheba Medical Center, Ramat-Gan, Israel; 2 Sackler School of Medicine, Tel-Aviv University, Tel-Aviv, Israel; 3 Department of Radiology, Sheba Medical Center, Ramat-Gan, Israel
*Corresponding author.

Study Objective: To compare the long-term outcome of laparoscopic myomectomy with MR-guided focused ultrasound (MRgFUS) for symptomatic uterine fibroids.

Design: A cohort study, from January 2012 to January 2017.

Setting: Single tertiary care center.

Patients or Participants: All patients with symptomatic uterine fibroids treated operatively with laparoscopic myomectomy or treated conservatively with MR-guided focused ultrasound.

Interventions: A telephone interview was performed to assess further interventions and sustained fibroid associated symptoms using the Uterine Fibroid Symptom and Quality of Life symptom severity score (UFS-QOL-SSS).

Measurements and Main Results: One-hundred fifty-four women met the inclusion criteria. Complete follow-up was achieved for 64 women undergoing laparoscopic myomectomy and 68 were treated by MRgFUS. Follow up time was similar for both groups (median, IQR: 31 month, (17-51) vs 36 month (24 - 41); P=0.95, respectively). The rate of additional interventions was 5 (7.8%) and 9 (13.2%), respectively (p=0.312). Similarly, the uterine fibroid symptom-quality of life-symptom severity score (QOL-SSS) questionnaire at follow up interview revealed comparable score 17/(12-21) vs 17 (13-22) for laparoscopic myomectomy and MRgFUS, respectively (p=0.439). Analyzing each of the symptoms separately (bleeding, changes in menstruation, abdominal pain, bladder activity, nocturia, fatigue), did not change these findings.

Conclusion: Long term outcome and surgical intervention following MRgFUS treatment for uterine fibroids seems comparable with that laparoscopic myomectomy. Further larger randomized trials are needed to confirm these findings.

Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

9:50 AM: STATION L

1244 Introduction to Laparoscopic Myomectomy: A Teaching Video for Medical Students
Kim JS,4, 5 Weigel G, 1 Lager Jr. 1, 2, 3 UCSF, San Francisco, CA; 4 Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco, San Francisco, CA
*Corresponding author.

Video Objective: Surgical videos allow students to observe and study the elements of a case prior to initial exposure, improving the intraoperative learning experience for both the student and the educator. Minimally invasive surgery is especially suited to this modality of teaching, as students typically are able to observe the procedure clearly, but surgeon-educators do not always have the luxury of teaching in the moment. In response to both of these challenges, we created an interactive video series that allows students to obtain a better understanding of a laparoscopic myomectomy prior to encountering this procedure in the operating room.

Setting: An academic teaching hospital introducing third-year medical students to their obstetrics and gynecology rotation.

Interventions: We created a three-part video series designed to review the steps of a laparoscopic myomectomy. The video is narrated by a senior medical student walking through the major steps of the procedure, so that they may match their didactic learning with their surgical learning. Exit interviews and quantitative data from students actively using these teaching videos are currently being collected by students on their ob/gyn clerkship.

Conclusion: This video is being used as an accessory teaching tool to supplement surgical teaching. Our goal is for students and surgeon educators to use this tool together in order to lay the groundwork for students to learn about minimally invasive gynecologic surgery, as well as to review the footage after the case to consolidate learning.
Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

9:50 AM: STATION M

2094 Single-Port Laparoscopic Hysterectomy without Uterine Manipulator in Early Cervical Cancer
Ahn JH,* Hwang H, Lee KH. Gynecologic Oncology, Seoul St. Mary’s Hospital, The Catholic University of Korea, Seoul, Korea, Republic of (South)
*Corresponding author.

Video Objective: To present the advanced single port laparoscopic hysterectomy without a uterine manipulator in early cervical cancer.

Setting: A 42-year-old woman(G2P2) undertook surgery diagnosed with cervical cancer in PAP smear and punch biopsy. She had no past medical history. There was neither evidence of definite buring mass in the cervix nor any metastasis in the preoperated abdominal computed tomographic imaging. Two ml (2.5 mg/mL) of ICG solution was prepared in a 10 ml syringe to inject directly into the cervix. We recorded video with 30° 10 mm scope equipped with a specific lens and light source emitting both visible and NIR light (Streky 1588 AIM, Streyker Co., ABK, MI, USA).

Interventions: Under general anesthesia, we performed laparoscopic single port hysterectomy and both salpingectomy and sentinel lymph node biopsy. During the surgery, we didn’t inserted both uterine manipulator and Foley catheter. we used only the colpotomizer cup just before cutting the uterus, we also used a retrieval bag when removing the uterus from the abdominal cavity. Pathology revealed invasive squamous cell carcinoma and no sentinel lymph node metastasis.

Conclusion: We successfully performed the single port laparoscopic hysterectomy not using a uterine manipulator for the early cervical cancer without any complication and that would be helpful in reducing the risk of tumor recurrence.

Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

1623 Improvement in 24-Month Health-Related Quality of life and Work Productivity after Ultrasound-Guided Transcervical, Intrauterine Radiofrequency Ablation of Uterine Fibroids in the Sonata Pivotal IDE Trial
Maikai GE,* Brooks E, 1 Obstetrics and Gynecology, Christiana Care Health Systems, Newark, DE; 2TTI Health Research & Economics, Westminster, MD
*Corresponding author.

Study Objective: To establish the long-term improvement in health-related quality of life and work productivity after use of ultrasound-guided transcervical, intrauterine radiofrequency (RF) ablation of symptomatic uterine fibroids.

Design: Prospective, longitudinal, multicenter, single-arm trial.

Setting: 22 clinical sites (21 in the US and 1 in Mexico).

Patients or Participants: Premenopausal women between the ages of 25 and 50 with heavy menstrual bleeding secondary to fibroids.

Interventions: Ultrasound-guided transcervical RF ablation performed on up to 10 fibroids per subject with the Sonata® system; fibroids ranged from 1-5 cm in diameter as determined by transvaginal sonography. The EuroQOL EQ-5D-3L (which measures health utility) and Work Productivity and Activity Impairment (WPAI) surveys were administered at baseline, as well as at 24 months post-intervention. Paired t-tests were conducted to evaluate improvement in health utility and work productivity from baseline to 24 months post-procedure.

Measurements and Main Results: One hundred forty-seven (147) patients were enrolled and followed through 24 months. Mean patient health utility significantly increased from 0.72 at baseline to 0.89 (p<0.0001). In addition, the WPAI measured statistically significant improvement in all 4 components of work productivity from baseline to 24 months post-procedure: absenteeism decreased from 2.9% to 1.3%; presenteeism decreased from 50.0% to 13.2%; overall work impairment decreased from 50.9% at baseline to 13.8%; in daily activities decreased from 57.9% at baseline to 13.2% (all p<0.0001).

Conclusion: Ultrasound-guided transcervical, intrauterine RF ablation with the Sonata system was shown to significantly increase patient health utility and work productivity during the first 24 months post-treatment.

Virtual Poster Session 1: Laparoscopy
(9:50 AM — 10:00 AM)

9:50 AM: STATION N

1138 Repeat Laparoscopy for Pregnancy of Unknown Location
Jennings A, Rosen ER,* Department of Obstetrics and Gynecology, University of Wisconsin School of Medicine and Public Health, Madison, WI
*Corresponding author.
Measurements and Main Results: involvement and extensive pelvic adhesion. cases due to deep infiltrating endometriosis with colorectal, urinary tract single-site resection; however, an additional port was added in fourteen alternative if challenging cases encountered.

Conclusion: This is a unique case where initial surgical management failed to identify a pregnancy of unknown location. In the setting of a suspected tubal ectopic pregnancy requiring salpingectomy, performing a complete salpingectomy is essential. Additionally, the use of intra-operative frozen pathology can aid in confirming the diagnosis and successful treatment of a PUL.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION Q

2937 Robotic Single-Site Surgery as a Feasible Method in Managing all Stages of Endometriosis with Chronic Pelvic Pain
Huang Y, 1 Guan Z, 2 Rezai S, 3 Bardawil E, 4 Liu J, 2 Guan X, 4*, 1 OBGYN, Nanhai Hospital Affiliated to Southern Medical University, Foshan, China; 2Gynecology, Third Affiliated Hospital of Guangzhou Medical University, Guangzhou, China; 3Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX; 4Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX
*Corresponding author.

Study Objective: To investigate the safety and feasibility of robotic single-site for surgical resection of stage I to IV endometriosis in chronic pelvic pain patients.

Design: A retrospective cohort study via chart review collected data. All procedures were performed by a single surgeon between January 2015 and April 2019.

Setting: An academic university hospital.

Patients or Participants: A total of 272 patients with chronic pelvic pain and pathology confirmed endometriosis were managed with surgical resection via the robotic single-site laparoscopy. All of the patients were chronic pelvic pain who incurred symptoms of dysmenorrhea, menorrhagia, deep dyspareunia, although other symptoms may be present such as dysphasia, lower back pain, urinary, or intestinal symptoms.

Interventions: All procedures were completed successfully with robotic single-site resection; however, an additional port was added in fourteen cases due to deep infiltrating endometriosis with colorectal, urinary tract involvement and extensive pelvic adhesion.

Measurements and Main Results: The median operative time was 110 min (range, 45-480 min), and the median blood loss was 50 mL (range, 15-300 mL). The length of hospital stay was less than 24 hours for 90.8% of patients (247/272). The incidence of complication was 5.9% (16/272). All but two surgeries had no severe complications, which included eight wound infection, one vaginal cuff dehiscence, four urinary tract infection and pelvic abscess. One patient with symptomatic bowel endometriosis nodule developed in the right abdominal wall and perineal hematoma after lower anterior bowel resection. The other patient, who had undergone a double ureteral malformation, ureteral endometriosis, and severe adhesion, had injured the left ureteral ten days after extensive pelvic and bladder endometriosis resection.

Conclusion: Robotic single-site laparoscopic resection of endometriosis surgery appears to be a reasonably safe and feasible method for the surgical management of women with endometriosis. Adding a port is a good alternative if challenging cases encountered.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION R

2168 Cavernous Lymphangioma of the Fallopian Tube
De La O O, Gamiño Sanchez LS, 2 Perez CA, Reproductive Medicine, IMSS, Monterrey, NL, Mexico
*Corresponding author.

Video Objective: Describe an uncommon tumor of the lymphatic system in the fallopian tube Fertility preserving laparoscopic surgery.

Setting: 34 years old female. GIP1 Presenting with secondary infertility and pelvic tumor. Recurrent episodes of severe left lower quadrant pain. Undergoing diagnoses laparoscopy finding a rare tumor.

Interventions: Operative laparoscopy. Complete resection of the tumor as well as fallopian tube and ovary.

Conclusion: Lymphangiomasa are rare, usually benign lesions of the lymphatic system. Laparatomy or laparoscopy both are acceptable routes of surgery for treatment. The prognosis with laparoscopic treatment is usually excellent. It has inherent advantages in the form of less intra-operative blood loss, early recovery, less morbidity, and low complication rate compared with laparotomy. Preserving fertility surgery.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION S

2824 Laparoscopic Tips and Tricks for Temporary Oophoropexy During Pelvic Surgery
Barnes WA, 1, 3* Hazen ND, 2 Robinson JK III, 1 Minimally Invasive Surgery, Medstar Georgetown University-Washington Hospital Center, Washington, DC; 3MIGS - National Center for Advanced Pelvic Surgery, Medstar Washington Hospital Center, Washington, DC
*Corresponding author.

Video Objective: To demonstrate minimally invasive surgical techniques that can be employed for temporary suspension of pelvic anatomy, specifically the ovaries, for improved visualization during complex laparoscopic pelvic surgery.

Setting: Operating room.

Interventions: Suboptimal visualization of the pelvis during laparoscopic surgery can arise from normal anatomic structures blocking clear line of sight of the laparoscope or due to comorbid conditions that limit trendelenburg each of which can negatively impact surgical efficiency. This instructional video demonstrates techniques of oophoropexy to facilitate better visualization of pelvic anatomy, and aid in retroperitoneal dissection. These techniques can replace the need for additional ports and allow surgical assistants to perform other more active tasks than retracting.

Conclusion: The techniques demonstrated already exist within the skill set of most laparoscopically trained gynecological surgeons. Employing these simple techniques can increase efficiency, replace need for additional laparoscopic ports, and allow surgical assistants to perform alternative tasks besides anatomical retraction to improve the safety of and operator comfort completing complex pelvic surgery, and well as provide physical space following a dissection to avoid adhesion formation.

Virtual Poster Session 1: Laparoscopy (9:50 AM — 10:00 AM)

9:50 AM: STATION T

2859 Single-Port Laparoscopic Hysterectomy in Patients with Myoma Uteri

Video Objective: To demonstrate the importance of total salpingectomy when surgical management of ectopic pregnancy is warranted.

To demonstrate minimally invasive surgical techniques that can be employed for temporary suspension of pelvic anatomy, specifically the ovaries, for improved visualization during complex laparoscopic pelvic surgery.

Setting: Operating room.

Interventions: Suboptimal visualization of the pelvis during laparoscopic surgery can arise from normal anatomic structures blocking clear line of sight of the laparoscope or due to comorbid conditions that limit trendelenburg each of which can negatively impact surgical efficiency. This instructional video demonstrates techniques of oophoropexy to facilitate better visualization of pelvic anatomy, and aid in retroperitoneal dissection. These techniques can replace the need for additional ports and allow surgical assistants to perform other more active tasks than retracting.

Conclusion: The techniques demonstrated already exist within the skill set of most laparoscopically trained gynecological surgeons. Employing these simple techniques can increase efficiency, replace need for additional laparoscopic ports, and allow surgical assistants to perform alternative tasks besides anatomical retraction to improve the safety of and operator comfort completing complex pelvic surgery, and well as provide physical space following a dissection to avoid adhesion formation.
Study Objective: The aim of this study is to compare surgical outcomes of single port laparoscopic hysterectomy (SPL-H), conventional laparoscopic hysterectomy (LH) and robot-assisted hysterectomy (RH) in patients with uterine fibroids.

Design: Retro and prospective study.

Setting: City Hospital #40, The Swiss University clinic.

Patients or Participants: 117 patients entered the study between 2012 and 2018. 39 patients had single port laparoscopic hysterectomy (SPL-H), 41 patients - conventional laparoscopic hysterectomy (LH), and 37 patients - robot-assisted hysterectomy (RH) for myoma uteri.

Interventions: single port laparoscopic hysterectomy (SPL-H), conventional laparoscopic hysterectomy (LH), robot-assisted hysterectomy (RH).

Measurements and Main Results: Patient characteristics, operating time, estimated blood loss, length of hospital stay, rate of complications, postoperative pain scores and cosmesis were compared.

Mean operating time (min) in the group of SPL-H was 109.1±24.8 (95% CI: 101.1-117.2 min), in comparison with LH -104.8±26.2 min (95% CI: 96.5-113.0 min), p=0.847. The total duration of surgery in the group of robot-assisted laparoscopy was 185.1±50.5 min. Estimated blood loss (ml) did not differ statistically in the group of single port and conventional laparoscopic hysterectomy (Me 80 ml, p=0.083). The hospital stay (days) in a group of SPL-H was significantly lower compared to both groups robotic and conventional laparoscopy (p=0.018 and p=0.034, respectively), while the differences in this two groups were insignificant (p=0.777). There were no conversions to abdominal hysterectomy.

Conclusion: Single-port hysterectomy is a feasible and safe technique, with no major complications compared to conventional and robotic access.

Virtual Poster Session 1: Laparoscopy

10:00 AM—10:10 AM

1608 A National Survey: Evaluating Current Practice and Risk Assessment in Morcellation Amongst Gynecologists in the United Kingdom
Ghai V, *Jan H. Gynaeocology, Epsom and St Helier’s University Hospitals NHS Trust, London, United Kingdom
*Corresponding author.

Study Objective: To evaluate current practice and adherence to AAGL and BSGE power morcellation guidelines.

Design: Multiple-choice questionnaire.

Setting: United Kingdom.

Patients or Participants: 157 NHS hospitals offering gynaecological services.

Interventions: n/a.

Measurements and Main Results: Power morcellation practice patterns, informed consent processes and outcomes over the last 12 months. We received 136 responses (87% response rate). Power morcellation was performed by a third (59, 37.6%) of all UK hospitals. The median number of gynecologists performing morcellation per organisation was 2 (Q1-Q3: 2-4). A median of 7 morcellators (Q1-Q3: 0-17) were purchased and 7 morcellators (Q1-Q3: 1.25-15.75) used per annum. A median of 10 (Q1-Q3: 2.0-15.0) laparoscopic hysterectomies and 5 (Q1-Q3: 0.5-9.0) myomectomies requiring morcellation were performed per annum. Almost, a third of trusts did not perform an endometrial biopsy or MRI. 79.7% (47) of trusts consented for power morcellation and 76%, (46) explained risk of inadvertent leiomyosarcoma.83.3%, (50) had no patient literature and almost half had no audit process 45%, (27).

Conclusion: Current UK practice does not reflect recommendations from the AAGL or BSGE. Deficiencies were identified in pre-operative evaluation, local governance procedures, and consenting practices regarding use of a power morcellator and risk of occult leiomyosarcoma.

Virtual Poster Session 1: Laparoscopy

10:00 AM—10:10 AM

2363 Laparoscopic Management of Heterotopic Cornual Pregnancy - Tips & Tricks
Weng C, *Chen LH, Chao AS, Wang CJ. Obstetrics and Gynecology, Chang Gang Memorial Hospital at Linkou, Taoyuan, Taiwan
*Corresponding author.

Video Objective: To provide practical tips and tricks on laparoscopic management of a heterotopic cornual pregnancy.

Setting: This video presents a 38-year-old nulliparous female patient who received bilateral salpingectomy and then underwent in vitro fertilization. Heterotopic pregnancy was found at 8 weeks of gestation. We arranged fetal reduction by ultrasound-guided potassium chloride injection. Two weeks after the procedure, severe lower abdominal pain developed. Due to massive hemoperitoneum with suspected left cornual rupture, she was admitted for laparoscopic intervention.

Interventions: Laparoscopic surgery was arranged. Left cornual pregnancy with necrosis and oozing were seen upon entry into the abdominocavity. Estimated internal bleeding was about 3000 ml. Laparoscopic management was carried out in five steps: identification of the cornual protruding mass; control of bleeding via a loop ligation; incision of the cornus precisely with complete removal of the ectopic gestational tissue; closure of the defect of the cornus; and hemostasis using Floseal matrix.

Conclusion: The surgery was done smoothly and the patient recovered well with ongoing pregnancy. However, the patient underwent termination of pregnancy at 23 weeks of gestation due to fetal hydrocephalus.

Virtual Poster Session 1: Laparoscopy

10:00 AM—10:10 AM

10:00 AM: STATION C

2166 Transvaginal Single-Port Laparoscopic Ovarian Cystectomy for a Giant Ovarian Benign Tumor
Wang X, *Chen Y, *Gynecology, Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China; *Obstetrics and Gynecology Hospital of Fudan University, Shangai, China
*Corresponding author.

Video Objective: To demonstrate the transvaginal single-port laparoscopic oophorocystectomy for a giant ovarian benign tumor.


Interventions: Transvaginal single-port laparoscopic oophorocystectomy.

Measurements and Main Results: A 44-year-old woman (gravida 2 para 1) had a gradually abdominal distension and discomfort over two years. A preoperative magnetic resonance imaging showed ovarian cyst (the ovarian cyst is as large as 5 months pregnancy). Transvaginal single-port laparoscopic oophorocystectomy was performed. An intraoperative pathologic examination showed endometrial cyst of the ovary. The operation took roughly 80 minutes, and total blood loss was approximately 100ml. The patient recovered well and was discharged 2 days after surgery.
Conclusion: Transvaginal single-port laparoscopic skills allow the surgeon to accomplish oophorocystectomy for a giant ovarian benign tumor without abdominal incision, and let patient recover rapidly.

Virtual Poster Session 1: Laparoscopy
(10:00 AM — 10:10 AM)

2197 Strategies for Laparoscopic Entry in Complex Patients
Ulrich AP,1,2 Plesniani KM,1 Plummer M,3 Shreck E,1 Pacis M,1 OB/GYN (Minimally Invasive Gynecologic Surgery), Montefiore Hospital/Albert Einstein College of Medicine, Bronx, NY; 2Albert Einstein College of Medicine, Bronx, NY; 3Urology, Montefiore Hospital/Albert Einstein College of Medicine, Bronx, NY
*Corresponding author.

Video Objective: There are three general techniques for laparoscopic entry, all of which are considered safe and effective. These include the use of a veress needle, an optical trocar, and an open approach. Twenty-five percent of all injuries during laparoscopic surgery occur with initial entry. Therefore, a thoughtful approach to port placement is critical to ensure optimal performance and patient safety with entry. Certain patient factors that may increase the rate of injury or complicate entry include obesity, prior abdominal surgeries, large uterine size, and the small stature and short torso of the pediatric patient. We created a video to describe laparoscopic entry techniques in patients with co-morbid conditions in order to improve surgical planning and decrease the rate of injury.

Setting: We selected six patient scenarios that posed various challenges to safe laparoscopic entry at our large academic institution nested in an underserved urban environment. These scenarios included: morbid obesity, a large bulky uterus, previous abdominal surgeries, umbilical mesh from a herniorrhaphy, prior abdominoplasty, and the pediatric patient.

Interventions: We identified complexities of laparoscopic entry in surgical patients and then reviewed the literature to devise techniques to address these challenges. We present techniques for entry from an evidence-based literature review and expert opinion from minimally invasive gynecologic surgeons and general surgeons, for patients undergoing laparoscopic surgery in the aforementioned scenarios.

Conclusion: This video uses audio and visual components to review safe and effective strategies for laparoscopic entry. Through illustrations and surgical cases we offer tips in complex scenarios. We hope this video can serve as a resource to surgeons, particularly trainees, and improve confidence and surgical planning to ultimately decrease injury.

Virtual Poster Session 1: Laparoscopy
(10:00 AM — 10:10 AM)

1082 A Prospective, Controlled Study Comparing Single Port Laparoscopic Sacrospinous Fixation and Transvaginal Sacrospinous Fixation in the Treatment of Pelvic Organ Prolapse
Zhang W, Department of Gynecology, Zhongnan Hospital of Wuhan University, Wuhan, China
*Corresponding author.

Study Objective: The objective of the study was to compare operative time, intraoperative blood loss, recurrence and complication rates for single port laparoscopic sacrospinous fixation (SSF) and transvaginal (SSF) for the primary treatment of pelvic organ prolapse.

Design: Patients undergoing surgery for pelvic organ prolapse were included in a randomized, controlled study comparing single port laparoscopic SSF or transvaginal sacrospinous fixation. The examination included operative time, intraoperative blood loss, operative complication, and pelvic organ prolapse quantification, urodynamics, ultrasound, and quality-of-life (QoL) questionnaires before and 3 and 12 months after surgery.

Setting: Trendelenburg.

Patients or Participants: Of 20 randomized patients in Zhongnan Hospital of Wuhan University, from Jan. 2018 to Mar. 2019.

Interventions: 10 patients underwent single port laparoscopic SSF and 10 patients underwent transvaginal SSF.

Measurements and Main Results: All the operations were completed successfully. The operative time in the single port laparoscopic group (117.2±20.0 min) was longer than the transvaginal group (75.2±24.3 min). The intraoperative blood loss (54.9±24.1 ml) was less than the transvaginal group (87.6±12.3 ml). The incidence of operative complications in the single port laparoscopic group (30.0%) was lower than transvaginal group (50.0%). There were no difference between the single port laparoscopic group and the transvaginal group in prolapse recurrence after 12 months occurred (P >0.05). No difference in QoL improvement as well as de novo stress urinary incontinence and overactive bladder onset was found.

Conclusion: Single port laparoscopic sacrospinous fixation is safe and feasible in the treatment of pelvic organ prolapse.

Virtual Poster Session 1: Laparoscopy
(10:00 AM — 10:10 AM)

2274 Laparoscopic Primary Repair of Duodenal Perforation after Laparoscopic Para-Aortic Lymphadenectomy
Choi JS, Bae J, Lee WM, Jung US, Eom JM, Lee H, Obstetrics and Gynecology, Hanyang University College of Medicine, Seoul, Korea, Republic of (South)
*Corresponding author.
Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

2332 Transient Uterine Artery Clipping in Complex Gynecologic Laparoscopy

Heredia F,1,2,4 Donetch G,3 Escalon R,4 Hinoistroza M.1 Unidad de cirugía mínimamente invasiva y robótica, Clínica Universitaria de Concepción, Concepción, Chile; 2Departamento de Ginecología y Obstetricia, Universidad de Concepción, Concepción, Chile; 3Hospital Las Higueras, Talcahuano, Chile; 4Departamento de Obstetricia y Ginecología, Universidad de Concepción, Concepción, Chile

Corresponding author.

Video Objective: To present diverse surgical procedures in which Transient Uterine Artery clipping may result in less bleeding throughout surgery.

Setting: Three clinical cases in which this technique was used.

Interventions: Uterine artery clipping prior to a myomectomy, con- nruectomy and cesarean section scar pregnancy.

Conclusion: We believe this simple step warrants less bleeding in complex laparoscopic gynecological surgery.

Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

2887 Hysterectomy after Failed Endometrial Resection and Endometrial Ablation Techniques. Can We Work Out When It is Going to Fail?

Skelly C,1,2,4 Sheehan E,1,2,4 Niblock K,2,3 Johnston KM.1,2 Obstetrics & Gynaecology, Antrim Area Hospital, Antrim, United Kingdom; 2Obstetrics & Gynaecology, Craigavon Area Hospital, Craigavon, United Kingdom; 3Antrim Hospital, Antrim, United Kingdom

Corresponding author.

Video Objective: To present of laparoscopic paraortic lymphadenectomy for the patient with endometrial carcinoma.

Setting: Case study. University hospital in Korea.

Interventions: A 78-year-old Korean woman with postmenopausal bleeding and thickened endometrium presented to our department. The histopathology of biopsied endometrium revealed grade 1 endometrioid adenocarcinoma. The preoperative MRI shows an about 5 cm sized tumor within the endometrial cavity suspicious myometrial invasion. We perform the laparoscopy incision surgery on April 2, 2019. No intraoperative complications were recognized. However, on postoperative day 1, the color of intra-abdominal drainage change from serosanguineous to dark green. We strongly suspected small bowel perforation and perform secondary laparoscopic surgery immediately. Peritoneum and prior operative site were turged with bile. We scrutinized the small bowel and finally the perforation site on duodenum. The perforation occurred at the horizontal part of duodenum ventrally vena cava. We carried out laparoscopic primary repair with 3-0 vicryl. Double layer closure was done by interrupted suture in first layer and Lambert suture for second layer. Then, we placed drainage into the duodenal repair site and traced the small bowel meticulously. We reviewed the video of primary surgery. But there was no definitive procedure related with duodenal perforation. We thought that the thermal injury was occurred by ultrasonic cutting and coagulating device during the lymphadenectomy in pre-caval area just below duodenum or mechan- cal micro-perforation is made during lifting the duodenum by dissecting forcep. After duodenal repair, endoscopically guided placement of nasogastric tube was performed. Gastrography did not show any leakage at the site of duodenal repair on postoperative day 3.

Conclusion: Immediate laparoscopic primary repair of duodenal perfora- tion after laparoscopic paraortic lymphadenectomy is safe and feasible.

Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

1181 Laparoscopic Management of Hernia Uterus Inguinale with Associated Unicornuate Uterus: A Case Report

Friedman J,1,2,4 Hutchinson A,2 Milad MP,1 Department of Obstetrics and Gynecology, Division of Minimally Invasive Gynecologic Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL; 2Reproductive Endocrinology and Infertility, Northwestern University Feinberg School of Medicine, Chicago, IL

Corresponding author.

Video Objective: This video demonstrates the laparoscopic management of a surgical emergency due to a non-communicating herniated rudimentary uterine horn and ipsilateral torsed adnexa.

Setting: NA.

Interventions: This case is a 36-year-old healthy woman undergoing elec- tive oocyte cryopreservation with normal baseline pelvic ultrasound. On day 7 of oocyte stimulation, an enlarging inguinal mass was identified associated with severe inguinal pain; an incarcerated ovary was suspected. She was taken to the operating room for surgical management. The diagno- sis of a Mullerian anomaly was made laparoscopically, noting that she had a right unicornuate uterus with associated normal-appearing right adnexa and ureter. Notably, the left non-communicating rudimentary uterine horn was found herniated through the deep inguinal ring, drawing with it a portion of the left tube and ovary, tor ed around its associated pedicle. A left ureter could not be visualized. After decompressing and de-torsing the left inguinal mass, the rudimentary horn, fallopian tube, and necrotic portion of the left ovary were excised using a bipolar sealing device; the inguinal hernia was repaired. The viable left ovarian tissue was retained. A postop- erative renal ultrasound confirmed left renal agenesis. Two months later,
she successfully underwent oocyte cryopreservation with eggs aspirated from both ovaries.

**Conclusion:** Hernia uterus inguinale is a rare condition in which uterine tissue and occasionally adnexa herniate through the inguinal ring. It can present as an asymptomatic palpable mass or rarely as pelvic pain. Most reports have focused on its association with persistent Müllerian duct syndrome, which affects phenotypically male infants. While there are few reports of hernia uterus inguinale occurring in adult females, this case highlights the importance of keeping it in the differential in a patient with an inguinal mass and recognizing the potential for its associated morbidity and the ability to manage it surgically, if needed, through a minimally invasive approach.

**Virtual Poster Session 1: Laparoscopy**
**10:00 AM — 10:10 AM**

**10:00 AM: STATION K**

**2924 Oophoropexy in Adolescent Patients**

Gabra M, *Aguirre AG. University of Arizona, Tucson, AZ*

*Corresponding author.

**Video Objective:** This video demonstrates a technique of oophoropexy through plication of the utero-ovarian ligament to the round ligament.

**Setting:** The patient is a 13 year old P0 with a history of right ovarian torsion 10 months prior, for which she underwent laparoscopic detorsion without oophoropexy. She re-presented to the ED with two weeks of severe intermittent right lower abdominal pain, associated with nausea and vomiting. MRI abdomen/pelvis revealed twisting of the right ovarian pedicle. In addition, the right ovary was enlarged due to ovarian stromal edema, and there was peripheralization of the follicles. There was no ovarian cyst or mass. At the time of evaluation, the patient was not experiencing pain and she was clinically stable. She was suspected to have intermittent torsion. The patient and her parents were counseled on the option of observation and outpatient follow up versus surgical management with oophoropexy. They desired to proceed with surgical management.

**Interventions:** Oophoropexy was performed with a horizontal mattress of non-absorbable Polyester suture from the round ligament, through the mesosalpinx, and to the utero-ovarian ligament.

**Conclusion:** Evidence supports ovarian oophoropexy rather than oophorectomy for recurrent ovarian torsion in adolescents. Despite this the National Inpatient Sample (NIS) estimates 78% of adolescents underwent oophorectomy. We demonstrate a method of oophoropexy for recurrent ovarian torsion. The case patient has remained asymptomatic since her procedure. In conclusion, oophoropexy should be considered for adolescent patients with recurrent ovarian torsion to decrease risk of recurrence and to preserve fertility.

**Virtual Poster Session 1: Laparoscopy**
**10:00 AM — 10:10 AM**

**10:00 AM: STATION L**

**2347 A Comparison of Laparoscopic Versus Laparotomy Management for Adnexal Masses During Pregnancy: A Retrospective Study With 16-Year Experience**

Li M, *Obstetrics and Gynecology, Affiliated of Beijing ChaoYang Hospital, Capital University of Medical Science, Beijing, China*

*Corresponding author.

**Study Objective:** To evaluate the surgical, obstetric outcomes between laparoscopic and laparotomy management for adnexal mass during pregnancy.

**Design:** Retrospective comparative study.

**Setting:** University tertiary care referral center for endoscopic surgery.

**Patients or Participants:** Eighty-six pregnant women who underwent 86 operations for suspected adnexal pathology at our institute. Laparoscopy was performed during the first trimester in 13 patients, second trimester in 33 patients. The remaining 40 patients underwent laparotomy, 8 during the first trimester, 31 during the second trimester and 1 during third trimester.

**Interventions:** Laparoscopy or laparotomy for the management of adnexal masses during pregnancy from January 1996 to March 2012.

**Measurements and Main Results:** Operative and postoperative maternal complications, miscarriage, congenital malformations, and newborn long-term outcome.

**Results:** The laparoscopy group had a significantly shorter mean operative time (68.5±4.2 vs 49.9±3.4 min, P=0.0008), lower mean blood loss (19.9±2.3 vs 45.3±4.6 ml), shorter mean flatus time after operation (22.0±0.7 vs 43.1±2.1 h) and mean hospital stay (2.8±0.1 vs 6.6±0.2 days, P=0.004) than the laparotomy group. All group patients didn’t require a blood transfusion. In multivariate analysis, there was no significant difference between laparoscopy and laparotomy group in obstetric outcomes, including preterm delivery and miscarriage rate, after adjusting for confounding factors, such as gestational age at surgery, emergency surgery and mass size. The median follow-up time was 3.5 years (range, 1.5-11.5 years). The median age of the child was 2.5 years (range, 1-9.5 years). All babies were healthy.

**Conclusion:** In this retrospective study, the successful outcome suggests that operative laparoscopy for adnexal masses performed during pregnancy is safe and feasible when performed by experienced surgeons. Procedures in the second trimester without emergency indications is preferable.

**Virtual Poster Session 1: Laparoscopy**
**10:00 AM — 10:10 AM**

**10:00 AM: STATION M**

**2679 Management of a Large Uterus and its Complications to a Successful Laparoscopic Surgery**

Cervantes GV,1 *Ohara F,2 Tomasi MC,3 Ribeiro PA,4 Ribeiro HA,5 1Laparoscopic Surgery and Endometriosis, Irmãode da Santa Casa de Misericórdia of São Paulo, São Paulo, Brazil; 2Irmãode da Santa Casa de Misericórdia of São Paulo, São Paulo, Brazil; 3Irmãode da Santa Casa de Misericórdia de São Paulo, Sao Paulo, Brazil*

*Corresponding author.

**Video Objective:** Present and demonstrate a pre operative and surgical management of large uterus and its complications.

**Setting:** A 37-years-old, G2P2, who complained of progressive dysmenorrhea, genital pelvic and low-back pain without improvement with hormonal treatment. Complementary exams showed deep endometriosis on the posterior compartment, myomatosis uterus with 848cc of volume and an 139cc cystic right ovarian mass, which generated an extrinsically compression on the right ureter and ureterohydronephrosis.

**Interventions:** Pre operative management consisted in double J catheter in the right ureter and uterine artery embolization with prophylactic antibiotic 3 months before the surgery. Final complementary exams showed an uterine volume reduction to 313cc. Laparoscopic treatment consisted of inspecting pelvic and abdominal cavities. Right ovarian mass was adhered to the posterior compartment including ovarian fossa, rectovaginal septum and right uterosacral ligament. Strategy consisted of right ovariectomy, Latsko and Okabayashi space dissection to identify bilateral hypogastric nerves and ureters. After identifying anatomy landmarks, endometriotic lesions were removed from uterosacral ligament and ureter. Rectovaginal septum was dissected and bowel superficial lesion identified. Hysterecomy and bilateral salpingectomy were performed as treatment. Linear stapler was used to remove bowel endometriotic lesion. Ureterohydronephrosis became absent and controlled and Double J catheter was removed right after the surgery.

**Conclusion:** Pre operative strategies are very important to a successful surgery. Double J catheter is a temporary intervention to prevent ureteres...
complications. Uterine artery embolization reduced more than 50% of the uterine volume. These uterine strategies facilitated the access to the pelvis and promoted excellent laparoscopic view to completely treat myomatosis and deep endometriosis.

Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

10:00 AM: STATION N

1450 Laparoscopic Cornual Resection of Heterotopic Cornual Pregnancy
Jiang L,* Chan-Tiapiano M, Horng HC, Chen YJ, Wang PH. Obstetrics and Gynecology, Taipei Veteran General Hospital, Taipei, Taiwan
*Corresponding author.

Video Objective: Laparoscopic heterotopic cornual pregnancy resection.
Setting: A 41 y/o woman, with history of G3P0E1(status post right salpingectomy)SA1 got pregnancy via IVF with frozen embryo transferred. Four embryos were transferred. However, at about gestational age 6 weeks, two intrauterine gestational sac and one right cornual gestational sac were found. All the fetus had heart beats. Thin uterine wall at right cornus about 0.5 cm in size was also noticed. To preserve normal intrauterine pregnancy, surgical intervention was suggested, and the patient received laparoscopic cornual resection surgery.

Interventions: During operation, to prevent fetus injury, we didn’t use uterine manipulator or pitressin injection. We also avoided electrical energy device to decrease thermal effect to fetus. Because of the rich blood flow of uterus, the gas of heated surgical device will decrease the viability of the fetus. To preserve normal uterus, all blood was sucked into the abdomino-pelvic cavity. A brown-colored soft lesion with an operative laparoscopy. Approximately 500cc of blood and clots were pooled in the abdomino-pelvic cavity. The initial clinical diagnosis was hemoperitoneum and she underwent diagnostic laparoscopy and drainage of the tube. After checking bleeders, adhesion barrier was used. For postoperative medication, progesterone was prescribed for tocolysis. We checked ultrasound after the surgery, and only one fetus with fetal heart beat was noticed.

Conclusion: Laparoscopic heterotopic cornual pregnancy resection is feasible with the advantages of decreased hospital stay, less wound pain, and less use of analgesics. Further obstetrics outcome is reassuring in current studies.

Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

10:00 AM: STATION O

1402 Hemoperitoneum Caused by Ectopic Location of an Adenomyomatous Polyp
Moon HS,* Koo JS, Nam GI. Obstetrics & Gynecology, Good Moonhwa Hospital, Busan, Korea, Republic of (South)
*Corresponding author.

Video Objective: To demonstrate an unusual case of hemoperitoneum caused by adenomyomatous polyps growing through the myometrial layer, into the pelvic cavity.
Setting: An academic teaching hospital.
Interventions: A 46-year-old woman was referred for postcoital abdominal pain for 3 days. Physical examination revealed both direct and rebound tenderness of the whole abdomen. Her vital signs were stable. The hemoglobin level was 12.7 g/dL, CA-125 elevated to 80.3 U/ml (reference range, 0-35 U/ml) and serum β-hCG level below 1.2 mIU/ml. Transvaginal ultrasound demonstrated free fluid in cul-de-sac. The initial clinical diagnosis was hemoperitoneum and she underwent operative laparoscopy. Approximately 500cc of blood and clots were pooled in the abdomino-pelvic cavity. A brown-colored soft lesion with an irregular surface was noted in the right cornua which was suspected to be a ruptured interstitial pregnancy. Removed tissue specimen was sent for frozen biopsy, of which result was endometrial tissue not related to pregnancy. The myometrial showed connection to the endometrial cavity. The site of removal was closed with interrupted polyglactin endosutures. The postoperative course was uneventful and the final pathologic report was an adenomyomatous polyp.

Conclusion: Because myometrial lesion showed connection to the endometrial cavity, hysteroscopic examination was performed after recovery, demonstrated a polyloid mass and a uterine septum. Hysteroscopic polypectomy was performed and the pathological diagnosis was also an adenomyomatous polyp.

Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

10:00 AM: STATION P

1787 A Case of Female Genital Tuberculosis with Superimposed Tubo-Ovarian Abscess in a Developed Nation
Fowler ML,* O’Rourke-Suchoff D, Steer J, Noel NL, Hendessi P. Boston Medical Center, Boston, MA
*Corresponding author.

Video Objective: To describe the surgical techniques in a case of female genital tuberculosis (TB) with superimposed tubo-ovarian abscess (TOA) in a developed country.
Setting: A 22-year-old G0 who was born in Vietnam presented to the emergency room with pelvic pain and known bilateral hydrosalpinx. She was treated for pelvic inflammatory disease, and a TB test was sent and later returned as positive. Her initial chest x-ray was read as normal. When she returned for follow up, a CT scan was planned to evaluate the extent of pulmonic and possible pelvic disease. However, before this could be done, she became febrile, requiring hospitalization with concern for TB or TOA.

Interventions: Once pulmonary and peritoneal TB were suspected based on imaging, diagnosis of TB was attempted via sputum culture and endometrial biopsy. However, there was significant concern that the patient had a tubo-ovarian abscess given the high fevers, dilated tubes, and delay in urogenital TB diagnosis confirmation. This led to the patient being taken to the operating room for diagnostic laparoscopy and drainage of the tube. This video shows the techniques used to evaluate pelvic organs when acute infection is suspected. Ultimately, the endometrial biopsy returned positive for culture of Mycobacterium tuberculosis, confirming the diagnosis of female genital tuberculosis.

Conclusion: This patient was diagnosed genital TB with superimposed bacterial infection, leading to the pyosalpinx. Female genital TB can cause a diagnostic challenge, and surgery may be required to achieve a diagnosis. Pre-operative planning and careful surgical technique is essential when faced with dense adhesions.

Virtual Poster Session 1: Laparoscopy (10:00 AM — 10:10 AM)

10:00 AM: STATION Q

2932 Total Laparoscopic Hysterectomy: 5 Step Approach for Uteri Larger than 500 Grams
Katehi Kash P,* Hamilton CA. OB/GYN, Inova Fairfax Hospital, Falls Church, VA
*Corresponding author.

Video Objective: To demonstrate a five step approach facilitating successful completion of Total Laparoscopic Hysterectomy (TLH) in patients with uteri larger than 500 grams.
Virtual Poster Session 1: Laparoscopy
(10:00 AM — 10:10 AM)

2912 Quality of Life Following Hysterectomy: A Randomized Clinical Trial of Laparoscopic vs Abdominal Hysterectomy
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*Corresponding author.

Study Objective: To compare long-term quality of life outcomes of patients undergoing laparoscopic vs. abdominal hysterectomy for non-cancerous gynecologic conditions.

Design: Randomized controlled trial.

Setting: Academic teaching hospital.

Patients or Participants: All patients undergoing hysterectomy from the benign gynecology service with clinical uterine size < 15 weeks, but not candidates for TVH, were offered enrollment.

Interventions: Women were randomized to laparoscopic (TLH or LAVH) or abdominal (TAH) hysterectomy with evaluation of clinical and patient reported outcomes (PROs) using validated questionnaires including quality of life (SF12), body image (BIS), sexual functioning (SAQ), and physical activity (AAS) measured at baseline, hospital discharge, 2 weeks, 6 weeks, 6 months and 12 months postoperatively.

Measurements and Main Results: 94 patients underwent abdominal (48) or laparoscopic (46) hysterectomy. There were no differences in demographics including median age, BMI, race, comorbidities or surgical indication. There were no significant differences in operative time, estimated blood loss, uterine weight, surgical complications, nor Clavien-Dindo grade. PROs were systematically collected with 95% completing follow up to 12 months.

Conclusion: Comparisons of clinical outcomes after laparoscopic vs. abdominal hysterectomy were well-documented and our study affirms these findings of diminished pain, shorter hospital stay and earlier return to activities after laparoscopic hysterectomy. This study demonstrates overall quality of life improves up to 1 year after hysterectomy, regardless of route, but is significantly better in patients undergoing laparoscopic hysterectomy as early as 2 weeks postoperatively. Body image improves after either type of hysterectomy and is more dramatically improved after laparoscopic hysterectomy as early as 6 weeks postoperatively. Compared to abdominal hysterectomy, sexual functioning is significantly better after laparoscopic hysterectomy and continues to be better up to 12 months postoperatively. PROs of quality of life, pain, body image, physical activity, and sexual functioning improve after hysterectomy regardless of route of surgery; for several outcomes, laparoscopic hysterectomy confers earlier, and more substantial, improvements over abdominal hysterectomy.

Virtual Poster Session 1: Laparoscopy
(10:00 AM — 10:10 AM)

2298 Immediate Laparoscopic Nontransvesical Repair with Omental Interposition for Vesicovaginal Fistula Developing after Total Laparoscopic Hysterectomy
Eom JM,* Choi JS, Bae J, Lee WM, Jung US. Obstetrics and Gynecology, Hanyang University College of Medicine, Seoul, Korea, Republic of (South)
*Corresponding author.

Video Objective: To investigate the safety and feasibility of laparoscopic management for vesicovaginal fistula developing after TLH.

Setting: Case study, University hospital in Korea.

Interventions: A 51-year-old Korean woman underwent immediate laparoscopic management for vesicovaginal fistula developing after total laparoscopic hysterectomy. A 51-year-old Korean woman was referred to my department for having urinary leakage two weeks before. She underwent total laparoscopic hysterectomy due to heavy vaginal bleeding and leiomyoma four weeks ago. We performed a laparoscopic vesicovaginal fistula repair with omental interposition on November 8th, 2016. We encountered a large adhesion from prior surgery in the pelvic cavity, so performed adhesiolysis using a harmonic shears. After adhesiolysis, I performed bilateral ureterolysis that continued to the posterior bladder until it reaches the vesicovaginal space, which is then sharply dissected laterally and distally until the fistula is encountered. A bulb syringe were used to mobilize the vaginal cuff so that the dissection of the vesico-vaginal space and mobilization of the vagina could be performed easily. After adequate dissection and resection of the fistula tract from both the vagina and the bladder, a double-layer closure using 3-0 Vicryl was placed in an interrupted suture to secure the bladder. After the first layer of closure, the bladder was retrograde filled with 300cc of sterile water. Then second layer was closed in the same manner. And a single-layer closure of the vagina using a 1-0 Vicryl was placed transvaginally. After omental interposition to the fistula site, the procedure was over. There were no serious intraoperative or postoperative complications.

Conclusion: Laparoscopic approach for vesicovaginal fistula is safe and feasible.
Interventions: Decision was taken to do a Laparoscopy with Colo Anal Anastomosis. Expected challenges were dense bowel adhesions; deficient anterior rectal wall; Non healing tissue. On Laparoscopy small bowel adhesiolysis was done. Colon was completely mobilized up to splenic flexure so as to obtain a tension free repair. Rectum transected proximal to fistula site. A tunnel was created in the distal rectum. Rectal Mucosa was excised so as to avoid mucus passage. Mobilized bowel was then pulled out through the tunnel. Colon was anastomosed to anal canal perineally by simple interrupted sutures. As anal sphincters were not dissected patient’s anal tone was well maintained. Rectal drain was placed. Patient was gradually started on full diet by day 3; rectal drain was removed on day3 post op. Dye study done postoperatively showed no leak of dye.

Conclusion: Colo Anal Anastomosis is a unique way of treating fistulas not responding to routine RVF repair procedures.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

1669 A Stepwise Approach to Laparoscopic Excision of a Non-Communicating Rudimentary Horn
Jan H, 1,2 Katesmark M, 2 Ghal V, 1 Gynaecology, Epsom and St Helier’s University Hospitals NHS Trust, London, United Kingdom; 2 Gynaecology, Epsom and St Helier’s University Hospital, London, United Kingdom

Video Objective: To demonstrate our approach to laparoscopic excision of a non-communicating rudimentary horn with hysterectomy and cystectomy.

Conclusion: Non-communicating rudimentary horns are present in 20-25% of women with a unicornuate uterus. [1] They may be associated with dysmenorrhea, pelvic pain, subfertility and poor obstetric outcomes. Laparoscopic excision of rudimentary horns can be challenging and complex. Factors to consider in relation to the rudimentary horn are attachment to the uterus, the presence and course of the ureter and vascular supply. In this video, we demonstrate our approach to laparoscopic excision of a rudimentary horn including pre-operative imaging to plan surgical care. Intraoperatively, we begin with a cystoscopy to identify and confirm an efflux from ureteral openings. A real-time hysteroscopy is performed to identify the unicornuate uterus from the rudimentary horn as well as exclude vaginal or cervical anomalies. Through, hysteroscopic transillumination the plane of dissection is identified between the rudimentary horn and uterus. [2] [3] This technique is especially useful when the rudimentary horn is densely fused to the unicornuate uterus. Retropertioneal dissection is performed ipsilaterally to the rudimentary horn. A lateral approach is used to coagulate the uterine artery at its origin. The bladder is reflected from the horn to allow excision. A Thundebeat device (Olympus Medical Systems, Tokyo, Japan) is used to excise the rudimentary horn ensuring, keeping very close to the specimen ensuring there is no penetration of the unicornuate uterus. Haemostasis is achieved and no additional sutures are required. The specimen is removed using in-bag morcellation.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

1685 Fibroid Size and Complexity do not Impact on Clinical Outcomes: A Twelve Year Single-Centre Single-Surgeon Observational Study
Balfoussia D, 1,2 Kindinger L, 2 Ling H, 3 Setchell TE, 4 Miskry TS, 5
1 Reproductive Medicine, Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, United Kingdom; 2 Institute for Women’s Health, University College London, London, United Kingdom; 3 Department of Obstetrics and Gynaecology, London North West Healthcare NHS Trust, London, United Kingdom; 4 Imperial College Healthcare NHS Trust, London, United Kingdom; 5 Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, United Kingdom

Measurements and Main Results: This study examined data from 305 women undergoing LM. Comparisons were made between those with single fibroids measuring 6-8cm (Group A) and those with either single fibroids >8cm or multiple fibroids >4cm (Group B). Main outcome measures were operative time, blood loss and complication rates (including blood transfusion and conversion to laparotomy). Sixty-two women had multiple large fibroids resected, 117 had one fibroid measuring 6-8cm resected and 126 had a single myoma >8cm removed. A total of 387 large fibroids were removed with a median size of 8cm (range, 6-20cm), median operative time of 110minutes (range, 40-320 minutes) and median blood loss of 100mls (range, 20-2000mls). There was a significant correlation between fibroid size and operative time (Pearson’s R: 0.313 p=0.001), and fibroid size and blood loss (Pearson’s R: 0.195 p=0.003). Overall complication rate was 6.8%. Median post-operative hospital stay was 2 days (range, 1-19 days) Comparing Groups A and B, there was no significant difference in overall complication rate (6.84% versus 3.85% p=0.81), blood transfusion rate (1.71% versus 3.19% p=0.72), conversion to laparotomy rate (3.42% versus 1.06% p=0.21) or hospital stay (median: 2 days; range: 1-19days vs. median: 2 days; range: 1-9days p=0.34) in the two groups.

Conclusion: Whilst blood loss and operative time increase with increasing fibroid size and complexity, clinical outcomes (blood transfusion, conversion to laparotomy, complications and hospital stay) remain comparable suggesting that large and multiple fibroids may be safely removed laparoscopically.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

1680 Comparison of 2 Laparoscopic Approaches for Removal of Large Uterine Myomas
Fontana, CA

Measurements and Main Results: This study examined data from 305 women undergoing LM. Comparisons were made between those with single fibroids measuring 6-8cm (Group A) and those with either single fibroids >8cm or multiple fibroids >4cm (Group B). Main outcome measures were operative time, blood loss and complication rates (including blood transfusion and conversion to laparotomy). Sixty-two women had multiple large fibroids resected, 117 had one fibroid measuring 6-8cm resected and 126 had a single myoma >8cm removed. A total of 387 large fibroids were removed with a median size of 8cm (range, 6-20cm), median operative time of 110minutes (range, 40-320 minutes) and median blood loss of 100mls (range, 20-2000mls). There was a significant correlation between fibroid size and operative time (Pearson’s R: 0.313 p=0.001), and fibroid size and blood loss (Pearson’s R: 0.195 p=0.003). Overall complication rate was 6.8%. Median post-operative hospital stay was 2 days (range, 1-19 days) Comparing Groups A and B, there was no significant difference in overall complication rate (6.84% versus 3.85% p=0.81), blood transfusion rate (1.71% versus 3.19% p=0.72), conversion to laparotomy rate (3.42% versus 1.06% p=0.21) or hospital stay (median: 2 days; range: 1-19days vs. median: 2 days; range: 1-9days p=0.34) in the two groups.

Conclusion: Whilst blood loss and operative time increase with increasing fibroid size and complexity, clinical outcomes (blood transfusion, conversion to laparotomy, complications and hospital stay) remain comparable suggesting that large and multiple fibroids may be safely removed laparoscopically.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION C

1421 Removal of a Noncommunicating Cavitary Horn using a 4 Quadrant Laparoscopic Technique
Andryjowicz E*, Ob/Gyn, Kaiser San Bernardino County Medical Center, Fontana, CA

Video Objective: Review noncommunicating uterine horns; incidence, diagnosis and surgical management. Demonstrate the steps needed to safely remove this type of horn using our 4 quadrant laparoscopic approach.

Setting: A 21 year old nulligravid female with severe dysmenorrhea and acute worsening pain, found to have a uterine malformation. MRI confirming a unicornuate uterus with American Fertility Society class II b malformation.

Interventions: A 4 quadrant laparoscopic approach, combining retropertitoneal dissection with myomectomy techniques, to safely remove the non-communicating functional horn.

Conclusion: Even though rare, uterine abnormalities must be ruled out as a cause of continued female pelvic pain. Once a noncommunicating...
functional horn is diagnosed, principles used in laparoscopic hysterectomy and myomectomy can be combined to safely remove it. Our 4 quadrant laparoscopic technique allows both surgeon and assistant to actively participate in most minimally invasive gynecologic surgery in an ergonomic fashion.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

1603 Fibroid Mapping with MRI to Optimize Surgical Planning
Ramadan H,1* Shaves S,2 Hudgens JL,1 Ito TE,1 Obstetrics and Gynecology, Eastern Virginia Medical School, Norfolk, VA; 2Radiology, Eastern Virginia Medical School, Norfolk, VA
*Corresponding author.

Video Objective: This video discusses the use of preoperative Magnetic Resonance Imaging (MRI) to optimize surgical planning of laparoscopic myomectomies in patients with multiple fibroids desiring future fertility.

Setting: University hospital that serves as a referral center for patients desiring myomectomies. We will present two patients with multiple fibroids and infertility who elected to undergo surgical intervention. MRI’s were obtained and we will highlight the use of imaging to assist in the surgical planning of the myomectomy procedure.

Interventions: For both patients, preoperative pelvic MRI (with and without contrast) was performed. Multiple fibroids were found and T2 images in 3 planes were used to map fibroid location in relation to key anatomical structures (Endometrium, cornua, cervix, etc.). This critical information allows for efficient intra-operative management and resection of fibroids reducing the risk of recurrence. Anticipating endometrial involvement may allow for resection without compromising the integrity of the endometrial cavity which could have a significant impact on fertility and mode of delivery.

Conclusion: In the setting of 4 or more fibroids, MRI is likely superior to ultrasound for the purposes of preoperative planning. Mapping techniques helps surgeons plan efficient resection of the pathology to optimize surgical outcomes.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

2953 Temporary Uterine Artery Ligation During Laparoscopic Myomectomy - Different Surgical Approaches
Cabreria R,1* Vigueras Smith A,2 Ribeiro R,2 Zomer MT,3 Kondo W4. 1Minimally Invasive Surgery, Angels Hospital, City of Mexico, Mexico; 2Minimal Invasive Surgery, Vita Batel Hospital, Curitiba, Brazil; 3Minimal Invasive Surgery, Vita Batel Hospital, Curitiba, Brazil; 4Minimally Invasive Surgery, Cecig - Naçoes Hospital, Curitiba, Brazil. *Corresponding author.

Video Objective: Laparoscopic Uterine Artery Ligation may be performed during myomectomy in order to reduce the amount of blood lost during surgery.

Setting: Step-by-step video demonstration of three different techniques.

Interventions: Main steps of uterine artery ligation are described in detail as well as different laparoscopic variants to this procedure.

Anterior Approach: The impression of the uterine vessels can usually be seen anterior and laterally to the uterine cervix. After the identification of the path of the uterine arteries, the peritoneum of the anterior cul-de-sac is opened over the vessels and the uterine artery is carefully dissected next to the lateral border of the uterine cervix. This dissection must be extremely cautious because the uterine veins are very close to the artery. After the circumferential dissection of the artery, the temporary occlusion is conducted using 2-0 polyester suture.

Posterior approach, lateral to the infundibulopelvic ligament: For the ligation of the uterine artery posteriorly to the uterus and laterally to the pelvic infundibulum, the opening of the peritoneum of the broad ligament should start immediately below the round ligament, parallel to the external iliac vessels towards the base of the pelvic infundibulum. The avascular space is dissected by blunt dissection identifying the following landmarks:
- Lateral: external iliac vessels;
- Medial: pelvic infundibulum and the ureter attached to the peritoneum.

The external iliac artery is dissected cranially in order to find the bifurcation of the common iliac artery and the internal iliac artery. The first medial branch of the anterior division of the internal iliac is normally the uterine artery. After dissection of the uterine artery it may be ligated according to the same technique described above.

Conclusion: Laparoscopic Uterine Artery Ligation may be performed during laparoscopic myomectomy to reduce intraoperative blood loss. According to surgical scenario, the surgeon may choose among one of the above-mentioned techniques to perform it.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

2979 Laparoscopic Removal of Parasitic Leiomyomas
Khadrnoweri WK,1* Menderes G,2 Tierney C,1 OB/GYN, YNNH Bridgeport Hospital, Bridgeport, CT; 2Obstetrics, Gynecology & Reproductive Sciences, Yale School of Medicine, New Haven, CT
*Corresponding author.

Video Objective: The objective of this video is to describe the presentation, diagnosis and surgical approach to parasitic leiomyoma. We describe a case report of a postmenopausal patient who presented with incidental adnexal masses, underwent a diagnostic laparoscopy and was ultimately diagnosed with parasitic leiomyoma. We discuss the differential diagnosis, symptomatology, origin and epidemiology of this rare diagnosis.

Setting: A university tertiary care hospital.

Interventions: This is a case report of a patient with an incidentally diagnosed adnexal mass that was found to have parasitic leiomyoma.

Conclusion: Parasitic leiomyoma is an unusual variant of fibroid presentation. There are several hypotheses regarding their development, most importantly following morcellation after laparoscopic myomectomy. Others include the possibility of pedunculated fibroids that detach from the uterus and latch onto nearby viscera. This case illustrates the incidental finding of a parasitic leiomyoma, appropriate workup and differential diagnosis. We also elaborate on the surgical technique for removal of parasitic leiomyomas. We conclude that parasitic leiomyoma should be on the differential diagnosis for adnexal masses.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

1543 Laparoscopic Nerve Sparing Radical Trachelectomy
Puntambekar SP,1* Pattanaik S, Nihlani H, Goel A. Galaxy CARE Laparoscopy Institute Pvt. Ltd, Pune, India
*Corresponding author.

Video Objective: This video is a demonstration of radical trachelectomy done laparoscopically with a nerve sparing approach. The uniqueness of the surgery lies in the fact that it is nerve sparing which helps prevent urinary dysfunction, anorectal problems and sexual issues postoperatively which is the ultimate goal for any surgeon doing a radical fertility sparing
surgery. The difference between a nerve sparing radical hysterectomy and trachelectomy is that, in the latter we are limited in the space available for dissection due to preservation of supports of uterus.

**Setting:** A 24-year-old married lady with a history of abortion underwent examination due to excessive vaginal discharge. Pap Smear examination revealed HSIL & acetowhite area was found at 11 o’clock position on visual inspection with acetic acid and Lugol’s iodine. On HPV DNA examination, strains 18 & 51 were positive. On cervical biopsy, it was proved to be invasive squamous cell carcinoma, but imaging study revealed no visible growth in the cervix or spread to pelvic viscera.

**Interventions:** As we had to preserve her fertility potential, trachelectomy was chosen but our challenge was the nerve sparing radical approach. With the help of laparoscopy, we could achieve a magnified view of the pelvic anatomy and meticulous dissection could be done to preserve the innervation to the vital organs. The video explains the need for understanding the pelvic anatomy of avascular spaces and fascia in order to achieve the optimum result. On follow up, she didn’t have any change in bladder and bowel habits. This also prevented vaginal dryness & dyspareunia which would help in her conception in the future!

**Conclusion:** Thus, nerve sparing approach to a radical trachelectomy is a breakthrough in minimally invasive surgery & the field of reproductive medicine.

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**Virtual Poster Session 1: Laparoscopy**

**10:10 AM: STATION H**

**1508 A Case of an Adenomyomatous Polyp Penetrating Uterine Wall into Pelvic Cavity**

Moon HS,* Koo JS, Nam GI. Obstetrics & Gynecology, Good Moonhwa Hospital, Busan, Korea, Republic of (South)

*Corresponding author.

**Study Objective:** To demonstrate an unusual case of hemoperitoneum caused by adenomyomatous polyps growing through the myometrial layer, into the pelvic cavity.

**Design:** Case report.

**Setting:** Academic teaching hospital.

**Patients or Participants:** A 46-year-old woman was referred for abdominopelvic pain for 3 days. Physical examination revealed both direct and rebound tenderness of the whole abdomen. Her vital signs were stable. The hemoglobin level was 12.7g/dL. Transvaginal ultrasound demonstrated free fluid in cul-de-sac.

**Interventions:** The initial clinical diagnosis was hemoperitoneum and she underwent operative laparoscopy. Approximately 500cc of blood and blood clots were pooled in the abdomen-pelvic cavity. A brown-colored soft lesion with irregular surface was removed and specimen was sent for frozen biopsy, of which result was endometrial tissue. The site of removal was closed with interrupted polyglactin endosutures. The postoperative course was uneventful and the final pathologic report was an adenomyomatous polyp. Because the myometrial lesion showed connection to the endometrial cavity, hysteroscopic examination was performed after recovery, demonstrated a polyoid mass and a uterine septum. Hysteroscopic polypectomy was performed and the pathological diagnosis was also an adenomyomatous polyp.

**Measurements and Main Results:** The operative time of laparoscopy was 55 minutes with blood loss of about 50 mL. The patient recovered well and was discharged 5 days after the procedure. The operative time of hysteroscopy was 10 minutes. The patient recovered well and was discharged 1 day after the procedure. A transvaginal ultrasound was performed 5 month after hysteroscopic surgery showing no abnormal finding at the site of operation.

**Conclusion:** To our knowledge, this is the first report of an adenomyomatous polyp growing through the myometrial layer, into the pelvic cavity. Further study and a larger number of cases are needed to elucidate the mechanism which lies beneath the penetrating growth pattern of the adenomyomatous polyp into the myometrium.

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**Virtual Poster Session 1: Laparoscopy**

**(10:10 AM — 10:20 AM)**

**10:10 AM: STATION I**

**1639 Use of High Dose Epinephrine Versus Low Dose Epinephrine to Reduce Hemorrhage During Laparoscopic Myomectomy: A Randomized Controlled Trial**

El Fazary HA,1,* Abdes Dayem TM,1 OB/GYN, Alexandria University, Alexandria, Egypt; *OB/GYN, Alexandria University, Alexandria, Egypt

*Corresponding author.

**Study Objective:** To compare the effectiveness, safety and complications of intramural injection of epinephrine in high dose versus low dose during laparoscopic myomectomy as a method to reduce blood loss.

**Design:** Forty patients undergoing laparoscopic myomectomy were allocated at random to receive either high dose or low dose epinephrine in the serosal and/or overlying myometrium. Blood loss, duration of surgery, change in Hb levels, systemic haemodynamic changes and postoperative complications were compared.

**Setting:** El-Shabyt maternity hospital, Alexandria University.

**Patients or Participants:** Forty patients having single interstitial myomas ranging from 3-10 cm in diameter measured by ultrasound, complaining of abnormal uterine bleeding and/or infertility

**Interventions:** Twenty patients received 500 μg epinephrine diluted in 200 ml saline intramural and compared to other twenty patients who received 250 μg epinephrine diluted in 200 ml saline intramural.

**Measurements and Main Results:** Patient characteristics (e.g. age, body mass index, demographic data) and average size of myomas were similar between the two study groups. The differences in intraoperative blood loss, operative time and change in Hb levels between the two groups were insignificant (p>0.05). Transient and non serious increases in systolic and diastolic blood pressure and heart rate following intramyometrial epinephrine injection occurred in 20% of cases in the low dose group and 60% of cases in the high dose group showing a significant difference (p=0.010). No significant postoperative complications were observed in either groups.

**Conclusion:** The intramyometrial injection of epinephrine in low dose leads to significantly less haemodynamic alteration than the high dose and appears to be more safe. The effectiveness of the low dose appears to be equal to the high dose regarding controlling the blood loss.

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**Virtual Poster Session 1: Laparoscopy**

**(10:10 AM — 10:20 AM)**

**10:20 AM: STATION J**

**2998 Reproductive Outcomes after the use of Tourniquet in Abdominal Myomectomy**

Kobylianski A,1,* Sahkanaranam A,2,3 Benin A,2 Jey J,2 Kobylianski J,4 Liu G,2 Wong HM,2,3 Kung RC,2,4 Kraft P,2,5 OB/GYN and Gynecology, University of Toronto, Toronto, ON, Canada; 2Obstetrics and Gynecology, St. Michael’s Hospital, Toronto, ON, Canada; 3Western University, London, ON, Canada; 4Division of Urogynecology, Department of Obstetrics and Gynecology, Sunnybrook Health Sciences Centre, Toronto, ON, Canada; 5Obstetrics and Gynaecology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada

*Corresponding author.

**Study Objective:** To determine whether the pregnancy rate and live birth rate is similar in women of childbearing age undergoing abdominal myomectomy (AM) in two major Canadian urban centers with the use of a peri-cervical tourniquet compared to women undergoing AM without the use of a tourniquet.
Design: A multi-center retrospective cohort study was conducted, consisting of a retrospective chart review and a self-administered study questionnaire on reproductive outcomes.

Setting: Sunnybrook Health Sciences Center and St. Michael’s Hospital, two tertiary care centers affiliated with the University of Toronto.

Patients or Participants: Women of childbearing age (18–45 years old) who underwent AM between June 2002 and 2012 were consecutively sampled. 1099 patients met inclusion criteria and 144 returned the study questionnaire. After excluding patients who did not attempt to conceive post-operatively, 82 patients were included in the final statistical analysis.

Interventions: Use of a peri-cervical tourniquet during AM.

Measurements and Main Results: Unadjusted and multivariable regression analysis was used to compare the groups of patients. Mean age of patients at time of surgery was 36 years. 28% of surgeries involved use of peri-cervical tourniquet. There was no significant association between the use of tourniquet and live birth rate (p=0.35). Similarly, there was no significant difference between the use of tourniquet and length of time attempting conception after surgery (p=0.91). Data analysis is ongoing and further results will be presented.

Conclusion: Our study suggests no significant association between use of tourniquet and live birth outcomes. Concerns about the tourniquet’s impact on fertility may therefore be unfounded, and a more widespread uptake of peri-cervical tourniquet during AM may contribute to limiting surgical blood loss. Further prospective research is warranted with a larger sample size.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION K

1306 Robotic Myomectomy

Beardsley R,* Elkattah RA. Obstetrics and Gynecology, University of Illinois College of Medicine Peoria, Peoria, IL

*Corresponding author.

Video Objective: Describing a minimally invasive technique for a solitary intramural myometomy.

Setting: A 28-year-old African American nulliparous woman presented with pelvic pressure and ultrasound evidence of a large posterior/fundal intramural fibroid measuring 6 cm. She had abnormal and heavy uterine bleeding that was refractory to medical therapy. Definitive surgical treatment was desired and thus a robotic approach was planned.

Interventions: Myometomy of a solitary intramural uterine fibroid is performed robotically. Several surgical tips are utilized and described herein. Tip#1: horizontal incision; Tip#2: Utility of a tenaculum for traction; Tip#3: Electrosurgical coagulative dissection; Tip#4: Layered closure with a resorbable barbed suture.

Conclusion: Hemostatic horizontal incisions, traction with a tenaculum, coagulative dissection, and the utility of a barbed resorbable suture are all steps one can utilize for successful completion of a myomectomy via robotic route.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION L

1189 Intraoperative Strategies to Minimize Blood Loss During Myomectomy

Nenss A.* Robertson D. Obstetrics and Gynecology, St. Michael’s Hospital, Toronto, ON, Canada

*Corresponding author.

Video Objective: Fibroids are common, benign masses which can result in significant morbidity for affected women due to heavy menstrual bleeding and anemia, bulk symptoms and infertility. In women who are pre-menopausal or wishing to retain future fertility, the surgical management of symptomatic fibroids is by way of myomectomy. The surgical removal of fibroids can be associated with significant intraoperative blood loss and subsequent blood transfusion, which is an important morbidity associated with this elective procedure in reproductive-aged women. Gynecologic surgeons have utilized a number of interventions in an attempt to reduce rates of surgical bleeding during myomectomy but clinical practice varies considerably. This video demonstrates various evidence-based strategies aimed at minimizing surgical bleeding during myomectomy.

Setting: N/A

Interventions: Techniques covered in this video include: (1) Preoperative use of medications such as vaginal/rectal misoprostal and intravenous tranexamic acid, (2) Intramyometrial injection of dilute vasopressin and (3) Temporary uterine artery occlusion with pericervical tourniquet.

Conclusion: Intraoperative blood loss is a significant surgical risk during laparoscopic, robotic and abdominal myomectomy and perioperative transfusion rates are high. There are significant short-term and long-term risks associated with blood transfusion and gynecologic surgeons must employ evidence-based interventions in order to minimize blood loss and decrease the need for blood transfusions.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION M

1751 Understanding the Anatomy of Anterior Parametrium: A Key Step for Prevention of Pelvic Recurrences Following Laparoscopic Radical Hysterectomy

Pattanaik S,* Jathar AH, Puntambekar SP, Goel A. Galaxy CARE Laparoscopy Institute Pvt. Ltd, PUNE, India

*Corresponding author.

Video Objective: This video is a demonstration of the concept of parametrium and its significance in radical hysterectomy for early stage cervical cancer.

Setting: It includes a series of three cases, one classical & two nerve sparing radical hysterectomies showing complete parametrectomy. The dissection of posterior and lateral parametrium are technically easier in comparison to that of anterior parametrium. Anteriorly and posteriorly, protection to the spread of cervical cancer is provided by the cervico-vaginal fascia and Denonvilliers fascia respectively. Deficiency or the weakest area facilitating tumor spread lies on the lateral aspects and it is incomplete parametrectomy that is the reason for local recurrences.

Interventions: Understanding the anatomy of parametrium and paracervix is the key to achieve optimum tumor clearance. “Lymphatics follow the veins”, was the dictum that led to the origin for the need of parametrectomy in this radical procedure. Schematic diagrams depict the various extents of the parametrium in the three-dimensional scenario. The inferior vesical vein is ligated around two centimeters lateral to the lateral border of vagina making it the lateral extent on either side enforcing complete parametrical clearance. Meticulous dissection of the ureter with predictive anatomy, achieving hemostasis and preserving the innervation in type C1 hysterectomies were the various challenges encountered during the procedure! But all you need is a crystal-clear picture of the anatomy and laparoscopic approach is an added advantage due to a magnified vision.

Conclusion: Thus, this video makes an effort to popularize the concept of anterior parametrectomy. The negligence due to ignorance of the anatomy or incompetence to achieve it leads to higher rates of recurrences and lower survival rates in minimally invasive approach for cervical cancer as highlighted in the LACC trial.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION N

1235 Myometrial Cells in Pelvic Washings at time of Benign Hysterectomy
Study Objective: To evaluate if smooth muscle cells can be detected in pelvic washings at time of intact hysterectomy.

Design: A multi-centered pilot cohort study.

Setting: Two academically affiliated tertiary referral centers.

Patients or Participants: Patients undergoing total hysterectomy for benign indications without morcellation by minimally invasive gynecologic surgeons were enrolled from January 2018 to July 2018.

Interventions: Pelvic washings were collected at 2 times during surgery: after abdominal entry and after vaginal cuff closure. Cell blocks were generated, slides were stained using hematoxylin and eosin (H&E), smooth muscle actin (SMA) and desmin, and interpreted by one expert pathologist at each institution.

Measurements and Main Results: Thirty-eight subjects were recruited; three subjects were excluded due to unplanned morcellation. Smooth muscle uterine cells were detected in 1 pre-wash specimen and 2 post-wash cases. The group with positive washings was noted to have longer procedure time (136 minutes versus 114 minutes), lower blood loss (25 mL versus 86 mL) and higher uterine weight compared to negative washings group (242 grams versus 234 grams).

Conclusion: Tissue dissemination of uterine cells may be possible at time of hysterectomy. Larger prospective studies are needed in order to better describe the incidence of and risk factors for tissue dissemination.

Virtual Poster Session 1: Laparoscopy
(10:10 AM — 10:20 AM)

10:10 AM: STATION O

2462 Don’t Forget the Appendix! Incidental Appendix
FINDINGS DURING LAPAROSCOPIC PELVIC SURGERY
Hendricks R,1,2 Sasaki K,1,2 Miller CE1,2, OBGYN, Advocate Lutheran General Hospital, Park Ridge, IL; 2The Advanced Gynecologic Surgery Institute, Naperville, IL
*Corresponding author.

Study Objective: Evaluate the incidence of appendectomy for grossly abnormal appearance during laparoscopic gynecologic surgery for benign indications and pathologic concordance.

Design: Retrospective chart review of patients who underwent an appendectomy during laparoscopic gynecologic surgery for other indications.

Setting: Surgeries by Advanced Gynecologic Surgery Institute (AGSI), a group of three highly skilled minimally invasive gynecologic surgeons, at three community hospitals in the Chicago area.

Patients or Participants: A total of 3,478 patients underwent laparoscopic surgery by AGSI between January 1, 2013 through February 28, 2018. Seventy-three patients underwent appendectomy, and fifty-six were included in final analysis. All patients were 18 years of age or older with available operative and pathology reports.

Interventions: IRB approval was obtained and a retrospective chart review conducted using outpatient and inpatient electronic medical records.

Measurements and Main Results: Patients were assessed for age, body mass index, surgical indication, procedure performed, intra-operative appendiceal findings, blood loss, pathology, intra-operative events, and postoperative complications. Intraoperatively, the most common indication for appendectomy was endometriosis or fibrosis (61.8%) of which 58.8% had confirmatory pathology and 23.5% had normal pathology. Overall, 75.0% of the specimens were positive for a pathologic process. Four (7.2%) appendiceal malignancies were found, three mucinous and one carcinoid tumor. All three patients with mucinous tumors were operated on by a general surgeon, at same time of gynecologic surgery (1) or at a later date (2). No significant sequelae occurred.

Conclusion: The appendix should be evaluated during gynecologic laparoscopy, as incidental findings may be identified including malignancies. It is safe for trained gynecologists to perform a laparoscopic appendectomy, but a general surgeon should be consulted intra-operatively when a suspicious mass or malignancy is noted. Future research could evaluate postoperative pain profiles, increased costs and surgical time, and incidence of appendiceal pathology in the endometriosis population.

Virtual Poster Session 1: Laparoscopy
(10:10 AM — 10:20 AM)

10:10 AM: STATION P

1173 A Surgical Technique for the Laparoscopic Intact Enucleation of an Interstitial Ectopic Pregnancy and Unilateral Selective Devascularization of the Uterus
Freeman A*. Evin Women’s Health, Brisbane, QLD, Australia
*Corresponding author.

Video Objective: To describe a step by step surgical technique for the laparoscopic intact enucleation of an interstitial ectopic pregnancy and unilateral selective devascularization of the uterus.

Setting: Intestinal ectopic pregnancy accounts for 2% to 4% of all ectopic pregnancies. Initial inaccurate diagnosis can occur in 40% of cases. The laparoscopic cornual resection or cornuotomy is becoming more commonly used procedure. However, laparoscopic procedure may need to be converted to laparotomy due to bleeding and or adhesions in up to 5.4% of cases. In addition, the incidence of persistent interstitial ectopic pregnancy after laparoscopic cornual resection or cornuotomy can be as high as 7% to 8%. The patient was 44 years old G4P4 (four vaginal deliveries) and had history of vaginal bleeding, seven weeks of amenorrhea and initial ultrasound findings of tubal ectopic pregnancy. She had laparoscopic partial salpingectomy for possible early tubal ectopic pregnancy by another surgical team one week prior.

Interventions: With the negative histology of tube, the findings of right interstitial ectopic pregnancy on repeat pelvic ultrasound and an elevated human chorionic gonadotropin (HCG) of 20,520, laparoscopic intact enucleation (similar to myomectomy) of ectopic pregnancy was performed. Techniques used include the intramyometrial injection of diluted vasopressin and unilateral ligation of ascending branches of uterine artery and veins by surgical clips. The operation time was 65 minutes. The estimated blood loss was 30 mL. There was no intra or post-operative complication.

Conclusion: Laparoscopic intact enucleation of interstitial ectopic pregnancy is possible. It can be done by only using three 5 mm trocars and intact enucleation may reduce the incidence of persistent ectopic pregnancy.

Virtual Poster Session 1: Laparoscopy
(10:10 AM — 10:20 AM)

10:10 AM: STATION Q

1997 The Usefulness of Uterine Manipulation Simulation Among OB-GYN Residents as Bottom Person Prior to Assisting a Total Laparoscopic Hysterectomy: A Quirino Memorial Medical Center Experience
Balazar MRA,* Aquino-Aquino PV. Obstetrics and Gynecology, Quirino Memorial Medical Center, Quezon City, Philippines
*Corresponding author.

Study Objective: To determine the usefulness of uterine manipulation in a simulator prior to assisting as bottom person during total laparoscopic hysterectomies (TLH) among OB-GYN residents of Quirino Memorial Medical Center.

Design: Single-blinded Randomized Controlled Trial.

Setting: Quirino Memorial Medical Center with Residency Training in OB-GYN
Patients or Participants: Thirty-three obstetrician-gynecologic residents with no background on laparoscopy but assisting and performing gynecological laparotomy cases. Patients were female with age ranged of 20 to 55 years old, history of sexual contact, scheduled for elective total laparoscopic hysterectomy and adenectomy for benign uterine or ovarian pathologies.

Interventions: The residents were randomly grouped into two. Group A consisted of sixteen residents who underwent uterine manipulation training using the pelvic trainer box and Group B consisted of seventeen residents who did not undergo training. Group A was given PST which were performed in 5 repetitions in one session. One set of tasks commanded to perform in this order were anteverte uterus, uterus to the patient’s left, uterus to the patient’s right, push uterus cephalad, pull uterus caudally and retrovert uterus. One session consisted of 5 sets. After a week, both groups were asked to scrub-in on actual procedure with the same instructor commanding the tasks and recording the time to perform the tasks.

Measurements and Main Results: Group A performed the procedure-specific tasks correctly with a significantly shorter time than Group B (p-value of 0.000). The senior residents did not perform the PST better than the junior residents (correlation coefficient was significant with p-value of 0.023 and a negative correlation coefficient of -0.200, this means that as the negative time difference to perform from the first to the fifth specific tasks increases, the actual time decreases).

Conclusion: We have shown that uterine manipulation exercises in the pelvic trainer box is effective in the proper performance of residents as bottom person for uterine manipulation during TLH.

Video Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION R

2022 Laparoscopic Isthmocele Repair with Hysteroscopic Assistance
Gallego-Muneton DE,1 Arango AM,1 Gallego-Muneton DE,1 De Los Rios IF,2 Arango A.M.3,1 Gynecological Endoscopy Unit, Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS) AAGL, Clínica del Prado, Medellín, Colombia; 2Gynecological Endoscopy Unit, Clínica del Prado, Medellín, Colombia; 3Gynecology, CES University, Medellín, Colombia *Corresponding author.

Video Objective: To demonstrate the surgical technique of the laparoscopic isthmocele repair.

Setting: A 35-year-old woman with a previous caesarean refers secondary infertility of 1 year of evolution and abnormal uterine bleeding. Saline-infused sonohysterography shows a normal size uterus and an Isthmocele in the Left side with a residual myometrium of 0 mm.

Interventions: We describe the surgical technique for isthmocele correction by laparoscopy with the help of hysteroscopy to identify the area to be resected. Then, the abnormal tissue is resected with scissors and with a monopolar electrode. Finaly the uterine wall is sutured.

Conclusion: The laparoscopic isthmocele repair is an easily reproducible technique for the treatment of this disease. In most cases the improvement of symptoms such as abnormal uterine bleeding and infertility is achieved.

Virtual Poster Session 1: Laparoscopy (10:10 AM — 10:20 AM)

10:10 AM: STATION S

Michael I. Moore M.D., Advanced Womens Health Institute, Denver, CO
Moore ML*. Advanced Womens Health Institute, Greenwood Village, CO *Corresponding author.

Study Objective: To review informed patient decisions regarding morcellation of fibroids since the FDA guidance statement of November 2014.


Setting: Minimally Invasive Gynecologic Surgery private practice.

Patients or Participants: Women with fibroids whose surgery involved morcellation.

Interventions: Each patient was offered a fibroid procedure with contained morcellation or non-contained morcellation with a scalpel. The incidence of leiomyosarcoma was quoted as 1-2 per 1,000 from 11/26/14 – 2/1/18 and then 1 per 1,000 thereafter.

Measurements and Main Results: 260 charts were available for review. After excluding 43 that left 217. 105 had Laparoscopic Intrafascial hysterectomy(LIH) and 112 had Laparoscopic myomectomy(LSM). Ten women(5%) elected contained morcellation(LIH, 3; LSM, 7).

Conclusion: When given a 99.8-99.9% probability of benign disease 95% of the patients elected to treat the fibroid(s) as benign and have the smallest incisions possible for their surgery. Outcomes and complications will be discussed in detail along with a hospital system change in policy following one complication.

Virtual Poster Session 1: Laparoscopy (10:20 AM — 10:30 AM)

10:20 AM: STATION A

1348 Caesarean Scar Ectopic Pregnancies: Tale of two Approaches
Ma K,1 Lim K, Edi-Osagie E, Majumder K. Gynaecology, Manchester Foundation Trust, Manchester, United Kingdom *Corresponding author.

Study Objective: Demonstrate hysteroscopic and laparoscopic approaches to managing residual caesarean scar ectopic pregnancy tissue.

Design: Case report discussion.

Setting: Tertiary Referral Centre and University Teaching Hospital.

Patients or Participants: Two cases of caesarean scar ectopic pregnancies.

Interventions: Case 1) Hysteroscopic removal of residual trophoblastic tissue using hysteroscopic forceps. Case 2) Laparoscopic excision of residual trophoblastic tissue using ultrasonic device.

Measurements and Main Results: Case 1) 32 year old Para 2 (two previous caesarean sections) presented at 8 weeks gestation with a caesarean scar ectopic pregnancy. Primary systemic methotrexate management was followed by surgical suction curettage 4 weeks later. The patient complained of persistent irregular intermenstrual bleeding and retained trophoblastic
Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)
10:20 AM: STATION B

1426 Gynecologic Surgeons' Perspectives of Same-Day Discharge (SDD) after Minimally Invasive Hysterectomy and Sacrocolpopexy
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*Corresponding author.

Study Objective: To describe gynecologic surgeons’ experience with, and opinions regarding, SDD after minimally invasive hysterectomy and sacrocolpopexy.

Design: Cross-sectional survey study.

Setting: Online questionnaire, beta tested for content validity among experts.

Patients or Participants: Two hundred and ninety-six of 7,112 (4.16%) physician-members of AAGL completed this study.

Interventions: Original questionnaire, beta tested for content validity among experts.

Measurements and Main Results: Approximately half (47.2%) of respondents reported discharging >75% of patients the same day after minimally invasive hysterectomy, while 25% never discharge the same day. Most (57.8%) reported never discharging patients the same day after minimally invasive sacrocolpopexy, while 25.2% reported discharging >75% the same day. Providers in the US and Canada were more likely to discharge patients the same day as hysterectomy compared to other regions of the world (p<0.01). Most surgeons felt that SDD after minimally invasive hysterectomy and/or sacrocolpopexy improves patient satisfaction (64.5%) and that SDD is both safe (89% and 69.8%) and feasible (93.2% and 76.0%) without increasing complications (85.6% and 77.0%) after these procedures respectively. Current trainees and surgeons 0-5 years from residency were more likely to report SDD is safe after hysterectomy (98% v. 85%, p<0.01) and sacrocolpopexy (92% v. 77%, p=0.02). Providers felt SDD was safe regardless of laparoscopic versus robotic approach (p=0.32). The most commonly reported reasons for not discharging patients the same day included: procedure completed late in the day (57.0%) and patient expectation to stay overnight (52.2%).

Conclusion: While most gynecologic surgeons discharge patients the same day as minimally invasive hysterectomy and/or sacrocolpopexy, both are safe and feasible - many still routinely admit patients overnight and few discharge patients the same day after minimally invasive sacrocolpopexy. Years from completion of training was associated with likelihood of SDD.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)
10:20 AM: STATION C

1478 Retrospective Comparison In Single Port Total Laparoscopic Barbed Suture and Vaginal Approach Barbed Suture
Man ST,1,2* Chung SH1,2, Dept of OBGY, Soonchunhyang University Cheonan Hospital, Cheonan, Korea, Republic of (South); Obstetrics and Gynecology, Soonchunhyang University Bucheon Hospital, Bucheon, Korea, Republic of (South)
*Corresponding author.

Study Objective: To compare the efficacy and safety between two methods such as conventional intracorporeal Barbed suture and vaginal approached Barbed suture in single port TLH.

Design: Retrospective analysis of 194 consecutive cases of single port TLH.

Setting: Single surgeon in University Hospital.

Patients or Participants: 194 women (ages 33-53 yrs) undergoing single port Total Laparoscopic hysterectomy. 99 women were conventional intracorporeal Barbed suture group, 96 women were vaginal approached Barbed suture group.

Interventions: Charts were reviewed to determine post-operative complications and surgical values. A comparison was made between two groups in post-operative hemoglobin, and hematocrits changes, operation time, blood loss during operation, post-operative drainage volume.(n=194)

Measurements and Main Results: There were no statistically significant difference between two groups in terms of age, indication for surgery, uterine size, body mass index, parity. There were no significant difference in the average time of the procedure between two groups(conventional intracorporeal Barbed suture vs vaginal approached Barbed suture), 45.0 min vs 44.1 min(p<0.05). There were no significant differences in blood loss, 119.3ml vs 123.1ml(p<0.05), change in hemoglobin, 1.31 vs 1.29(p<0.05) and hematocrit, 8.45 vs 8.32(p<0.05).

Conclusion: Two methods of conventional intracorporeal Barbed suture and vaginal approached Barbed suture in single port TLH were feasible and safe.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)
10:20 AM: STATION D

2131 Trends in Patient Follow-Up after Minimally Invasive Hysterectomy
Smith KA,* Frazzini Padilla P.M., Sprague ML, Gynecology, Cleveland Clinic Florida, Weston, FL
*Corresponding author.

Study Objective: To determine practice trends for evaluating patients following minimally invasive hysterectomy among gynecologic surgeons.

Design: Anonymous voluntary survey was distributed to members of the American Association of Gynecologic Laparoscopists. The survey collected information on surgeon demographics and practice patterns for post-operative care following minimally invasive hysterectomy.

Setting: E-mail based survey.

Patients or Participants: Gynecologic surgeons who self-identified as performing minimally invasive hysterectomy via vaginal, laparoscopic, or robotic-assisted technique.
Interventions: A single survey distributed once. Responses were collected over 3 weeks.

Measurements and Main Results: 533 of 546 responses were analyzed. Responses that were incomplete or from surgeons who did not perform minimally invasive hysterectomy (MIH) were excluded. The majority of respondents reported practicing in the United States (384, 72%), followed by those practicing outside the US and Canada (130, 24%). The majority of surgeons reported unsupervised practice (451, 84.6%). Of that majority cohort, most reported >20 years in practice (165, 36.7%). Most frequently reported MIH volume was 20-50 cases annually (197, 37.3%), followed by 51-100 cases annually (169, 32%). Forty-seven percent of respondents (253) reported practicing same-day discharge, followed by those reporting 1 day length of stay (228, 42.9%) after MIH. Surgeons most commonly endorsed 2 routine postoperative visits (313, 58.8%). Timing of visits ranged widely from 1-12 weeks with the most commonly reported postoperative interval being 2 weeks (252, 47.5%) followed by 6 weeks (201, 37.9%). Most surgeons reported routinely examining the vaginal cuff in asymptomatic postoperative patients (452, 83.5%), and was usually done 6 weeks after MIH (248, 55.1%). The cuff examination was most commonly reported as being performed by both inspection and palpation (359, 78.6%). Recommendations for pelvic rest ranged from 0-12 weeks, and was most frequently reported as 6 weeks (225, 42.2%).

Conclusion: Postoperative follow up after MIH varies widely. Further studies are required to determine best practice protocols that provide efficient care while optimizing patient outcomes.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION E
1353 A Randomized Comparison of Laparoscopic Lens Defogging using Anti-Fog Solution, Warm Saline, and Chlorhexidine Solution (Clear)
Song Y.*, Department of Obstetrics & Gynecology, Kangbuk Samsung Hospital, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: Current literature demonstrates a lack of comparative in vivo studies regarding laparoscopic lens fogging (LLF). This study aimed to compare 3 popular methods of minimizing or reducing LLF in laparoscopic surgery by heating the lens using warm saline, applying anti-fog solution to the lens, and rubbing the lens with chlorhexidine solution.

Design: A randomized controlled trial.

Setting: A university hospital.

Patients or Participants: Ninety-six participants underwent randomization to be allocated in control (n = 24), warm saline (n = 24), anti-fog solution (n = 24), and chlorhexidine groups (n = 24).

Interventions: Laparoscopy.

Measurements and Main Results: The primary outcome measure was the severity of LLF during the first 3 minutes after laparoscope insertion into the abdominal cavity. The severity of LLF was rated on a 10-point visual clarity scale ranging from 0 (clearest) to 10 (foggiest). The secondary outcome measures were (1) the severity of LLF during the remaining operative time other than the first 3 minutes, (2) the number of lens cleanings, and (3) the total time required to clean the lens. Lens fogging during the first 3 minutes and remaining operative time other than the first 3 minutes was significantly decreased in the warm saline group compared to that in the other 3 groups (all, P < 0.001). In post-hoc analysis, the anti-fog solution group was significantly foggger than the warm saline group, but clearer than the chlorhexidine and control groups. The number of lens cleanings and total time required to clean the lens were significantly lower in the warm saline and anti-fog solution groups than in the chlorhexidine and control groups (all, P < 0.05).

Conclusion: The use of warm saline leads to significantly fewer fogging events than the use of anti-fog solution or chlorhexidine solution, resulting in an improved continuity of surgery.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION F
1736 Novel Approach to Repair of Laparoscopic Cystotomy
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*Corresponding author.

Video Objective: This video aims to demonstrate an interesting incidental cystotomy created laparoscopically during a total hysterectomy, demonstrate best practices for repair techniques, and review relevant anatomy.

Setting: Our patient is a 47 year old G7P3223 with a prior surgical history of 4 cesarean sections, who presents for total laparoscopic hysterectomy and bilateral salpingectomy as definitive treatment for abnormal uterine bleeding (AUB) due to leiomyomas. The surgery takes place at a large tertiary medical center. During creation of the colpotomy, a through and through anterior cystotomy and a partial thickness posterior cystotomy is incidentally created. Illustrations of relevant anatomy demonstrate how the colpotomy is created and which areas of the bladder need to be repaired.

Interventions: The extent of the cystotomy is assessed by guiding the laparoscope into the bladder via the cystotomy. The ureteric orifices are found to be intact bilaterally. The repair is then performed laparoscopically. First, the partial thickness posterior cystotomy is repaired in two layers. The first layer is a running non-locking stitch that is started in an inside-to-out followed by an outside-to-in fashion, allowing the knot to be buried below the mucosa. The second layer is an imbricating baseball stitch burying the mucosal layers. Next, the anterior full thickness cystotomy is repaired in two running non-locking layers burying all knots outside the bladder to prevent a nidi for stone formation and other complications. The bladder is backfilled to assure a water tight seal and the hysterectomy is continued.

Conclusion: Our video demonstrates an interesting cystotomy that involves both the anterior and posterior walls of the bladder and evaluation of the trigone from the abdominal side. It summarizes and illustrates best practices for bladder injury repair laparoscopically and relevant anatomy. Finally, it reviews necessary intraoperative care after repair, including retrograde filling of the bladder and cystoscopy, and postoperative care.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION G
1704 Application of “Chopstick Technique” In Laparoendoscopic Single-Site Radical Hysterectomy: Initial Single-Institutional Experience for Early Stage Cervical Cancer
Wang Y.*, Department of Obstetrics and Gynecology, Southwest Hospital, Third Military Medical University, Chongqing, China
*Corresponding author.

Study Objective: This study aimed to describe the new “chopstick technique” in laparoendoscopic single-site radical hysterectomy (LESS-RH) and explore its feasibility, safety and perioperative outcomes in the treatment of early stage cervical cancer.

Design: Retrospective study.

Setting: The First Affiliated Hospital of Third Military Medical University, Chongqing, China.

Patients or Participants: Women with federation international of gynecology and obstetrics (FIGO) stage Ia1 with lymph vascular space invasion or stage Ia2-IIa2 cervical cancer.
Interventions: “Chopstick technique” was performed in LESS-RH and pelvic lymph node dissection. The demographic characteristics and perioperative efficacy of the patients were summarized and analyzed.

Measurements and Main Results: LESS-RH was attempted in 84 patients, and 83 (98%) patients underwent the procedure successfully. One patient underwent conversion to traditional laparoscopic surgery secondary to phase IV endometriosis. “Chopstick technique” was used in all the 83 cases, wherein 40 cases used the single-incision three-channel laparoscopic platform, and 43 used the multichannel-tipped single port laparoscopic platform (HangT Port). The average operation time was 225.0±50.2min and the median intraoperative blood loss was 100mL. During the operations in the first 20 cases, 2 patients had intraoperative vascular injuries and 1 patient had bladder injury, and all were repaired under LESS. One case had ureterovaginal fistula 14 days after operation, and was successfully repaired by ureterococystostomy. The average number of pelvic lymph node dissections was 21, and the pathological examination of incisional edge was negative. Deep stromal invasion in 43 cases, LVSI in 16 cases, positive parametrium in 1 case, positive pelvic nodes in 15 cases. 33 patients, and 83 (98%) patients underwent the procedure successfully. One patient underwent conversion to traditional laparoscopic surgery secondary to phase IV endometriosis. “Chopstick technique” was used in all the 83 cases, wherein 40 cases used the single-incision three-channel laparoscopic platform, and 43 used the multichannel-tipped single port laparoscopic platform (HangT Port). The average operation time was 225.0±50.2min and the median intraoperative blood loss was 100mL. During the operations in the first 20 cases, 2 patients had intraoperative vascular injuries and 1 patient had bladder injury, and all were repaired under LESS. One case had ureterovaginal fistula 14 days after operation, and was successfully repaired by ureterococystostomy. The average number of pelvic lymph node dissections was 21, and the pathological examination of incisional edge was negative. Deep stromal invasion in 43 cases, LVSI in 16 cases, positive parametrium in 1 case, positive pelvic nodes in 15 cases. 33 patients were treated with postoperative chemotherapy and radiotherapy required.

Conclusion: “Chopstick technique” under LESS was considered feasible for treating cervical cancer.
Measurements and Main Results: 241 women met inclusion criteria. Complete follow-up was achieved in 199 (82.57%) women, of them 82, 89 and 28 underwent laparoscopic, laparotomy and hysteroscopy myomectomy, respectively. There were no significant differences between the groups in women’s age, BMI, gravidity and history of cesarean deliveries. Endometrial damage during laparoscopy and laparotomy was reported in 3 (3.6%) and 7 (7.8%) of the women, respectively (p=0.21), and in all women undergoing hysteroscopic myomectomy (p=0.001). During subsequent pregnancy, morbidly adherent placenta was suspected in only one woman in each of the groups (p=0.63), a rate that is considered lower than the reported rate after one cesarean delivery. Placenta previa was not seen in any of the women included in the study. Normal vaginal delivery was significantly higher in the hysteroscopy group compared to laparoscopy and laparotomy groups [11 (36.3%) vs. 5 (6.1%) vs. 4 (4.5%); p=0.001], with significantly lower need for manual lysis of the placenta [11(39.0%) vs. 51 (62.1%) vs. 62 (69.7%); p=0.01] and no need for any further interventions to control blood loss.

Conclusion: Subsequent pregnancy after myomectomy was not found to be associated with high placental abnormality rate. Furthermore, other than manual lysis, no difference in abnormal placentaion requiring intervention was seen between the different techniques.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION K

2576 Right Sided Cornual Ectopic Pregnancy after Right Salpingectomy
Arora A,1 Saxena A, Jaiswal E, Teja GND. Tulip Multispeciality Hospital Pvt. Ltd, Sonепur, India
*Corresponding author.

Video Objective: To present our experience of laparoscopic management of cornual ectopic pregnancy.

Setting: Tulip Multispecialty Hospital.

Interventions: Laparoscopic surgery as a treatment modality for cornual pregnancy. Laparoscopic wedge resection was carried out for cornual pregnancy. A circumferential incision was made above the base of the cornual pregnancy thus leaving behind sufficient serosal and myometrial tissue for closure with minimal distortion to the uterus. After extirpation of the cornual pregnancy, the myometrial defect was reconstituted with Vicryl 1-0 in two layers. Hemostasis was achieved by suturing.

Conclusion: We have to be aware that cornual pregnancy can be presented even after salpingectomy and laparoscopic approach for cornual ectopic is minimally invasive, safe procedure if performed by a confident and experienced surgeon.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION L

1954 Effect of Enhanced Recovery After Surgery (ERAS) Implementation on Surgical Outcomes and Opioid Prescription Patterns in Patients Undergoing Minimally Invasive Hysterectomy: A Safety-Net Teaching Hospital Experience
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*Corresponding author.

Study Objective: To evaluate the effect of ERAS bundle implementation on surgical duration, blood loss, length of stay (LOS), 30-day readmission, complication rates as well as opiates prescribing pattern at discharge in patients undergoing hysterectomy.

Design: Retrospective chart review including all hysterectomies performed one year before and one year after the implementation of the ERAS bundle.

Setting: Teaching county hospital in Texas.

Patients or Participants: All patients undergoing hysterectomy from 1/1/17-12/31/18.

Interventions: ERAS components included: 1- Preoperative carbohydrate loading, Preemptive anesthesia, 2- Intraoperative fluid and narcotic restriction and regional anesthesia, 3- Postoperative early feeding and ambulation.

Measurements and Main Results: 474 patients were included in the study, 51% before and 49% after ERAS. Route of surgery included 36% vaginal, 33 % laparoscopic and 30% open hysterectomy. Patient characteristics were similar between groups. Surgical outcomes as well as opioid prescription at discharge measured in Morphine Milli-Equivalents (MME) were recorded and compared before and after the intervention. After ERAS implementation, more regional blocks were performed in open hysterectomies: 6% vs 20%, p<0.001 and successful intraoperative fluid restriction was achieved in laparoscopic and open hysterectomies (p=0.045, p<0.001 respectively). LOS was significantly shorter after ERAS in all categories of hysterectomies (P<0.01). Same day discharge increased from 16% in vaginal and laparoscopic hysterectomies to 40% and 38% respectively. No significant difference in surgical duration, blood loss, postoperative complications, emergency room (ER) visits and readmissions was noted between groups, however, opioid prescription at the time of discharge decreased significantly from 150 to 123 MME, p<0.01, 174 to 130 MME, p<0.001, 188 to 147 MME (p<0.003) in vaginal, laparoscopic and abdominal hysterectomies respectively.

Conclusion: ERAS implementation in a safety net teaching hospital was associated with decreased LOS with no increase in complications, ER visits or readmissions in hysterectomy cases while decreasing opioid prescription at the time of discharge.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION M

1475 Laparoscopic Intracapsular Myomectomy for Deep Intramural Myomas in Infertile Women
Tandulwadkar SR*, Centre of Excellence Infertility & Endoscopy, Dr. Tandulwadkar’s Solo Clinic, Pune, India
*Corresponding author.

Video Objective: Laparoscopic Intracapsular Myomectomy helps in avoiding the opening of uterine cavity in infertile women with deep intramural myomas compressing the cavity.

Infertile women with deep intramural myomas compressing the cavity, laparoscopic intracapsular myomectomy may be preferred to avoid opening the uterine cavity.

Setting: Videos of 3 cases will be shown where infertile women needed Myomectomy to optimize fertility results
Case A 33 year old woman with 3 deep intramural medium sized myomas compressing the cavity from three sides.
Case B 31 year old woman, with large posterior wall intramural myoma compressing the cavity from fundus to isthmus.
Case C 28 year old, regular cycles, showing 6cm by 8cm right lateral wall myoma, compressing the cavity.

Intervention: 3 cases demonstrating our objective are shown. In all the cases you will notice.

- we remained in the intracapsular plane
- finer fibers of the capsule were also cut so as to make myoma absolutely naked
- Intracapsular plane is the most avascular plane
- cavity was not opened
Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

2538 Current Methods of Tissue Extraction in Minimally Invasive Surgical Treatment of Uterine Fibroids
Kim R., 1 Dmello M., 2 Clark NV., 3 Ajao M.O., 4 Einarsson JI., 5 Cohen SL. 6
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*Corresponding author.

Study Objective: Since the 2014 Food and Drug Administration warnings regarding the use of power morcellation, gynecologists have adopted multiple alternative tissue extraction strategies. The objective of this study is to investigate the current techniques used by minimally invasive gynecologic surgeons for tissue extraction following minimally invasive hysterectomy for fibroids.

Design: Web-based survey.

Setting: N/a.

Patients or Participants: Current AAGL members were sent a link to access the survey, which was available from March 26, 2019 to April 17, 2019.

Interventions: N/a.

Measurements and Main Results: 420 respondents completed the survey. The most common methods of tissue extraction were manual morcellation through the colpotomy (72.4%) and mini-laparotomy (66.9%). 31.7% of all participants endorsed the use of power morcellation. Intact specimen removal through a laparotomy was reported by 10% of respondents. Other methods of tissue extraction, such as intra-abdominal manual morcellation with a laparoscopic scalpel, were reported by 1.4%. Use of containment bags was reported by 43.4% during vaginal morcellation, morcellation with a laparoscopic scalpel, were reported by 1.4%. Use of containment bags was reported by 43.4% during vaginal morcellation, with 18.4% of US-based surgeons reporting its use compared to 56.9% of non-US-based surgeons.

Conclusion: Minimally invasive gynecologic surgeons are currently employing a variety of tissue extraction strategies for hysterectomy for fibroids. A large majority of practitioners are performing manual morcellation through the colpotomy and/or mini-laparotomy; use of containment bags is more common with during mini-laparotomy than via colpotomy. Power morcellation is still in use, less commonly in the United States than in other countries, and usually within a containment system.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

2122 5mm Mini Single Hole Incision Laparoscopic Hysterectomy: Series of Five Cases

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*Corresponding author.

Study Objective: To investigate the feasibility and safety of single-port laparoscopic hysterectomy with 5mm mini incision.

Design: The clinical data of 5 patients who underwent 5mm mini-incision single-port laparoscopic hysterectomy were retrospectively analyzed.

Setting: Department of Obstetrics and Gynecology, the Affiliated Changzhou No.2 People’s Hospital of Nanjing Medical University.

Patients or Participants: 5 patients who underwent 5mm mini-incision single-port laparoscopic hysterectomy.

Interventions: The median longitudinal incision of the umbilicus is about 5mm long, and the subcutaneous sneak expansion space is 3-5mm. The 40/50 small abdominal retractor expands and retracts the incision approach, using small lenses such as pediatric surgical laparoscopy, cystoscopy or hysteroscopy. Place the operating instrument to perform the operation.

Measurements and Main Results: Five patients in this group were successfully operated. No other channels were added during the operation, and no laparotomy was performed. The operation time is 100-195 min, in which the puncture establishes the surgical access part for 5-10 min, and the umbilical hole reconstruction part 3-5 min; The intraoperative blood loss was 50-100 ml, the body temperature was 36.5°C to 37.5°C after 1 day, and the anus exhaust time was 1.0-1.5 days. The patient was discharged from hospital for 6-7 days. The postoperative umbilical wounds healed well, almost no surgical scars were seen, and no postoperative umbilical hernia and other serious complications occurred.

Conclusion: Under the premise of mature laparoscopic technique, it is safe and effective to perform a 5mm mini incision laparoscopic hysterectomy.

Virtual Poster Session 1: Laparoscopy
(10:20 AM — 10:30 AM)

10:20 AM: STATION P

2788 Disseminated Intracavitary Leiomyomatosis: An Intra-Operative Diagnosis
Mathur S., 1 McCaffrey C., 2 Murji A., 3 Mehra N., 4 Po L., 5 Kroft J., 6 Liu G. 7
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*Corresponding author.

Study Objective: Subendothelial (intracavitary) leiomyomas are rare and can be challenging to manage. They commonly recur and can present with significant abnormal uterine bleeding or infertility. Our objective is to discuss the clinical presentation, diagnosis and management of this rare condition. The patients in these series presented with either heavy menstrual bleeding or infertility. Preoperative imaging studies showed multiple small fibroids, however the diagnosis was not confirmed until the uterus was surgically evaluated.

Design: Case Series.

Setting: n/a.

Patients or Participants: We present three cases of disseminated intracavitary leiomyomatosis.

Interventions: n/a.

Measurements and Main Results: Case 1: A 31 year old female presented with abnormal uterine bleeding and primary infertility. Preoperative
imaging showed multiple submucosal fibroids. This patient had a hysteroscopic myomectomy two years prior for abnormal bleeding. She was taken for a laparotomy/myomectomy and intraoperatively, the fibroids were found to be subendothelial; nearly 40 fibroids were resected. Case 2: A 37 year old female presented with primary infertility. This patient had a previous hysteroscopic myomectomy but was still unable to conceive. Imaging studies reported multiple submucosal and intramural fibroids. Intraoperatively the entire endometrial cavity was lined with 2cm subendothelial fibroids; over 30 fibroids were removed. Case 3: A 37 year old female presented with abnormal uterine bleeding. The patient had imaging that demonstrated multiple submucosal fibroids. The bleeding was not well managed with medical therapy. Intraoperatively she was found to have multiple 1cm subendothelial fibroids. She was managed with Lupron and multiple hysteroscopic procedures for resection for these fibroids.

**Conclusion:** Intracavitary subendothelial leiomyomas have not been widely described in the literature. The diagnosis can be challenging as transvaginal ultrasound, sonohysterogram and MRI are unable to distinguish subendothelial from submucosal leiomyomas. These patients also had hysteroscopic procedures prior to development of intracavitary leiomyomatosis. In all our cases, the diagnosis was made intraoperatively, and resulted in the removal of a large number of leiomyomas.

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**Virtual Poster Session 1: Laparoscopy**

(10:20 AM — 10:30 AM)

**10:20 AM: STATION Q**

1665 Trends in Extraction Techniques in Minimally Invasive Myomectomies: A Retrospective Study

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**Study Objective:** Our study aims to evaluate how the FDA’s 2014 recommendation against the use of power morcellation for tissue extraction in minimally invasive myomectomies changed surgical approach at our hospital system. Our study investigated rates of laparoscopic versus abdominal myomectomies, and for laparoscopy, trends in mode of tissue extraction and resultant perioperative outcomes.

**Design:** Retrospective cohort study.

**Setting:** Southern California Kaiser Foundation Hospitals.

**Patients or Participants:** Women undergoing a laparoscopic or robot-assisted laparoscopic myomectomy involving tissue morcellation from 2008 to 2018.

**Interventions:** One of 3 morcellation techniques: electronic power morcellation (PM), manual morcellation via minilaparotomy (ML), or contained power morcellation in a bag (CM).

**Measurements and Main Results:** A total of 3259 myomectomies were performed at our hospital system from 2008 to 2018. Rate of abdominal versus minimally invasive myomectomies, estimated blood loss, length of operation and hospital stay, major post-operative complications, and hospital readmission were compared in the six years before and the four years after the FDA warning. A total of 151 laparoscopic cases were performed during the study period. The cohort was 38% Hispanic, 32% Black, 15% White, and 12% Asian. Mean age was 37 (SD 7.31). Mean BMI was 28 (SD 7.16). Prior to the FDA announcement, tissue extraction methods were 75% PM, 5% ML, and 9% CM. After the announcement, 0% PM, 34% ML, and 57% CM (Pearson chi = 93.28). There was no difference in complications in aggregate or individually between tissue extraction method.

**Conclusion:** Minimally invasive myomectomies make up a small portion of total myomectomies performed. For these cases, however, the FDA notice did, nonetheless, change surgical practice in regards to tissue extraction methods. There were no significant differences found among the tissue extraction techniques with regard to estimated blood loss, major post-operative complications, operating time, length of hospital stay or hospital re-admission.

**Virtual Poster Session 1: Laparoscopy**

(10:20 AM — 10:30 AM)

**10:20 AM: STATION R**

1828 Surgical Management of a Fused Non-Communicating Rudimentary Uterine Horn with Significant Myometrial Connection

Kaiserman J,* Allen LM. Hospital for Sick Children, Toronto, ON, Canada *Corresponding author.

**Video Objective:** In this video we present the surgical management of a fused non communicating, rudimentary uterine horn with significant myometrial invasion. The objectives of this video are to review the diagnostic imaging features that are suggestive of surgical complexity with non communicating fused rudimentary horn resections. And review the steps involved in their resection.

**Setting:** A 12 year old previously healthy female presenting with 8 months of progressively worsening, severe dysmenorrhea. Onset 5 months post menarche. Her pain was not alleviated with ibuprofen, naproxen or acetaminophen. Initial Abdominal & Pelvic US: possible uterine fibroid, unremarkable kidneys. A Repeat US suggestive of a unicornuate uterus with an obstructed left rudimentary horn. She was started on menstrual suppression with a continuous combined oral contraceptive. A MRI was done confirming the presence of a left fused, non communication rudimentary horn, with significant myometrial invasion.

**Interventions:** A laparoscopic left uterine horn resection was performed. The surgery was divided into four steps. These include to perform a anatomical survey to confirm the patients anatomy, lateral isolation of hemi-uterus, division of the myometrial connection and finally, myometrial reconstruction.

**Conclusion:** In summary, the surgical steps in the management of a fused non communicating rudimentary uterine horn with significant myometrial connection include: To perform a anatomical survey to confirm the patients anatomy, lateral isolation of hemi-uterus, division of the myometrial connection and finally, myometrial reconstruction. A non-communicating functional fused rudimentary horn with significant myometrial invasion can present as a surgical challenge to gynecologists. It is important to do a pre-operative MRI in adolescents or with complex anomalies to assess the complexity of anticipated surgery. Post operative imaging with a MRI can assess for any residual endometrium from the resected horn.

**Virtual Poster Session 1: Laparoscopy**

(10:20 AM — 10:30 AM)

**10:20 AM: STATION S**

2440 Efficacy of Hand Assisted Laparoscopic Adenomyomectomy with Manipulation of Uterine Artery Comparing with Classical Laparoscopic and Laparotomic Adenomyomectomy

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**Study Objective:** To assess the safety and benefit of Hand-assisted laparoscopic (HALS) adenomyomectomy compared with laparoscopic and laparotomic adenomyomectomy.

**Design:** Single-center, nonrandomized, comparative study.

**Setting:** University hospital, tertiary referral center.
Patients or Participants: 20 patients underwent HALS adenomyomectomy with bilateral uterine artery ligation (BUAL) or transient occlusion of uterine artery (TOUA). HALS group was compared with laparoscopic adenomyomectomy (n=82) and laparotomic adenomyomectomy (n=170) with or without BUAL/TOUA between January 2016 and January 2019.

Interventions: HALS adenomyomectomy was performed via laparoscopic and/or extracorporeal approach through supracervical incision (about 5cm). Other groups underwent laparoscopic adenomyomectomy or laparotomic adenomyomectomy alone.

Measurements and Main Results: HALS and laparotomic groups were comparable with average estimated blood loss (217.5±136.0 vs. 193.6±193.0 mL, p=0.858), weight of removed mass (89.0 ±75.2 vs 108.2±91.9 g, p=0.699), postoperative hospital day (HD) (4.6±1.1 vs 4.7±0.8 days, p=0.922). Laparoscopic group was lower in all of them (EBL 119.5±79.6 mL, mass weight 39.3±25.9 g, HD 3.6±0.8 days). The three groups did not differ significantly in transfusion rates, hemoglobin change, febrile morbidity, and perioperative complications. Additional procedures were more frequently performed in HALS (0.33±0.48) than other groups such as myomectomy, pelvic adhesiolysis, adnexa & pelvic endometriosis excision (vs. laparoscopy 0.16±0.36, p=0.024; vs. laparotomy 0.15±0.36, p=0.017). The mean operating time was longer in HALS group (182.5±38.1 min), compared with other groups (vs. Laparoscopy 99.9±40.6 min, p<0.001; Laparotomy 133.0±41.1 min, p<0.001).

Conclusion: HALS adenomyomectomy with BUAL/TOUA allows for complete excision of adenomyosis via extracorporeal & intracorporeal procedures while retaining the advantages of minimally invasive surgery. Furthermore, this approach could easily perform the additional pelvic surgery for benign uterine and adnexal pathology without compromising surgical outcomes.

Virtual Poster Session 1: Laparoscopy (10:20 AM — 10:30 AM)

2190 Single Site Salpingectomy Technique
Small Layne AN, Gutierrez MM. Las Vegas Minimally Invasive Surgery, Las Vegas, NV
*Corresponding author.

Video Objective: To demonstrate our procedure for single site laparoscopic salpingectomy in a patient desiring permanent sterilization.

Setting: Tubal ligation and salpingectomy are associated with a decrease incidence of ovarian cancer. Salpingectomy for sterilization has been shown to be safe and not increase complications. Single-site laparoscopy is used in a variety of gynecologic procedures and allows for minimization of incisions and opportunity for improved cosmesis. Here we demonstrate our procedure for single site laparoscopic salpingectomy at an academic affiliated gynecology practice. The patient is a 34yo G3P3 who has completed child bearing and desires permanent sterilization.

Interventions: The patient underwent a single-site laparoscopic bilateral salpingectomy for sterilization through an umbilical incision. A single site gel platform, 30 degree laparoscope,atraumatic grasping and articulating energy device are used to facilitate this surgery. The fascia is repaired with 0 vicryl and the umbilicus is rebuilt with 2-0 vicryl and 4-0 monocryl for a cosmetic appearance.

Conclusion: Single site laparoscopy, as an alternative for multi-port, can easily and safely be used for salpingectomy with favorable cosmetic outcome.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

3009 The Role of Patient Education in the Success of Same Day Discharge after Minimally Invasive Gynecologic Surgery
Eisenstein DI, Chan C, Zawin O. OB/GYN, Henry Ford Medical Center, West Bloomfield, MI; Women’s Health, Henry Ford Health System, West Bloomfield, MI; Women’s Health, Ascension Providence Hospital, Southfield, MI
*Corresponding author.

Study Objective: To assess the impact of preoperative education success and patient satisfaction for same day discharge after laparoscopic surgery.

Design: Prospective survey.

Setting: Academic tertiary referral center.

Patients or Participants: Twenty-four women undergoing minimally invasive hysterectomy or myomectomy with two surgeons between May 2018 and March 2019.

Interventions: Patients completed a questionnaire regarding same day surgery before and after an educational video. They also received a phone call four to six weeks postoperative regarding their postoperative experience.

Measurements and Main Results: Twenty-four patients were enrolled in the study although only twenty patients have currently undergone surgery. Among patients who completed the pre-education questionnaire 15 of 23 (65%) were agreeable to same day discharge and 8 of 23 (35%) were not agreeable. After watching the educational video and completing the post-education questionnaire 17 of 23 (74%) were agreeable to same day discharge and 6 of 23 (26%) were not agreeable. After the educational video among those who were originally not agreeable to same day discharge 3 of 8 (38%) changed to agreeable. Postoperatively 11 of 20 (55%) were discharged same day, 8 of 20 (40%) patients were discharged POD #1 and 1 of 20 (5%) discharged POD #3. Of 9 patients discharged same day, 5 (56%) were happy to be discharged, 3 (33%) were nervous but did well, 7 (78%) felt it was the right to do, 2 (22%) would not do it again and 1 (11%) was not happy to be discharged.

Conclusion: In this study, the majority of patients were agreeable to same day discharge after undergoing education, which also favorably changed the opinions of some who were not initially agreeable to same day discharge. Postoperatively, the majority of patients were happy to be discharged the same day and felt it was appropriate.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

2925 A Novel Technique: Contained Adnexal Mass Extraction
Davenport ER, Stockwell EL. Obstetrics & Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV; Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV
*Corresponding author.

Video Objective: To demonstrate a novel technique in removing large adnexal masses in a contained fashion. To reduce the risk of ovarian cyst spillage and or chemical peritonitis.

Setting: In Hospital.

Interventions: Ovarian Cystectomy.

Conclusion: Minimally invasive surgery is the preferred technique for ovarian cystectomies. By using this novel approach to completing cystectomies in a specimen bag will allow extraction of large adnexal masses reducing the risks of spillage.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

1749 Laparoscopic Rectovaginal Fistula Repair Following Benign Gynaecological Procedure
Minimally Invasive Surgery, Las Vegas, NV; Obstetrics & Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV; Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV
*Corresponding author.
Virtual Poster Session 1: Laparoscopy
(10:30 AM — 10:40 AM)

10:30 AM: STATION D

2631 A New Uterine Suspension Technique May Fasten Patient Recovery After Laparoscopic Radical Hysterectomy
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*Corresponding author.

Study Objective: Postoperative fever may delay the patient recovery after laparoscopic radical hysterectomy (LRH). The use of traditional uterine manipulator could be one of the reasons behind this issue. The aim of this study is to evaluate the feasibility and surgical outcomes of a new method of manipulating the uterus during LRH.

Design: A retrospective cohort study.

Setting: University-based tertiary obstetrics and gynecology hospital.

Patients or Participants: Patients with early stage of cervical cancer and treated by the same surgical team were enrolled. Between January 2015 to February 2019, 40 patients (Group S) have undergone LRH with this new technique and 40 patients (Group T) underwent LRH with traditional uterine manipulator.

Interventions: Variables such as age, histological result, International Federation of Gynecology and Obstetrics (FIGO) stage and surgical outcomes were analyzed by student's t test and Wilcoxon rank sum between above two groups.

Measurements and Main Results: As shown in Table 1 and Table 2, postoperative fever was shorter in Group S compared with that in Group T (2 days vs 4 days, P=0.004). Lower blood loss (188 ml vs 249 ml, P=0.018) and shorter operation time (211 min vs 242 min, P=0.004) was shown in Group S. No statistical significance were found in the number of positive lymph nodes (16/40 vs 5/40, P=0.422) or lymphovascular invasion (16/40 vs 17/40, P=0.465) between these two groups.

Conclusion: The use of this simple uterine suspension technique may decrease the incidence of post operation fever, allowing patients with early-stage cervical cancers for faster recovery after operation. It is recommended for every LRH especially with the presence of pus inside the uterus.

Virtual Poster Session 1: Laparoscopy
(10:30 AM — 10:40 AM)

10:30 AM: STATION E

2083 Hemihysterectomy of Non-Communicating Rudimentary Horn Following a Missed Abortion
Bartley L1, Pratt K, Loret de Mola R, Ghareeb A, Siddique SA, Garza-Cavazos A 1Obstetrics & Gynecology, Southern Illinois University School of Medicine, Springfield, IL
*Corresponding author.

Video Objective: The objectives of this film are to demonstrate the surgical management of a missed abortion in a non-communicating rudimentary horn. The majority of these pregnancies present with uterine rupture in the second trimester, making them difficult to manage and often hard to detect early in gestation. In this case presentation, the patient had previously failed medical management and suction dilation and curettage (D&C) prior to presenting to our clinic. The viewer should be able to understand the management of pregnancies in association with müllerian anomalies.

Setting: The film describes the case of a previously healthy 40 y/o G2P1 who presents to outpatient clinic after failing medical management and suction D&C for a missed abortion.

Interventions: An ultrasound (U/S) at the outlying provider’s office confirmed a 5 week 5 day pregnancy in the right horn with uncertain cardiac activity. A follow-up U/S confirmed a missed abortion in the right horn. She underwent two doses of misoprostol with no resolution. A curette was unable to be passed during D&C. Upon referral, hysteroscopy was performed and a communication between the horns was unable to be visualized. She was immediately scheduled for a right hemi-hysterectomy and right salpingectomy the following day. The procedure was performed paying careful attention to the ureters, as müllerian anomalies are commonly associated with genitourinary anomalies as well.

Conclusion: To our knowledge, no report of a similar case exists in the literature. Our video highlights the surgical techniques and methods used to evaluate and treat a missed abortion within a non-communicating rudimentary horn. We intend to increase awareness regarding müllerian anomalies and the ways in which they can present. Careful attention must be paid to patients presenting with pregnancies in association with müllerian anomalies. The high risk of uterine rupture necessitates immediate surgical management.

Virtual Poster Session 1: Laparoscopy
(10:30 AM — 10:40 AM)

10:30 AM: STATION F

1259 Invasive Procedure in Patients with Tubo-Ovarian Abscess: A Retrospective Study
Levin G1,2, Dior UP2, Shoshan A1,2, Benshushan A1,2, Rottenstreich A1,2 1Departments of Obstetrics and Gynecology, Hadassah Medical Center, Jerusalem, Israel; 2Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel;
*Corresponding author.
Postoperative vision loss (POVL) is a rare but devastating complication that has only recently been reported following laparoscopic surgery. We present the case of a 34 year old female who experienced POVL following an uncomplicated laparoscopic hysterectomy. Her medical history was remarkable for anxiety, depression and endometriosis. She underwent a total laparoscopic hysterectomy, bilateral salpingectomy, and excision of deeply infiltrating endometriosis from the right pelvic sidewall. She was in the dorsal lithotomy position with both arms tucked. Operating time was 174 minutes and EBL was 75mL. Upon arrival to the surgical floor, approximately 4 hours postoperative, she became increasingly distressed, reporting complete absence of vision. A stroke code was called. No focal neurologic deficits were found. Pupils were equally reactive to light, but vision was reported as no light perception. No cerebral hemorrhage or ischemia were detected on CT/MRI. Fundoscopic exam revealed no structural abnormalities. Tonometry demonstrated a normal intraocular pressure of 18mmHg in the left eye and 13mmHg in the right. The lens was clear, macula flat, and periphery was within normal limits bilaterally. Over the following days, her vision remained unchanged. She continued to describe a white wall, and was unable to notice motion or light. Otherwise, she met all appropriate post-operative milestones from a gynecologic perspective. On postoperative day 7 the decision was made to start an IV methylprednisolone taper. The following morning she noticed mild light perception. Later that night, she reported a decision was made to start an IV methylprednisolone taper. The following morning she noticed mild light perception. Later that night, she reported complete absence of vision. A stroke code was called. No focal neurologic deficits were found. Pupils were equally reactive to light, but vision was reported as no light perception. No cerebral hemorrhage or ischemia were detected on CT/MRI. Fundoscopic exam revealed no structural abnormalities. Tonometry demonstrated a normal intraocular pressure of 18mmHg in the left eye and 13mmHg in the right. The lens was clear, macula flat, and periphery was within normal limits bilaterally. Over the following days, her vision remained unchanged. She continued to describe a white wall, and was unable to notice motion or light. Otherwise, she met all appropriate post-operative milestones from a gynecologic perspective. On postoperative day 7 the decision was made to start an IV methylprednisolone taper. The following morning she noticed mild light perception. Later that night, she reported a spontaneous partial return of visual acuity. She was discharged home the next day after completing the steroid taper. At her 2 week postoperative visit, uncorrected Snellen eye exam was 20/63 for her left eye and 20/50 for her right, which was consistent with her baseline.

Conclusion: POVL should be treated as an emergency, and managed in a multidisciplinary fashion.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION H

2805 Complete Vision Loss after Laparoscopic Hysterectomy: A Case Report
Radhke SJ, 1 • Clavijo A.M., 1 • Do L, 1 • Lopez F, 1 Obstetrics and Gynecology, Texas Tech University Health and Science Center, El Paso, TX, *Texas Tech University Health and Science Center, El Paso, TX
*Corresponding author.

Study Objective: NA
Design: Case-report.
Setting: University-affiliated hospital.
Patients or Participants: 1
Interventions: NA
Measurements and Main Results: Postoperative vision loss (POVL) is a rare but devastating complication that has only recently been reported following laparoscopic surgery. We present the case of a 34 year old female who experienced POVL following an uncomplicated laparoscopic hysterectomy. Her medical history was remarkable for anxiety, depression and endometriosis. She underwent a total laparoscopic hysterectomy, bilateral salpingectomy, and excision of deeply infiltrating endometriosis from the right pelvic sidewall. She was in the dorsal lithotomy position with both arms tucked. Operating time was 174 minutes and EBL was 75mL. Upon arrival to the surgical floor, approximately 4 hours postoperative, she became increasingly distressed, reporting complete absence of vision. A stroke code was called. No focal neurologic deficits were found. Pupils were equally reactive to light, but vision was reported as no light perception. No cerebral hemorrhage or ischemia were detected on CT/MRI. Fundoscopic exam revealed no structural abnormalities. Tonometry demonstrated a normal intraocular pressure of 18mmHg in the left eye and 13mmHg in the right. The lens was clear, macula flat, and periphery was within normal limits bilaterally. Over the following days, her vision remained unchanged. She continued to describe a white wall, and was unable to notice motion or light. Otherwise, she met all appropriate post-operative milestones from a gynecologic perspective. On postoperative day 7 the decision was made to start an IV methylprednisolone taper. The following morning she noticed mild light perception. Later that night, she reported a spontaneous partial return of visual acuity. She was discharged home the next day after completing the steroid taper. At her 2 week postoperative visit, uncorrected Snellen eye exam was 20/63 for her left eye and 20/50 for her right, which was consistent with her baseline.

Conclusion: POVL should be treated as an emergency, and managed in a multidisciplinary fashion.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION I

1880 Usefulness of Sentinel Lymph Node Mapping using Indocyanine Green and Fluorescent Imaging in the...
Diagnosis of Lymph Node Metastasis During Robotic or Laparoscopic Surgery for Endometrial Cancer
Park JY, *Kim JH. Department of Obstetrics and Gynecology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: The lymph node status is the most important prognostic factor for endometrial cancer. This study aimed to assess whether sentinel lymph node mapping (SLNM) is applicable in endometrial cancer.

Design: A retrospective review of patients with endometrial cancer who were diagnosed and treated at a single institute (Asan Medical Center, Seoul, Korea) from September 2015 to December 2017 was conducted. One hundred patients underwent robotic (da Vinci®) or laparoscopic surgical treatment, including SLNM with indocyanine green (ICG) fluorescence detection using the Firefly® and NIR/ICG systems.

Setting: University Hospital.

Patients or Participants: 100 patients with early stage endometrial cancer.

Interventions: Robotic or laparoscopic staging surgery.

Measurements and Main Results: All patients underwent intraoperative SLNM. At least one lymph node area was observed in 100% of SLNM cases. Sentinel node detection and frozen biopsy were performed in all cases, and all patients with metastasis were found on SLNM. The sensitivity and negative predictive value were both 100% in the patient-by-patient and station-by-station analyses.

Conclusion: SLNM appears to be a feasible method to reduce the morbidity and increase the detection rate in early-stage endometrial carcinoma.

Virtual Poster Session 1: Laparoscopy
(10:30 AM — 10:40 AM)

10:30 AM: STATION J

1975 Pre-Operative Medical Optimization of Women Undergoing Myomectomy: A Retrospective Cohort Study
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*Corresponding author.

Study Objective: Myomectomy is associated with significant blood loss and pre-operative medical optimization can improve surgical outcomes including minimizing transfusions rates and associated complications. The purpose of this study was to determine the proportion of women who are medically optimized prior to undergoing myomectomy with interventions to correct anemia and reduce fibroid volume.

Design: Retrospective cohort study.

Setting: Large academic, university-affiliated hospital in Canada.

Patients or Participants: All patients undergoing myomectomy (open, laparoscopic and robot-assisted) between February 2015 and June 2018 were included.

Interventions: N/A

Measurements and Main Results: 225 myomectomies were completed between February 2015 and June 2018. 158 (70%), 25 (11%) and 42 (19%) of myomectomies were completed using open, laparoscopic and robot assisted approaches, respectively. Across all approaches, 68 (30%) of patients had a hemoglobin<120g/L prior to surgery and 155 (69%) were on a form of medical pre-operative optimization three months before surgery. The most common medications used for pre-operative optimization were oral iron supplementation (51%), Ulipristal Acetate (49%) and GnRH agonist (17%), 27(17%) patients who had an open myomectomy required a peri-operative transfusion. None of laparoscopic myomectomy patients required a transfusion. Five (12%) robotic-assisted patients had a post-operative transfusion.

Conclusion: At the time of myomectomy, a third of women in our study were anemic yet only two-thirds were medically optimized within 3 months of surgery. 17% of open myomectomy patients required a perioperative transfusion. More efforts should be directed at optimizing patients prior to myomectomy in the hope of decreasing rates of peri-operative transfusions, particularly when an open procedure is planned.

Virtual Poster Session 1: Laparoscopy
(10:30 AM — 10:40 AM)

10:30 AM: STATION K

1904 Laparoscopic Combined with Hysteroscopy in the Treatment of Cesarean Scar Pregnancy
WANG Q, *Yun L, Yu K. The Third Department of Gynaecology, Ningbo Children and Women Hospital, Ningbo, China
*Corresponding author.

Video Objective: To introduce a treatment of Cesarean Scar Pregnancy.

Setting: Patient information:Age:34y. Chief complaint:pregnancy at 10 weeks and a little vaginal bleeding for 20 days. Past history: underwent two cesarean sections in 7 years ago and 5 years ago (received removal of CSP by hysterectomy after uterine artery embolization last year. No other special past history. Investigation information: 1.B-ultrasound: sac size: 41*27*35mm, fetal heart (+), the sac locates on the cesarean scar. 2.MRI: the thickness of cesarean scar is less than 2mm. 3.HCG:103722mIU/ml.

Diagnosis: Cesarean scar pregnancy(CSP Type II)

Interventions: Laparoscopy combined with hysterectomy to remove the CSP and repair the uterus, the innovative point is to temporarily interrupt the bloodstream by knotting a slipknot around both uterina arteries during the operation and remove the knots at last of the operation.

Conclusion: The removal the CSP and repair the uterus through laparoscopy combined with hysterectomy is a minimally invasive surgery which will help patient to recover rapidly. Temporary interrupt the bloodstream by knotting a slipknot around both uterina arteries during the operation and remove the knots at last of the operation that will reduce the bleeding during the operation effectively. This kind of surgery is expected to be a good way to treat CSP type II and type III.

Virtual Poster Session 1: Laparoscopy
(10:30 AM — 10:40 AM)

10:30 AM: STATION L

2088 The Comparison of Total Laparoscopic Hysterectomy With 2-Dimensional versus 3-Dimensional Laparoscopic Surgical Systems In Benign Uterine Diseases
Park S*, Obstetrics and Gynecology, Kangnam Sacred Heart Hospital, Hallym University, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: Three-dimensional (3D) laparoscopic surgical systems have been developed to account for the lack of depth perception, a known disadvantage of conventional 2-dimensional (2D) laparoscopic system.

Design: We retrospectively compared the outcomes of total laparoscopic hysterectomy (TLH) with 3D versus conventional 2D laparoscopic surgery. From September 2017, when we began using a 3D laparoscopic system at Kangnam Sacred Heart hospital, Hallym University, to December 2018, 60 TLH procedures were performed using a 3D laparoscopic system (3D-TLH).

Setting: Under general anesthesia, TLH with 3D laparoscopy was performed with same method of TLH with 2D laparoscopy.

Patients or Participants: In this study, Sixty patients with benign uterine diseases were included.

Interventions: Total laparoscopic hysterectomy with 3D laparoscopy were performed for patients with benign uterine diseases.

Measurements and Main Results: The surgical outcomes of 3D-TLH were compared with the surgical outcomes of TLH using the conventional 2D laparoscopic system (2D-TLH) performed just before the introduction of the 3D system. The 3D-TLH group had a statistically significantly
shorter mean operative time than the 2D-TLH group (105±18 vs. 128±14 min), whereas the mean weight of the resected uterus and mean intraoperative blood loss were not statistically different. When we compared the outcomes for 40 cases in each group, using the same energy sealing device in a short period of time, only mean operative time was statistically different between the 3D-TLH and 2D-TLH groups (98±19 vs. 118±21 min). During the observation period, there were no differences in postoperative peritonitis, occurrence of vaginal cuff dehiscence, hospital stay and postoperative transfusion rate between two groups. The surgeon and assistants did not report any symptoms attributable to the 3D imaging system such as dizziness, eyestrain, nausea, and headache.

Conclusion: We conclude that the 3D laparoscopic system could be safe and efficient laparoscopic system for TLH.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION M

2219 Laparoscopic Resection of Bulky Para-Aortic Lymph Node Metastasis
Choi JS,* Bae J, Lee WM, Jung U.S., Eom JM, Lee H. Obstetrics and Gynecology, Hanyang University College of Medicine, Seoul, Korea, Republic of (South) *Corresponding author.

Video Objective: To present laparoscopic resection of bulky para-aortic lymph node metastasis discovered during laparoscopic restaging surgery for unexpected ovarian malignancy.

Design: Case study.

Setting: University hospital in Korea.

Patients: A 45-year-old Korean woman with prior laparoscopic bilateral salpingo-oophorectomy, presented to our department with unexpected ovarian malignancy which was resulted from the high grade serous carcinoma. Preoperative PET CT scan shows enlarged lymph node in aorto-caval area and no abnormal finding in peritoneal cavity and previous operative site.

Interventions: We planned to perform laparoscopic restaging surgery to obtain knowledge about the stage on February 19, 2019. Laparoscopic restaging surgery included peritoneal washing cytology, LAVH, pelvic lymphadenectomy, para-aortic lymphadenectomy, omentectomy, appendectomy, and multiple peritoneal biopsies. We encountered about 6cm sized Isolated huge para-aortic lymph node metastasis just before the para-aortic lymphadenectomy. Peritoneal incision was made from right common iliac artery to the duodenum. The bulky nodes were encased and detached peri-nodal tissue from the vessels meticulously not to rupture of aortic lymphadenectomy, and multiple peritoneal biopsies. We encountered about 6cm sized Isolated huge para-aortic lymph node metastasis just before the para-aortic lymphadenectomy. Peritoneal incision was made from right common iliac artery to the duodenum. The bulky nodes were encased and detached peri-nodal tissue from the vessels meticulously not to rupture of abdominal peritoneum and organs (liver, spleen), diaphragm, pleural cavity, lungs, and pericardium. The prevalence of diaphragmatic endometriosis has been reported in up to 0.19 % of lesions. No guidelines exist about treatment of diaphragmatic endometriosis, and this rare condition is still a matter of debate because it raises several diagnostic and treatment challenges. We present a case of patient affected by diaphragmatic endometriosis who was treated by laparoscopy.

Setting: Case study, University hospital in Korea.

Interventions: A 41-year-old woman was referred to our department because of dyspareunia and dysmenorrhea. Laparoscopic finding showed left ovarian cyst adherent to peritoneum, cul-de-sac partial obliteration and endometriotic nodule on right diaphragm. We performed laparoscopic adhesiolsis, right ureter peritoneectomy and diaphragmatic resection of endometriosis. An accidental diaphragmatic injury was occurred during the laparoscopic diaphragmatic resection. We performed successful laparoscopic primary repair of diaphragm and then chest tube was also inserted. The patient was uneventfully discharged home 4 days later.

Conclusion: Laparoscopic primary repair after resection of diaphragmatic endometriosis is feasible.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION O

2285 Laparoscopic Primary Repair after the Diaphragmatic Endometriosis Resection
Eom JM,* Choi JS, Bae J, Lee WM, Jung U.S., Obstetrics and Gynecology, Hanyang University College of Medicine, Seoul, Korea, Republic of (South) *Corresponding author.

Video Objective: In approximately 0.6 % of cases, ectopic endometrium has been found in extrapelvic sites, such as the umbilicus, skin, upper abdominal peritoneum and organs (liver, spleen), diaphragm, pleural cavity, lungs, and pericardium. The prevalence of diaphragmatic endometriosis has been reported in up to 0.19 % of lesions. No guidelines exist about treatment of diaphragmatic endometriosis, and this rare condition is still a matter of debate because it raises several diagnostic and treatment challenges. We present a case of patient affected by diaphragmatic endometriosis who was treated by laparoscopy.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION P

2544 Minilaparoscopic Assisted Vaginal Myomectomy: A Novel Technique, Preliminary Study
Tsivyan BL,1,* Vardanyan S,1 Onegova S,2 Konstantinova E,1 Gyn Department, City Hospital 40, North-Western Medical Academy n.a. II Mechnikov, Saint-Petersburg, Russian Federation; 2Gyn Department, City Hospital 40, Saint-Petersburg, Russian Federation *Corresponding author.
Study Objective: The aim of our study is to perfect technique of vaginal myomectomy and evaluate the safety and efficacy of combined minilaparoscopic and vaginal approach through anterior and posterior cul-de-sac.

Design: Prospective study.

Setting: Department of Gynecology, City Hospital.

Patients or Participants: All women with reproductive plans and symptomatic subserous or intramural fibroids from 4 cm to 7 cm in diameter treated with minilaparoscopic assisted vaginal myomectomy (MiniLAVM) in our department were prospectively followed.

Interventions: Minilaparoscopic assisted vaginal myomectomy.

Measurements and Main Results: 19 patients entered the study between January 2016 and December 2018. 17 patients had MiniLAVM through the posterior cul-de-sac and 2 through the anterior one. Age range 31–47 years, mean 42.4 ± 5.8 years; parity range 0–4, mean 2.1 ± 1.6. Two patients had a prior history of Cesarean sections, 2 patients had undergone pelvic surgery. The mean duration of hospital stay was 3.2 ± 1.5 days (range, 2–4 days). Mean amount of blood loss was 125 ± 87.2 ml (range, 20–550 ml). Mean duration of surgery was 106.49 ± 38.2 minutes (range, 60–140 minutes). Mean total myoma size was 7.1 ± 1.4 cm (range, 4.5–7 cm). The mean number of myomata removed was 1.4 ± 1.1. None of the cases were converted to laparotomy. All uterine and colpotomic defects were repaired vaginally. None of the cases required a blood transfusion. No major complications occurred. Two patients had full term labor, one of them underwent a Cesarean section.

Conclusion: The MiniLAVM procedure offers advantages over both laparoscopic and abdominal myomectomy such as digital palpation, direct suturing, no morcellation needed, good visualisation for evaluation of abdominal organs and appropriate control for place of surgery, the application of an antiadhesive barrier, minimallyinvasiveness with good cosmetic effect. This is a preliminary study involving a small number of patients; we believe a larger study will be required to further investigate the efficiency and safety of MiniLAVM.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION R

1254 Nirmaroff Specimen Retrieval Device

Cooperman M, * Nirmaroff ML. Minimally Invasive Gynecologic Surgery, North Shore University Hospital, Manhasset, NY

*Corresponding author.

Video Objective: The purpose of this video is to present a new specimen retrieval device—a novel way of retrieving specimens via the vaginal cuff under direct visualization during laparoscopic procedures.

Setting: The device is used at the end of a laparoscopic total abdominal hysterectomy during specimen retrieval. It is used in this case to retrieve the uterus and cervix.

Interventions: Using readily available OR surgical equipment to create a specimen retrieval device that can be placed through the vaginal cuff while maintaining pneumoperitoneum and direct visualization.

Conclusion: We present a novel method of specimen retrieval by using readily available OR equipment as a way to safely and quickly remove specimens from the body during the time of minimally invasive hysterectomy.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION S

3016 Management of Adnexal Torsion in Pregnancy

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*Corresponding author.

Video Objective: The objective of this video is to review the risk factors, perioperative planning, and surgical management of adnexal torsion in advanced pregnancy.

Setting: The patient is a twenty-one-year-old gravida two para one at twenty-six weeks of gestational age who presented with left adnexal torsion. Her surgical management was performed at a tertiary care center that provides obstetrical and neonatal intensive care.

Interventions: A minimally invasive approach to the surgical management of adnexal torsion in advanced gestation is demonstrated. The procedure will be shown in a stepwise approach consisting of: identification of the anatomy, determination of accessory port placement, detorsion of the adnexa, and finally removal of the specimen. Furthermore, general pearls to utilize and pitfalls to avoid in laparoscopic surgery during pregnancy are discussed.

Conclusion: A minimally invasive approach to the management of adnexal torsion in advanced gestation can be safely accomplished through proper surgical planning, a stepwise approach, and minimal manipulation of the gravid uterus.

Virtual Poster Session 1: Laparoscopy (10:30 AM — 10:40 AM)

10:30 AM: STATION T

1645 Same Day Discharge after Minimally Invasive Gynecologic Surgery at an Urban, Safety-Net Hospital
Noel NL. 1253 A Descriptive Analysis of Anomalous Ectopic Pregnancies
Cooperman M,¹* Sinha R,² Tardieu SC,³ Farrow M,¹ Ninaroff ML.¹
¹Minimally Invasive Gynecologic Surgery, North Shore University Hospital, Manhasset, NY; ²OBGYN, Northwell University Hospital, Manhasset, NY; ³North Shore University Hospital, Manhasset, NY
*Corresponding author.

Study Objective: The majority of ectopic pregnancies implant in the fallopian tube; however, 10% implant in non-tubal locations including the abdominal cavity, cervix, ovary, interstitium of the fallopian tube, broad ligament, uterine cornua, and cesarean section scar. The objective of this study is to describe the characteristics and history of patients presenting with anomalous ectopics encountered at North Shore University Hospital/Long Island Jewish (NSUH/LIJ) from 2016 to 2018.

Design: A descriptive analysis of the anomalous ectopics encountered at NSUH/LIJ from 2016 to 2018.

Setting: Patients presented to the emergency room and were treated medically or in an operating room setting at NSUH/LIJ.

Patients or Participants: 55 women of reproductive age presented to NSUH/LIJ with pelvic pain and a positive hCG and were determined to have an ectopic pregnancy in a non-tubal location.

Interventions: Patients with heterotopic, ovarian, cervical, cesarean section scar and interstitial ectopics were primarily treated via minimally invasive laparoscopic excision. Those with cesarean section scar and cervical ectopics were managed with methotrexate and intra-cervical balloons.

Measurements and Main Results: The incidence of patients with anomalous ectopics was 13.6%. The average age at diagnosis was 35. 74.5% in this cohort reported to be never smokers. 74.5% reported having previous abdomino-pelvic surgery. 74.5% did not use ART prior to their presenting diagnosis. The breakdown of ectopics was- Cesarean scar (27.3%), Cornual (23.6%), Interstitial (20.0%), Cervical (16.4%), Heterotopic (5.5%), Abdominal (3.6%), and Ovarian (3.6%).

Conclusion: Anomalous ectopic pregnancies in the NSUH/LIJ population of patients are 3.6% more prevalent than that reported by current data. Although these patients did not report use of ART in association with the anomalous pregnancy, many of these patients reported having previous abdominopelvic surgeries. C-section scar ectopics were the most prevalent, which may be secondary to the higher rate of c-sections in the last decade.
Measurements and Main Results: A significant reduction in recurrence rate was evident in OC and DNG users versus nonusers at 36 months postoperatively. Postoperative DNG use dramatically decreased the risk of ovarian endometrioma recurrence. Overall, there were no differences between the no recurrence and recurrence groups in terms of age, BMI, or tumor size. It was also noted that most of the OC user recurrent endometriomas were bilateral, multilocular, associated with DIE and stage IV by rASRM classification.

Conclusion: A significant reduction in recurrence rate was evident in OC and DNG users postoperative hormonal therapy. The stage and severity of endometriosis was significant higher in OC user recurrence group. Therefore, DNG therapy is the best option for prevention of recurrence.
Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION G

2564 Vagina Fibroid: A Laparoscopic Approach
Timbo JP,1,2 Cavalcante Melo Junior M,1 Martins Magalhães M,2 Alencar Ohi C,1 GYN-OB, Hospital Cesar Cals, FORTALEZA, Brazil; GYN-OB, Hospital Cesar Cals, FORTALEZA, Brazil
*Corresponding author.

Video Objective: To demonstrate a minimally invasive technique used on approaching of a large vaginal fibroid.

Setting: A 30-year-old woman with important transvaginal bleeding which started 6 months ago. A MRI was performed and showed the presence of an heterogeneous image with slightly lobed contours, located on the upper third of the right vaginal wall, measuring 6.4 x 6.4 x 5.9 cm, subsequenlty.

Interventions: The patient was admitted to a tertiary hospital of the Fortaleza - Brazil (Cesar Cals Hospital) for a video-assisted vaginal myomectomy due to a large vaginal fibroid as described by a previous MRI. Intraoperatively, with the aid of a laparoscopy was verified that the fibroid extended deep into the pararectal and parametrial spaces, being necessary to approach this spaces to identify noble structures, such as ureter and pelvic nerves. Surgical procedure was successfully completed and the patient was discharged on the day after surgery.

Conclusion: Vaginal fibroids are a rare condition and commonly need a vaginal approach surgery. However, in some cases it requires both abdominal and vaginal approach when de fibroids are so extensive and infiltrative. This video uses a particularly challenging case to demonstrate a laparoscopic assisted vaginal myomectomy as a safe procedure for cases like this.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION H

2870 Tips and Tricks in Laparoscopic Removal of the Remaining Cervical Stump
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*Corresponding author.

Study Objective: the objective is to propose specific recommendations regarding the laparoscopic approach for removal of the retained cervix after subtotal hysterectomy. This is a rare operation and it will require systematic preoperative assessment and intraoperative approach.

Design: Retrospective study of 10 cases done over three years with follow up.

Setting: All cases were done in one centre and all had a laparoscopic approach with variable difficulty intraoperatively.

Patients or Participants: The cases had retained the cervix for different reasons; including a default approach to leave the cervix, surgical difficulty due to endometriosis, the reason for removing the remaining cervix included cervical abnormality, symptoms of pain, bleeding and complications.

Interventions: the cases had standard laparoscopic approach.

Measurements and Main Results: all cases were successful in achieving the target of the removal of the cervical stump. One case needed conversion to laparotomy due to severe adhesions and bowel injury, one cases resulted in some worsening prolapse and two cases still have residual pain.

Conclusion: These cases need a careful preoperative assessment including a thorough analysis of the reason of leaving the cervix. The assessment should include transvaginal ultrasound to assess the length of the cervix and the Pouch of Douglas and supported by Pelvic MRI. Colposcopy and hysteroscopy can be useful aids to assess high grade lesions and evaluate endocervical canal to exclude precancer or cancer. It is a useful recommendation to avoid instrumentaion of the cervix. McCarten tube can be considered instrument of choice for manipulation and colpotomy. Bilateral ureterolysis is strong recommendation and prior ureteric stenting can be useful in anticipation of residual severe endometriosis. Ample dedicated surgical time is important as the degree of adhesions over the remaining stump is unpredictable. These cases should attempted at advanced laparoscopic settings.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION I

2469 Perforated Copper-T Causing an Ovarian Abscess: The First Reported Case
Pinto Rosario D, Kulkarni N, Vigueras Smith A, Sunak R, Ferreira H. Gynecology, Centro Hospitalar Universitário do Porto, Porto, Portugal
*Corresponding author.

Video Objective: To demonstrate laparoscopic retrieval of a rare case of Copper-T migration causing ovarian abscess.

Setting: A 34 year old Para4 Living4, who underwent a seemingly uneventful Copper-T insertion. She presented at follow up with lower abdominal pain for two months, and fever. Ultrasound showed an empty uterine cavity with Copper-T seen in the right adnexal region.

Interventions: She underwent laparoscopy proceed. At laparoscopy, the Copper-T was found to be embedded in a right tubo-ovarian mass which was adherent to the pelvic side wall. Ovary was friable, with abscess drainage ~5cc of purulent fluid. The Copper-T was dissected free of the T-O mass. Ureter was dissected free, and integrity ensured. Bilateral salpingectomy and thorough lavage was done. Patient was covered with broad spectrum antibiotics. Post-operative period was uneventful.

Conclusion: Perforation and migration of IUD can rarely lead to ovarian abscess. Diagnosis and retrieval should be prompt, with appropriate antibiotic cover. Laparoscopic retrieval is a feasible method for IUD retrieval. In-depth knowledge of laparoscopic surgical anatomy is essential in such cases.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION J

2139 Modification of Vecchietti’s Laparoscopic Technique for Neovagina in a Mexico
Colin Garduno IM,1,2 Jimenez Huerta J,1 Gynecology, Hospital Juarez of Mexico, Mexico City, DF, Mexico; 2Gynecology, Hospital Juarez De Mexico, Mexico City, DF, Mexico
*Corresponding author.

Study Objective: To show the success obtained in the development of a low cost modified technique for neovagina by traction and use of balloon with laparoscopic assistance, based on anatomical and functional results.

Design: Retrospective study in female adult patients with Mayer-Rokitansky-Kuster-Hauser syndrome treated by our group with a neovagina using traction and balloon with laparoscopic assistance technique in the period from January 2010-January 2018.

Setting: N/A

Patients or Participants: Female patients, over 18 years of age diagnosed with Mayer-Rokickansky-Kuster-Hauser syndrome treated by using our low cost modified technique, during the period of January 2010-January 2018.

Interventions: After informed consent, in a total of 15 patients were operated with a modified surgery of Vecchietti’s laparoscopic technique using an inexpensive traction device. Our group evaluated both functional outcomes and anatomical/aesthetic results. By te functional, one the female sexual function index of Rosen R. et al. was evaluated, and the anatomical/aesthetic results was evaluated with vaginoscopy exam.

Measurements and Main Results: A total of 15 patients were evaluated who met the inclusion criteria in a period of ten years, with a mean age of 19 years, who reported with sexual functionality and satisfaction of it after 3 years since surgery follow-up. According to the functional evaluation, the total score obtained in our study was on average of 26 pts, ruling out sexual dysfunction. The anatomical result was evaluated by vaginoscopy with a vaginal length of 11 +/-2 cm; in 3 months after surgery follow-up.
Conclusion: Our group concluded that the modification of Vecchietti’s laparoscopic technique, decreases widely material costs (material cost of this technique is estimated of $10,000 dls, making it a more accessible treatment option for patients in public health institutions in Mexico.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

2017 through April 2019

terectomy and requiring morcellation for specimen extraction from March and clinical data.

Measurements and Main Results: A total of 39 patients were treated. Median age was 47 (range 25 – 70) and mean length of stay was 0.74 days. There were no conversions to laparotomy, readmissions, or surgical site infections within 30 days after surgery. Morcellation was performed vaginally for 24 patients (61.5%), abdominally for 10 patients (25.6%), and via combined approach for 5 patients (12.8%). Largest uterine dimension on imaging was median 12.6 centimeters (range 6 – 19.7) in the vaginal group, 11.9 (7.2 - 20) in the abdominal group, and 16.4 (14.1 – 23) in the combined group (p=0.046). Both morcellation time (mean 19.7 minutes vaginal, 38.9 abdominal, 78.6 combined; p<0.0001) and total operating time (mean 182.3 minutes vaginal, 220.2 abdominal, 266.2 combined; p=0.005) were significantly longer in the combined group. Uterine weight was largest in the combined group (mean 473.8 grams vaginal, 788.1 abdominal, 970.4 combined; p=0.017).

Conclusion: Larger uterine dimensions are associated with failed vaginal extraction, and pre-operative imaging can assist with surgical decision-making. Providers need to be deliberate when choosing route of specimen removal, as morcellation and total operating time significantly increase when vaginal morcellation is unsuccessful.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

2003 Association of Pre-Operative Uterine Dimensions and Success of Contained Morcellation Following Minimally Invasive Hysterectomy


*Corresponding author.

Study Objective: To determine if uterine dimensions on pre-operative imaging are associated with success of contained morcellation during minimally invasive hysterectomy.

Design: Canadian Task Force Classification Level of Evidence II-2

Setting: Surgical patients in a single metropolitan academic institution.

Patients or Participants: Patients undergoing laparoscopic or robotic hysterectomy and requiring morcellation for specimen extraction from March 2017 through April 2019

Intervention: At the completion of surgery, a contained extraction system was inserted, and the specimen was placed within the bag. Manual morcellation was performed vaginally, abdominally, or via a combination of both methods in cases of failed vaginal extraction. Morcellation times were recorded. Medical records were reviewed to abstract demographic and clinical data.

Measurements and Main Results: A total of 39 patients were treated. Median age was 47 (range 25 – 70) and mean length of stay was 0.74 days. There were no conversions to laparotomy, readmissions, or surgical site infections within 30 days after surgery. Morcellation was performed vaginally for 24 patients (61.5%), abdominally for 10 patients (25.6%), and via combined approach for 5 patients (12.8%). Largest uterine dimension on imaging was median 12.6 centimeters (range 6 – 19.7) in the vaginal group, 11.9 (7.2 - 20) in the abdominal group, and 16.4 (14.1 – 23) in the combined group (p=0.046). Both morcellation time (mean 19.7 minutes vaginal, 38.9 abdominal, 78.6 combined; p<0.0001) and total operating time (mean 182.3 minutes vaginal, 220.2 abdominal, 266.2 combined; p=0.005) were significantly longer in the combined group. Uterine weight was largest in the combined group (mean 473.8 grams vaginal, 788.1 abdominal, 970.4 combined; p=0.017).

Conclusion: Larger uterine dimensions are associated with failed vaginal extraction, and pre-operative imaging can assist with surgical decision-making. Providers need to be deliberate when choosing route of specimen removal, as morcellation and total operating time significantly increase when vaginal morcellation is unsuccessful.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

2735 The Incidence of Abdominal Wall Adhesions at the Time of Laparoscopic surgery in Women with or without Previous Surgery

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*Corresponding author.

Study Objective: To compare the incidence of abdominal wall adhesions at the time of laparoscopic surgery in women with various surgical histories.

Design: REB approved prospective cohort study.

Setting: Surgical suite in an academic affiliated teaching hospital.

Patients or Participants: 283 women undergoing laparoscopic surgery for gynecological indications between June 2013 to November 2014

Intervention: After informed consent was obtained, laparoscopic surgery was performed by the senior author (GV), baseline patient characteristics were recorded, and the presence and description of abdominal wall adhesions was documented. Adhesions were characterized as containing bowel, mesentery, or omentum. Patients previous surgical history was documented.

Measurements and Main Results: The mean (SD) of age, parity and BMI of women were 36.8 (+/- 7.6) years, 0.96 (+/- 1.1), and 27.8 (+/- 6.5) kg/m², respectively. The incidence of abdominal wall adhesions in women with history of: no previous abdominal surgery - 1.9% (2/104); at least one previous laparoscopy- 2.0% (2/101, p=1.00); at least one low transverse laparotomy- 20.7% (11/53, p<0.001); at least one previous midline laparotomy- 33.3% (2/6, p=0.01); open appendectomy or open cholecystectomy- 31.6% (6/19, p=0.001). There were no entry related visceral injuries.

Conclusion: The incidence of abdominal wall adhesions in women undergoing laparoscopic surgery is the same in those with or without previous laparoscopic surgery of any kind. The incidence is increased in those with previous laparotomy, including low transverse incision.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

2851 Laparoscopic Unroofing of a Giant Adrenal Pseudocyst During Pregnancy

Hernandez-Denis A,1 Audifred-Salomon JR,2 Hernandez AO,3 Razo Osorio MA,4* 1Gynecology and Obstetrics, High Specialty South Central Hospital Pemex, Mexico City., Mexico, DF, Mexico; 2Gynecology
Interventions: all the space between the right iliac fossa and the right hypochondrium. because of an incidental finding of an apparent simple cyst that occupied cyst during second trimester pregnancy.

Setting: A 39 years old pregnant woman was referred to our service because of an incidental finding of an apparent simple cyst that occupied

Interventions: MRI was performed and apparently the content was liquid only, the well-being of the fetus was corroborated through MRI and obstetric ultrasound. A laparoscopy was performed with transumbilical direct 5 mm trocar technique to access the cavity and pneumoperitoneum was achieved, two accessory ports (5 mm trocar) in the right fossa region and 10 mm trocar in the left fossa region were made, another accessory port was made at the crossing of an imaginary line between the transumbilical port and the left accessory port. The cyst was incised with ultrasonic energy. Citrine liquid was drained and with the harmonic scalpel scission and hemostasis careful traction and countertraction was performed to obtain a sample. The sample was extracted using a latex glove as an endobag, afterwards with the harmonic scalpel the unroofing of the cyst was performed to avoid recurrence of the cyst, finally a drain was placed. After 10 days the patient was discharged without surgical or obstetric complications, the hystopathological reported an adrenal pseudocyst, the post-surgery MRI control reported only scarce fluid in the surgery zone; the rest of the pregnancy was uneventful achieving term and delivery of a newborn at 39 weeks.

Conclusion: Most adrenal pseudocysts are benign and typically asymptomatic; however, if symptomatic the most common presentation is abdominal or flank pain due to compression; multidisciplinary management allows successful surgical intervention and excellent outcome for the mother and term delivery. Laparoscopic resection sets the gold standard before 24 weeks of pregnancy.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION O

1188 Manual Tissue Extraction: Approach to Vaginal Morcellation

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*Corresponding author.

Video Objective: Vaginal morcellation is a manual tissue extraction technique used to remove large specimens following robotic, laparoscopic, or vaginal hysterectomy. The objective of this video is to present the technique and required equipment for performing vaginal morcellation following laparoscopic hysterectomy.

Setting: The case presented is of a 42yo G3P3 woman who presented with fibroid-related abnormal uterine bleeding and a 14-16 week size uterus, with minimal descent. Ultrasound described a multi-fibroid uterus with a 14-16 week size uterus, fibroid-related abnormal uterine bleeding and a 14-16 week size uterus, and conventional vicryl sutures for vaginal cuff closure during total laparoscopic hysterectomy. The aim of our study is to evaluate whether the use of unidirectional barbed suture (V-loc) for vaginal cuff closure is associated with a decrease in vault closure time, operative time, blood loss, and other extraction. In recent years, there have been concerns regarding morcellation and the potential for inadvertent dissemination of malignant tissue. However, with appropriate patient selection, thorough pre-operative evaluation and careful surgical technique, the risks are low.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION P

1941 Ovarian Dermoid Cyst as the Cause of Anti-Nmda Receptor Encephalitis: A Case Series

Zigron R,1,* Chil I,2 Pri-Chen H,3 Levin G,4 Shashan A,1,2 Dior UP,1 Sheiky D,2 Benshushan A,1,4 Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; 3Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; 4Department of Internal Medicine A, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; 2Departments of Obstetrics and Gynecology, hadassah medical center, jerusalem, Israel

*Corresponding author.

Study Objective: Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is an autoimmune condition often presenting in the form of a neuropsychiatric disorder. Ovarian dermoid cyst has been described as a possible instigator of this state with surgical therapy often leading to substantial clinical improvement. We aim to describe our hospital’s experience and highlight the importance of ultrasound in the diagnosis and treatment of Anti-NMDAR encephalitis.

Design: A case series.

Setting: All patients were treated at the gynecology department of a tertiary teaching hospital between January 2013 and December 2018.

Patients or Participants: We describe 3 cases of anti-NMDAR encephalitis. In the first case a 33 y/o woman presented with headaches, dizziness, and seizures for the first time in her life and later, developed aphasia. In the second case, a 37 y/o woman was referred to the emergency room with acute confusion, delusions and hallucinations and in the third case, a 32 y/o woman appeared with psychosis and seizures. All three were diagnosed with ANTI NMDA antibodies and an ultrasound examination revealed a dermoid cyst ranging from 1 to 4 cm, and in one case the cyst was not detected by CT-scan.

Interventions: All women underwent ovarian resection and continued immunosuppressive medical therapy with gradual improvement in their condition.

Measurements and Main Results: We show that even small dermoid cysts may evoke antibody titers rise emphasizing the importance of performing early gynecologic ultrasound for women with new-onset encephalitis.

Conclusion: ANTI-NMDAR encephalitis caused by dermoid cyst is an important entity which can easily go misdiagnosed. Early cystectomy or ovarian resection and immunosuppressive treatment are key elements in the management of such cases.

Virtual Poster Session 1: Laparoscopy (10:40 AM — 10:50 AM)

10:40 AM: STATION Q

2336 Unidirectional Barbed Versus Polyglactin 910 Suture for Laparoscopic Vaginal Cuff Closure - A Prospective Comparative Study

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*Corresponding author.

Study Objective: We compared the use of unidirectional barbed sutures and conventional vicryl sutures for vaginal cuff closure during total laparoscopic hysterectomy. The aim of our study is to evaluate whether the use of unidirectional barbed suture (V-Loc) for vaginal cuff closure is associated with a decrease in vault closure time, operative time, blood loss, and other
intraoperative and postoperative complications compared to polyglactin 910 (Vicryl) in patients undergoing total laparoscopic hysterectomy for benign pathology.

**Design:** Prospective comparative study.

**Setting:** The study conducted at the department of Obstetrics & Gynaecology at AIIMS, Rishikesh from July 2018 to December 2018.

**Patients or Participants:** A total of 60 women participated in the study; 30-30 in each group.

**Interventions:** All 60 women underwent total laparoscopic hysterectomy due to benign pathology of uterus, vault closure was done with unidirectional barbed suture (v-Loc) in 30 women and with polyglactin 910 (vicryl) in another 30 patients.

**Measurements and Main Results:** The mean vault closure time was significantly less with barbed suture (8.84 min) than vicryl group (12.27 min). The mean number of stitches taken was more in barbed suture group (7.46) than vicryl group (7.09), though the difference was not statistically significant. No statistically significant differences were found in operative time, or postoperative outcomes, such as vaginal cuff dehiscence, infectious complications, and the presence of granulation tissue.

**Conclusion:** The efficacy and safety of unidirectional barbed suture is comparable to the conventional vicryl sutures. Barbed sutures can be safely used to reduce procedure time and surgical difficulty.

**Virtual Poster Session 1: Laparoscopy**

(10:40 AM — 10:50 AM)

**10:40 AM: STATION R**

**2916 Laparoscopic Techniques for Open Hysterectomy**

Sandoval-HERRERA C,* Pineau CN, Henson J, Ob/Gyn, Mount Sinai Hospital Medical Center, Chicago, IL

*Corresponding author.

**Video Objective:** We propose the use of laparoscopic techniques in an open hysterectomy for a large multi fibroid uterus to decrease operating time, increase visualization, and decrease trauma.

**Setting:** 53 y/o G4P3 presented c/o severe abdominal pain and heavy vaginal bleeding. Patient presented to multiple emergency departments due to pain and bleeding. Found to have multi-fibroid uterus with one predominant degenerating fibroid. Pt desired definitive surgical management but due to the size of the uterus, it required an open technique. Pt was admitted to the hospital for pain control and surgical management.

**Interventions:** Total abdominal hysterectomy with laparoscopic techniques.

**Conclusion:** Using laparoscopic techniques in an open hysterectomy can improve visualization and allow us to take advantage of the benefits of laparoscopic surgery when dealing with a large fibroid uterus.

**Virtual Poster Session 1: Laparoscopy**

(10:40 AM — 10:50 AM)

**10:40 AM: STATION S**

**2070 A Case of Clear Cell Carcinoma Arising from Cystic Adenomyosis Treated with Laparoscopic Surgery**

Arakane F,* Murakami N. Department of Obstetrics and Gynecology, Japanese Red Cross Kumanoto Hospital, Kumanoto city, Japan

*Corresponding author.

**Study Objective:** Ovarian cancer arising from benign endometriotic has been widely reported. Cystic adenomyoma is a rare form of adenomyosis. And clear cell carcinoma arising from cystic adenomyosis is even more unusual. Here we report a case of clear cell carcinoma arising from cystic adenomyosis treated with laparoscopic surgery.

**Design:** Case report.

**Setting:** A tertiary care hospital.

**Patients or Participants:** 41-years-old Japanese woman, gravida 4 para 2. Two years ago, she was pointed out an index finger size cystic lesions in the uterine posterior wall.

**Interventions:** Laparoscopic surgery.

**Measurements and Main Results:** At her follow-up visit, she did not complain of any particular symptoms, but enlargement of the cystic lesion was pointed out by the transvaginal ultrasound. MRI was performed, and MRI findings revealed that the cystic lesion was cystic adenomyosis with a mural nodule in the cyst. Moreover, the nodule showed slight enhancement with contrast images and high-intensity on diffusion-weighted images in MRI. These findings were suspected malignancy. We performed laparoscopic hysterectomy. Postoperative pathological findings are adenomyosis with clear cell carcinoma within the mural nodule was diagnosed as clear cell carcinoma. We performed laparoscopic bilateral oophorectomy and pelvic lymph node dissection under the laparoscopic surgery as additional surgery. No residual tumor and metastasis was observed, and cytology of ascites was negative. Her final diagnosis was endometrial cancer stage IB, pT1B1N0M0, since the nodule was in the outer half of the uterine myometrium. After the second surgery, she suffered from chylous ascites for three months. Adjuvant chemotherapya with paclitaxel and carboplatin was performed after ascites was disappeared.

**Conclusion:** Although carcinoma arising from cystic adenomyosis is rare, the enlargement or the appearance of nodules might be suspicious findings of carcinoma arising from cystic adenomyosis. And laparoscopic surgery was useful for diagnosis and treatment of this rare condition.

**Virtual Poster Session 1: Laparoscopy**

(10:40 AM — 10:50 AM)

**10:40 AM: STATION T**

**2111 Case Series: Potential Link between the use of Celecoxib and Postoperative Hemorrhage Following Gynecological Surgery**

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*Corresponding author.

**Study Objective:** To report a potential link between the use of celecoxib and postoperative hemorrhage following gynecological surgery.

**Design:** Case Series.

**Setting:** Ambulatory Surgery Center.

**Patients or Participants:** Women >18 yrs old.

**Interventions:** Laparoscopic-assisted myomectomy.

**Measurements and Main Results:** After a general practice change from acetaminophen to celecoxib for perioperative pain, there was a significant increase in rate of postoperative hemorrhage. Six patients presented with signs of hemorrhage and acute anemia within 48 hours of surgery and were admitted to the hospital for hemoperitoneum and blood transfusions. Patients were prescribed the maximum recommended oral dose of 400 mg of celecoxib the day before surgery, and 200 mg daily on postoperative days 1-6. Patients were also given acetaminophen 1000 mg immediately before surgery, and oxycodone/acetaminophen 5/325 mg for postoperative pain. Intraoperative courses were unremarkable except for 2 cases in which extensive adhesiolysis between the uterus and sigmoid colon required repair of a serosal defect, and a rectal serosal defect in the other. Uterine artery occlusion via temporary tourniquet and permanent ligation were performed to control blood loss in all cases. Hemostasis was confirmed in all 6 cases at the end of the procedures, and patients were in stable condition at discharge.

**Conclusion:** Our experience echoes other study on unexpected hemorrhage linked to celecoxib. As Stammshulte et al. (2014) noted, celecoxib and concomitant NSAIDs may lead to a relative overdose due to interactions or irregularities in the metabolism of the affected patients. Given the seriousness of the adverse events, caution is warranted when prescribing celecoxib for perioperative pain therapy.
Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION A

2138 Nodular Adenomyosis: A Single Center 8-Years Results on the Treatment Of 120 Cases by

Radiofrequency Thermal Ablation

Roviglione G.,* Stepniwska AK.,* Clarizia R.,* Scarperi S.,2 De Mitri P.,1 Brunì F.,1 Cecchellero M.,1 Manzone M.,1 Finelli A.,2 Ceccaroni M.1

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*Corresponding author.

Study Objective: to prospectively assess the effectiveness and safety of Radiofrequency Thermal Ablation (RFA) for uterine nodular adenomyosis

Design: all patients with nodular adenomyosis who desired to preserve the uterus and who were selected for RFA were included.

Setting: third-level Referral Center for Endometriosis

Patients or Participants: One hundred twenty women with symptomatic nodular adenomyosis, aged 24-51 years, were collected.

Interventions: All the procedures were carried out by laparoscopic access in order to perform a concomitant surgery for endometriosis (75% of the cases), if preoperatively detected. In order to evaluate the impact of the treatment on the intensity symptoms related to the presence of uterine adenomyosis, the intensity of uterine bleeding and pain during the follow-up was compared to the preoperative symptomatology, and the ten-point visual analog scale (VAS) was used for pain assessment. Patients were asked about any hormonal or surgical treatments performed during the follow-up period and pregnancies occurred after the radiofrequency thermal ablation.

Measurements and Main Results: The median number of nodular lesions treated per patient was 1 (range, 1-2). The median reduction in volume was 66%. Follow-up period ranged from 6 to 94 months. A significant progressive improvement in the symptoms score was observed at the follow-up.

Conclusion: In this study, laparoscopic RFA reduced uterine adenomyosis-related symptoms and volume, with significant improvement on quality of life in the treated patients.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION B

1892 Laparoscopic Removal of Large Submucous Myomas

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*Corresponding author.

Video Objective: This video demonstrates the laparoscopic approach in the management of large submucous myomas and minimal damage on the endometrium.

Setting: The patient is a 45 year old, G2 P2 woman with the complaint of heavy menstrual bleeding. Ultrasonography revealed a 5 x 4 cm submucous myoma with 10-20 % of intramural extension.

Interventions: Following serosal incision with bipolar energy instrument and entering the endometrial cavity, submucous myoma is extracted, the endometrial defect is closed submucosally with 2-0 V - lock suture. Myometrial defect is closed in double layer closure. Integrity of the endometrial cavity remains intact after the procedure.

Conclusion: Given the fact that the complication risks increase with size and intramyometrial extension of submucous myomas during hysteroscopic surgery, laparoscopic myomectomy may be a better treatment option especially for patients with submucous fibroids more than 4 cm in size and/or with an intraperitoneal extension of more than 50%.

A concomitant control hysteroscopy thereafter is useful to identify if the endometrial cavity remains intact after the procedure.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION C

1953 Ulipristal Acetate for Adenomyosis: A Multicenter Randomized Trial

Fernandez H.,1,2,3 Brun JL.,2 Legendre G.,5 Koskas M.,6 Merviel P.,7 Capmas P.L.O.*, 4 Paris Sud University, Le Kremlin Bicetre, France; 5CESP, Le Kremlin Bicetre, France; 6Gynecology, Hopital Bicetre, Le Kremlin Bicetre, France; 7CHU Bordeaux, Bordeaux, France; 8CHU Angers, Angers, France; 9Hopital Bichat, Paris, France; 10CHU Amiens, Amiens, France; 11Hopital Bicetre, Le Kremlin Bicetre, France; 12CESP, Villejuif, France

*Corresponding author.

Study Objective: To evaluate efficacy of a 3 months course of ulipristal acetate on abnormal uterine bleeding in adenomyosis

Design: A multicenter randomized trial with a 3:1 ratio.

Setting: In five different teaching hospitals

Patients or Participants: Women with adenomyosis confirmed on MRI or sonography and abnormal uterine bleeding with PBAC score more than 100

Interventions: Women were randomly assigned for a 3 months course of either 10mg Ulipristal acetate or a placebo

Measurements and Main Results: Main objective was the rate of women with a PBAC score under 75 after 3 months of treatment. The secondary objectives included rate of PBAC score under 75 at 75 and 6 months, rate of amenorrhea at 3 and 6 months, evolution of the pain and of the quality of life at 3 and 6 months and finally, tolerance. Forty women were included, 30 in the UPA group and 10 in the placebo group. The two groups were comparable particularly for PBAC score and analgesic consumption before the treatment. At 3 months, a significant difference was observed between UPA group and placebo group for the rate of PBAC score under 75 (0 versus 95.2%), p<0.01). At 6 months, there was not anymore significant difference for rate of PABC score under 75 in the two groups. The rate of amenorrhea was also significantly higher at three months (95% versus 0%, p<0.01). At 3 months, a significant decrease in pain was observed in the UPA group (p<0.01) but not at 6 months. There was no significant difference between groups for quality of life. Tolerance was good, no hepatic disorders were found in this study.

Conclusion: Ulipristal acetate seems to stop abnormal uterine bleeding due to adenomyosis but also pain during a three months course but both of these symptoms reappeared at the stop of the medication. Other studies are needed to conclude and to try different doses.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION D

1493 Preoperative Uterine Artery Embolization Prior to the Surgical Management of Fibroids: An Institutional Case Series

Wu HY.,1,* Kaczynske K.,2 Portnoy E.,3 Wang KC.,1 Simpson K.,1 Patzczkowsky KE.,4 Division of Minimally Invasive Gynecologic Surgery, Johns Hopkins School of Medicine, Baltimore, MD; 2Gynecology and Obstetrics, Johns Hopkins School of Medicine, Baltimore, MD; 3Radiology, Johns Hopkins School of Medicine, Baltimore, MD

*Corresponding author.

Study Objective: Uterine artery embolization (UAE) can be used as a pre-operative adjunct for the surgical management of fibroids. Few, small
studies have reported that preoperative UAE may reduce blood loss or facilitate a laparoscopic approach for myomectomies. We assessed outcomes at our institution with preoperative UAE prior to surgical management of fibroids from 7/1/2013 through 8/1/2018.

**Design:** Case series

**Setting:** Academic medical center

**Patients or Participants:** Patients who underwent preoperative UAE prior to surgical management of fibroids

**Interventions:** Preoperative UAE followed by myomectomy/hysterec- tomy

**Measurements and Main Results:** Eight patients underwent planned UAE immediately prior to surgery: 2 myomectomies and 6 hysterectomies. One myomectomy was laparoscopic; 22 week size uterus, 3 fibroids removed (largest 11 cm), specimen weight 903g, estimated blood loss (EBL) 300cc with intraop vasopressin use. The other myomectomy was abdominal; 22 week size uterus, 23 fibroids removed (largest 11 cm), specimen weight 1723g, EBL 500cc, with intraoperative vasopressin and misoprostol used. Of the hysterectomy cases, 3 were abdominal and 3 were laparoscopic. A notable open case was a supracervical hysterectomy of a 32 week size uterus; EBL 200cc, specimen weight 5150g. Among the laparoscopic hysterectomy cases, the mean uterine size was 19 weeks (range 17-21 weeks; mean specimen weight 1328g), average EBL 350cc (range minimal-500cc). There were no complications from the UAE and no perioperative surgical complications (conversion to laparotomy, blood transfusions, fever/infection, bleeding, reoperations). All minimally invasive cases were discharged on postoperative day 0.

**Conclusion:** Preoperative UAE for surgical management of fibroids appears to be a safe adjunct to myomectomy or hysterectomy with respect to control of EBL, reduced need for transfusions, and maintaining a laparoscopic approach (when applicable). Future larger studies, likely with pooled data from multiple sites, are needed to further evaluate the safety and efficacy of preoperative UAE in this setting.

**Virtual Poster Session 2: Laparoscopy**

(1:00 PM – 1:10 PM)

1:00 PM: STATION E

**1624 Term Delivery in an Infertile Patient after Transcervical Radiofrequency Fibroid Ablation and Assisted Reproductive Technology**

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*Corresponding author.

**Study Objective:** Transcervical radiofrequency ablation of uterine fibroids is an incisionless procedure to treat nonpedunculated uterine fibroids, including those that are not amenable to operative hysteroscopy. However, its safety and effectiveness regarding fertility and fecundity have not been established, including among women with infertility. This is a report of a pregnancy that occurred in a woman after transcervical radiofrequency (RF) ablation of uterine fibroids and assisted reproduction.

**Design:** Case report.

**Setting:** Community hospital in Warendorf, Germany

**Patients or Participants:** A 38-year-old nullipara with infertility since 2008 and a recent complaint of refractory dysmenorrhea in association with a uterine fibroid

**Interventions:** Transcervical RF ablation with the Sonata® system to treat the symptomatic myoma. Unsuccessful assisted reproduction (intracytoplasmic sperm injection/embryo transfer; ICSI/ET) as confirmed by negative pregnancy testing had been attempted 1 month pre-ablation, and a second embryo transfer after thawing of the previously cryopreserved pro- nuceli was carried out 7 months post-ablation.

**Measurements and Main Results:** Transcervical RF ablation resulted in a 68% reduction in fibroid volume by sonography at 2 months post-treatment along with resolution of the patient’s dysmenorrhea, and there was no residual fibroid noted on sonography at 7 months post-ablation. The second attempt at assisted reproduction produced an uncomplicated pregnancy that resulted in the vacuum-assisted vaginal delivery of a liveborn infant at term weighing 3670 gms with Apgar scores of 9/10/10/10. Pelvic sonography four months postpartum revealed an unremarkable uterus, again with no evidence of a fibroid remnant.

**Conclusion:** This is the first report of a pregnancy and delivery in an infertil- ite couple who underwent transcervical RF ablation of a uterine fibroid followed by assisted reproduction.

**Virtual Poster Session 2: Laparoscopy**

(1:00 PM – 1:10 PM)

1:00 PM: STATION G

**1655 Laparoscopic Unification of Non Communicating Horn with Hemi-Uterus**

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*Corresponding author.

**Video Objective:** To demonstrate new idea of laparoscopic unification of functional non-communicating horn with hemi-uterus instead of removal to improve obstetric outcome in future.

**Setting:** an academic tertiary care hospital. A 14-year-old girl presented with complaints of pain in lower abdomen, on and off for 2 months. Her previous 2 cycles were regular; she had cyclic dysmenorrhea since her...
operative ketorolac (6.35 vs 23.4 MME, p = 0.056).

Interventions: On Hysteroscopy a small right uterine cavity with only one ostium on right. Cervical canal was normal with normal crypts. Vagina also normal and spacious. On diagnostic laparoscopy: A unicor- 
nate right hemi-uterus with a non-communicating left horn was noted on the right side of the round ligament, tube and ovary were seen normal with small hemi-uterus. On the left, small uterine horn seen with absent tube but normal ovary and round ligament attachment. First, we were planned resection of non-communicating horn as described in literature but after assessing the anatomical proximity and good size of horn and small size of hemi-uterus we decided for unifica-
tion of both. After injecting diluted inj. vasopressin, linear medial inci-
sion given in full thickness of myometrium with monopolar energy and opening the cavity with scissors. Both the walls sutured together first posteriorly and then anteriorly in double layer with no. 1 polyglactin 910 suture.

Conclusion: Good normal size, shape and contour of uterus appreciated after completion of procedure. After surgery patient had one normal menses without any pain suggest success of surgery.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION H

2524 Perioperative Non-Opioid Pain Control Adjuncts and Postoperative Opioid Use after Benign Gynecologic Surgery
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Study Objective: To assess associations between perioperative non-opioid pain control adjuncts and postoperative opioid use.

Design: Survey and retrospective chart review of patients who underwent a minimally invasive hysterectomy or laparoscopic adenexal surgery at a single academic institution between October 2017 and October 2018. Patients underwent a structured telephone interview 5-7 days after discharge and a chart review one month later. The primary outcome was mor-
phine milligram equivalent (MME) use after discharge.

Setting: N/A

Patients or Participants: Of 352 patients enrolled, 124 met inclusion and exclusion criteria, including 87 who underwent minimally invasive hysterectomy and 42 laparoscopic adenexal surgery. Ten of these participants did not consent to a medical record review.

Interventions: The perioperative non-opioid adjuncts examined include preoperative administration of celecoxib, gabapentin, pregabalin, and/or acetyaminophen; intraoperative application of bupivacaine topically to the diaphragm; and postoperative ketorolac. Surgeons treated patients at their own discretion.

Measurements and Main Results: The median MME used after mini-
mally invasive hysterectomy and laparoscopic adenexal surgery was 8 and 8.2 respectively, with 42% of participants not receiving, not filling or not using their opioid prescription at all. The median proportion of MME used to MME prescribed was 10% for hysterectomy and 20% for adenexal sur-
geries. Of these patients, 33.3% received at least one preoperative medica-
tion, 18% had intraoperative bupivacaine, and 71% received postoperative ketorolac. There were no statistically significant differences in MME use between those who did or did not receive any of the perioperative non-opi-
oid adjuncts, though there was a trend toward lower MME use with post-
operative ketorolac (6.35 vs 23.4 MME, p = 0.056).

Conclusion: Some patients do not require post-operative opioid medica-
tions after a minimally invasive hysterectomy or adenexal surgery and most use only a small fraction of the amount prescribed. Perioperative adjunct therapies did not demonstrate statistically significant reductions in opioid use, though small numbers and lack of standardization limit the evaluation.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION I

2079 Introduction of A Mathematical Model for the Prediction of Bleeding in Laparoscopic Myomectomy
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*Corresponding author.

Study Objective: To evaluate the factors associated with bleeding during laparoscopic myomectomy. And to incorporate them in a mathematical formula that could predict the bleeding during the surgical procedure.

Design: We performed a descriptive and prospective study to identify associated factors that could be predictors of bleeding in laparoscopic myomectomy from January 1st 2015 to December 31 2018 at 20 de Nov-
iembre Medical Centre.

Setting: Centro Médico Nacional 20 de Noviembre

Patients or Participants: All patients who underwent laparoscopic myomectomy

Interventions: All the demographic and surgical information from patients who underwent a laparoscopic myomectomy were collected before and during the procedure. The data collected were age, body mass index, number of myomas, size of the biggest myoma, parity, surgical bleeding and surgical time. Using the factors that correlated the most with the amount of bleeding a multiple linear regression model was made and a mathematical formula was developed for the prediction of bleeding.

Measurements and Main Results: We analyzed 37 patients who under-
went a laparoscopic myomectomy during the mentioned period of time. We observed that bleeding during laparoscopic myomectomy relies on variables, which are: Age (rr = 0.381, p = 0.02), Number of fibroids Size of fibroids (r 0.436, p = 0.007). Taking into account these variables, we made a multiple linear regression model to obtain a mathematical formula that can predict the bleeding with the next equation. Bleeding = 169.377 – 4.840 (Age) + 31.681 (Number of fibroids) + 9.328 (Fibroid size).

Conclusion: Bleeding during laparoscopic myomectomy depends mostly on 3 factors that can be incorporated in the aforementioned formula. This can be a useful tool for clinicians to decide whether to use medications to reduce the size of a uterine fibroid or going straight to surgery.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION J

1896 Primary Solitary Anterior Abdominal Wall Leiomyoma
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*Corresponding author.

Study Objective: To present a case of primary solitary large anterior abdominal wall leiomyoma
Leiomyomas are said to be the most common benign tumor of the female reproductive tract. They are frequently found in the uterus, however they can also be found in the broad ligament, ovaries, fallopian tubes, vagina and, very rarely, on the abdominal wall. Abdominal wall leiomyomas are rare and usually thought to be associated with previous surgical resection of uterine myomas.

Setting: The patient was placed in lithotomy Trendelenburg position and performed under general anesthesia.

Patients or Participants: N/A

Interventions: Robotic-assisted mass excision was performed, and the specimen was carefully removed from a mini-laparotomic incision.

Measurements and Main Results: A 42-year-old woman, with no history of prior uterine surgeries, presented with a lump in the right lower abdomen which had been progressively increasing in size for months. Ultrason sound revealed an anterior abdominal mass, with a diameter of about 9 cm, with no evidence of uterine myomas or ovarian tumors. To exclude the possibility of malignancy, the patient underwent robotic-assisted mass excision. Histopathology of the anterior wall mass showed a leiomyoma with diffuse coagulation tissues (weighted at 213 g).

Conclusion: Abdominal wall leiomyoma is an uncommon finding and is thought to be related to seeding following uterine myomectomies; however, the patient in this case had never undergone any uterine surgeries. The precise cause of the origin of primary abdominal wall leiomyoma is not clear at present. Transformation of the smooth muscle cell of the vessel wall in the anterior abdominal layer to leiomyoma may play a role. It is hypothesized to be associated with somatic mutation or interaction of hormonal and growth factors. In conclusion, benign primary leiomyoma of the abdominal wall is a differential diagnosis to be considered in women with an anterior abdominal mass and no histories previous uterine surgeries.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION K

2276 A Validation of Hysterectomy Procedural Codes in the Canadian Institutes for Health Information Discharge Abstract Database

Bacal V.,* Choudhry AJ, Baier K., Mélor MC, Gratton SM, Khair S., Mercier S., Nguyen V., Chen P., 1Department of Obstetrics and Gynecology, University of Ottawa, Ottawa, ON, Canada; 2Ottawa Hospital Research Institute, Ottawa, ON, Canada; 3School of Medicine, University of Ottawa, Ottawa, ON, Canada

*Corresponding author.

Study Objective: The Canadian Institute of Health Information (CIHI) Discharge Abstract Database (DAD) is the main source of routinely-collected for gynecologic surgery in Canada and increasingly used for research. As these data were originally collected for healthcare administrative purposes, they are prone to error and should be validated for clinical research. The objective was to validate hysterectomy codes from the CIHI-DAD at a single institution.

Design: Retrospective consecutive sample

Setting: The Ottawa Hospital (TOH), Ontario, Canada

Patients or Participants: We obtained a consecutive sample of all gynecologic procedures performed at TOH between April 2016 and March 2017 using the CIHI-DAD at the Ottawa Hospital. Patient data including diagnosis, procedure type, and surgical approach, were reabstracted from charts. Reabstracted chart data were compared to CIHI-DAD Canadian Classification of Health Interventions (CCI) codes using sensitivity, specificity, positive and negative predictive value (PPV, NPV) and kappa coefficient with associated 95% confidence intervals (CI).

Interventions: N/A

Measurements and Main Results: Of 1079 gynecologic procedures, 649 hysterectomies were performed, including 23.3% vaginally, 17.1% laparoscopically, and 14.9% abdominally. The median patient age was 46 years (Range:41-54). The sensitivity, specificity, PPV, NPV, and kappa, with associated 95% confidence intervals, for all hysterectomies was 94.8% (92.8-96.4%), 88.4% (85.0-91.3%), 92.5% (90.2-94.4%), 91.8% (88.7-94.3%) and 0.84 (0.80-0.87), respectively. For vaginal hysterectomy, sensitivity=88.8% (84.3-92.5%), specificity=99.2% (98.3-99.7%), PPV=97.0% (93.8-98.9%), NPV=96.7% (95.3-97.8%), and kappa=0.91 (0.87-0.94). For laparoscopic hysterectomy, sensitivity=91.3% (86.3-95.0%), specificity=92.8% (91.0-94.4), PPV=72.4% (66.2-78.1%), NPV=98.1% (97.0-98.9%), and kappa=0.79 (0.71-0.81). For abdominal hysterectomy, sensitivity=96.9% (93.9-99.0%), specificity=94.9% (93.2-96.2%), PPV=76.8% (70.4-82.5%), NPV=99.4% (98.7-99.8%), and kappa=0.83 (0.78-0.87).

Conclusion: Our study suggests a high level of validity for hysterectomy CCI codes in the CIHI-DAD for clinical research purposes.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION L

2442 Tubal Reanastomosis: Complete Minilaparoscopic Approach


*Corresponding author.

Video Objective: The purpose of this video is to demonstrate mini-laparoscopic tubal reanastomosis procedure.

Setting: This is the case of 38 year old multiparous woman, G2P2, after 2 caesarean sections and Pomeroy tubal ligation. She presented to our center with high desire of pregnancy. She had no comorbidities, preoperative work-up exams were normal. She underwent minilaparoscopic tubal reanastomosis.

Interventions: In this procedure we used 6mm optical trocar with 5mm zero degrees endoscope and additional three 3mm trocars. One placed suprapublically and two laterally. Tubal stumps were identified. One polyglactin 2/0 suture was placed at the level of mesosalpinx, to approximate the proximal and distal stumps and reduce tissue tension. Mesosalpinx was infiltrated with diluted vasopressin for hydrodissection and prevention of bleeding. Scar tissue in the mesosalpinx and tubal stumps was resected by using grasper and cold scissors. Proximal and distal stumps were transacted at the point of obstruction and tubal opening was identified. Finally, the muscle layer of the two stumps was sutured with four simple interrupted sutures using a poliglycaprone 4/0 suture by placing it at three, six, nine and twelve o’clock. Contralateral tube was operated in the same manner.

Conclusion: Minilaparoscopy is a feasible and safe approach for tubal reanastomosis.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION M

1279 Total Laparoscopic Hysterectomy in an 18 Week Sized Uterus with Persistent Gestational Trophoblastic Disease

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*Corresponding author.

Video Objective: To describe and illustrate an innovative minimally invasive surgical technique to allow a total laparoscopic hysterectomy with safe and feasible extraction of an 18 week sized uterus with gestational trophoblastic neoplasia (GTN).

Setting: The patient is a 44 year old G4P2012 with a diagnosis of GTN, status post dilation and evacuation with increasing b-hCG levels during follow-up. Workup for metastatic disease was negative. She completed childbearing and opted for a hysterectomy as definitive treatment.
Interventions: Intraoperatively, the uterus appeared to be 18 weeks in size. Laparoscopic dissection started by bilateral salpingo-oophorectomy and transsection of the utero-ovarian ligaments, preserving the ovaries. The broad ligament was then skeletonized, and the round ligaments were transected bilaterally. The bladder flap was created, and the uterine vessels were transected bilaterally using an advanced bipolar device. A sponge on a stick soaked in methylene blue was used to delineate the cervix and vagina. The cervix was then dilated to 14" and evacuation was performed using 12" suction. The suction continued until all products were removed and the uterus was significantly smaller in size. The colpotomy was performed and the uterus was extracted intact.

Conclusion: This is the first case in the literature to describe a minimally invasive technique that demonstrates a safe and feasible laparoscopic removal of an enlarged uterus and illustrates alternative extraction techniques to avoid laparotomy in GTN. In this case, a combination of laparoscopic transsection of vascular pedicles followed by a dilation and evacuation was used prior to colpotomy. The addition of dilation and evacuation allowed us to reduce the overall size of the uterus and remove it intact through the vagina with minimal bleeding, avoiding unnecessary laparotomy. This allowed the patient to have a faster post-surgical recovery, minimal blood loss (EBL 20) and no hospitalization in comparison to standard laparotomy for persistent GTN.

Virtual Poster Session 2: Laparoscopy
1:00 PM – 1:10 PM
1:00 PM: STATION N

1995 Single Port Access Total Laparoscopic Hysterectomy and Bilateral Salpingo-Oophorectomy after Transverse Rectus Abdominis Myocutaneous Flap (TRAM) in Patient with Breast Cancer
Lee SY, Park JS,* Han KH, Lee SH. Obstetrics and Gynecology, Yonsei University, Wonju College of Medicine, Kangwon-do, Korea, Republic of (South)
*Corresponding author.

Study Objective: Abdominal wall anatomy can be altered after transverse rectus abdominis myocutaneous flap (TRAM) procedure in patient with breast cancer and the umbilicus may be distorted. For this reasons, laparoscopic gynecologic surgery is difficult procedure including proper port placement, the knowledge of the residual blood supply to the abdominal wall and umbilicus.

We present our experience performing single port access total laparoscopic hysterectomy and bilateral salpingo-oophorectomy (SPA-TLH BSO) on a woman after TRAM surgery.

Design: N/A
Setting: N/A
Patients or Participants: N/A
Interventions: 53 years old woman who were diagnosed with breast cancer got left modified radical mastectomy followed by the breast mound reconstruction with contralateral pedicled TRAM flap three years ago. She took two cycles of chemotherapy after surgery. Since then, she has been taking tamoxifen and referred to Gynecologic oncology department for growing uterine myoma. 8 cm sized uterine myoma on transvaginal sonography was observed. The patient was recommended with hysterectomy and bilateral salpingo-oophorectomy. Transumbilical SPA TLH and BSO were performed after confirming the pathway of the vessel of pedicle by Abdominal-pelvic CT.

Measurements and Main Results: After making of altered anatomy of abdominal muscle flap, self designed single port system was made using the wound retractor and a surgical glove on umbilicus. We did not make additional port placement to avoid damage of abdominal wall with previous TRAM procedure. Patient underwent successful SPA TLH and BSO transumbilical incision for single port placement. There was no complication during operation.

Conclusion: Single port access laparoscopic surgery is feasible in women after TRAM reconstruction. Knowledge of anatomic and physiologic variations related to the TRAM procedure is necessary in planning a safe operation.

Virtual Poster Session 2: Laparoscopy
1:00 PM – 1:10 PM
1:00 PM: STATION O

2213 Spinal Rod Migration and Pelvic Perforation in a Patient with Severe Cerebral Palsy and Scoliosis
Dahlin AK,¹ Brown DN²,³ Gynecologic Special Surgery, Columbia University, New York, NY; ²NC
*Corresponding author.

Video Objective: To describe a rare occurrence of spinal hardware migration and perforation into the pelvic peritoneum. To describe the evaluation of the pelvic organs with perforating trauma.

Setting: Academic university affiliated tertiary care center.

Interventions: Cerebral palsy refers to a heterogeneous group of conditions involving permanent nonprogressive central motor dysfunction that affect muscle tone, posture, and movement. It can be associated with neuromuscular scoliosis which can cause large curves in the spine and pelvic obliquity necessitating spinal and pelvic fusion and fixation. Hardware failures from these surgeries are rare however do occur with increased incidence in patients with risk factors such as ongoing severe contractures of the spine. Specifically, the Luque rod has been associated with complications and even pelvic cortex perforation. This video describes a rare occurrence of a Luque rod perforation from the spine and bony pelvis into the retroperitoneum and perforation into the pelvis. We show an evaluation of the potential trauma sites and highlight the location of this rod in relation to the surrounding vital pelvic structures.

Conclusion: We report a rare occurrence of spinal hardware migration and perforation into the pelvic peritoneal cavity. Multispecialty surgical planning and coordination is extremely important. Many contingent surgical plans are necessary prior to the operating room for optimal outcomes.

Virtual Poster Session 2: Laparoscopy
1:00 PM – 1:10 PM
1:00 PM: STATION P

1145 Bridging the Gap: A Novel Approach to Communicate in the Surgical Suite in the Era of Minimally Invasive Surgery
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Video Objective: Communication in the era of minimally invasive laparoscopic surgery poses challenges for the assisting surgeon and novice training surgical residents. Challenges are inherent to the unified surgical view in laparoscopy and the paradoxical direction commands rendered by the trocars’ hinged point mechanism. Here we demonstrate a novel communication tool that helps to make communication during laparoscopic hysterectomy uniform, clear and efficient.

Setting: Surgical assistance during a laparoscopic hysterectomy can be challenging especially in a setting of academia with the high turn over of training surgical residents. Laparoscopic hysterectomy is also unique in requiring intra-corporeal assistance in addition to extra corporeal uterine manipulation that is usually provided by an assistant who receives reversed directional commands.

Interventions: The new communication code is pre-introduced to the surgical assistants via a 15 min Power Point Presentation that contains review of laparoscopic pelvic critical surgical anatomy and presents the concept of the 8 cardinal pelvic views during the laparoscopic hysterectomy. Each view is given a code (e.g. A1, A2, A3) with predefined uterine manipulation angle and a predefined camera area of focus. Utilizing the 8 codes the uterine and camera assistants would not get directional commands that might be confusing, but rather would respond to the code request by adjusting visual views to match the predefined necessary exposure similar to the presented diagrams.
Conclusion: Utilization of the K code tool in laparoscopic hysterectomy reinforced preoperative surgical self coaching and briefing with the assisting staff. It also helped generate a shared mental model through which all assisting staff and surgeon could more easily communicate. A brief pilot period of utilizing the tool in two different institutions was very well received by all the surgical assistants with responses favoring utilization of this tool over the conventional direction commands method utilized traditionally in the operating room.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION Q

2647 Uterine Arteries Ligation Previous To Uterine Myomectomy (8-10 cm Myoma)

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Video Objective: The intention of this video is to show a different technique to ligate the uterine arteries before a large uterine myoma (8-10cm) is dissected. In that way we are decreasing the chances for bleeding.

Setting: This case is a 26 years old patient with a heavy bleeding and crampy abdominal pains with the periods. An ultrasound shows a large fundic myoma (8-10cm)

Interventions: Before do the myomectomy, the uterine arteries are ligated, using a 3-0 chromic absorbable suture. The retroperitoneal space is opened, and the anatomical structures are identified. The ureter is followed from the ileac bifurcation, then the vascular retroperitoneal anatomy is identified, the hypogastric artery becomes into the superior vesical artery and uterine artery, this is dissected and sutured with chromic 3-0, the same procedure is done in the left pelvic side wall. The uterine blood supply is decreased by almost 80%.

Conclusion: Temporary bilateral uterine artery occlusion during laparoscopic myomectomy does not increase mean operative time, offers a possible option to reduce blood loss effectively. This is a very easy technique to occlude temporary the vascular supply to the uterus, with this, there is no bleeding complication from the myomectomy. The main myomectomy complication is bleeding.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION R

1207 Comparative Study Between Robotic Laparoscopic Myomectomy and Abdominal Myomectomy: Clinical Evaluation and Cost Analysis

Hanafi MM.1,* Gynecology, Gyn & Fertility Specialists, Atlanta, GA

*Corresponding author.

Study Objective: Compares postoperative clinical outcomes and cost of Abdominal (AM) and Robotic Laparoscopic (RLM) Myomectomy.

Design: Retrospective single-center study.

Setting: Surgeries performed by the author at Emory Saint Joseph’s Hospital.

Patients or Participants: All Myomectomies performed during the study period were symptomless ultrasound confirmed Leiomyoma patients. 419 cases of RLM and 65 cases of AM were identified between January 1^st^, 2009 and December 31^st^, 2017.

Interventions: AM is considered more involved operation: associated with higher morbidity, blood loss and adhesion formation rates. RLM provides surgeons with improved optics, three dimensional view, and increased dexterity and precision. This facilitates excision of tumors and repair of uterine incisions. Personal and clinical data were collected from EMR. All patients were interviewed and willing patients were administered post-operative questionnaire (297/484 completed, 61.4%).

Measurements and Main Results: Study compared total operative time, total estimated blood loss (EBL), length of hospital stay, post-operative outcomes including self care and cost. AM had significantly longer hospital stay (2.3 days vs. 1.4 days) and significantly higher EBL (178.5 mL vs. 105.9 mL) than RLM. Post-operative pain level and days of analgesic use lower in RLM than in AM, but not significant. RLM had significantly fewer number of weeks to return to work (4.2 vs. 5.7 weeks), significantly fewer number weeks until resuming sexual activity (7.1 vs. 11.2 weeks) and significantly fewer days until independent self care (7.7 vs. 10.4 days) than AM.

Conclusion: RLM has advantages clinically and technically over AM. In some cases, AM are the only practical option technically to perform myomectomy. Dealing with very large fibroid tumors, extensive pelvic and/or abdominal endometriosis, severe pelvic/abdominal bowel adhesions and very short stature patients, use of laparoscopy increases risk of injury to vital pelvic and abdominal organs. Cost is higher in AM than RLM but not significant.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION S

1401 Is Asymptomatic Bacterial Vaginosis a Risk Factor for Surgical Site Infection (SSI) in Women Undergoing Minimally Invasive Hysterectomy?

Sample N;1,* Farrow M,2 Grant AM,1, Obstetrics and Gynecology, North Shore University Hospital, Manhasset, NY; 1. Minimally Invasive Gynecologic Surgery, North Shore University Hospital, Manhasset, NY

*Corresponding author.

Study Objective: To determine the association between asymptomatic bacterial vaginosis (BV) and surgical site infection (SSI) in women undergoing robotic or laparoscopic total hysterectomy for benign disease.

Design: Prospective cohort

Setting: Academic hospital

Patients or Participants: Women ages 18-75 years old undergoing total robotic or laparoscopic hysterectomy for benign gynecologic disease.

Interventions: BD Affirm vaginal swab was used to test for the presence of BV. The sample was collected in the operating room after induction of anesthesia and prior to standard Betadine vaginal prep.

Measurements and Main Results: Patients were followed over the course of a 12 week post-operative period to observe for SSI. SSI was defined as vaginal cuff cellulitis, pelvic abscess, pelvic hematoma and vaginal cuff dehiscence. Among the 20 women enrolled in the cohort, there is a 40% prevalence of asymptomatic BV. There has been 1 case of vaginal cuff dehiscence in a woman who tested negative for BV. At present, the enrollment numbers are too small to calculate a statistical difference between post-operative outcomes in women with asymptomatic BV versus women who tested negative.

Conclusion: 8/20 (40%) of asymptomatic women in our study tested positive for BV prior to surgery. Our numbers are too small to state any conclusions, but the BV rate in this cohort appears high. Overall adverse outcomes after minimally invasive hysterectomy are rare. We hope to gather more data as enrollment continues as a means to confirm pre-operative guidelines regarding the management of BV prior to minimally invasive hysterectomy.

Virtual Poster Session 2: Laparoscopy
(1:00 PM – 1:10 PM)

1:00 PM: STATION T

1409 Laparoscopic Approach to Cornual Ectopic Pregnancy

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*Corresponding author.
Video Objective: Cornual ectopic pregnancies are a rare variant of ectopic pregnancies which are difficult to diagnose and can cause significant intra-peritoneal bleeding. There are no current guidelines to decipher between medical or surgical management, even amongst surgical approaches there is debate over minimally invasive versus traditional laparotomies. This video demonstrates a successful laparoscopic approach to the management of a cornual ectopic pregnancy.

Setting: The patient is a 44 year old female with plateauing serum beta hcg levels who was diagnosed with a right cornual ectopic pregnancy by trans-vaginal ultrasound. She was admitted and treated at a tertiary care center in Brooklyn, New York.

Interventions: The risks, benefits and alternatives of a laparoscopic resection of the cornual ectopic pregnancy was discussed with the patient, who elected to proceed with the surgery. The right cornual ectopic was identified intraoperatively by transvaginal ultrasound. Vasopressin was then injected into the right cornua to decrease blood loss. Endoshear scissors were then used to gently dissect the right cornua, and the gestational sac was removed intact. A barbed suture was then used to repair the hysterotomy which was hemostatic. Anti-adhesion barrier was then placed over the right cornu at the end of the procedure. The patient tolerated the procedure well and was discharged home on the same day of the procedure with an uneventful postoperative course.

Conclusion: Cornual ectopic pregnancies are a significant cause of morbidity and mortality and remain difficult to diagnose and treat. Laparoscopic treatment of cornual ectopic pregnancies lead to improved patient outcomes with faster recovery times, and decreased length of hospitalization compared with laparotomies. Thus, when possible, laparoscopic management of cornual ectopic pregnancies should be attempted and can increase patient satisfaction.

Virtual Poster Session 2: Laparoscopy (1:10 PM – 1:20 PM)

1455 GSFD
Shen Y,1 University Hospitals Cleveland Medical Center/MetroHealth Medical Center, Cleveland, OH
*Corresponding author.

Study Objective: To report rates and identify risk factors for urinary tract infection (UTI) following hysterectomy for benign conditions

Design: Retrospective cohort study (Canadian Task Force classification II-2)

Setting: American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database

Patients or Participants: Women undergoing benign hysterectomy by any modality between 2010 and 2017.

Interventions: Abdominal hysterectomy (AH), total laparoscopic hysterectomy (TLH), laparoscopic supracervical hysterectomy, laparoscopic assisted vaginal hysterectomy (LAVH), vaginal hysterectomy (TVH)

Measurements and Main Results: 67,243 women included in the analysis with 1,310 postoperative UTIs identified, at a rate of 19.5 per 1000 hysterectomies. Women who developed UTIs were more likely to smoke (19.6% vs 15.7%, p<0.001), have insulin dependent diabetes mellitus (IDDM) (3.7% vs 2.0%, p<0.001), chronic obstructive pulmonary disease (1.5% vs 0.8%, p=0.007), use systemic steroids (2.2% vs 1.4%, p=0.01), had previous abdominal-pelvic surgery (71.1% vs 63.5%, p<0.001), and be American Society of Anesthesiology (ASA) class ≥3 (26.1% vs 21.2%, p<0.001). Procedures complicated by UTI were longer (148.1min +/-79.4 vs 135.5min +/-65.6, p<0.001). Patients with a postoperative UTI were more likely to undergo TVH (12.9% vs 9.2%, p=0.001), LAVH (13.5% vs 11.5%, p=0.02) and TLH (43.7% vs 40.4%, p=0.02); and less likely to undergo AH (25.5% vs 21.7%, p<0.004). Patients with UTIs were more likely to have surgeries complicated by cystotomy (1.5% vs 0.3%, p<0.001), have endometriosis identified (15.7% vs 13.5%, p=0.02) and undergo adnexectomy (80.5% vs 77.9%, p=0.02).

Perioperative transfusions were more common in women with postoperative UTI (5.8% vs 3.7%, p<0.001). Following regression analysis, cystotomy (aOR=4.16, 95%CI=2.57-6.73) and TVH (aOR=2.45, 95%CI=1.99-2.99) were most strongly associated with increased odds of post-hysterectomy UTI. Additional independent predictors are listed in.

Conclusion: The risk of UTI after hysterectomy is low. Intraoperative cystotomy and vaginal hysterectomy are the most significant predictors of subsequent urinary tract infection.

Virtual Poster Session 2: Laparoscopy (1:10 PM – 1:20 PM)

2940 Initial Outcome Eras Protocol
Modotti WP,1,2,* Dias DS,2 Bueloni Dias FN,3 Rossato C,1 Coelho G,1 Suzuki LM,1 Pereira LP,1 OB & GYN, IAM Atendimento Medico Hospitalar, Assis, Brazil;2 Gynecology and Obstetrics, Botucatu Medical School, Sao Paulo State University - FMB/UNESP, Botucatu, Brazil;1 Endoscopia, Faculdade De Medicina De Botucatu, Botucatu, Brazil *Corresponding author.

Study Objective: Analyze outcome after introducing Enhanced Recovery After Surgery (ERAS) protocol

Design: Data was storage in all laparoscopy surgery using ERAS protocol first to seventh day pos operative

Setting: Patients underwent video laparoscopy at IAM ATENDIMENTO MEDICO HOSPITALAR, Assis, Brazil

Patients or Participants: 60 patients underwent video laparoscopy between 2018-november to 2019-april, after introducing ERAS protocol.

Ten days before the surgery all patients received a written document orientation from all moment of the procedure (before, during and after surgery) based on ERAS protocol

Interventions: we used ERAS protocol as Olle Ljungqvist, et al published in JAMA Surg. 2017. To evaluate outcome, we call patients 10 days after surgery asking about pain, use of pain medication and satisfaction level.

Measurements and Main Results: We found 91% of satisfaction, no pain medication 3 days after surgery and VAS between 2-6

Conclusion: ERAS protocol bring us outcome improvement in our laparoscopy surgery

Virtual Poster Session 2: Laparoscopy (1:10 PM – 1:20 PM)

3014 Examining Disparities In Route Of Hysterectomy for Benign Indications within an Integrated Healthcare SysteM
Zaritsky E,1 Raine-Bennett T,2 Tucker LY,3 Ojo A4,5,1 Kaiser Permanente Northern California, Oakland Medical Center, Oakland, CA;2 Obstetrics and Gynecology, Kaiser Permanente Northern California Oakland Medical Center, Oakland, CA; 3Department of Research, Kaiser Permanente Northern California, Oakland Medical Center, Oakland, CA *Corresponding author.

Study Objective: Racial disparities exist in routes of benign gynecological surgery within the United States. Compared to open abdominal hysterectomies, minimally invasive hysterectomies (MIH), including laparoscopic, vaginal, and robotic, reduce pain, blood loss, and recovery time. We questioned if such disparities would be mitigated within an integrated healthcare system.

Design: Data-only retrospective single-institution cohort study.

Setting: A metropolitan-based integrated health system surgical center.

Patients or Participants: Between 2008 to 2015, 31,385 women underwent hysterectomies. Preoperative malignant indications or pregnancy related procedures were excluded. During this period, our surgeon pool strategically decreased by nearly half.

Interventions: N/A
Measurements and Main Results: Unadjusted odds ratios (OR), adjusted odds ratios (aOR) and 95% confidence intervals (95%CI) were estimated using the simple logistic regression for the crude association between MIH and individual risk factors (Black race, uterine weight [proxy for fibroids], low income, and medical benefit plan), and multivariable logistic regression analyses for the additive effect of risk factors.

Among the study population 49% were White, 13% Black, 21.4% Hispanic, 11.5% Asian, and 5.1% other. 72.9% were MIH, of those 74.5% were White and 65.8% were Black (P<0.001). Black patients were less likely to receive MIH (OR 0.68; 95%CI, 0.63-0.73) after controlling for uterine weight (aOR 0.93; 95%CI, 0.86-0.99) or adjusting for uterine weight, income, and benefit plan (aOR 0.92; 95%CI, 0.85-0.99). From 2008 to 2015 the unadjusted prevalence rate of MIH was 44.4% and 93.6% (111% increase) for White and 28.4% and 90.5% (219% increase), for Black patients. Overall, the discrepancy in MIH prevalence between Black and non-Black patients decreased over the study period.

Conclusion: Within an integrated healthcare system, racial disparities are markedly reduced when compared to other settings. Our high-volume, uniform teams likely aided this outcome. Further research is needed to identify determinants of racial disparities.

Virtual Poster Session 2: Laparoscopy (1:10 PM – 1:20 PM)

1:10 PM: STATION D

1454 Intrauterine Device Perforation and Adhesion Formation

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*Corresponding author.

Study Objective: To compare the potential for adhesion formation between metal containing and levonorgestrel releasing IUD, once uterine perforation occurred.

Design: PubMed electronic search with key words and subject heading “intrauterine device” and “perforation” was performed

Setting: N/A

Patients or Participants: 75 articles, describing 85 cases, between 1965 to 2016 were included in the study.

Interventions: Patient demographics, class of IUD, site of adhesion formation and the description of these adhesions were tabulated. Adhesions were classified into 3 groups (Group I, II and III) based on the degree of the adhesions (dense/severe to filmy). The degree of intra-peritoneal adhesion formation and the class of IUD was analyzed. The statistical test to identify determinants of racial disparities.

Measurements and Main Results: Metal containing perforated devices were found to have a statistically higher number of dense adhesions compared to levonorgestrel releasing IUD (p=0.00056). The sigmoid colon (22%) was found to be the most common site of adhesions formation following perforation of IUD. Laparotomy was performed in the majority of cases in which a metal containing IUD had perforated.

Conclusion: The degree of intra peritoneal adhesion formation is significantly higher in metal containing perforated IUD, and this may contribute to further complications such as visceral perforation, bowel obstruction and need for more extensive procedures such as appendectomy or bowel resection. Further studies are warranted to establish the significance of this in patient selection criteria.

Virtual Poster Session 2: Laparoscopy (1:10 PM – 1:20 PM)

1:10 PM: STATION E

2676 Laparoscopic Myomectomy: A New Suturing Technique

Marzili M,1,* Borelli R,2 Cassanelli F,2 Cappello S,1 La Penna C,1 Patrizi L2,1 Gynaecology, Nuova Villa Claudia Clinic, Roma, Italy; Gynaecology and Obstetrics, Policlinico Tor Vergata, Tor Vergata University, Roma, Italy

*Corresponding author.

Study Objective: The aim of the present study was to find a surgical technique that allows to perform laparoscopic myomectomy even of large fibroids located in difficulty accessible locations, such as the posterior uterine wall, by reducing both the operative time and the risk of bleeding related to the suture of the uterine wound.

Design: Prospective case control study, lasting 8 months.

Setting: Department of Gynecology in Nuova Villa Claudia Clinic, Rome (Italy).

Patients or Participants: Forty women of reproductive age with an intramural-underserous posterior uterine wall myoma, measuring 6-8 cm, undergoing laparoscopy to remove it.

Interventions: The 40 women enrolled underwent laparoscopic myomectomy according to the classical technique: transversal incision in the most distended part of the myometrium down to the pseudocapsule, identification of the cleavage plane and enucleation of the myoma. All of the study women had the myometrial wound repaired using an absorbable 2/0 barbed polyglycolate wound closure device, but while in 20 of them a single layer continuous suture was performed, starting from the left end of the wound up to the right, in the remaining 20 women a single stitch was initially placed in the central part of the wound and transversal to it. That thread was cut sufficiently long to be grasped with a joanne and lifted upwards, while a single layer semicontinuous suture was performed.

Measurements and Main Results: The evaluation showed, in group 1 and 2 respectively, an average surgery duration of 55 and 42 minutes and a mean intraoperative blood loss of 1.5 and 0.8 g/dl of hemoglobin.

Conclusion: The suturing technique proposed in group 2 significantly facilitates the operator work, allowing both a shorter duration of the surgical procedure and a reduction in intraoperative blood loss. It could be, then, a valid alternative to the classic suturing technique, especially in cases of myomectomy of large fibroids of the posterior uterine wall.

Virtual Poster Session 2: Laparoscopy (1:10 PM – 1:20 PM)

1:10 PM: STATION F

2917 A Novel Twist on Direct Trocar Insertion

Katehi Kashi P, Hamilton CA, Elkas JC, Rose GS, OB/GYN, Inova Fairfax Hospital, Falls Church, VA

*Corresponding author.

Video Objective: To describe a novel direct trocar insertion (DTI) technique for minimally invasive surgery that requires minimal force and provides excellent visualization.

Setting: Tertiary health care facility. Patients who underwent minimally invasive gynecologic surgery for benign and malignant indications between 2014 -2016 were reviewed.

Interventions: Minimally invasive gynecologic surgery by two senior Gynecologic Oncology faculty members. 780 patients underwent minimally invasive gynecologic surgeries for benign and malignant indications. A Left upper quadrant (LUQ) approach was used in all the patients. With a level operating room table, we made a 5 mm incision. With the laparoscope inside the 5 mm Optiview trocar, we applied gentle pressure while rotating or twisting the trocar. Abdominal wall layers were distinctly identified without tentsing the abdominal wall. Atraumatic entry was achieved in all cases. BMI and prior pelvic surgery did not impact the use of this technique; however, we routinely used LUQ approach in patients with prior abdominal surgeries. Creation of pneumoperitoneum with this DTI technique was feasible in all patients. No major complications were associated with the technique.
Conclusion: This study demonstrates the feasibility of direct trocar insertion under visualization. Our application of light pressure and twisting while visualizing abdominal layer without having to tent up the abdominal wall allows excellent control and visualization of abdominal wall layers and prevents inadvertent popping of the trocar. It also helps avoid trocar skiving keeping the appropriate distance from targeted anatomy.

Virtual Poster Session 2: Laparoscopy
(1:10 PM – 1:20 PM)

1:00 PM: STATION G

1806 Tricky and Inexpensive Way to Aspirate Large Hemoperitoneum
Epprecht JP*, Ginecology, Santa Casa de Misericórdia de São Paulo, São Paulo, Brazil
*Corresponding author.

Video Objective: show a inexpensive, safe and fast way to aspirate large hemoperitoneum during a laparoscopy
Setting: large amounts of blood in the abdominal cavity delays a lot during a laparoscopy for ectopic pregnancy or an hematic ovarian cyst, using a regular 5mm aspirator
Interventions: make a small, inexpensive, reversible and safe modification in a regular aspirator hose with scissors
Conclusion: this reversible and fast modification improve the operation time without harm for the patient during aspiration of large hemoperitoneum

Virtual Poster Session 2: Laparoscopy
(1:10 PM – 1:20 PM)

1:10 PM: STATION H

2075 A Case of Acute Abdomen Caused by Torsion of Parasitic Leiomyoma
Murakami N,* Arakane F. Department of Obstetrics and Gynecology, Japanese Red Cross Kumamoto Hospital, Kumamoto city, Japan
*Corresponding author.

Study Objective: The reports of parasitic leiomyoma increase with the spread of the laparoscopic surgery. The origin is considered spontaneous or iatrogenic. In iatrogenic cases, many reports mention that the cause of parasitic leiomyoma is the using morcellator for laparoscopic myomectomy or hysterectomy of leiomyoma. This condition shows various symptoms, and it may develop acute abdomen. We describe the management of this condition and discuss about parasitic leiomyoma together with a review of the literature.
Design: A case report.
Setting: A tertiary care hospital.
Patients or Participants: A 46-year-old, gravida 1, para 1, Japanese woman. Her past history is a laparoscopic myomectomy and excision of endometriosis in several years ago.
Interventions: Laparoscopic surgery.
Measurements and Main Results: The patient visited a practicing physician with a chief complaint of acute abdominal pain. Transabdominal ultrasound showed huge pelvic mass, and she referred to our hospital. MRI scan of the pelvic revealed a 15 cm diameter polycystic mass contained with water in the right adnexal region. Since she complained of severe pain at the point of the mass, we suspected torsion of ovarian tumor, and we performed emergency laparoscopic surgery. During the procedure, we found the huge mass in the pelvis without connecting to right ovary. The mass was fed by vessels extending from the mesocolon of sigmoid colon and was twisted 1.5 rotations clockwise around the stalk. The mass was resected by the surgeon because GIST was suspected. A histopathological examination showed a leiomyoma. In immune-histological examination, c-kit was negative. Her postoperative course was uneventful.

Conclusion: It is important to include torsion of parasitic leiomyoma in the differential diagnosis of acute abdomen, especially, for the patients who had medical history of laparoscopic myomectomy.

Virtual Poster Session 2: Laparoscopy
(1:10 PM – 1:20 PM)

1:10 PM: STATION I

1364 Tips & Tricks: Step by Step How to Do Two-Port Contained Power Morcellation in A Specialized Bag
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*Corresponding author.

Video Objective: To explain and demonstrate: 1. Laparoscopic port placement, 2. Step by step technique for the two-port contained power morcellation in a specialized bag (Morcellation Containment System by Es spirer Medical), 3. Tips and tricks on each step of contained morcellation
Setting: Risks of electromechanical morcellation are spreading undiagnosed cancer, diffuse leiomyomatosis, and visceral injury. Food and Drug Administration (FDA) safety communication discouraged use of power morcellators for leiomyoma extraction after the case of disseminated leiomyosarcoma following a laparoscopic hysterectomy. Since FDA warning, laparoscopic contained (in bag) morcellation became popular. However, it can be challenging.
Interventions: A 27 years old, G0P0, woman was presented with heavy periods and pelvic pain. Her medical and surgical history was unremarkable. Ultrasound showed anterior/broad ligament fibroid with size of 7.6 × 5.2 × 5.5 cm. After discussing the treatment option, she was consented and had laparoscopic myomectomy and two-port contained morcellation in a specialized bag. Post-operative care was uneventful. Patient was discharged home same day. Histopathology showed benign fibroid.
Conclusion: The Morcellation Containment System is a feasible tool to extract a pelvic mass. However, it is important to be aware of its challenges like any other contained morcellation system.

Virtual Poster Session 2: Laparoscopy
(1:10 PM – 1:20 PM)

1:10 PM: STATION J

1277 Trends and Factors Associated with Antibiotic Use by Gynecologic Surgeons during Myomectomy
Cho M., Shin HJ2, OB/GYN (Minimally Invasive Gynecologic Surgery), Montefiore Hospital/Albert Einstein College of Medicine, Bronx, NY; 2OB/GYN (Minimally Invasive Gynecologic Surgery), Montefiore Hospital / Albert Einstein College of Medicine, Bronx, NY
*Corresponding author.

Study Objective: There are limited guidelines regarding antibiotic use for myomectomies. The objective of this study was to determine perioperative factors that influence antibiotic use by gynecologic surgeons for myomectomies, and to assess adverse postoperative outcomes with and without perioperative antibiotics.
Design: Retrospective chart review.
Setting: Tertiary care academic center.
Patients or Participants: Patients that underwent abdominal (ABD), laparoscopic or robotic (LSC/RA), and hysteroscopic (HSC) myomectomies, from April 2018 and earlier.
Interventions: ABD, LSC/RA, or HSC myomectomies.
Measurements and Main Results: One hundred patients were included in each of the myomectomy categories. In the ABD group, 85% of patients received perioperative antibiotics. There were no identifiable factors between those that received antibiotics and those that did not. In the LSC/RA group, 65% of patients received perioperative antibiotics. Minimally invasive gynecologic surgeons were more likely to give antibiotics (72.7%
may lead to significant morbidity. Although rare, in patients presenting
was described in an immunocompetent, premenopausal woman without
Conclusion:
showed benign degenerated leiomyoma with focal areas of necrosis and
abscess in the right upper quadrant was drained for an additional 1L of
was found to have an enlarged myomatous uterus with a necrotic peduncu-
ing fluid and extension into the abdominal wall. Intravenous antibiotics
were begun, and she was taken to the operating room. Intraoperatively, she
with fever, worsening pain and fibroids, pyomyoma should be considered
in the differential.

Virtual Poster Session 2: Laparoscopy
(1:10 PM − 1:20 PM)

1:10 PM: STATION I

1827 Laparoscopically Assisted Supravicular Surgery for
Adnexal Tumors Under Epidural Anesthesia
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Gynecology, Pusan National University School of Medicine, and
Biomedical Research Institute, Pusan National University Hospital, Busan, Korea, Republic of (South)
*Corresponding author.

Study Objective: To evaluate the feasibility and safety of laparoscopically
assisted surgery for benign ovarian tumors via a single suprapubic incision
under epidural anesthesia.

Design: Forty-three patients underwent laparoscopically assisted surgery
via a single suprapubic incision under epidural anesthesia. Types of sur-
gery were classified as follows: type I – suprapubic incision surgery with-
out laparoscopic support, type II – suprapubic incision surgery with
laparoscopic support but without CO2 inflation; and type III – suprapubic
incision surgery with laparoscopic support and CO2 inflation.

Setting: This study was performed in Pusan National University Hospital,
Busan, Korea.

Patients or Participants: Between April 2013 and November 2014, we
performed 43 laparoscopically assisted extracorporeal surgeries for
adnexal tumors via a single suprapubic incision under epidural anesthesia,
in the Department of Obstetrics and Gynecology of Pusan National Uni-
versity Hospital.

Interventions: Laparoscopically assisted surgery via a single suprapubic
incision under epidural anesthesia.

Measurements and Main Results: Type I, II, and III procedures were
performed on 16, 21, and six patients, respectively. Most patients (n = 35)
were discharged on postoperative day 1 or 2. No surgical complication
was encountered. Types of surgery exhibited different surgical characteris-
tics. Type I was adopted for larger diameter tumors than types II or III
(p = .016), whereas type III had a longer operative time (p = .024) than
types I and II. Other characteristics, such as age, body mass index, and
length of hospital stay, did not differ significantly among surgical types.

Conclusion: Laparoscopically assisted surgery for adnexal tumors via a
single suprapubic incision under epidural anesthesia is feasible and safe
and should be viewed as an alternative approach to conventional mini-
imally invasive surgery.

Virtual Poster Session 2: Basic Science/Research/Education
(1:10 PM − 1:20 PM)

1:10 PM: STATION M

2155 Romeo’s Gladiator Rule - an Easy and
Reproducible Knot Tying Technique
Fernandes LFC,1, a Romeo A, 2
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Medicine of University of São Paulo, São Paulo, Brazil; 2Storz Training
Center, São Paulo, Brazil
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Video Objective: Describe an easy and reproducible laparoscopic knot
tying technique.

Setting: Laparoscopic suturing is a milestone in endoscopic education and
formation. Bidimensional vision impairs the ability of the surgeon to sense
the depth and the topographical localization of structures. This characteris-
tic inverts training steps when compared to laparotomy, making suture
learning an independent and advanced topic, when it must be considered a
basic feature and a starting point of any surgery. There is a lack of theories and systematic explanations about this topic, turning its apprenticeship a matter of intuition. This reality is reflected in the recent demand for suture courses in the last AAGL congress.

**Interventions:** We describe, step-by-step, concepts which make laparoscopic suturing easy when the steps are respected. Concepts as home base, horizon line and Romeo’s gladiator movements, help surgeons to overcome the difficulty of laparoscopic suturing, enabling them to perform secure and safe knots.

**Conclusion:** Suturing, besides of being a basic feature of any kind of surgery, is considered an advanced topic when dealing to laparoscopic surgery. Romeo’s gladiator rule permits overcome the difficulty of laparoscopic suturing, making it feasible to any surgeon with a little training.

**Virtual Poster Session 2: Basic Science/Research/Education (1:10 PM – 1:20 PM)**

**2566 Timing of Surgical Intervention Following Failed Medical Management of Ectopic Pregnancy**

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**Study Objective:** To assess the timing at which patients received surgical management after receiving methotrexate (MTX) for management of ectopic pregnancy (EP).

**Design:** Retrospective cohort study at a single academic institution of patients treated for EP between January 2000 and December 2017. Medical records were reviewed for demographic and clinical information as well as approach to management.

**Setting:** N/A

**Patients or Participants:** 896 patients treated for EP were included. 220 (24.6%) of these patients were lost to follow up and their final outcomes were not available.

**Interventions:** N/A

**Measurements and Main Results:** Of the 676 patients with final outcomes available, 139 ultimately underwent surgical excision of EP (20.5%). Progression of ultrasound findings and significant worsening of pelvic pain accounted for the decision to proceed with surgery in all but 8 patients (94%). These 8 patients were operated on due to inappropriate hcg trend following multiple doses of MTX. Progression of ultrasound findings was noted in 82.5% of patients. Significant worsening of pelvic pain was present in 46.2% of patients. The median number of days from MTX administration to surgery was 7. Fifteen patients (10.8%) underwent surgery within 24 hours following MTX administration. Of those requiring surgery, only 8 patients (5.8%) had hcg values below 200. The indication for surgery in a majority of these cases was plateauing hcg values.

**Conclusion:** Despite the high success rate of medical management of EP, loss to follow up is significant in an urban population. A majority (74%) of patients that fail MTX do so within the first 10 days of treatment. Very few patients require surgical management after their hcg values decrease below 200. Given that pain is a reliable motivator to present for evaluation, it may be reasonable to limit follow up after hcg levels fall below 200.

**Virtual Poster Session 2: Basic Science/Research/Education (1:10 PM – 1:20 PM)**

**3029 Physician Awareness of Medical Device Cost: A Systematic Review**

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*Corresponding author.

**Study Objective:** To investigate the accuracy of physician estimates of medical device costs.

**Design:** A systematic review of PUBMED, EMBASE, Cochrane Library, EconLit, and Clinicaltrials.gov was conducted. Articles were included for review if they surveyed physicians or residents and included a description of (1) how the authors defined accuracy with regard to medical device cost estimates and (2) how the true costs of the devices were calculated. Exclusion criteria comprised incomplete or duplicate data and research not in English.

**Setting:** Systematic Review.

**Patients or Participants:** N/A

**Interventions:** N/A

**Measurements and Main Results:** Of 2,699 studies identified, 10 satisfied both inclusion and exclusion criteria. All articles were published between 1998 and 2019, representing a total of 984 physician respondents. Individual article response rates ranged from 22.6–100% (median 44.4%). Cost estimates were considered accurate if they fell within 20–25% of the true device cost, with the exception of 1 study that defined accuracy as being within 50% of the true cost. Between 9% and 35% of physicians

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were able to accurately estimate medical device costs. Of note, 36.0 −92.2% of physicians reported that they felt their knowledge of medical device costs was inadequate, with a majority of participants in every study (66−100%) identifying knowledge of medical device costs as at least moderately important.

Conclusion: Physicians have limited insight into medical device costs, with a vast majority unable to accurately estimate these costs. Given that many physicians recognize their lack of knowledge concerning medical device costs and believe that such information is important, increased transparency and improved education on this topic may represent important areas of need.

Virtual Poster Session 2: Basic Science/Research/Education
(1:10 PM – 1:20 PM)

1:10 PM: STATION Q

1960 The Impact of Resident Participation on Operating Time in Robotic Surgery for Benign Gynecological Conditions

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Study Objective: To assess the association between resident participation and operative time in robotic surgery for benign gynecological conditions.

Setting: A retrospective cohort study.

Setting: Two hospitals in Las Vegas, Nevada (one is a teaching hospital and one is not).

Patients or Participants: A total of 329 patients who underwent robotic surgery for benign gynecologic conditions from January 2018 to March 2019. All cases were performed by a single high volume robotic surgeon.

Interventions: Resident participation (versus non-participation) in 41.6% of 329 robotic cases.

Measurements and Main Results: The primary outcome was the total operative time. The primary exposure was resident participation versus non-participation in the robotic case. In our primary analysis we compared the mean and median operative times for cases with versus without resident participation. We then constructed a regression model to adjust for potential confounders including age, body mass index (BMI), specimen weight (in grams) and whether the surgery was a hysterectomy or not. There were no baseline differences in patient characteristics between cases involving residents and those not involving residents. In unadjusted analysis, the mean operative time was longer for cases involving residents (130.3 minutes [95% CI 122.8-137.7 minutes] vs 109.6 minutes [95% CI 104.0-115.3 minutes], p < 0.001). In our multiple linear regression analysis, resident participation was still associated with longer operative time (increase = 20.1 minutes [95% CI 9.3-30.8 minutes], p < 0.001). There were no baseline differences in patient characteristics between cases involving residents and those not involving residents. In unadjusted analysis, the mean operative time was longer for cases involving residents (130.3 minutes [95% CI 122.8-137.7 minutes] vs 109.6 minutes [95% CI 104.0-115.3 minutes], p < 0.001). In our multiple linear regression analysis, resident participation was still associated with longer operative time (increase = 20.1 minutes [95% CI 9.3-30.8 minutes], p < 0.001).

Conclusion: Consistent with a prior study looking at trainee participation in gynecologic oncology cases performed robotically, we found that resident participation in robotic cases for benign gynecologic surgical conditions was associated with an increased operative time of approximately 20 minutes, even adjusting for age, BMI, type of surgery (hysterectomy vs. other type) and specimen weight.

Virtual Poster Session 2: Basic Science/Research/Education
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1:10 PM: STATION R

2899 Validation of Simulated Diagnostic Hysteroscopy Curriculum

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Study Objective: This purpose of this study is to test the face and construct validity of a low-fidelity simulation model for hysteroscopy training.

Design: This is a prospective observational study.

Setting: This study took place within an obstetrics and Gynecology residency program at a major academic medical center.

Patients or Participants: Incoming first year residents of obstetrics and gynecology.

Interventions: We have created a mock uterus using a clear plastic bottle and placed targets within the bottle to serve as goals for navigation. The curriculum, which includes instructional videos, pre-test and post-test surveys as well as the simulation task. In 2017 and 2018 expert faculty administered an objective structured assembly of technical skills (OSATS) and recorded times required to assemble the hysteroscope and perform the simulation. Residents were then given 6 weeks for independent practice with the model after which the OSATS and performance times were collected again.

Measurements and Main Results: 36 first year residents (33 female and 3 male) and 4 faculty experts completed the simulation. 69% of residents had no hands-on training in hysteroscopy prior to the study. Following independent practice, resident OSAT scores improved by 11 points (SD ± 8, out of 39 potential total points) on assembly of hysteroscope and 9 points (SD ± 3.5, out of 15 potential points) on simulation tasks. Resident OSATS scores improved significantly (p<0.005) between pre-test and post-test on both assembly and use. Experts scored significantly higher than the residents on the OSATS overall (p < .001). After completing the study, 97% of residents reported feeling prepared to assemble and navigate the hysteroscope, 77% felt comfortable with identifying key anatomy.

Conclusion: Our study supports the use of our reusable, low-fidelity hysteroscopic training model as a way to improve resident performance in a simulation environment.

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between novices, intermediates, and experts. Parameters task time, collisions/displacements, and path length were compared. Additionally, a total performance score was calculated for each participant.

**Measurements and Main Results:** Face validity scores regarding realism and training goals were overall positive (median scores of 4 on a 5-point Likert scale). Participants felt the curriculum was a useful addition to the previous curricula (71.9%) and the simulator would fit in their residency programs (96.8%). Construct validity results showed significant differences on the great majority of measured parameters between groups. Experts outperformed intermediate is the three most difficult exercises. The simulator is able to differentiate between performers with different levels of laparoscopic experience (p<0.001).

**Conclusion:** Face- and construct validity for the new Bimanual Fundamental curriculum for this virtual reality simulator could be established. The curriculum is suitable to use in resident’s training programs to improve and maintain advanced psychomotor skills.

**Virtual Poster Session 2: Basic Science/Research/Education (1:10 PM – 1:20 PM)**

1:20 PM: STATION A

**Score:**

&emsp;&emsp;**2487 Same-Day Discharge after Hysterectomy:**

**Identifying Reasons for Unplanned Admissions and Evaluating Institutional Compliance with a Standardized Protocol**


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*Corresponding author.

**Study Objective:** Same-day discharge (SDD) has been the goal of most of minimally invasive hysterectomies. Our institution adopted a standardized operating procedure (SOP) for planned SDD in 2013. The aims of this study were to identify the reasons for unplanned admissions after minimally invasive hysterectomies at our institution and critically review the SDD SOP.

**Design:** Quality assurance, retrospective cohort study

**Setting:** Single academic institution

**Patients or Participants:** We reviewed charts of 74 patients between January to June 2017 and from June to December 2018 who underwent minimally invasive hysterectomy for benign gynecologic indications. Urogynecology patients were excluded.

**Interventions:** No interventions, descriptive study

**Measurements and Main Results:** The peri-operative hospital course our sample was compared to our institution’s SOP for same-day discharge.

The average age of our cohort was 44 with an average body mass index of 27. Mean post-operative acute care unit stay was 4.7 hours (range 2.5 - 11.1 hours); 34% of patients stayed less than the 4 hours required in the SDD SOP, but none of these patients had post-operative emergency room visits or hospital re-admissions. Documentation of SDD SOP-recommended pre-operative counseling (43%) and intra-operative bladder back-filling (8%) was poor. Unplanned admissions on the day of surgery occurred in 17 (22.9%); 9 (52.9%) were for medical (23.5%) or surgical (29) complications, while 2 (12%) had voiding dysfunction and 2 (12%) had pain. Age, hysterectomy route, length of surgery, and estimated blood loss were not associated with these unplanned admissions.

**Conclusion:** Our quality assurance project identified that our unplanned admissions for nausea and pain could potentially be avoided with implementation of enhanced recovery after surgery protocol, including peri-operative counseling of expectations and same-day discharge information. Voiding dysfunction requiring admission could be decreased by performing active voiding trials in recovery area. Consider creating a protocol for goals at recovery room before discharge instead of a time frame to discharge.
Virtual Poster Session 2: Basic Science/Research/Education
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2292 How to Build a High Fidelity Model for Teaching Perineal Laceration Repair
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Video Objective: Train the trainer: Hands on creation in less than 10 minutes an anatomically accurate simulation model for repair of third and fourth degree obstetric lacerations
Setting: 1. Create in less than 10 minutes an anatomically accurate high fidelity simulation model using beef tongue and beef intestine and craft supplies in order to teach the repair of third and fourth degree obstetric lacerations to obstetric and gynecology residents.
2. Understand the anatomy of the perineum and anal sphincter as illustrated by this simulation model.
3. In the setting of insufficient training in ob/gyn residencies regarding 3rd and 4th degree obstetric laceration repairs and assuring competence in this area by the time residents graduate, simulation models have become increasingly relevant. This video aims to provide residency program directors and educators with a detailed step-by-step hands-on creation in less than 10 minutes of an anatomically correct high fidelity simulation model using beef tongue and beef intestine along with easily obtained craft supplies which can be used for teaching OB/GYN residents third and fourth degree obstetric laceration repairs

Interventions: n/a
Conclusion: The video provides an easily made (within 10 minutes) anatomically accurate high fidelity model utilizing beef tongue and beef intestine along with easily obtained craft supplies that can be used to teach the correct techniques for third and fourth degree repairs for obstetric lacerations.

Virtual Poster Session 2: Basic Science/Research/Education
(1:20 PM – 1:30 PM)

2663 Essentials in Minimally Invasive Gynecology
(Emig) Manual Skills Pilot Validation Trial
Munro MG,1,6 Brown AN,2 Saadat S,3 Gomez NA,4 Howard DL,5 Kahn BS,5 Stockwell EL,2 Volker W,2 Thayn K,4 Obstetrics and Gynecology, University of California, Los Angeles and Kaiser Permanente, Los Angeles Medical Center, Los Angeles, CA; 2Scripps Clinic, San Diego, CA; 3Obstetrics & Gynecology, Kaiser Permanente, Los Angeles Medical Center, Los Angeles, CA; 4Obstetrics and Gynecology, University of Nevada Las Vegas, School of Medicine, Las Vegas, NV; 5Obstetrics and Gynecology, LVMIS-UNLV, Las Vegas, NV; 6Department of Gynecological Surgery, Scripps Clinic, La Jolla, CA; 7Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV
*Corresponding author.

Study Objective: Evaluate the EMIG-FLS Laparoscopic Simulation System and the EMIG Hysteroscopy Simulation System for face validity and functionality in a pilot testing environment.
Design: A pilot cohort study
Setting: Three teaching institutions in the US Southwest
Patients or Participants: Twenty-seven residents and gynecologists who fit one of three categories of exposure to hysteroscopic and laparoscopic surgery and surgical simulation. Twelve were postgraduate year 1 (PGY-1); five were PGY-3, 1 was ABOG certified, and 5 were either fellows in training or had completed a Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS).

Interventions: After completing a screening survey, each subject was exposed to a structured orientation to the two simulation systems and then tested with proctor supervision on the 5 laparoscopic and 2 hysteroscopic exercises. A short 5-point Likert questionnaire designed to determine face validation and question clarity was administered to each subject at sites 2 and 3.

Measurements and Main Results: Face validity was high for each of the 7 exercises (means ranged from 4.8 to 4.9 out of 5) and subjects considered instructions to be clear (means ranged from 4.7 to 4.9). The recorded exercise times generally reduced with increasing levels of training although the sample sizes were not designed to determine significance given the pilot design. Similarly, exercise errors were generally less frequent with increasing experience. The systems, including the devices and recording mechanisms performed well and proctor evaluation and training were satisfactory.

Conclusion: The EMIG laparoscopic and hysteroscopic simulation systems were considered to have good face validity and appear to be suitable for a construct validation trial to confirm their utility in distinguishing amongst trainees and practitioners with a wide spectrum of endoscopic surgical experience. The recording and specimen storage mechanisms will allow for multiple proctors to rate a candidate’s performance, thereby enhancing evaluation consistency and quality.
Interventions: Voluntary participation in a 58-item survey

Measurements and Main Results: We received 158 survey responses with 84 (53.2%) responses coming from 4th year residents and 74 (46.8%) responses from 3rd year residents. The majority of resident respondents graduated from an allopathic medical school (139, 88%), identify as female (129, 81.6%), and are attending an Academic-University based program (96, 60.8%). The majority of respondents (67.7%) have not and do not plan on applying for a surgical fellowship in Ob/Gyn. Overall, the majority of residents (71.5%) feel their residency training adequately prepared them to be a competent minimally invasive surgeon. However, only 50% feel prepared to perform a laparoscopic hysterectomy on a uterus greater than 12 weeks size, and 12% feel prepared to offer a laparoscopic hysterectomy for a uterus above the umbilicus. Less than one-third of residents (29%) feel prepared to offer a vaginal hysterectomy on a uterus 12-week size or greater, and only 17% of residents feel comfortable performing a laparoscopic myomectomy. For endometriosis surgery 76% of senior residents do not feel prepared to offer excisional surgery. Of the residents not interested in a surgical fellowship 45% do not plan on referring complex gynecologic cases to a fellowship trained minimally invasive surgeon.

Conclusion: The overwhelming majority of senior U.S. Ob/Gyn residents do not feel prepared to provide minimally invasive surgery for complex gynecologic cases. Despite this discomfort nearly half of these residents do not plan on referring their patients to a competent minimally invasive surgeon.

Virtual Poster Session 2: Basic Science/Research/Education

1:20 PM - 1:30 PM

1628 Use of Fundamentals Of Laparoscopic Surgery (FLS) Testing to Assess Gynecologic Surgeons: 10 Years of Experience

Seaman SJ,1,* Jorgensen EM,2 Tramontano AC,2 Jones DB,4 Mendola M,2 Ricciotti H,2 Hur HC3,1 Obstetrics and Gynecology, Columbia University Irving Medical Center - New York Presbyterian Hospital, New York, NY; 2Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA; 3Institute for Technology Assessment, Massachusetts General Hospital, Boston, MA; 4Surgery, Beth Israel Deaconess Medical Center, Boston, MA

*Corresponding author.

Study Objective: To assess Fundamentals Of Laparoscopic Surgery (FLS) exam scores among OB/GYN and general surgery providers.

Design: This is a descriptive study of all FLS examinees in OB/GYN and general surgery and at a single academic institution (Beth Israel Deaconess Medical Center [BIDMC], Boston, MA) from July 2007 to May 2018. We compared categorical and continuous variables with Chi-square, t, and Wilcoxon rank-sum tests.

Setting: N/A

Patients or Participants: N/A

Interventions: N/A

Measurements and Main Results: 205 BIDMC trainees and faculty took the FLS exam between July 2007 and May 2018 of which 176 were identified to be OB/GYN or general surgery providers. The FLS pass rate was high for both specialties (98.7% OB/GYN, 99.0% surgery, p= 0.42). When comparing providers in OB/GYN and general surgery, no difference was found in manual skills score (mean 594.9 OB/GYN vs 601.0 surgery, p=0.59), however, a significant difference was noted in the cognitive scores with surgery providers scoring higher than OB/GYN providers (mean 533.8 OB/GYN vs 583.4 surgery, p=0.0003). In a multivariate linear regression model adjusting for specialty, level of training, age, sex, and test year, none of the variables were significant predictors for manual scores. However, age, sex, and test year were predictors for cognitive scores with greater scores associated with younger age, male sex, and advancing calendar year. Surgical specialty was not a predictor for manual or cognitive scores.

Conclusion: Overall, both OB/GYN and surgery residents had a high FLS pass rate. The manual skills test scores were comparable between specialties, but the cognitive scores were lower for OB/GYN compared to surgery providers. Further investigation regarding validity of the cognitive component of the FLS exam for OB/GYN providers may be warranted.

Virtual Poster Session 2: Basic Science/Research/Education

1:20 PM: STATION G

2382 Pelvic Sidewall Anatomy and Vasculature

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*Corresponding author.

Video Objective: To demonstrate lateral pelvic wall spaces and anatomy

Setting: da Vinci Robotic Platform dissection during a hysterectomy procedure

Interventions: A dissection of the para-rectal space, the para-vesical space, the obturator fossa, and the space of Morrow. Demonstration of a step by step dissection plan and dissection techniques. Identifying the main branches of the anterior division of the internal iliac artery as well as the inferior hypogastric nerve plexus and the obturator nerve

Conclusion: This video will help the trainees follow a roadmap of the lateral pelvic sidewall dissection and the identification of structures necessary for the safe and effective completion of malignant and complex benign surgical procedures.

Virtual Poster Session 2: Basic Science/Research/Education

1:20 PM - 1:30 PM

1222 Conservative Management of Cesarean Scar

Pregnancies with Systemic Multidose Methotrexate: Predictors of Treatment Failure and Reproductive Outcomes

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Study Objective: The role of conservative management of CSP has been previously reported with conflicting results reported. In this retrospective study, we aimed to further evaluate its role and better delineate the subsequent reproductive outcomes

Design: A retrospective cohort study.

Setting: A large university hospital (Hadassah Medical Center Hospitals, Israel, Jerusalem) between November 2014 to April 2017

Patients or Participants: All patients diagnosed with a CSP and treated by intention of conservative management with systemic methotrexate (MTX).

Interventions: A comparison of maternal and gestation characteristics was performed between treatment success and failure groups

Measurements and Main Results: Thirty seven cases of CSP were encountered. Overall, 29/37 (78.3%) were treated by systemic injection of MTX while the other 21.7% had combined systemic and local (i.e. intra-sac) MTX treatment. Invasive intervention was needed in 5 (13.5%) cases (failure group). Cases who were converted to surgical treatment had higher number of previous cesarean deliveries (median 4 vs. 2, p=0.002). In logistic regression modeling, the number of prior cesarean deliveries in the past was the only factor found independently associated with conversion to surgical management Odds Ratio 2.02, 95 % Confidence Interval 1.03,3.94.
Majority of future pregnancies had term pregnancy with one preterm delivery due to severe intrauterine growth restriction

**Conclusion:** Systemic MTX therapy is a safe and effective strategy for the treatment of CSP with favorable subsequent reproductive results and a low conversion rate for surgical management. Patients with high order of previous cesarean deliveries should be considered for early surgical treatment rather than a medical one.

**Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)**

1:20 PM: STATION I

**1928 Effect Of a Surgical Teaching Video on Resident Performance of a Laparoscopic Salpingo-Oophorectomy – A Randomized Controlled Trial**

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**Study Objective:** To assess the effect of a surgical teaching video on resident knowledge and performance of a laparoscopic salpingo-oophorectomy (LSO).

**Design:** Randomized controlled trial.

**Setting:** An urban tertiary care academic obstetrics and gynecology department.

**Patients or Participants:** First and second year gynecology residents.

**Interventions:** Access to an educational video of an LSO for one week prior to performing this surgery in the operating room.

**Measurements and Main Results:** Twenty-four residents were recruited and randomized to either the educational video group or traditional residency training group. All participants completed a demographic survey and knowledge questionnaire preceding their performance of an LSO, which was video recorded. Video recordings of surgical performance were analyzed by two blinded raters using the objective structured assessment tool (OSATS, 20 points) and an LSO specific tool (30 points). Participants completed a self-assessment questionnaire following the procedure. The primary outcome measure was the difference in OSATS scores. The secondary outcomes were the knowledge questionnaire scores and self-assessed confidence scores.

There were no significant differences between demographic variables of the two groups. The primary outcome revealed no significant differences in mean OSATS scores (10.64, SD 2.05 vs 11.55, SD 1.85, p=0.3) or LSO specific tool scores (16.45, SD 2.68 vs 17.85, SD 2.63, p=0.24). However, there was a significant difference in mean knowledge scores between the video and the traditional training ((8.42, SD 0.79 vs 7.11, SD 1.36, p=0.01) groups. In addition, residents in the video group had more confidence of their knowledge of pelvic anatomy (3.83/5, SD 0.39 vs 3.00, SD 1.00, p=0.04).

**Conclusion:** For junior learners, use of an LSO video improved knowledge and confidence in anatomy but did not translate to improved surgical performance in the operating room. Surgical videos are a useful adjunct and compliment hands-on technical teaching.

**Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)**

1:20 PM: STATION J

**1934 Perioperative Narcotic Trends in Women Undergoing Minimally Invasive Myomectomy**

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*Corresponding author.

**Study Objective:** Evaluate the perioperative narcotic utilization patterns at the time of myomectomy, specifically as they relate to the opioid epidemic. We also aim to evaluate the differences between conventional laparoscopy and robotic surgery in terms of narcotic utilization.

**Design:** Retrospective cohort study

**Setting:** A single academic university hospital

**Patients or Participants:** Women undergoing minimally invasive myomectomy

**Interventions:** Laparoscopic or Robotic-Assisted myomectomy

**Measurements and Main Results:** Between 2012 and 2018 312 minimally invasive myomectomies were performed and are included in this analysis. For consistency all narcotics administered intraoperatively and in immediate postoperative period were converted to mean morphine equivalents (MME). For the entire cohort then mean age was 35.7 ± 5.1 years and mean Body Mass Index (BMI Kg/m²) was 28.3 ± 6.3. Of the 312 myomectomies included 239 (76.6%) were performed using robotic assistance and the remainder (23.4%) were performed by conventional laparoscopy. There were no myomectomies converted to laparotomy throughout the study period. A statistically significant inverse relationship was found between year of myomectomy and perioperative narcotic administration (p<0.0001). Yearly MME administration decreased significantly for both intraoperative and postoperative administration (p<0.0001). The largest decline for intraoperative MME use was between 2016 and 2017, while for postoperative MME use it was between 2012 and 2013. There was no statistically significant difference in perioperative narcotic administration between conventional laparoscopy and robotic-assisted myomectomy. The time effect for intraoperative (p<0.0001) and postoperative (p<0.0001) narcotic administration remained significant after adjusting for covariates, including mode of surgery, race, insurance, age, and BMI. None of the background variables assessed were associated with perioperative narcotic administration.

**Conclusion:** Perioperative narcotic administration for minimally invasive myomectomy has decreased following widespread awareness of the national opioid crisis.
Patients or Participants: The study population included faculty and residents at two academic hospitals. We identified and surveyed operating room residents and faculty dyads.

Interventions: The Wisconsin Surgical Coaching Framework was used to develop a workshop-type presentation, and was delivered to both faculty and residents. Posters and pocket cards were developed to be used as memory aids for the framework.

Measurements and Main Results: A total of 28 staff Obstetricians & Gynecologists surveyed reported that time pressure, attitudes towards learners and case difficulty were the most commonly noted barriers to effective surgical coaching. Only 8% of staff physicians report having received formal training in coaching techniques.67% of residents report pre-operative goals were rarely or never set and coaching of non-technical and cognitive skills rarely or never occurs. Post intervention, over 90% of staff physicians and residents report setting goals with an increase in the frequency of teaching of non-technical skills.

Conclusion: In Obstetrics & Gynecology, our trainees have noted significant variation in the teaching skills of surgical teachers. A survey of our faculty and residents showed limited exposure to formal surgical coaching concepts. We have established a need and role for a formalized framework and language surrounding operating room teaching.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION L

2480 Budget Impact of Changes in Site-Of-Service And Modality of Endometrial Ablation for Severe Menstrual Bleeding for United States Payers and Providers

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Study Objective: Heavy menstrual bleeding is a common condition in women that can severely affect quality of life. For patients who fail or refuse medical management, endometrial ablation has emerged as a mainstay treatment alternative. Traditionally, endometrial ablation has been a heat-based procedure, typically performed in a hospital outpatient setting. A newly FDA-approved cryoablation technology now enables physicians to perform a safe, comfortable, and effective endometrial ablation procedure in the lower resource office setting. Our objective was to assess the budget impact of potential site-of-service and device modality changes for payers and physicians.

Design: A decision-analytic model was developed to compute differences in annual payer spend and physician revenue for specified current and future site-of-service mixes and device modalities. Per-case reimbursement for the different sites-of-service was determined based on claims data analysis of n=162,943 procedures. Based on expert surveys and interviews, a current site-of-service mix of 90%/10% hospital outpatient vs. physician office was considered and of 10%/90% for the future scenario. Cost for thermal and cryoablation device procedures were assumed to be $900 and $1,250, respectively. Physician office margin was computed based on an assumed annual volume of n=72 procedures.

Setting: N/A

Patients or Participants: N/A

Interventions: Endometrial ablation

Measurements and Main Results: The shift from 90% hospital outpatient to 10% hospital outpatient was associated with $4,025 of per-case savings for payers, at increased physician revenue of $1,657 per case. This added revenue more than off-set the additional device and procedure-related costs to the physician office, leaving a per-case margin of $1,704, an increase of 30.5% over status-quo.

Conclusion: Under current reimbursement, a shift in site-of-service of endometrial ablation procedures from hospital outpatient to the office and a shift in device modality from thermal to cryoablation would be associated with meaningful savings to payers at a concurrently attractive value proposition to physicians.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION M

2885 Endosee(R) Cystoscopy: An Alternative for Evaluating Ureretal Patency Following Total Laparoscopic Hysterectomy

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Video Objective: To demonstrate an alternative method to evaluate ureteral patency following benign hysterectomy.

Design: This is a retrospective cohort study of ten patients undergoing cystoscopy following benign hysterectomy to assess for ureteral patency.

Setting: This study took place at a single academic institution in the inpatient setting.

Patients or Participants: Patients were included in the study if they underwent total laparoscopic hysterectomy for benign indications from February 2019 to April 2019.

Interventions: Five patients underwent cystoscopy with traditional 70 degree rigid 17 French cystoscope. Five patients underwent cystoscopy with Endosee.

Measurements and Main Results: We compared cost, time, diameter size, and amount of bladder distending fluid required in patients undergoing traditional cystoscopy versus Endosee cystoscopy. The average cost for traditional cystoscopy was $246 and $165 (not including cost for hand piece) per case for Endosee cystoscopy. The average time for set-up and procedure was 7-12 minutes and 3 minutes for traditional and Endosee cystoscopy, respectively. The diameter of traditional cystoscope was 5.7 mm and 4.8 x 4.2 mm of Endosee cystoscope. Traditional cystoscope required approximately 200-300 mL distending fluid versus less than 60 mL distending fluid with Endosee.

Conclusion: Endosee cystoscopy is an efficient and reliable way to evaluate ureteral patency following benign total laparoscopic hysterectomy.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION N

2892 Minitouch Outpatient Endometrial Ablation for Heavy Menstrual Bleeding - The Way Forward!

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Study Objective: We have been carrying out Minitouch Outpatient ablation at two hospitals since 2015. We share our experience of 179 cases carried out between 2015-2018.

Design: Patients with heavy menstrual bleeding are offered Minitouch ablation if they have completed family and if medical management options have failed.

Setting: One district general hospital, one community hospital.

Patients or Participants: 20% Patients had significant comorbidities, such as body mass index >50, severe pulmonary hypertension and cardiac disease.

Interventions: All selected patients are given information leaflets and analgesia, and nurse contact numbers to discuss any queries. We carry out Transvaginal Ultrasound scan on all patients and endometrial biopsy unless already done prior to the procedure. Hysteroscopy is performed on
patients with structural abnormalities, such as polyps or fibroids, when detected on pelvic ultrasound scan. Patients are instructed to have pre-procedure analgesia at home (Diclofenac, Ibuprofen, Paracetamol) and Entonox (inhaled nitrous oxide) is offered during the procedure. Patients received standard Minitouch treatment. Energy customization features have been used for optimum patient comfort since 2017.

Measurements and Main Results: No complications were reported. Full energy dose was not delivered in three cases due to patient discomfort. Mean pain scores were 6/10 (intra-procedure) and 1/10 (post-procedure). Overall Success rate was 86% (154/179) with amenorrhea rate of 99%. 18 (10%) patients received further treatments – 2 Gonadotropin-releasing hormone analogue, 7 Repeat Minitouch ablation and 9 Hysterectomy. 31 patients treated using energy customization features had increased comfort and an overall success rate of 93.5% (29/31).

Conclusion: Minitouch Outpatient ablation without anesthesia, sedation or paracervical block is a safe procedure with high success rates. Customization features enhanced patient comfort without affecting clinical outcomes.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION O

1966 Structured Teaching to Enhance Laparoscopic Learning
Gallo A.1,* Lizon C.2 Weyenberg L.3 Clear E.3 Tam MF1,1 Rush University Medical Center, Chicago, IL; 2 Loyola University, Chicago, IL; 3 St. Francis Hospital, Chicago, IL
*Corresponding author.

Study Objective: To measure the impact of a standardized laparoscopic curriculum on knowledge and simulation skills assessment in Ob/Gyn residents
Design: Non-Randomized Control Trial
Setting: Three residency programs in Chicago, IL
Patients or Participants: Twenty-four residents
Interventions: A standardized laparoscopic curriculum was developed in accordance with Fundamentals of Laparoscopic Surgery (FLS) training guidelines. The educational program consisted of a didactic lecture with a written pre and post test and laparoscopic simulation training. Residents were trained in peg transfer and precision pattern cutting skills. A skills assessment was administered pre and post simulation training. This skills assessment measured time to completion of peg transfer and time to completion of precision cutting. Data points were assessed using a repeated measures analysis of variance.

Measurements and Main Results: The residents were evaluated with a significant improvement in knowledge score from 66.7% to 84.4% (p=0.001). Time to complete peg transfer improved from 363 to 207 seconds (p=0.004). Time to complete precision pattern cutting improved from 426 to 219 seconds (p=0.006).

Conclusion: Implementing a standardized curriculum improved resident knowledge and simulation skills in laparoscopic techniques. The program demonstrated an improvement in residency learning and could be applied to improve resident training in laparoscopy and FLS training.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION P

2689 Exploring Patient Characteristics in Adnexal Torsion after Hysterectomy
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Study Objective: To describe the characteristics of patients with adnexal torsion after previous hysterectomy.
Design: Retrospective case-series
Setting: Academic tertiary care hospital.
Patients or Participants: Patients with a history of hysterectomy, who subsequently presented with confirmed adnexal torsion from 2006-2019.
Interventions: Electronic medical records were searched using ICD 9 and ICD 10 codes, to identify patients with a history of adnexal torsion. Charts were manually reviewed for history of hysterectomy, patient and operative characteristics.

Measurements and Main Results: A total of 36 surgically confirmed adnexal torsions occurred in 35 patients with a prior surgical history of hysterectomy. This represents 16% of all patients identified with adnexal torsion (219) during the study period. Of those with post-hysterectomy torsion, the most common surgical approach to hysterectomy was laparoscopic (including robotic-assisted laparoscopy). Route of hysterectomy for patients with subsequent torsion included 86% laparoscopic, 9% abdominal and 6% vaginal. Most common indications for hysterectomy were abnormal uterine bleeding (23/35), uterine fibroids (10/35), and chronic pelvic pain/endometriosis (14/35). Median time from hysterectomy to torsion was 2.5 years. Torsion was managed by laparoscopic approach in 35 of the 36 cases. Ipsilateral or bilateral fallopian tubes were present at the time of torsion in 55.6% (20/36) of cases. All of these patients underwent concurrent salpingectomy during surgical management of torsion.

Conclusion: Incidence of adnexal torsion after hysterectomy may be higher than previously described. Providers should maintain a suspicion for adnexal torsion in patients with clinical signs and symptoms, even after prior hysterectomy. The majority of adnexal torsions occurred after hysterectomy via laparoscopic approach. Further study may identify patient characteristics and operative factors at time of hysterectomy, which increase the risk of future torsion.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION Q

1686 The Effect of 24-hour Call on Laparoscopic Skills of Ob/Gyn Residents
Mazzone E.* Ob/Gyn, Indiana University, Indianapolis, IN
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Study Objective: To assess the effect of 24-hour call on the simulated laparoscopic skills of Ob/Gyn residents from a large, tertiary-care hospital in a metropolitan city.
Design: A standard peg transfer drill module on the Laparoscopy VR Trainer (CAE Healthcare) was used as a surrogate for surgical skills. Participants performed the simulation module three times at the start of their call and later at the completion of call. Participants also completed a short survey of basic demographics, caffeine intake and sleep over the call shift, and prior experience on the simulator. All sessions on the simulator were logged and data, including total time, average right and left path lengths, and number of dropped pegs, was extracted.

Setting: n/a
Patients or Participants: Residents of a university-based Ob/Gyn program
Interventions: n/a
Measurements and Main Results: 22 residents were recruited for the study. A total of 35 trials were performed. Participants showed improvement in all outcomes over their call shift with a significant decrease in total time required to complete the task, a significant decrease in left and right path lengths, and significantly less pegs dropped from pre to post call sessions (p<.0001 for all outcomes). Covariates were not found to be significant (p > .05) for any of the outcomes.

Conclusion: Data revealed a statistically significant improvement in post call performances across all measured variables. This was true regardless
of year in residency and was not affected by amount of sleep obtained, amount of caffeine consumed, or time since last caffeine consumption. This is one of the first studies to show an improvement after a call shift. Further studies are needed to investigate the potential impact of sleep deprivation on more complex medical procedures as well as the impact of sleep deprivation on a physician’s ability to diagnose, educate, and obtain informed consent.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION R

1955 Hysterectomy Complications Relative to Hemoglobin A1c

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Study Objective: To evaluate the risk of postoperative complications among diabetic and nondiabetic patients stratified by hemoglobin A1c (HbA1c).

Design: A statewide collaborative quality initiative database was queried to identify 41,286 hysterectomies performed at 63 hospitals from January 1, 2013 to April 30, 2018. A specialized clinical quality reviewer abstracted medical record data including Diabetes Mellitus (DM) diagnosis. DM was present when the condition was managed >2 weeks prior to surgery, and/or if HbA1c >6.5%. The preoperative HbA1c closest to and not more than 90 days before surgery was abstracted when available. Complications included acute renal failure, pneumonia, surgical site infection, cardiac dysfunction, VTE, sepsis, unplanned intubation, cardiac arrest, MI, and stroke. A sensitivity analysis identified thresholds of complications by DM diagnosis stratified by HbA1c. A mixed, multivariate logistic regression model was developed to identify independent associations between DM stratified by HbA1c and risk of complications adjusted for age, BMI >35, surgical approach, medical comorbidities, and clustering by hospital.

Setting: NA

Patients or Participants: NA

Interventions: NA

Measurements and Main Results: The sensitivity analysis identified four groups of risk for postoperative complications—1) no DM and no HbA1c; 2) no DM with HbA1c normal or increased to 6.5%; 3) DM and no HbA1c or HbA1c <9%; and 4) DM with HbA1c ≥9%. In the adjusted model, there was a significant 32% and 34% increased risk of postoperative complications for Groups 2 and 3, respectively, compared to Group 1. There was a more than two-fold increased risk of complications for women with DM and a HbA1c ≥9% compared to Group 1. DM with HbA1c ≥9% were at increased risk compared to DM with HbA1c <9%. Several other factors were associated with increased risk of postoperative complications.

Conclusion: Diabetes diagnosis and measurement of preoperative HbA1c each independently provide risk stratification for postoperative complications after hysterectomy, with the highest observed risk among diabetics with a preoperative HbA1c ≥9%.

Virtual Poster Session 2: Basic Science/Research/Education (1:20 PM – 1:30 PM)

1:20 PM: STATION S

2967 Development of Laparoscopic Skills for Myomectomy in the Uterine Model

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Video Objective: To demonstrate the importance of the development of laparoscopic skills in surgeons in training, before facing real scenarios, specifically in uterine myomatosis.

Setting: In the gynecological endoscopy service of the Central Sur Hospital of High Specialty, residents have developed an anatomical model of the uterus, with fibroids in different locations.

Interventions: Initially a positive mold is made, made of ceramic, which will serve as the base for the next mold, negative, in cement, it is left to dry and as a final step, it is used for the deposit of silicone and latex, introducing the “fibroids” , Made with a harder texture. The development of the practice allows to emulate as real as possible, a myomectomy.

Conclusion: Fibroids are the most frequent benign gynecological tumors in women. They affect women of childbearing age, by 20-30%, their treatment is usually surgical and laparoscopic, the approach of choice. Myomas represent a surgical challenge, even for the expert surgeon, because the presentation is varied: in quantity and location. The previous practice, in anatomical models, has proven to be very useful in the development and improvement of surgical skills in minimally invasive procedures.
Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM − 1:40 PM)

1:30 PM: STATION A

2485 Identifying Barriers for Same-Day Discharge of Minimally Invasive Hysterectomies
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*Corresponding author.

Study Objective: Minimally invasive surgery (MIS) has provided patients with decreased post-surgical pain, faster recovery, and shorter hospital stay. Currently, the trend with MIS procedures is to have same-day discharge. The purpose of this study is to determine which patient-based and post-surgical factors are barriers to same-day discharge and lead to hospital re-admission.

Design: Quality assurance, retrospective cohort study.

Setting: Single academic institution

Patients or Participants: Chart review for patients undergoing laparoscopic, vaginal, laparoscopic assisted vaginal or robotic hysterectomy from July 2014 to April 2017. Cohort of 541 patients from 18-84 years-old with a mean age of 48.

Interventions: No interventions. Descriptive study of post-operative hospital stay following surgery.

Measurements and Main Results: We performed an electronic medical record chart review to evaluate time in the recovery room following surgery, route of hysterectomy, reasons for prolonged hospital stay, and readmission. Out of 541 patients, 395 (73%) were general gynecology patients and 146 (27%) were urogynecology patients. Despite the goal of same-day discharge, only 252 (47%) of patients were discharged the same day. Of those patients, 83% were vaginal hysterectomies and 84% were laparoscopic hysterectomies that were discharged in less than 6 hours. 145 (99.3%) urogynecology patients stayed admitted overnight. There was an association between length of case, urogynecology patients, and overnight stay (OR 1.23, CI 1.006 - 1.521), but no association was found between length of stay in recovery with estimated blood loss. There was no statistically significant (p>0.05) between hours of recovery room stay with emergency room visits or re-admissions.

Conclusion: The majority of the patients in the cohort were not discharged the same-day given that data was altered by urogynecology patients despite having MIS procedures. Barriers to same-day discharge included length of procedure, voiding dysfunction and pain. Further studies include implementing enhanced recovery after surgery and voiding trials for same-day discharge, as well as evaluating urogynecology patients separate from general gynecologic procedures.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM − 1:40 PM)

1:30 PM: STATION B

2275 “The Resident Buddy System”: A Better Way to Encourage Laparoscopy Simulation Training?
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*Corresponding author.

Study Objective: To determine if a “buddy-system” compared to independent training increases laparoscopic simulation time amongst residents.

Design: Assignments were provided via email at the beginning and mid-way points. At the conclusion of the study period a survey link was distributed.

Setting: Banner University Medical Center-Phoenix

Patients or Participants: Thirty-two residents at a single obstetrics and gynecology residency program were consented for the study.

Interventions: Each buddy pair was composed of a junior and senior resident. During the first half of the 20-week study, 12 residents were randomly assigned a buddy while 20 remained solo. During the second half, solo-trainers were assigned buddies and conversely buddies were made solo. Residents recorded check-in and -out times electronically.

Measurements and Main Results: Six of the 32 residents (18.8%) attended simulation in the 20-weeks, with an average time of 2 hours 14 minutes. In the solo-trainer group, 1 resident checked in 3 times and 2 residents once. In the buddy group, 1 pair checked in together and 1 person checked in alone. Fifteen residents (46.9%) completed the survey. Thirteen (86.7%) agreed they accurately reported times; 1 was neutral and 1 never attended. All communicated with their buddy monthly or less frequently, while 10 of them never communicated.

Conclusion: Residents’ laparoscopic simulation time was dismal in our program in this study. Dedicated mandatory simulation time may increase participation.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM − 1:40 PM)

1:30 PM: STATION C

2644 CREOG 2019 Resident Survey: OBGYN Perception of Surgical Confidence and Competence
Banks E, † Woodland MB, † OBGYN, Montifiore Hospital, New York, NY; *OBGYN, Reading Hospital/Tower Health, Reading, PA
*Corresponding author.

Study Objective: To measure the residents and program directors perception to their surgical confidence and competence.

Design: National survey of over 5000 OBGYN residents

Setting: The Council on Resident Education OBGYN (CREOG) survey is an anonymous voluntary survey taken by residents annually at the time of their CREOG training examination.

Patients or Participants: All OBGYN residents are available to participating the survey annually. We typically have about a 92% return rate.

Interventions: This survey was to assess the current perception of OBGYN residents and their program directors regarding the residents’ surgical confidence and competence in 5 gynecology and 3 obstetric procedures.

Measurements and Main Results: Over 5000 residents participated in the 2019 CREOG survey on perceptions of confidence and competence in 5 gynecology and 3 obstetric procedures. Confidence and perceived confidence of the procedures queried were affected by resident post-graduate year (PGY). Additionally, it appears that residents participate in learning of certain procedures at different times during their training. Residents and program directors agree upon the competence of residents for most procedures and some of the most difficult procedures during training are total vaginal hysterectomy, forceps operative vaginal delivery and to a lesser extent robotic laparoscopic surgery. Data will be presented by procedure and level of resident education with comparison between resident perception ad program director perception.

Conclusion: Continued surveillance of surgical training for OBGGYN residents needs to continually assessed. Residents and Program Directors are aligned in their understanding of confidence and competence of resident surgical training. Total vaginal hysterectomy and forceps vaginal operative delivery are two of the most important issues that we need to face in education of OBGGYN residents.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM − 1:40 PM)

1:30 PM: STATION D

1586 Laparoscopic Suturing and Knot Tying
Murphy C, * Kashani SM, OBGGYN, Bridgeport Hospital, Bridgeport, CT
*Corresponding author.
Video Objective: Although reliable knot tying is one of the most important surgical concepts, few videos exist that illustrate how to tie a reproducible, reliable laparoscopic knot. The purpose of this video is to teach the basics of laparoscopic suturing, as well as to illustrate a reproducible method of tying reliable laparoscopic knots.

Setting: The video setting uses a 3-D Med laparoscopic trainer box with both standard sutures and thick, color-blocked string for better demonstration.

Interventions: N/A

Conclusion: Laparoscopic suturing and intracorporeal laparoscopic knot tying is one of the most difficult, yet important, skills to learn as a beginning minimally-invasive surgeon. There are few accessible videos which teach how to correctly insert a needle, suture, and tie a reliable knot using laparoscopic tools. This video aims to teach the basics of laparoscopic suturing with the aid of color-blocked string to aid in the viewer’s understanding of how to tie a proper knot.

Virtual Poster Session 2: Basic Science/Research/Education

1:30 PM: STATION E

2813 Strategies for Difficult Hysterectomies
Alvarez-Rosales A.1,2,* Garcia Rodriguez LF.1,2 Berlanga-Narro SM.3 Garza-Avala M.3 2080

Setting: Multiple Cases of Hysterectomies with Challenging circumstances.

Interventions: Multiple Cases of Hysterectomies with Challenging circumstances with strategies for getting an alternative approach.

1. 30° angle Scope for better visualization
2. Decompression for vaginal extraction
3. Traction of the angles of vaginal cuff
4. Blunt Dissection
5. Cold Dissection
6. Power Morcellation
7. Identify Retropitoneal Structures.

Conclusion: These strategies are useful to perform complex surgery and reduce the risk of complications.

Virtual Poster Session 2: Basic Science/Research/Education

1:30 PM: STATION F

2813 Clinical Prediction of Unsuccessful Endometrial Ablation: Random Forest vs Logistic Regression
 Stevens Kyr.1 Lagaert LVR.2,3,4 Bakkes T.4 Van De Keere M.3 Houterman S.3 van Vliet H.5 Schoot BC6.1 Obstetrics and Gynaecology, Catharina ziekenhuis Eindhoven, Hulst, Netherlands; Women’s Clinic, Ghent University Hospital, Ghent, Belgium; Department of Obstetrics and Gynaecology, Catharina Hospital, Eindhoven, the Netherlands, Eindhoven, Netherlands; 4department of Electrical Engineering, Biomedical Diagnostics lab TU Eindhoven, The Netherlands, Eindhoven, Eindhoven, Netherlands; 5Education and research, Catharina ziekenhuis Eindhoven, Eindhoven, Netherlands; 6Obstetrics and Gynaecology, Catharina ziekenhuis Eindhoven, Eindhoven, Netherlands *Corresponding author.

Study Objective: To compare the performance of the prediction models of surgical re-intervention within 2 years after endometrial ablation (EA) by a multivariate random forest model vs the previously presented multivariate logistic regression model.

Design: Retrospective cohort study, minimal follow-up time of 2 years.

Setting: Data from Catharina Hospital, Eindhoven and Elkeriek Hospital, Helmond, both non-university teaching hospitals in the Netherlands, were used.

Patients or Participants: Pre-menopausal women (18+) who have had an EA for heavy menstrual bleeding between January 2004 & April 2013. A total number of 446 patients were eligible for analysis.

Interventions: Used ablation methods were Cavatherm (Veldama Medical SA, Morges, Switzerland), Gynecare Thermachoice (Ethicon, Somerville, US.) and Thermablate EAS (Idoman, Ireland). Used interventions and other ablation techniques had the same outcomes according to previously published literature.

Measurements and Main Results: Data-analysis was done by using IBM SPSS statistics software version 21.0 (IBM Corp., Armonk, NY, USA). The random forest model was trained in MATLAB (2018b) using the TreeBagger function in the Statistics and Machine Learning Toolbox. The prediction model based on a multivariate logistic regression analysis had an AUC of 0.71. The machine learning model had an AUC of 0.63 and an AUC of 0.65 after hyperparameter optimization.

Conclusion: Based on the preliminary results, we can conclude that the random forest model in this case is not better than the logistic regression model to predict the outcome of surgical re-intervention within two years after EA. In summary, the performance of a random forest clinical prediction model is not necessarily superior to a logistic regression model. The performance of each model is influenced by the sample size, the number of predictors, hyperparameter tuning and the linearity of associations.

Virtual Poster Session 2: Basic Science/Research/Education

1:30 PM: STATION G

1282 Current Trends in Compensation for Minimally Invasive Gynecologic Surgery (MIGS) Graduates
Adedayo P.1,4 Dassel MW.2 Shiber L.3,4 The Christ Hospital, Cincinnati, OH; The Cleveland Clinic, Cleveland; MetroHealth Medical Center, Cleveland, OH *Corresponding author.

Study Objective: The Fellowship in Minimally Invasive Gynecology Surgery (FMIGS) is the most competitive fellowship in Obstetrics and Gynecology with 1.9 applicants per position and a 50% match rate in 2019. Yet, only one prior study, conducted in 2012-2013, has examined trends in MIGS salaries and found widely variable levels of compensation. There is no current published data on the compensation and practice of this growing field. Here, we present updated information regarding compensation patterns for FMIGS physicians in the United States.

Design: An online survey sent to FMIGS graduates between March-April 2019. We collected information on physicians’ demographics, compensation trend and physician attitudes towards fairness in compensation.

Setting: Online Survey

Patients or Participants: FMIGS Graduates practicing within the United States.

Interventions: E-mail Survey

Measurements and Main Results: Of 391 former FMIGS fellows surveyed, 204 responded (response rate =52%). 66.5% of respondents graduated from FMIGS fellowship in the last 5 years and 79.4% completed fellowship programs of 2 or 3 years duration. Median total salary in year 1 after fellowship was $230000 [range 130000–400000], increasing to a median salary of $260000 in current year for individuals at this job for more than 1 year [average years at job 1=3.6]. The majority of
Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

2758 Easy-to-Master Slipknot
Shirane T,* Andou M, Ichikawa F, Sawada M, Shirane A, Sakate S.
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*Corresponding author.

Video Objective: In laparoscopic intracorporeal knot tying, we have to ligate securely in the limited space. The slip knot technique is useful in these situations. I will show the key and logic of slip knot using a two-color suture, and some techniques.

Setting: The procedure to perform slip knot are as following: Firstly, you make a square knot by two opposite half knots consisted of one clockwise and the other counter-clockwise. Then, you can push and slide the “unlocked” square knot toward the ligation point and secure the tissues.

“Unlocked” means the state of which the square knot is slidable, and keeping this state is the secret of slip knot. A two-color suture is helpful to understand this state.

Various slip knot techniques are below: 1) Standard slip knot. This is the basic way, an unlocked square knot is slid to the ligation point. 2) Loose one-hand slip knot. As a square knot is unlocked and loose, you can tie the knot by pulling the long tail one-handed. 3) In case of the locked knot. You should pull the long tail and release the knot before you slide it. 4) Pulling the short tail. You can also tie the knot by pulling short tail in theory. 5) Knot tying combined with surgeon’s knot. You can alter the first opposite half knot to double half knot.

To get your slip knot more smoothly and quickly, you should manage the opposite half knot to double half knot.

You should pull the long tail and release the knot before you slide it. 4) Pulling the short tail. You can also tie the knot by pulling short tail in theory. 5) Knot tying combined with surgeon’s knot. You can alter the first opposite half knot to double half knot.

Interventions: N/A
Conclusion: These techniques can help your operation get better definitely.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

2262 Hysteroscopic Loop Resection Training Utilizing a Virtual Reality and Low-Fidelity Model: A Pilot Study
Patel NR,1,2 Johnson CM,2 Makai GE,2 Haynh TQ,2 Thompson D3.
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*Corresponding author.

Study Objective: To evaluate the effectiveness of Virtual Reality (VR) and low-fidelity inanimate model for training and assessing OB/GYN residents in hysteroscopic loop resection.

Design: Prospective, cohort trial.
Setting: Single academic affiliated community hospital.

Patients or Participants: Twenty-four PGY-1 through PGY-4 OB/GYN residents were enrolled.

Interventions: All participants served as their own controls and underwent a pre-intervention objective structured assessment of technical skills (OSATS), during which the participant performed a baseline hysteroscopic loop resection using a low-fidelity model. Next, they completed a designated VR hysteroscopic loop resection simulator module to achieve a score >95%. Immediately after intervention, participants were then allowed to practice on the low-fidelity model prior to repeating a recorded hysteroscopic loop resection. Post-intervention performance was assessed using an OSATS. Participants also completed a subjective survey assessing comfort levels with the procedure pre- and post-intervention. All low-fidelity model hysteroscopic resections were recorded and scored by a single blinded evaluator.

Measurements and Main Results: Seven surgical skills were measured using OSATS and nine subjective measures were assessed, both using a Likert Scale of 1 (low) to 5 (high). All residents showed improvement in camera management, tissue handling, and instrument management (p<.05). The 3 month follow-up illustrated continued significant improvement compared to baseline in the same skills. Subjectively, there was significant improvement in comfort level of knowledge of procedural steps and energy, and using the loop resectoscope.

Conclusion: Simulation improved baseline surgical skills and led to retention and improvement of same skills. In addition, residents perform with the knowledge and procedural steps increased. As mechanical resection device use continues to increase, residents have fewer opportunities to train with hysteroscopic resectoscopes. Resident training should include simulation to increase both baseline development and retention of surgical skills.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION J

1187 Utilizing Lean Methodology to Optimize Operating Room Efficiency: A Multidisciplinary Process-Mapping Exercise
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*Corresponding author.

Study Objective: Optimizing surgical capacity while maintaining high quality patient care is an ongoing challenge in the operating room, particularly for complex procedures requiring significant resources, such as robotic hysterectomy. Process Mapping is a Quality Improvement (QI) strategy which can identify common barriers to surgical efficiency and quality of care by dividing a process into its individual components and analyzing each step separately. Our aim was to design an “ideal-state” intraoperative pathway for robotic hysterectomy in order to improve operating room efficiency and minimize case cancellation.

Design: Surgical care team members were invited to a meeting where process steps were evaluated and suggestions for improvements were identified. Various QI/LEAN methodologies were utilized including affinity diagrams with multi-voting, parallel processing strategies and checklist development.

Setting: Canadian tertiary-care academic hospital

Patients or Participants: A “current-state” process map for robotic hysterectomy was developed with input from the intraoperative care team consisting of gynecologists, anesthesiologists and nursing staff.

Interventions: Output from the exercise included the design of a “future-state/ideal-state” process map incorporating proposed multidisciplinary strategies for improved efficiency and plans for subsequent implementation.

Measurements and Main Results: In the 5 months following introduction of the “ideal-state” process map, mean surgical case time for robotic hysterectomy decreased by 28 mins (11%) and case cancellation rate decreased by 70%. Mean case time, case cancellation rates and the
acceptability of proposed interventions will be analyzed in a recurring fashion as part of a Plan-Do-Study-Act (PDSA) cycle.

**Conclusion:** A multi-disciplinary approach to improving operating room efficiency allowed for sharing of responsibility and improved communication between team members. Engagement of all stakeholders is fundamental to ensuring accurate analysis of current process flow and successful deployment of QI strategies. This process mapping exercise can be easily applied to other surgical procedures and expanded for use in surgical teaching and education.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION M

1988 Improving the Utility of The Manufacturer and User Facility Device Experience (MAUDE) Database: Using Categorization of Device Events to Compare Uterine Endometrial Ablation Devices

**Woo HH,1, 2 Johnson ME,2 Kahn RS,3 Department of Gynecological Surgery, Scripps Clinic, La Jolla, CA; 3Virginia Commonwealth University School of Medicine, Richmond, VA

*Corresponding author.

**Study Objective:** Categorize 13 years of FDA MAUDE reports on endometrial ablation devices to assess its utility as an improvement to the database.

**Design:** The MAUDE database was reviewed from 2005 to 2018 using brand name searches: Genesys HTA, HerOption, Minerva, Novasure, and Thermachoix. Events related to device malfunction with and without patient injury were categorized: Type I: non-injury equipment malfunction event, Type II: an injury event not requiring hospitalization and, Type III: an injury event requiring hospitalization.

**Setting:** 13-year FDA MAUDE database review (2005-2018).

**Patients or Participants:** N/A

**Interventions:** N/A

**Measurements and Main Results:** 1518 MAUDE reports were categorized as follows: Genesys HTA: Type I: 131/432 (33.41%), Type II: 259/432 (58.1%), Type III: 42/432 (9.49%); HerOption: Type I: 4/14 (28.57%), Type II: 0 (0%), and Type III: 10/14 (71.43%); Minerva: Type I: 13/56 (23.21%), Type II: 9/56 (16.07%), and Type III: 34/56 (60.71%); Novasure: Type I: 92/550 (16.7%), Type II: 273/550 (49.6%), Type III: 185/550 (33.6%); Thermachoix: Type I: 315/466 (67.60%), Type II: 78/466 (16.74%), and Type III: 73/466 (15.67%). Large differences in reported category type were noted between brands of instruments.

**Conclusion:** The MAUDE database serves as a valuable tool for physicians to evaluate the safety of medical devices. Patient injuries, minor and serious, are critical information physicians need when considering new device use. Categorizing MAUDE reports into 1) instrument malfunction, 2) minor patient injury & 3) major patient injury (i.e., hospitalization) is a potential way to make the database more useful. While the MAUDE system was not designed to compare devices, the categorization proposed here demonstrates a potential method to do this and improve the utility of the database. Additionally, the absence of sales or use volume data on devices use is a serious limitation to the utility of the database. This data can and should be incorporated into the MAUDE reporting system.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION L

1307 Ureterolysis: Preventing Ureteral Injury during Robotic Hysterectomy

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**Video Objective:** To demonstrate successful ureterolysis technique when the ureter is abutting the cervix.

**Setting:** A 43 year-old multiparous woman with an enlarged fibroid uterus and abnormal uterine bleeding desired definitive surgical management. Her right ureter was abutting the cervix to within less than 0.5cm and required meticulous dissection to maintain its integrity.

**Interventions:** Several factors are considered to maintain ureteral integrity during hysterectomy. These include: 1- Identification and dissection of the ureter along the medial leaflet of the broad ligament; 2- In-depth knowledge of the anatomical variations of the parametric; 3- Judicious use of monopolar and bipolar electrocautery; 4- In-depth understanding of the various effects of electrocautery on tissues.

**Conclusion:** Understanding the course of the ureter is crucial during hysterectomy. When abutting the cervix, judicious use of monopolar and bipolar energy is key to maintain ureteral integrity.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION N

1846 Preparing for FLS: A Survey of Residents in Obstetrics and Gynecology

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**Study Objective:** Fundamentals of Laparoscopic Surgery (FLS) is a validated curriculum that uses laparoscopic simulation to prepare surgeons for the operating room. The American Board of Obstetrics and Gynecology has made FLS certification an eligibility requirement to take the certifying board exam for residents graduating in 2020 and onwards. The objective of this study is to describe the resident experience and to quantify test preparation for the FLS exam.

**Design:** This is a prospective observational study at a large academic medical center.

**Setting:** This study took place at UT Southwestern Medical Center between September 1, 2018 and March 31, 2019.

**Patients or Participants:** Second year residents in Obstetrics and Gynecology were invited to participate in the study if they had completed their initial FLS certification exam. Of 18 second year residents, 15 met eligibility criteria and all agreed to participate.

**Interventions:** Participants completed a two-page questionnaire about their preparation for the exam, including questions about practice time and repetitions for the five skills tasks and time spent watching the FLS-provided videos.

**Measurements and Main Results:** 15 residents completed the survey. Participants spent an average of 3 sessions practicing for an average of 2-3 hours per task. 11/15 residents rated the lighting loop the easiest task to master and 8/15 residents rated the precision cut most difficult. Residents viewed the training modules an average of 1.7 times. All 15 residents who took the exam passed.

**Conclusion:** FLS certification will soon be a requirement of all graduating US residents in Obstetrics & Gynecology. Residents and training programs will benefit from an understanding of the time and resources required to successfully take this exam. Our data suggests that residents spent upwards of 10 hours practicing to proficiency on the simulation tasks, in addition to viewing the training videos.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION N

3028 Peer-Coaching Effect On Laparoscopic Surgical Skills Amongst OB/GYN Residents. A Quality Improvement Randomized Controlled Study
Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1180 Factors that Influence Applicants Pursuing A Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS)

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Department of Obstetrics and Gynecology, Division of Minimally Invasive Gynecologic Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL
*Corresponding author.

Study Objective: The Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS) has been the most competitive fellowship in Obstetrics and Gynecology since 2015. Since its inception, it has served to provide advanced endoscopic training and addresses the need for additional proficiency beyond residency. We sought to identify factors that influence applicants in choosing to pursue MIGS training.

Design: Cross-sectional study.

Setting: 2018 FMIGS Application Cycle.

Patients or Participants: FMIGS applicants.

Interventions: A novel, 32-item web-based survey was distributed to all FMIGS applicants during the 2018 application cycle.

Measurements and Main Results: Descriptive statistics were used to characterize the applicant sample and responses. Our survey response rate was 47.4% (37/78). Interest in the subject area of minimally invasive gynecologic surgery was the single most influential factor driving applicants to pursue FMIGS, followed by an interest in an academic career. Income level was the least important factor in their decision, with 37.8% rating this as not important. There were no differences in motivational factors between male and female applicants. Few applicants felt “very comfortable” performing laparoscopic hysterectomy (16.2%) or laparoscopic myomectomy (3.0%) upon completion of residency training.

Conclusion: FMIGS applicants are motivated by their interest in minimally invasive gynecologic surgery, academia and research, and the opportunity to increase their proficiency with advanced endoscopic procedures.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1711 Cesarean Scar Defect: Risk Factors and Comparison of Evaluation Efficacy between Transvaginal Sonography and Magnetic Resonance Imaging

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*Corresponding author.

Study Objective: The aim of this study is to determine the risk factors for development of cesarean scar defect (CSD), to compare the efficacy of transvaginal ultrasound (TVS) and magnetic resonance imaging (MRI) for CSD assessment, further to investigate the association between CSD size and clinical symptoms.

Design: A retrospective cohort study

Setting: Obstetrics and Gynecology Hospital of Fudan University

Patients or Participants: A total of 189 CSD patients and 378 non-CSD women with a history of cesarean section (CS) in Obstetrics and Gynecology Hospital of Fudan University from January 2008 to February 2016 were enrolled.
Interventions: All patients were diagnosed as CSD by TVS and/or MRI. Measurements and Main Results: The potential risk factors for CSD were investigated with multivariable logistic regression analysis. The TVS and MRI were performed for CSD measurements, including residual myometrium thickness, depth, length and width of CSD. The association between CSD size through TVS/MRI and symptoms were evaluated respectively. The operation time of CS ≥ 85mm, peripartum fever or infection, retroflexed uterus were risk factors for CSD. And age at time of last CS < 30 years old, intraoperative blood loss < 150ml, double-layer closure were protective factors for CSD. Prolonged menstruation, dysmenorrhea, chronic pelvic pain and infertility are main clinical manifestation. Women with larger size of CSD presented with more prolonged menstruation. Compared with TVS, measurements by MRI shows a better prediction of clinical symptoms of CSD.

Conclusion: Multi-factors contribute to development of CSD. Prevention of peripartum infection, shortening operation time, reducing blood loss and a more careful uterine closure are needed to decrease the risk of developing CSD. MRI is a reliable method for diagnosis and measurement of CSD and can be utilized in clinical practice.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION R

2198 New Laparoscopic Entry Port for Previous Surgery Cases: Jain Point
Jain DN*, Obs. & Gynae, Vardhman Trauma and Laparoscopy Centre Pvt.Ltd, Muzaffarnagar, India
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Study Objective: Laparoscopy in previous surgery cases is a challenge due to risk of encountering adhesions during the first blind trocar entry. This study demonstrates the technique, and relative benefits of a new entry point.

Design: It is a retrospective study undertaken at a high volume tertiary care referral center for advanced gynecological laparoscopic surgery.

Setting: Tertiary Care Centre

Patients or Participants: The total number of patients from January 2011 to March 2019. Total 6830 laparoscopic cases were done between January 2011 to March 2019. In 1948 patients there was a history of previous abdominal surgeries.

Interventions: Working over the years we found that post surgical adhesions are encountered usually in the midline or right side. The left side is spared as the colon adheses at the pelvic brim and stomach and spleen lie higher up at T 10 level. So we developed a point which is at L4 level and on the left side. It is at the level of umbilicus on a straight line drawn vertically upwards from a point 2.5 cm medial to the anterior superior iliac spine. We first introduce the veress needle perpendicular to the abdomen and then the 5mm telescope from this point, and optimize the 10 mm telescope entry. Jain Point port doubles up as the main working port in due course of surgery.

Measurements and Main Results: All of the 6830 cases were entered by the Jain Point in an identical manner. Out of these 1948 case were of previous or multiple surgeries.

Conclusion: Jain Point offers an alternate safe entry point in previous surgery cases, applicable to upper, mid and lower abdominal scars.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION S

2681 Impact of Surgical Specialization on Size of Uterus and Subsequent Route of Hysterectomy
Arora C,*, Han ES, Kim J.H.J, Advincula AP, Obstetrics and Gynecology, Columbia University Medical Center, New York, NY
*Corresponding author.

Study Objective: To compare uterine weights (UW) and surgical outcomes for all routes of hysterectomies completed by generalist Ob-Gyns, minimally-invasive gynecologic surgeons (MIGS), and urogynecologists (Urogyn).

Design: Retrospective descriptive study.

Setting: A tertiary urban academic teaching hospital.

Patients or Participants: All patients receiving a hysterectomy from May 2015 to April 2019 as recorded in a single-institution REDCap database.

Interventions: N/A

Measurements and Main Results: Over a four-year period, 1177 hysterectomies, including total and supra-cervical hysterectomies, were performed and entered into a database. Routes of surgery: (1) laparotomy (n=222, 18.9%), (2) total laparoscopic (TLH) (n=274, 23.3%), (3) robotic-assisted (raTLH) (n=529, 44.9%), (4) vaginal (TVH) (n=148, 12.6%), and (5) laparoscopic-assisted vaginal (LAVH) (n=4, 0.3%). Majority of hysterectomies (n=905, 81.1%) were minimally invasive. Additional prolapse and/or incontinence procedures were performed by Urogyn. Average UW were: 114.25g for laparotomy, 237.0g for TLH, 458.2g for raTLH, 127.9g for TVH, and 332.3g for LAVH. In all routes, MIGS had the highest average UW (562.5g), followed by generalists (397.8g), then Urogyn (87.5g). Average UW and BMI overall were 493.8g and 29.0. Complication rates (inclusive of 21 extensive variables both minor and major) and average EBL were: 15.3%, and 553.5mL for laparotomy, 4.4% and 141.3mL for TLH, 6.4% and 149.4mL for raTLH, 5.4% and 211.2mL for TVH, and 0% and 332.3mL for LAVH. Overall complication rate of 7.5% (n=1177). Length of surgery (LOS) is comparable in all routes (3:09 with laparotomy, 3:04 with TLH, 3:44 with raTLH, 3:29 for TVH, 3:22 for LAVH).

Conclusion: Within a single urban academic center, hysterectomies were performed by a wide-range of providers with various trends observed. MIGS performed all routes of hysterectomy more frequently and with greater UW. Urogyn performed more vaginal procedures. With a high average departmental UW (>450g), a laparoscopic or robotic-assisted approach is a safe and appropriate option. EBL and LOS are proportionally lower with MIGS when accounting for increased average UW.

Virtual Poster Session 2: Basic Science/Research/Education (1:30 PM – 1:40 PM)

1:30 PM: STATION T

1216 Novel Laparoscopic Simulation Platform
Ulrich AP,1,* Cho M,1 Lerner V2, OB/GYN (Minimally Invasive Gynecologic Surgery), Montefiore Hospital/Albert Einstein College of Medicine, Bronx, NY;2 OB/GYN, Montefiore Medical Center Albert Einstein College of Medicine, Bronx, NY
*Corresponding author.

Video Objective: With the requirement for the Fundamentals of Laparoscopic Surgery certification amongst graduating OB/GYN residents there has been increased interest in utilization of simulation to practice and improve laparoscopic skills. Currently FLS box trainers for practice and testing of FLS manual skills tasks are being sold. We aimed to create a low-cost, easy-to-make, and versatile laparoscopic training platform and studied its usability at our institution.

Setting: Academic Hospital, OB/GYN Residency program

Interventions: A rectangular piece of sheet wood was used as a platform and a blueprint based on the official FLS box trainer dimensions was created with corresponding placement of ports and the camera on the board. A drill is used to create holes for the metal pegs with eyehooks that function as ports. Velcro is applied to the board to provide stability for FLS inserts. This model can be used for any laparoscopic set up including models for hysterectomy or colpotomy. Open design of the model allows for complex task breakdown to allow learners to master skills. Total cost of one model was $15-25 per platform and took 30 minutes to build.

Conclusion: A usability and acceptability survey was administered to a convenient sample of faculty and trainees. Trainees and faculty responded favorably to the model. 70% (7/10) residents and 86% (6/7) of attendings
agreed the platform was easy to use. 100% (10/10) of residents and attendings (6/6) agreed the laparoscopic platform is useful for improving and practicing laparoscopic skills. 100% of attendings felt that the laparoscopic platform is useful for assessing the learners ability to perform laparoscopic skills prior to live surgery. 88% (8/9) of residents/fellows and 86% (6/7) of attendings felt that it closely simulated the feel of performing laparoscopy in live surgery. Novel laparoscopic platform model is an innovative low-cost teaching tool to add to the gynecologic surgical education armamentarium.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION A

3005 Resident Versus Program Director Opinions on the Fundamentals of Laparoscopic Surgery Exam Requirement

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*Corresponding author.

Study Objective: To determine opinions of both residents and program directors regarding the new American Board of Obstetrics and Gynecology Fundamentals of Laparoscopic Surgery (FLS) exam requirement

Design: Survey

Setting: Nation-wide

Patients or Participants: All OB/GYN residents and program directors (PD’s) in the United States

Interventions: Nation-wide survey

Measurements and Main Results: 91 residents completed the survey while 27 program directors completed it. 71% of residents felt that they never used their simulation lab while 59% of PD’s thought that residents used it 1-2 times a week. Of answers that scored the highest, 49% of residents felt that the main obstacle to simulation training was their resident work, while 31% of PD’s felt that it was due to resident initiative. 75.4% of residents agreed with FLS requirement, whereas only 44.4% of PD’s agreed. The majority of both residents and PD’s agreed that the programs should pay for the test. Additionally, both residents and PD’s equally felt that residents would be adequately prepared without additional resources (64.9% and 59.3% respectively).

Conclusion: Understanding both resident and PD viewpoints may be helpful in developing FLS residency curriculums.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION B

2519 Training, Education for Robotic Performance with Simulation (Terps): A Valuable Tool For Gynecologic Surgeons In Training

Helou CM,1,2 Seal PM,2 Sannes TV,3 Morozov VV,3 Roque DM2

1Minimally Invasive Gynecology, Vanderbilt University Medical Center, Nashville, TN; 2General Obstetrics and Gynecology, Palmetto Health University South Carolina School of Medicine, Columbia, SC; 3Female Pelvic Medicine & Reconstructive Surgery Urogynecology, Howard University School of Medicine, Washington, DC

*Corresponding author.

Study Objective: To evaluate the role of robotic simulation in training OBGYN residents by determining an optimal number of exercise repetitions prior to clinical debut; To assess whether clinical exposure accelerates proficiency by correlating laparoscopic/robotic experience with simulator skills acquisition

Design: Prospective cohort study

Setting: Urban academic center with active COEMIG designation

Patients or Participants: 2017-2018 Gynecology residents (PGY1-4)

Interventions: Voluntary participants were instructed to complete 10 repetitions of 5 exercises (pegboard-1, energy dissection-1, energy switching-1, ring&amp;rail-2, tubes) on the dV-Trainer® robotic simulator. After a 4-month hiatus, residents were asked to repeat the protocol. Residents were surveyed regarding prior surgical experience and perceptions regarding simulation utility.

Measurements and Main Results: 25 of 28 (89%) residents participated. Performance was captured using M-scores® (aggregate quality, efficiency, risk, and safety measure). With all exercises, M-scores® increased with repetitions among all levels (mean±SD 58.9±19.1 repetition 1 versus 82.0±13.6 repetition 10, p<0.001); however, after one round, many trainees failed to attain the pre-determined passing score of 80%. Across all participants, mean scores by exercise were 82.5±15.6, 78.0±15.8, 72.6±17.9, 62.7±19.4, 60.1±22.1 (p<0.001). Neither PGY level nor prior surgical experience correlated with higher scores: repetition-1 scores were 61±12.8, 54.0±11.2, 59.4±19.7, and 59.9±10.6 for PGY-1 through -4 participants, p=0.51; repetition-10 scores were 80±3.9, 82±9.3, 86.5±9.3, and 84±9.0, p=0.79, respectively. Self-reported prior surgical experience reflected graduated responsibility: only PGY-4 participants reported console exposure, with most describing 1-5 cases performed. Retention of skills at 4 months negatively correlated with difficulty, suggesting challenging skills require more repetitions to master. Poor compliance hindered data interpretation. The majority of trainees believed simulation is valuable.

Conclusion: Robotic simulation may be useful for development/maintenance of robotic skills in Gynecology trainees. M-score® may be insufficiently sensitive; additional metrics should be explored. Robotic simulation is valued by trainees, however, not a milestone established by the ACGME. Protected time with incorporation into curricula would be needed to maximize utility.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION C

1866 The Role of Microrna-424/503-Weel Axis in Ovarian Cancer Stem Like Cells

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*Corresponding author.

Study Objective: We investigated the role of miR-424/503-WEE1 axis in ovarian cancer and its potential utility as a therapeutic target.

Design: To determine whether miR-424/503-WEE1 axis is associated with the generation of CSCs, we up/down-regulated miR-424/503-WEE1 axis in ovarian cancer sphere cells.

Setting: This study was performed in Pusan National University Hospital, Busan, Korea

Patients or Participants: The human epithelial ovarian cancer cell lines OVCAR3, SKOV3, and OVCAR429 were obtained from the Korean Cell Line Bank. Ovarian cancer cells were maintained in MEM (Life Technologies, Inc., Grand Island, NY, USA) supplemented with 10% fetal bovine serum and 100 µg/ml streptomycin in a humidified 5% CO2 incubator.

Interventions: In order to assess spheroid formation, approximately 5 x 103 cells were suspended in 10 mL of serum-free DMEM-F12,
supplemented with 10 ng/mL basic fibroblast growth factor, 20 ng/mL epidermal growth factor and plated in an ultra-low attachment plate to prevent adherence. Spheres were counted at 14 days after plating. All experiments were performed in triplicate.

Measurements and Main Results: Firstly, we discovered that miR-424 and miR-503 are lowly expressed in ovarian cancer stem-like cells (CSCs) compared with non-CSCs. Over-expression of miR-424 and miR-503 resulted in decreased cancer colony formation, migration in ovarian cancer cell lines. Moreover, miR-424 and miR-503 over-expression caused inhibition of spheroïd formation and the DNA damage repair pathway, while over-expression of WEE1 caused increased spheroïd formation and cell survival in ovarian CSCs. Secondly, we found that the stem cell marker NANOG decreased miR-424 and miR-503 transcription in ovarian CSCs. In addition, miR-424 and miR-503 bind to the 3' UTR of WEE1 to decrease its expression. Finally, we found that atorvastatin treatment increased miR-424 and miR-503 expression while it significantly decreased NANOG and WEE1 expression in ovarian CSCs.

Conclusion: Our findings indicate that increased WEE1 is an oncogenic marker for ovarian CSCs and is a potential target for CSC-specific therapy.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION D
2958 Robotic Ureteral Reimplantation for Posthysterectomy Injury: Is Laparotomy Necessary
Salom EM,1 * Soubry TC,1 Division of Gynecologic Oncology, Florida International University, Miami, FL; 2Department of Obstetrics and Gynecology, Community of Health Institute, Miami, FL *Corresponding author.

Study Objective: There is limited data on robotic ureteral reimplantation for ureteral injury following hysterectomy. The aim of this study is to demonstrate the use of robotic ureteral reimplantation in a setting of ureteral injury sustained during hysterectomy.

Design: Retrospective case series

Setting: Hospital

Patients or Participants: Patients who developed ureteral obstruction as a result of hysterectomy

Interventions: Robotic ureteral implantation

Measurements and Main Results: This case series exhibited a 100% rate of success of robotic ureteral reimplantation without conversion from robotic to an open procedure. Two patients presented with injury in bilateral ureters (unilateral ureteral reimplantation with contralateral stenting), 4 with injury on the left, and 3 with injury on the right, 1 bilateral. 2 of the 8 procedures had a history of concurrent bladder injury during the initial surgery. The mean days to the recognition of ureteral injury was 6.5 days. 37.5% underwent concomitant lysis of adhesions during the robotic ureteronecystostomy. The Jackson-Pratt drain, ureteral stents, and Foley catheters remained upon discharge and were removed in the office post-operatively. JP drains were removed on ave 8.5 (8-10) days. Foley catheters were removed on 10.8 average (6-18) days. Ureteral stents were removed mean 34 (28-47) days. All patient underwent serial outpatient Renal US post-operatively with only 25% of patients exhibiting mild hydronephrosis following ureteral reimplantation and ureteral stent removal, 0% of patient required surgical revision of the ureteronecystostomy. Mean duration of post-operative follow up was 110.75 (22-270) days.

Conclusion: The use of robotic ureteral reimplantation is effective and safe and is underutilized. This case series demonstrates effective utilization of robotics in ureteronecystostomy following ureteral injury sustained during hysterectomy without the need of surgical revision of the ureteronecystostomy post-operatively, no loss of renal units, and no significant hydronephrosis.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION E
1554 OB/GYN Resident Interest And Exposure To Non- Clinical Healthcare Industry Careers: A Survey-Based Study Of Large Academic Institutions
Webster EM,* Simoni M, Fan LL, Desai V, Cron J. Department of Obstetrics, Gynecology and Reproductive Sciences, Yale New Haven Hospital, New Haven, CT *Corresponding author.

Study Objective: Much of healthcare innovation and advancement of patient care stems from non-clinical settings within the healthcare industry. This study aimed to evaluate OB/GYN resident exposure, knowledge, and attitude towards the relationship between the healthcare industry and medicine.

Design: An electronic, survey-based, cross-sectional study.

Setting: N/A

Patients or Participants: A Qualtrics survey was emailed to program directors and coordinators of ACGME-accredited OB/GYN residency programs with a request to forward the survey to their resident body. Only the responses of residents self-identifying as being from “large academic hospitals” were included in this study.

Interventions: OB/GYN residents were requested to complete an anonymous 22-question survey. The survey collected demographic information and assessed exposure to and interest in non-clinical healthcare careers (examples include medical device development, healthcare consulting, and hospital administration). Questions were adapted from validated sources or designed through an iterative peer-review process. Statistics were performed using STATA.

Measurements and Main Results: The survey was started 105 times and completed 94 times (89%). Twenty-two percent (n=21) of respondents held a dual degree; 21% (n=20) previously held non-clinical jobs in healthcare industry. Roughly a third (37%, n=35) reported interacting with degreed industry professionals only once per year. Only 8% (n=8) felt they had sufficient knowledge of industry careers, while 84% (n=79) were interested in learning more about how the healthcare system interacts with business and research. Nearly half (48%, n=46) were interested in a healthcare industry elective during residency. About one fourth (26%, n=25) expressed interest in pursuing non-clinical careers.

Conclusion: OB/GYN residents from large academic institutions have interest in non-clinical healthcare industry careers and desire exposure to such careers during residency. These findings indicate a need for a more thoughtful and collaborative approach between clinical medicine and the healthcare industry, while maintaining unbiased education.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION F
1420 A Bibliometric Review of the Top Cited Articles in The History of the Journal of Minimally Invasive Gynecology
Hadaya O,* Balica AC. Department of Obstetrics and Gynecology, Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ *Corresponding author.

Study Objective: Bibliometric analysis can identify impactful articles in a specialty’s history as well as highlight areas upon which future research can expand. It has thus garnered interest across multiple specialties. Our purpose was to identify and characterize the most highly cited articles in the history of The Journal of Minimally Invasive Gynecology (JMIG).
Interventions: and 50 with heavy menstrual bleeding secondary to fibroids.

Measurements and Main Results: A total of 2,727 articles were published by JMIG in this time frame. Of the top 100 articles, 47% were observational studies, 11% were new procedures/assays, and 11% were randomized control trials. 57% were from international authors. The most frequently cited topic was surgical techniques (30%), followed by surgical complications (17%) and endometriosis (11%). The mean citation number was 68.94. The median publication year of the top 100 articles was 2008. After 2008, the number of articles on surgical technique decreased (37% vs 26%) whereas the prevalence of those focusing on surgical complications increased (13% to 22%).

Conclusion: The majority of publications were observational studies, with a strong focus on surgical techniques. The number of articles on this topic decreased slightly after 2008, which also saw an increased focus on surgical complications. This data reiterates the leading role and global impact of JMIG in gynecological surgery.

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION H

2782 The Impact of a Simulation Curriculum Designed for Instituting Gynecologic Laparoscopy in Low and Middle Income Settings

Harveys LF, 1 Mata AJ, 2,*, Curlin HL, 2 Grimm BS, 2 Lovett BJ, 2 Sizemore CM, 2 Ulysse JC, 2 Minimally Invasive Gynecology, Vanderbilt University Medical Center, Nashville, TN; 3 Obstetrics and Gynecology, Vanderbilt University Medical Center, Nashville, TN; 4 Vanderbilt University Medical Center, Nashville, TN; 5 Obstetrics and Gynecology, Hôpital Universitaire de Mirebalais, Mirebalais, Haiti
*Corresponding author.

Study Objective: To measure the effect of a simulation curriculum designed for instituting gynecologic laparoscopy in low and middle-income settings on competent gynecologic surgeons with novice laparoscopic skills

Design: Prospective, single center, implementation study

Setting: Hôpital Universitaire de Mirebalais in Haiti (HUM), a 300-bed hospital operating with the Haitian Ministry of Health and Partners in Health, a Boston-based non-profit organization.

Patients or Participants: Four recent OB/GYN residency graduates and three attending OB/GYN physicians at HUM. The physicians had minimal experience with laparoscopy but were skilled abdomino-pelvic surgeons.

Interventions: A 5-day gynecologic laparoscopy curriculum was instituted. Trainees participated in increasingly complex simulations interspersed with didactic learning. Simulations included assembling and operating laparoscopic equipment, completing a laparoscopy specific surgical checklist, positioning patients, placing trocars, operating on a box trainer, and troubleshooting surgical complications and equipment malfunctions. Finally, participants completed bilateral salpingectomies on selected patients at HUM with at-the-elbow instructors. The trainees underwent pre- and post-training tests with simulation box training on 3 laparoscopic skills tasks; peg transfer, rubber band manipulation, and circle cut.

Measurements and Main Results: There were no operative complications. Two evaluators independently scored de-identified pre- and post-test videos of box trainer tasks using a modified OSATS scale (Objective Structured Assessments of Technical Skills). Both were fellowship trained gynecologic surgeons who regularly teach laparoscopy. The mean increase in OSATS scores after training was 4.3 out of 25 possible points (SD 2.7, R 0-8). A Wilcoxon signed rank test of equality of matched pairs was significant. (Prob > |z| = 0.0001.)

Conclusion: An intensive, short-term curriculum designed for instituting gynecologic laparoscopy in low and middle-income settings significantly increased the measurable laparoscopic skill of 7 gynecologic surgeons who were novices to laparoscopy. Further implementation science regarding the development of gynecologic laparoscopy in low and middle-income settings is needed.
Virtual Poster Session 2: Basic Science/Research/Education (1:40 PM – 1:50 PM)

1:40 PM: STATION I

1452 Development of a Postoperative Opioid Prescription Practice Algorithm for Benign Gynecologic Surgery (POPP Algorithm)
Braden JM,1,* Fielden AD,1 Endicott S,2 Dunlow SG,3 Lockrow EG,1 OB/GYN, Walter Reed National Military Medical Center, Bethesda; 1Minimally Invasive Gynecologic Surgery, Walter Reed National Military Medical Center, Bethesda, MD; 3Walter Reed National Military Medical Center, Bethesda, MD
*Corresponding author.

Study Objective: To determine if gynecologic surgery patients have satisfactory postoperative pain control when the POPP algorithm is used to guide the quantity of opioid medication prescribed. The secondary aim is to see if this algorithm leads to less opioid tablets prescribed after gynecologic surgery compared to past opioid prescription records.

Design: Prospective observational study, with a secondary comparison to a de-identified, retrospective dataset.

Setting: A large military medical center.

Patients or Participants: Women ≥18 years-old undergoing benign gynecologic surgery.

Interventions: Using existing data on opioid use after gynecologic surgery, we developed a simple algorithm to guide physicians in their opioid prescribing practices. Using the algorithm, the physician prescribes a set quantity of opioids, accounting for the type of surgery performed and the presence of certain patient characteristics. Patient demographic and background information are collected, both from a brief survey and the medical record. The researcher contacts patients 2 weeks post-operatively to conduct a brief survey to determine postoperative pain satisfaction and the quantity of opioid tablets remaining.

Measurements and Main Results: Upon study completion, data analysis will determine if the algorithm provides patients with adequate opioid medication by looking at the number of patients that required refills, the median number of tablets consumed after each procedure type, correlation of opioid use with other factors, and patient perception of pain control. We will compare quantity of opioids prescribed using the POPP algorithm to the quantity prescribed to a retrospective cohort of similar patients. We will adjust generalized linear models using patient and surgical co-variates to identify if algorithm prescribing is significantly lower than non-algorithm prescribing.

Conclusion: Preliminary data demonstrates the POPP algorithm, when used for patients undergoing benign gynecologic surgery, results in satisfactory postoperative pain control, an adequate quantity of opioid medication for most patients, and less excess opioids dispensed.

Virtual Poster Session 2: Basic Science/Research/Education (1:40 PM – 1:50 PM)

1:40 PM: STATION K

1917 Comparison of Training Techniques in Gynecological Endoscopy in Various Parts of the World
Singh R,1,* Majumder K,2 Anantharachagan A,1 Lee HL, Singh V,3 Chaturvedula L,4 Koothan V,3 Mettler L,1 Obstetrics and Gynecology, Fiona Stanley Hospital, Perth, WA, Australia; 2Obstetrics and Gynecology, Manchester Foundation Trust, Manchester, United Kingdom; 3Waikato Hospital, Hamilton, New Zealand; 4Obstetrics and Gynecology, JIPMER University Hospital, Puducherry, India; 5Obstetrics and Gynecology, AVMC Hospital, Puducherry, India; 6Obstetrics and Gynecology, University Hospitals Schleswig-Holstein, Kiel, Germany
*Corresponding author.

Study Objective: Endoscopy has improved in safety and utility over the years and is now part of standard Gynecological management. But Endoscopy has a learning curve and this may be steep in some instances. The role of systematic training is to improve the safety and efficacy of surgery and patient outcome.

Problem Question: Does Endoscopic training match the expectations of trainees and trainers, and is it currently being done in a systematic, safe, and effective manner with adequate supervision?

Design: Comparative analysis of training in Gynecological Endoscopy. This study compared and contrasted various centers in different countries worldwide, along with surveys of users and a review of literature in the field.

Setting: The survey attempts to identify the strengths and deficiencies of different methods of training and make suggestions for improvement so that future surgeons and patients are benefitted.

Patients or Participants: Trainees and trainers in Gynecological Endoscopy in various centers around the world.

Interventions: N/A

Measurements and Main Results: Trainees worldwide are extremely keen to develop Endoscopic skills during their training. While some centers have an excellent & structured training, many don’t, and there doesn’t seem to be well defined standards (even within the same country in many cases) which trainees should aim to achieve. There is a huge variation in resources available, utilization, assessment of training, levels of involvement and supervision among centers and countries.
**Virtual Poster Session 2: Basic Science/Research/Education**

1:40 PM – 1:50 PM

### 2392 ROBUST (Robotic Uterine Standardized Technique or): A Novel System for Uterine Biopsy

**Fazel A**,1,*,2 Chulard R,3 Reversat D,4 Vitran MA.1 Obstetrics and Gynecology, Lariboisiere Hospital APHP, Paris, France; 2ISIR, Sorbonne University, Paris, France; 3UPMC, Paris, France; 4ISIR, Sorbonne University, Paris, France
*Corresponding author.

**Study Objective:** The differential diagnosis of fibroids could be challenging with other uterine masses including adenomyomas or uterine cancers and sarcomas. Minimally Invasive procedures including morcellation mandates a thorough imaging and if possible histologic analyses. To date such a pathologic approach has a very poor accuracy, even conducted under ultrasound, MRI or hysteroscopic guidance. A targeted biopsy requires the development of state of the art imaging and robotics to enable a secure, reproducible, and accurate sampling. The aim of our study is to develop such a device based on the latest innovations in 3D imaging and robotics.

**Design:** ROBUST includes a robotic system called APOLLO® to position an ultrasound probe and an needle attached to it. A «co-manipulation mode» is used to control a robotized probe holder with Trinity, a 3D ultrasound system performing image fusions.

**Setting:** University Hospital and University Research Laboratory in Robotics

**Patients or Participants:** Phantom Model

**Interventions:** Numerical approach on a phantom to estimate the interaction between the probe tip and the insertion environment. It is implemented on a robotic control law in order to accurately position the probe tip on uterine target

**Measurements and Main Results:** Biomechanical study of the uterus were performed to ensure the robustness and the efficacy of the image fusion. The fusion between intraoperative US images will allow the tracking of the organ displacement and deformation. A graphical interface dedicated to uterus diagnosis and puncture accessories will be developed. The guidance of the clinician gesture through a co-manipulated mode will allow an optimized targeting, exploiting the MRI targets of the imaging system, and taking account of the anatomical limits with a force feedback system

**Conclusion:** Two experiments manipulating Freely an ultrasound probe along two perpendicular translation and after insertion in an anatomical phantom helped us to assess a mathematical model to improve a robotic device to direct ultrasound guided biopsies.

**Virtual Poster Session 2: Basic Science/Research/Education**

1:40 PM – 1:50 PM

### 2661 Training Laparoscopic Technical and Procedural Skills Using a New Gynecologic Silicon Pelvic Model:

**Residency Opinion**

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*Corresponding author.

**Study Objective:** To evaluate residents' opinion and to establish face- and content validity of a new silicone pelvic model for gynecologic simulation box training to practice technical and procedural laparoscopic skills. Intended innovative features of this model are: a realistic design made of silicone (i.e. realistic gynecological anatomy and feel of tissue); removable anatomy enabling the practice of six gynecological procedures.

**Design:** Prospective study

**Setting:** National laparoscopy courses

**Patients or Participants:** Twenty four residents in OBGYN (postgraduate year 4-6)

**Interventions:** During two laparoscopy courses participants used a new gynecologic silicon model of the pelvis for laparoscopic box training (Applied Medical, California, USA). All participants used the model for two hours. Procedures performed included: salpingectomy, oophorectomy, ectopic pregnancy, cystectomy, myomectomy, hysterectomy with opening of the vaginal cuff. After the training, all residents filled out a questionnaire considering their opinion about the usefulness and value of new model on a five-point Likert scale.

**Measurements and Main Results:** Residents appreciated the realistic and anatomic design of the model (median 4 (IQR 4-5)). The tissue feeling was evaluated as less realistic (median 3.5 (3-4)). Overall, the residents highly valued this model for laparoscopic training in general and to acquire technical skills (both median 5 (4-5)). They appreciated the possibility of procedural training (median 4.5 (4-5)) and would like the model to be implemented in their residency training (median 5 (4-5)).

**Conclusion:** The new silicone gynecological box model demonstrates good face- and content validity. Residents appreciated the realistic design and the possibility to train technical and procedural laparoscopic skills. They would like to implement this in their training curriculum. Model enhancements regarding a more realistic feel of tissue are recommended.

**Virtual Poster Session 2: Basic Science/Research/Education**

1:40 PM – 1:50 PM

### 2992 Does Dry Lab Training Improve Measured Performance in Laparoscopic Knot Tying?

Gherghe M,*, Papadakis K, Tyagi V, Hardwick C. Obstetrics and Gynaecology, Queen Elizabeth University Hospital, Glasgow, United Kingdom
*Corresponding author.

**Study Objective:** Our study wishes to appraise the effectiveness of hands-on laparoscopic training sessions using visual analogue scales.

**Design:** Evaluation of training was performed via self and tutor assessment questionnaires using visual analogue scale of 10 cm length to measure pre and post-training scores. We measured 5 different skills considered essential in performing safe laparoscopic surgery: manual dexterity, needle handling, tissue handling and knot efficiency. In addition, we measured the ability tie specific laparoscopic knots: surgical, square, spaghetti, Watson. Scores were analyzed for statistical significance using student t-test.

**Setting:** Dry lab laparoscopic training boxes

**Patients or Participants:** 9 trainees in Obstetrics and Gynecology, year 3 to 7 of training.

**Interventions:** One-day course based on theoretical lectures, video presentations and supervised practice in dry lab laparoscopic suturing. The ratio was one faculty to each two delegates.

**Measurements and Main Results:** There was a statistically significant difference in mean scores showing improvement for both candidate self-
Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION P

1489 Exosomes Derived from Human Umbilical Cord
Mesenchymal Stem Cells Accelerate Growth of VK2
Vaginal Epithelial Cells through Micrornas In Vitro
Zhu Z.1, Wu L.1, Ding J.2, Hua K.1, 1Department of Gynecology, Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China; 2Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China; 3OBS & GYN hospital, Fudan University, Shanghai, China; 4Gynecology, Obstetrics and Gynecology Hospital, Fudan University, Shanghai, China
*Corresponding author.

Study Objective: To investigate whether and how human umbilical cord mesenchymal stem cell-derived exosomes (hucMSC-Ex) could accelerate vaginal epithelium cell (VK2) growth.

Design: hucMSC and exosomes isolated from their conditioned medium were used to treat VK2.

Setting: Normal human fibroblasts (HFF-1) were used as negative control to hucMSC.

Patients or Participants: N/A

Interventions: VK2 cells were co-cultured with hucMSC whose paracrine effect on the viability, cell cycle and cell apoptosis of VK2 vaginal epithelial cells was further assessed by CCK-8 assay and flowcytometry. After identified by TEM-NTA-WB, hucMSC-Ex at different concentrations were used to treat VK2. High-throughput RNA sequencing was utilized to reveal the profile of microRNAs in hucMSC, HFF-1 and their exosomes. The functions of hucMSC-Ex specific microRNAs in VK2 were demonstrated by GeneOntology analysis and confirmed by phenotypic detection in microRNA mimics and inhibitors transfection VK2 and RNAi-hucMSC-Ex treated VK2 cells.

Measurements and Main Results: hucMSC stimulate VK2 growth through a paracrine route by promoting cell cycle and inhibiting apoptosis. Compared with control and low dose groups, hucMSC-Ex of high concentration (≥1000 ng/ml) significantly increased VK2’s growth after restoration in a dose-dependent manner (P < 0.05). HucMSC-Ex raised the proportion of cells in S-phase and reduced the percentage of apoptotic cells in VK2, microRNAs, including miR-100 (16.92%), miR-146a (9.21%), miR-21 (6.67%), miR-221 (6.39%) and miR-143 (4.63%), were found to be specifically enriched (P < 0.05) in hucMSC-Ex and their concentrations correlated on cell cycle, development and differentiation.

Conclusion: Our findings indicate that hucMSC-Ex may play a significant role in accelerating VK2’s proliferation by promoting cell cycle and inhibiting apoptosis through exosomal microRNAs in vitro. This supports the potential use of hucMSC-Ex as a cell-free therapy of MRKH after vaginoplasty. This study was supported by Chinese National Nature Science Foundation (grant number 91440107, 81471416 and 81771524) and Strategic Priority Research Program of the Chinese Academy of Sciences (XDB19040102).

Virtual Poster Session 2: Basic Science/Research/Education
(1:40 PM – 1:50 PM)

1:40 PM: STATION Q

1691 Value Based Healthcare in MIGS; Bundles and Beyond
Rosenfield RB*, Gynecology, Pearl Women’s Center, Portland, OR
*Corresponding author.

Study Objective: Providing High Quality Outcomes in Minimally Invasive Gynecology Surgery to Satisfy the Triple Aim of CMS: Quality, Cost, and Patient Experience

Design: Retrospective Cohort at multiple institutions. Savings and Outcome Data (complications, readmissions, infection rate), Proof of Concept and Feasibility of Creating National Network with Alternative Payment Model (APM)

Setting: Ambulatory Surgery Centers in multiple cities

Patients or Participants: Non-Randomized retrospective review of program growth

Interventions: Laparoscopic Hysterectomy performed with Same Day Discharge home in ASC setting, each location with one primary surgeon in charge of quality for site. Aggregation of outcome data, cost, charges, and savings achieved with review of CMS reference based prices.

Measurements and Main Results: LH (Laparoscopic Hysterectomy) was performed in an ambulatory surgery center setting by several physicians at respective institutions in Portland OR, Atlanta GA, Minneapolis MN, Phoenix AZ, Houston TX, Dallas TX, Chicago IL, and New York City NY. Cases were referred to a High Performance Network of surgeons from self-insured companies interested in direct contracts outside of traditional
commercial contracts. 200 Patients were referred to the provider network and underwent LH at one of several locations. Bundled pricing was provided with indemnification against complications. All surgeons performed LH with same day discharge. Patient demographics, including age/BMI/procedure, will be provided at time of presentation. Outcomes and cost were compared to national standards for Gynecology Surgery.

**Conclusion:** Bundled Gynecologic Procedures provide a Cost Effective Value Based Solution in the US Healthcare System. Publication of such success is imperative in order to expand the opportunity for deployment of Advanced Alternative Payment Methodology as set forth by CMS in the Affordable Care Act. This retrospective multi-center cohort validates a hypothesis that an outpatient program of “surgical bundles” can be scaled and deployed nationally to provide higher quality outcomes, lower cost, and a better patient experience, the "triple aim" of Value Based Care.

**Virtual Poster Session 2: Basic Science/Research/Education**

1:40 PM – 1:50 PM

**1699 Determining The Accuracy of Sonography in Detecting Pelvic Adhesions, A Pilot Study**

Chandler JN,1,2 Kramer DJ,3 Mihalos LS,1, Gynecology, Virginia Mason Medical Center, Seattle, WA; 3Virginia Mason Medical Center, Seattle, WA

*Corresponding author.

**Study Objective:** The objective of the study is to determine if ultrasound can accurately detect pelvic adhesions in patients before laparoscopic or robotic-assisted laparoscopic gynecologic surgery.

**Design:** A pilot study (Canadian Task Force II-3)

**Setting:** A single community hospital in a metropolitan city.

**Patients or Participants:** Fifty-two patients consented for the study, from March 2018 until August 2018. Thirty patients completed the study protocol.

**Interventions:** After completing a pelvic ultrasound, participants underwent laparoscopic or robotic-assisted laparoscopic surgery.

**Measurements and Main Results:** The data of patients completing the study protocol was analyzed. In total, 30 patients were analyzed. Ultrasound was most sensitive at detecting adhesions involving the ovaries. The sensitivities of the right and left ovary were 1 (0.57-1) and 1 (0.65-1) respectively. The specificity was highest at the posterior cul-de-sac (PCD) 0.90 (0.70-0.97). There were 4 participants with an elevated composite score of 6 or more.

**Conclusion:** In this pilot study, ultrasoundography had a high sensitivity for detecting pelvic adhesions of the ovaries, and high specificity for excluding adhesions involving the posterior cul-de-sac. Elevated composite radiographic adhesion index scores were consistent with areas of dense adhesions.

**Virtual Poster Session 2: Basic Science/Research/Education**

1:40 PM – 1:50 PM

**2160 Effects of Visual Fidelity for Design of a Virtual Reality Based Pain Management System**

Prabhu A,1,2 Masghati S,3 Hernandez, PW,1 Kim SI,1 Klein NC,1 Howard R, Hughes College of Engineering, UNLV, Las Vegas, NV; 2Obstetrics and Gynecology, LVMS-UNLV, Las Vegas, NV

*Corresponding author.

**Study Objective:** To compare low vs high fidelity Virtual Reality (VR) for pain distraction in gynecology.

**Design:** Experimental; qualitative interview

**Setting:** Two OB GYN experienced the Low-and High-Fidelity VR developed by the UNLV engineering team. An informal interview was performed after experiencing the two apps.

**Patients or Participants:** Two OB GYN physicians

**Interventions:** The two apps were setup in the DEX Lab at UNLV. The participants experienced both the low and high fidelity apps using a standard VR headset.

**Measurements and Main Results:** Participants mentioned greater immersion in the High-Fidelity prototype. The greater variety in the background alone contributed significantly to the level of distraction compared to only timed or task-based interactions. An interesting finding was the effect range of motion required for certain tasks. Limiting the range of motion of the tasks to comply with the procedures and limiting the user’s physical contribution during to a minimum and based on the user’s mobility.

**Conclusion:** The research conducted as part of a pilot study explored how different levels of visual stimuli in VR would potentially affect patients on their level of pain. Two VR apps, one with high fidelity images and the other with low fidelity images were developed and tested by two OGGYN doctors resulting in higher fidelity VR would engage a patient more in browsing the VR stimuli in the process. This study was done in order to identify variables of interest for fixing the design parameters for development of the pain management system.

**Virtual Poster Session 2: Basic Science/Research/Education**

1:40 PM – 1:50 PM

**1673 A Novel Low Cost Uterine Model Called Hysteropractor for Hysteroscopic Simulation Exercises**

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*Corresponding author.

**Study Objective:** To develop a very low cost, easily available uterine model for spatial orientation and practicing hysteroscopic surgeries. We are describing a very low cost novel uterine model (remembers uterus in shape and size) where a variety of hysteroscopic exercises can be practiced by residents.

**Design:** Pilot design of a novel uterine model /trainer utilized during simulation in a hysteroscopy workshop.

**Setting:** Single day hysteroscopy workshop for residents and fellows of Obstetrics and Gynecology

**Patients or Participants:** 100 Gynecology residents and practitioners who attended the workshop

**Interventions:** The hystero-practor or the uterine model is constructed using a mold to perform several exercises using the hysteroscopic instruments and its hardware. All the gynaecologists were made to do diagnostic hysteroscopy to operative hysteroscopic procedures such as polypectomies, septal resections, tubal cannulations using bell peppers and saline tubing and other vegetable models with hystero-practor. They also performed resections using brinjal and potato by monopolar and bipolar energy sources. Gynecologists were asked to rate confidence in performing hysteroscopic procedures using a 5-point agreement scale pre and post simulation with the trainer.

**Measurements and Main Results:** The hystero-practor is reusable low-cost model and the materials used for exercises cost almost nothing. Teaching and training can be done through various reality simulators and animal models but cost and availability is a constraint. With this model they get the feel of practicing on something which looks similar to uterus in shape and size as well. All gynecologists performed the exercises well and there was a significant increase in confidence levels post workshop p = 0.004

**Conclusion:** Our low-cost novel uterine model can be used for resident training in hysteroscopic procedures and improve their confidence in performing hysteroscopic procedures and reduce complications.
Virtual Poster Session 3: Basic Science/Research/Education (9:50 AM – 10:00 AM)

9:50 AM: STATION A

1739 Ultrasound Elastography for Gynecological Applications: Preliminary Reliability Analysis
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Study Objective: This preliminary investigation aimed to evaluate the feasibility of using ultrasound elastography (UE) to evaluate the myometrial and uterine leiomyoma stiffness. Our objectives were to (1) assess the reliability of UE stiffness measures of non-neoplastic myometrium, and (2) compare UE stiffness measures of non-neoplastic myometrium and leiomyomas.

Design: This preliminary investigation used a prospective, observational design.

Setting: Motor Function Measurement Laboratory at the University of Ottawa.

Patients or Participants: Nine healthy women with no gynecologic history (control) and one woman (case) with two asymptomatic uterine leiomyomas (FIGO 6) were recruited from the local community.

Interventions: Three trials of a 2D UE cineloops were acquired transvaginally (Aixplorer, SuperSonic Imagine) at the frontal midsagittal myometrium and in the sagittal plane of each leiomyoma. The procedure was repeated twice at the first visit (V1S1, V1S2) and again 2-3 days later (V2S1). Participants completed the menstrual bleeding questionnaire (MBQ) at V1S1.

Measurements and Main Results: Descriptive statistics were used to evaluate normative peak myometrial stiffness, and the reliability of peak tissue stiffness (kPa), averaged across three trials (10 frames/trial), was evaluated using intraclass correlation coefficients (ICCs). The control group (ages=30.2±4.4 years, MBQ=11.29) had median parity of 0 (range: 0-1), while the case participant (ages=31.4 years, MBQ=13) had parity of one. Peak myometrial tissue stiffness (V1S1=35.9±9.6 kPa, V1S2=34.1±8.8kPa, V2S1=32.7±11.9kPa) exhibited excellent within-session reliability (ICC<sub>V1S1V1S2</sub>=0.89, ICC<sub>V1S1V2S1</sub>=0.92, ICC<sub>V2S1V2S1</sub>=0.96), and good between-session (ICC=0.71) and between-day (ICC=0.76) reliability. The 95% prediction interval for normative myometrial tissue, computed using values recorded from the control group was 18.5-50.0kPa. The peak stiffness of both leiomyomas (Fibroid A = 111.4kPa; Fibroid B = 84.0kPa) well exceeded the 95% prediction interval for unaffected myometrium.

Conclusion: UE stiffness exhibited good to excellent reliability in non-neoplastic myometrial tissue, and much higher stiffness was observed in the two asymptomatic fibroids, suggesting that UE may have clinical value in this gynecologic population.

Virtual Poster Session 3: Basic Science/Research/Education (9:50 AM – 10:00 AM)

9:50 AM: STATION B

2186 Towards Zero SSIs: Incisional Negative Pressure Wound Therapy in High Risk Gynecologic Surgery
Patients May Reduce Infections but not Overall Wound Complications
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*Corresponding author.

Study Objective: Identify whether incisional (or prophylactic) negative-pressure wound therapy (iNPWT) is associated with reduced wound complications.

Design: Retrospective cohort study.

Setting: Quaternary referral academic center.

Patients or Participants: Included patients underwent an open abdominal procedure for a gynecologic indication with a gynecologic primary surgeon between July 1, 2015 and June 30, 2017. Type III or IV incisions were excluded. A total of 568 patients met inclusion criteria.

Interventions: iNPWT placed over a closed incision.

Measurements and Main Results: We compared our intervention group of patients who had 1+ additional risk factor and received iNPWT (Group A) to a group of patients managed by gynecologic surgeons who never use iNPWT (Group B) and to a cohort who did not receive iNPWT, but were managed by gynecologic surgeons who use iNPWT (Group C). The primary outcome was a composite of wound complications, including surgical site infections (SSIs), hematomas, seromas, or wound separations, within 30 days following surgery. Results were adjusted using inverse probability weighting.

The unadjusted wound complication rates were 18.3%, 13.4% and 16.8%, in Groups A (N=71), B (N=283), and C (N=214), respectively, and were not significantly different. The adjusted rates were similar for overall wound complications but did show a lower SSI rate between Groups A and B (6.7% vs 8.2%) and groups A and C (5.0% vs 10.0%). A subgroup of patients with a BMI >40 kg/m² and 1 additional risk factor showed similar SSI rates (10.5% vs 10.3%) between Groups A and C, and a lower rate in Group A when compared to Group C (10.5% vs 20.0%). However, SSI rate differences did not reach statistical significance due to low numbers.

Conclusion: There was no difference in overall wound complication rates among patients receiving iNPWT. Lower SSI rates were seen although statistical significance was not reached. iNPWT as an intervention may impact SSIs more than hematomas, seromas, and wound separations.

Virtual Poster Session 3: Basic Science/Research/Education (9:50 AM – 10:00 AM)

9:50 AM: STATION C

2624 Private vs Public: How Insurance Type Impacts Patient’s ‘No-Show’ Appointment Rates and Time to Surgery
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*Corresponding author.

Study Objective: To evaluate how insurance type (public vs private) impacts the frequency of missed appointments and the time lapse from first office visit to date of gynecologic surgery.

Design: Retrospective cohort study.

Setting: Academic hospital.

Patients or Participants: Women who underwent laparoscopic hysterectomy, robotic-assisted hysterectomy, or myomectomy procedures between 2012 and 2018.

Interventions: N/A.

Measurements and Main Results: 939 patients were identified: 267 (28.4%) were laparoscopic hysterectomies, 368 (39.2%) were robotic-assisted hysterectomies, and 304 (32.4%) were myomectomies. In the sample, 340 (36.2%) patients had public insurance and 599 (63.8%) had private insurance. The adjusted rates were 18.3%, 13.4% and 16.8%, in Groups A (N=71), B (N=283), and C (N=214), respectively, and were not significantly different. The adjusted rates were similar for overall wound complications but did show a lower SSI rate between Groups A and B (6.7% vs 8.2%) and groups A and C (5.0% vs 10.0%). A subgroup of patients with a BMI >40 kg/m² and 1 additional risk factor showed similar SSI rates (10.5% vs 10.3%) between Groups A and C, and a lower rate in Group A when compared to Group C (10.5% vs 20.0%). However, SSI rate differences did not reach statistical significance due to low numbers.

Conclusion: There was no difference in overall wound complication rates among patients receiving iNPWT. Lower SSI rates were seen although statistical significance was not reached. iNPWT as an intervention may impact SSIs more than hematomas, seromas, and wound separations.
private insurance. Public insurance was significantly associated with older age, a smaller proportion of White/Caucasian race, higher BMI, higher gravidity, higher parity, a smaller proportion of married patients, more chronic medical conditions, and lower employment rates (all \( p<0.05 \)). Unadjusted analysis of outcomes in the sample showed that public insurance was significantly associated with a higher average percentage of ‘no show’ appointments when compared to private insurance (1.9% vs 0.8%; \( p<0.01 \)) and that public insurance was significantly associated with having at least 1 ‘no show’ appointment when looked at categorically (6.5% vs 2.5%; \( p<0.01 \). After adjusting, those who were publicly insured were 2.24 times more likely to have had at least 1 ‘no show’ appointment compared to those who were privately insured (95% CI: 1.03 – 4.48; \( p=0.04 \)). No statistically significant differences were detected between public and private insurance when looking at time from initial consult to surgery, attended appointments, or canceled appointments.

**Conclusion:** Patients with public insurance were more likely to missed scheduled appointment than those with private insurance. There was no difference between groups temporally from initial consult to surgery. Further research needs to be conducted to understand what socioeconomic factors impact publicly insured patients’ access to appointments and how to remove those barriers.

**Virtual Poster Session 3: Basic Science/Research/Education**

**9:50 AM – 10:00 AM**

**2982 Discrepancies Between Author- and Industry-Reported Disclosures of Financial Relationships in Gynecologic Research**

**Wong JM, Guo XM, King NR, Milad MP. Obstetrics and Gynecology, Northwestern University, Chicago, IL; Department of Obstetrics and Gynecology, Division of Minimally Invasive Gynecologic Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL.**

*Corresponding author.

**Study Objective:** To investigate the concordance between author disclosures of financial and commercial interests and the data available on reported industry transactions present in the Centers for Medicare & Medicaid Services Open Payments database (OPD).

**Design:** Data was collected from an abstract booklet for a 2018 gynecologic annual meeting, including information on author specialty, number of abstracts published, and the number and nature of the listed disclosures. This was compared to data available for each author in the OPD in 2017, which included the amount and nature of all industry payments.

**Setting:** Retrospective observational study.

**Patients or Participants:** All authors with abstracts published in a 2018 gynecologic annual meeting abstract booklet.

**Interventions:** N/A.

**Measurements and Main Results:** A total of 544 authors were identified in the abstract booklet. Of these authors, 515 (94.7%) had no disclosures listed while 29 (5.3%) had one or more disclosure listed. Of the 515 authors without any disclosures, 219 (42.5%) had industry payments recorded in the OPD. A majority (160/2514, 67.2%) of the industry payments were categorized as “Food and Beverage” payments. Of 16 authors with multiple abstracts and at least one disclosure listed, 12 (75.0%) had discordance in reported disclosures between their own abstracts. In total, 224 (44.8%) authors were found to have industry relationships in the OPD, comprising over 2.2 million dollars of industry payments with a median payment of $76.46 (IQR $22.52-$179.85).

**Conclusion:** Many authors at a major gynecologic annual meeting did not correctly disclose some or all of their industry relationships, and those that did often failed to correctly disclose those relationships across their presented work. A majority of payments, however, were related to food and beverage transactions and the median payment overall remained low.

**Virtual Poster Session 3: Endometriosis**

**9:50 AM – 10:00 AM**

**1565 Laparoscopic Management of Endometriosis Presenting with Massive Recurrent Hemoperitoneum**

**González AM, Carugno JA, Artazaçóz S, Elorriaga F, Quiñonez A, Palla H, Timmons D. Obstetrics and Gynecology, Hospital Naval Pedro Mallo, Buenos Aires, Argentina; Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Pembroke Pines, FL; Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL.**

*Corresponding author.

**Video Objective:** To describe the clinical characteristics and laparoscopic findings of a patient with endometriosis presenting with hemorrhagic ascites.

**Setting:** University teaching academic level IV hospital.

**Interventions:** Diagnostic laparoscopy, drainage of hemoperitoneum and multiple peritoneal biopsy. The medical management of this rare condition is also discussed.

**Conclusion:** Endometriosis should be a differential diagnosis in women of reproductive age presenting with massive hemorrhagic ascites. Diagnostic laparoscopy with drainage of hemoperitoneum is a feasible option to obtain a pathology confirmed diagnosis of patients presenting with hemoperitoneum secondary to pelvic endometriosis. Awareness of this condition will prevent unnecessary aggressive resection commonly performed when confused with ovarian cancer.
Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION G

2612 Tumors of the Appendix: Prevalence in Patients with Chronic Pelvic Pain Undergoing Minimally Invasive Excision Surgery with Concomitant Appendectomy for Suspected Endometriosis
Farzan Nikou A,1*, Tenzel NS,1 Hua P,1 Pan S,1 Orbuch L,2,4
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*Corresponding author.

Study Objective: To determine the prevalence of appendiceal tumors in patients with chronic pelvic pain undergoing excisional surgery.

Design: Retrospective chart review.

Setting: Two Large Metropolitan Academic Hospitals.

Patients or Participants: 135 patients between the ages of 16 to 52 with chronic pelvic pain undergoing minimally invasive excision surgery with concomitant appendectomy for suspected endometriosis from January 2012 to June 2017.

Interventions: Medical records and postoperative pathology reports were analyzed for all 135 patients for the presence of appendiceal tumors, presence of endometriosis, and age.

Measurements and Main Results: The prevalence of appendiceal tumors in patients with chronic pelvic pain was 3% (95% CI:0.1-5.8%). Of these cases, three were neuroendocrine carcinoid tumors (0.5 cm, 0.6 cm, and 1.1 cm respectively) and one was a low grade appendiceal mucinous neoplasm (LAMN). Two of the patients had biopsy confirmed endometriosis. The biopsy confirmed endometriosis patients had the 0.6 cm neuroendocrine carcinoid tumor and the LAMN, respectively. Patients with and without appendiceal tumors had mean ages of 26.8±7.1 and 32.6±7.6 years, respectively.

Conclusion: The 3% prevalence of appendiceal tumors in our sample and the young age of the patients with appendiceal tumors is at odds with the much lower prevalence of appendiceal tumors and much older patient population reported in the literature. This highlights the increased need for research to establish predictive diagnostic criteria for appendiceal tumors and suggests that surgeons consider concomitant appendectomy in patients with chronic pelvic pain.

Video Objective: To demonstrate the surgical technique and steps of a minimally invasive videoappendectomy.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION I

2196 Vulvar Vestibulectomy with Vaginal Advancement Flap for Neoproliferative Vulvodynia
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*Corresponding author.

Video Objective: To demonstrate the surgical technique and steps of a vulvar vestibulectomy procedure used for management of neoproliferative vulvodynia.

Setting: A patient with lifelong vulvar pain and dyspareunia diagnosed with neoproliferative vulvodynia seeking surgical management at a large academic center.

Interventions: Vulvodynia is a common, but under recognized, cause of pain in women. In neoproliferative vulvodynia, there is a higher density of nociceptors in the vestibule that cause both allodynia and hyperalgesia. Though medical management options are available, surgical management through vestibulectomy removes the affected mucosa with the associated nociceptors, and can more effectively alleviate pain for these women.

Conclusion: For patients with neoproliferative vulvodynia, surgical management with removal of the vulvar vestibule is a safe and effective treatment method.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION J

2414 Endometriosis and the Prevalence of Infectious Agents within the Endometrium and Endo-Cervix
Hilgers SJ,1,2 Roberts A,1*, 1Obstetrics & Gynecology; 2Reproductive Robotic Surgery Program, Houston Methodist Hospital, Houston, TX; 3Obstetrics & Gynecology Residency Program, Houston Methodist Hospital, Houston, TX
*Corresponding author.

Study Objective: The presence of endometriosis has been shown to be strongly associated with chronic endometritis, and, furthermore, chronic endometritis has been associated with infectious agents in the endometrial
Patients or Participants: All patients diagnosed with endometriosis at the time of laparoscopy who underwent collection of endometrial/endo-cervical cultures from 2016 – 2018 (N=97).

Interventions: N/A.

Measurements and Main Results: Sterile endometrial/endo-cervical cultures were collected, per standardized protocol, prior to preparation of the vagina. Aerobic/anaerobic cultures; PCR for mycoplasma/ureaplasma/gonorrhea/chlamydia; viral cultures; and yeast cultures were performed.

In patients diagnosed with endometriosis at the time of laparoscopy, 70% tested positive for an infectious agent on endometrial/endo-cervical culture. Organisms were found in 65% of individuals diagnosed laparoscopically with mild endometriosis (American Society for Reproductive Medicine Revised Classification of Endometriosis "ASRM Classification" Stage 1-2), and 75% diagnosed with severe endometriosis (ASRM Classification Stage 3-4).

Gram positive organisms were the most common infectious agent cultured at 72%, and were primarily E. Faecalis (31%), Lactobacillus (17%), and Group B Strep (15%). Gram negative organisms (18%) were primarily E. coli (10%). Less commonly, yeasts (13%), anaerobes (3%), and ureaplasma (1%) were found. No gonorhea, chlamydia, viral cultures; and yeast cultures were performed. No significant correlation was found between severity of endometriosis and prevalence of any single organism.

Conclusion: For individuals with endometriosis, regardless of severity, the presence of infectious organisms in the endometrium and endo-cervix is similar to published data on chronic infectious endometritis.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION K

2948 Prospective, Single-Blinded Pilot Study: Bimanual Pelvic Examination Versus Pelvic Ultrasound Results in Symptomatic Women
Touchan E.1,*, Manik M.2, Sarfosh V.2, Mackoul P.2, Dandiyants N.3, van der Does L.1, Haworth L.1,*, Research, The Center for Innovative GYN Care, Rockville, MD; 2The Center for Innovative GYN Care, Rockville, MD; 3Vige, Rockville, MD
*Corresponding author.

Study Objective: To compare the results of bimanual pelvic exam (BPE) to Pelvic Ultrasound (PU) in symptomatic women. The American College of Physicians reported that 35% of women may experience pain, discomfort, embarrassment, or anxiety during a pelvic exam. This may serve as a barrier for women to seek medical care, which could potentially delay diagnosis. While prior studies show lack of evidence for routine BPE in asymptomatic women, its use in symptomatic women may also be limited.

Design: Prospective single-blinded pilot study.

Setting: Free-standing ambulatory surgery center serving the Washington, DC area.

Patients or Participants: Women, 18 years or older, with BMI < 40, presenting for evaluation of symptomatic gynecologic problems.

Interventions: BPE was performed by an experienced gynecologist blinded to the patient’s previous ultrasound results. The sonographer was also blinded to BPE results.

Measurements and Main Results: A total of 20 patients were evaluated, 45% for abnormal uterine bleeding, 60% for pelvic pain or dysmenorrhea, 25% for infertility or pregnancy losses, and 15% for post-menopausal bleeding. While PU indicated adnexal abnormalities in 25% of patients (hydrosalpinx, ovarian cysts or endometrioma), BPE only identified 1 case, for a detection rate of 20%. PU identified myomas in 80% of the cases, while BPE detected only 5 cases, for a detection rate of 31%. Although the size and location of myomas were mostly undetermined by BPE, it did accurately assess uterine size in 80% of the cases.

Conclusion: BPE offers little clinical utility in diagnosing gynecologic problems in symptomatic women. A full prospective study of a large number of patients is in progress to further validate these results.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION L

1901 Obliterated Rectovaginal Space Dissection
Gupta N*, Minimally Invasive Gynecologic Surgery, Jackson Madison County General Hospital, Jackson, TN
*Corresponding author.

Video Objective: Show dissection techniques in a completely obliterated cul-de-sac.

Setting: Stage 4 Endometriosis patient.

Interventions: Robotic assisted excision of endometriosis, hysterectomy and restoration of normal anatomy.

Conclusion: Stage 4 Endometriosis causes frozen pelvis and complete distortion of normal anatomy. Restoration of normal anatomy and excision of endometriosis is the goal of surgery in such patients whether or not hysterectomy is performed. It is essential to restore the normal anatomy and identify the key structures before undertaking hysterectomy to avoid inadvertent injuries and also to provide symptomatic relief to the patient.

Deeply infiltrative fibrotic endometriosis infiltrates through rectovaginal space and causes complete obliteration of the cul-de-sac, displacement of ureters, distorted pelvic side walls and perirectal fossas. The dissection is started by identifying the ureters on each side, develop normal space between the ureter and colon as well as between the rectum and urorectal ligaments. The instinct is to tackle the midline but a minimally invasive gynecologic surgeon should know that the correct approach is in developing the spaces laterally before dissecting in the midline.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION M

2133 Bilateral Ureteral Endometriosis - an Indolent, Aggressive and Dangerous Condition
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*Corresponding author.

Video Objective: Describe an unusual bilateral ureteral reimplantation due to endometriosis and a flowchart of a conservative decision making.

Setting: Deep infiltrating endometriosis (DIE) involving the ureter has an incidence of 0.1 – 1%, normally affecting the lower third of its segment, up to 4 cm above the vesicoureteric junction. Bilateral ureteral involvement happens in 9% of the cases. The absence of specific symptoms makes its diagnostic challengeing. Lumbar pain takes place when its involvement is complicated by a marked obstruction, with an impaired renal function. Decompressive surgery is mandatory. The necessity of ureteroneocystostomy increases along with the severity of hydronephrosis, accounting for 62% of the ureteral decompressive procedures. Even though, bilateral ureteroneocystostomy is a rare procedure, not trespassing 6% of ureteral reimplantations.
Interventions: This case illustrates a situation where a patient with a history of a bowel segmental resection presents with an advanced bilateral posterior DIE, compromising lower rectum below the previous anastomosis, vagina, parametrium (posterior and lateral) bilaterally and both inferior hypogastric plexus. Hormonal therapy improved endometriosis symptoms, but did not control the urinary tract involvement. Along with the patient, considering a probability of intestinal, urinary and sexual impairment, a conservative approach was decided and a laparoscopic bilateral uterinecystomy was performed with a post-operative close clinical and imaging surveillance.

Conclusion: Uteral endometriosis can be aggressive and indolent. Decompressive procedures must be performed. The decision making process must take in consideration patient’s characteristics and expectations.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION N

1692 Changes in Opiate Prescribing Patterns for Gynecologic Surgery After Implementation of Stringent Hospital Wide Prescribing Guidelines Wagner EM,* Dahlman M, Mihalov LS. Gynecology, Virginia Mason Medical Center, Seattle, WA
*Corresponding author.

Study Objective: To understand the impact of implementation of hospital system wide narcotic prescribing guidelines on patient narcotic usage after gynecologic surgery.

Design: Descriptive Quality Improvement project.

Setting: Academic tertiary care center.

Patients or Participants: All patients undergoing gynecologic surgery in December of 2017 and December of 2018.

Interventions: All patients undergoing gynecologic procedure in December of 2017 had their charts reviewed and a selection were called and interviewed up to 4 weeks post operation to assess their narcotic usage and pain control. Stringent prescribing guidelines were implemented in May 2018 as part of a quality improvement project. This procedure was repeated with all patients undergoing gynecologic surgery in December of 2018.

Measurements and Main Results: For minimally invasive hysterectomy (robotic, vaginal, laparoscopic) (n=30 in 2017, 28 in 2018) hospital administered oral morphine equivalents (OME) remained the same 73.6 in 2017 to 78.9 in 2018 (p=0.63). There was a significant decrease in discharge OME from 177.8 in 2017 to 117.8 in 2018 (p<0.0001) or a 34% decrease. For non-hysterectomy laparoscopy (n=29 in 2017, 30 in 2018) hospital administered OME remained similar 61.1 in 2017 to 54.4 in 2018 (p=0.4). Discharge prescriptions decreased significantly from 129.7 to 91.1 (p=0.002) - a 30% decrease. For minor procedures not requiring abdominal access such as hysteroscopy or vulvar procedures (n=33 in 2017, 35 in 2018) hospital administered OME showed a non-significant decrease from 26.3 to 19.5. Discharge prescription OME dropped from 31.6 to 6.8, a significant decrease (p=0.001) of 78%. Refills increased from 2% in 2017 to 5% in 2018. Patient opinion remained similar with 93% in 2017 and 90% in 2018 describing amount prescribed as “just right” or “too much” and 7% in 2017 and 10% in 2018 describing amount prescribed as “too little”.

Conclusion: Stringent opiate prescribing guidelines led to decreased opiate prescription on discharge across all types of gynecologic surgery.

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9:50 AM: STATION O

1856 Circulating Exosomal Long Noncoding RNA-TC0101441 as a Non-Invasive Biomarker for the Prediction of Endometriosis Severity and Recurrence Qiu J, 1* Zhang X, 2 Ding Y, 1 Hua K, 2 Gynecology, Obstetrics and Gynecology Hospital, Fudan University, Shanghai, China; 2The Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China; 1Obstetrics and Gynecology Hospital, Shanghai, China; 2Gynecology, Obstetrics and Gynecology Hospital, Fudan University, Shanghai, China
*Corresponding author.

Study Objective: Exosomal long noncoding RNAs (lncRNAs) are emerging as novel non-invasive biomarkers for various diseases. This study focused on TC0101441, a new malignant-related lncRNA identified by our group, and aimed to investigate: (1) the involvement of TC0101441 in endometriosis, (2) the presence of TC0101441 in exosomes derived from serum and peritoneal fluid of endometriosis patients, (3) the potential of circulating serum exosomal TC0101441 as a biomarker for endometriosis.

Design: Clinical retrospective study (3 years follow-up).

Setting: Obstetrics and Gynecology Hospital of Fudan University.

Patients or Participants: Ninety two patients with ovarian endometriotic cysts and thirty control non-endometriotic patients were recruited from 2014 to 2016.

Interventions: N/A.

Measurements and Main Results: The distribution and expression of TC0101441 in ectopic, eutopic and normal endometria was evaluated using fluorescence in situ hybridization and real-time polymerase chain reaction. Exosomes were extracted from serum and peritoneal fluid of

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*Corresponding author.

Study Objective: Pouch of Douglas (POD) obliteration can be predicted with a high degree of certainty in patients with symptoms of endometriosis using transvaginal ultrasound (TVS). Studies on POD obliteration and the sliding sign, as part of an expert-guided deep endometriosis (DE) TVS, have always focused on populations in tertiary care centres with high disease prevalence. Our aim is to determine the prevalence of a negative sliding sign on basic TVS in a general population.

Design: Prospective observational study.

Setting: Gynecology-focused ultrasound practice.

Patients or Participants: Consecutive patients visiting the practice for a gynecological TVS.

Interventions: The sliding sign was performed to determine the POD state.

Measurements and Main Results: Descriptive statistics were applied to the entire population and subgroups of patients high- and low-risk for endometriosis. High-risk for endometriosis was defined as having a TVS referral for endometriosis-related pelvic pain or specifically “endometriosis” and/or clinical symptoms suggestive of endometriosis. Low-risk was defined by the absence of these features. For minor procedures not requiring abdominal access such as hysteroscopy or vulvar procedures (n=33 in 2017, 35 in 2018) hospital administered OME showed a non-significant decrease from 26.3 to 19.5. Discharge prescription OME dropped from 31.6 to 6.8, a significant decrease (p=0.001) of 78%. Refills increased from 2% in 2017 to 5% in 2018. Patient opinion remained similar with 93% in 2017 and 90% in 2018 describing amount prescribed as “just right” or “too much” and 7% in 2017 and 10% in 2018 describing amount prescribed as “too little”.

Conclusion: Stringent opiate prescribing guidelines led to decreased opiate prescription on discharge across all types of gynecologic surgery.

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(9:50 AM – 10:00 AM)
endometriosis patients and confirmed using transmission electron microscopy, nanoparticle tracking analysis and western blotting. We observed that TC0101441 was mainly located and highly expressed in ectopic stromal endometria than that in the paired eutopic and normal endometria (P < 0.01). TC0101441 levels in the exosomes derived from serum and peritoneal fluid were elevated in endometriosis than those in controls and significantly correlated to TC0101441 expression in the matched ectopic endometria (P < 0.01). Moreover, high serum exosomal TC0101441 levels were associated with the clinical characteristics including infertility, pelvic pain, endometriosis severity (stage III/IV) and recurrence (P < 0.01). Univariate and multivariate analysis showed that serum exosomal TC0101441 was an independent predictive factor for endometriosis recurrence (P < 0.05). Of note, a nomogram model we established indicated that serum exosomal TC0101441 exhibited a good predictive value for endometriosis recurrence according to the Harrell’s concordance index and calibration curve.

Conclusion: Circulating exosomal TC0101441 can serve as a promising biomarker for the prediction of endometriosis severity and recurrence.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION Q

1218 Excision of Endometriosis: Ureterolysis with Hypogastric Nerve Sparing
Chuba N,1* Pasic RP, OB/GYN, University of Louisville, Louisville, KY
*Corresponding author.

Video Objective: To identify and highlight preservation of the ureter and hypogastric nerve during excision of superficial endometriosis for the treatment of chronic pelvic pain.

Setting: This is the case of a 33 y/o G1P1 with history of endometriosis, chronic pelvic pain and dysmenorrhea who failed medical management and is referred for surgical management of endometriosis due to proximity of endometriosis lesions to ureter on a prior diagnostic laparoscopy.

Interventions: Laparoscopic excision of superficial endometriosis with ureterolysis and skeletonization of the hypogastric nerve.

Conclusion: The hypogastric nerve and ureter are vital to maintain proper urinary function. These structures can be safely preserved at the time of laparoscopic excision of endometriosis with a proper technique, appreciation and understanding of their anatomic location.

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9:50 AM: STATION R

1812 Excision of Ovarian Remnant
Gupta N*, Minimally Invasive Gynecologic Surgery, Jackson Madison County General Hospital, Jackson, TN
*Corresponding author.

Video Objective: Dissection techniques for removal of ovarian remnant.

Setting: Patients with persistent ovarian tissue and persistent pelvic pain after Oophorectomy.

Interventions: Excision of persistent ovarian tissue.

Conclusion: Ovarian remnant is a challenging problem as it is seen in patients whose primary surgery was complicated due to excessive adhesions or severe endometriosis. If the initial dissection was incomplete, a portion of ovarian tissue may remain adhered and continue to cause pelvic pain.

This surgery requires dissection of pelvic side wall where remnant is most commonly isolated. Complete ureterolysis, separation of sigmoid colon from pelvic side wall and vagina, isolation of round ligament, IP ligament and uterine artery are the key steps while excising the ovarian residual tissue.

This video demonstrates these key steps of dissection. Such patients will often be referred to a minimally invasive gynecologic surgeon who are trained in dissection of pelvic side wall with knowledge of retroperitoneal anatomy and can safely perform this complex dissection.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION S

2897 Sleep, Fatigue, and Life Satisfaction After Hysterectomy in Women with Preoperative Pain and Depression
Griffith KC,1* Brummett CM,2 Till SR,1 As-Sanie S,1 Obstetrics and Gynecology, University of Michigan, Ann Arbor, MI; 1Anesthesiology, University of Michigan, Ann Arbor, MI
*Corresponding author.

Study Objective: To examine differences in life satisfaction, sleep, and fatigue after hysterectomy among women with preoperative pelvic pain and/or depression.

Design: Secondary data analysis of a prospective, observational cohort study of women undergoing hysterectomy for benign conditions.

Setting: Academic tertiary care center.

Patients or Participants: 336 patients undergoing hysterectomy for benign indications.

Interventions: Patients completed validated assessments of life satisfaction, sleep, and fatigue preoperatively and 6-months after hysterectomy.

Patients were divided into four groups based on preoperative characteristics: pelvic pain only, depression only, pain + depression, and no pain or depression.

Presence of pelvic pain was defined as average pelvic pain score of ≥ 4 (on numerical rating scale 0-10) at baseline survey.

Measurements and Main Results: Preoperatively, women with pelvic pain only reported worse sleep (p = 0.01) and fatigue (p < 0.001) compared to those with no pain or depression, but no difference in life satisfaction (p = 0.22). However, women with pain + depression have worse sleep, fatigue, and life satisfaction compared to women with pain only and no pain or depression (all p < 0.001).

At 6-month follow-up, women with pelvic pain only reported significant improvements in life satisfaction (p = 0.04), sleep (p < 0.001), and fatigue (p = 0.001), and achieved levels similar to those with no pain or depression. Women with pain + depression demonstrated improved life satisfaction (p = 0.01), but still do not achieve the same levels as those with pain only and those with no pain or depression. Furthermore, these women do not report improvement in sleep (p = 0.48) or fatigue (p = 0.16), which remain significantly worse than those with no pain or depression.

Conclusion: Women with pre-existing pelvic pain only demonstrate improvements in life satisfaction, sleep disturbance, and fatigue following hysterectomy and achieve similar levels to those with no pain or depression. Women with coexisting depression fare significantly worse in these domains than those without.

Virtual Poster Session 3: Endometriosis
(9:50 AM – 10:00 AM)

9:50 AM: STATION T

2643 Ovarian Remnant Resection in a Patient with History of Ureteral Re-Implantation
Moawad NS,1* Salem Z,2 1Division of Minimally Invasive Gynecologic Surgery, Department of Obstetrics & Gynecology, University of Florida, Gainesville, FL; 2Obstetrics & Gynecology, University of Florida, Gainesville, FL
*Corresponding author.

Video Objective: This video describes a systematic stepwise approach for complete dissection of ovarian remnant in the setting of a previous ureteral re-implantation.
Setting: A 40-year-old patient presenting with a history of ureteral injury during hysterectomy, followed by re-implantation. She had another ureteral injury during oophorectomy which required a secondary re-implantation. The patient then developed pelvic pain, and she was found to have a large pelvic mass. Hormonal assays confirmed premenopausal status consistent with ovarian remnant syndrome. The patient decided on medical management for several years, including progesteronal agents and GnRH agonists, but ultimately the pain became excessive, and she decided on surgery.

Interventions: Laparoscopic resection of ovarian remnant was performed in a systematic stepwise approach, with sealing and cutting of the ovarian vessels at the pelvic brim, and removing of the entire ovarian vessels pedicle together with the adherent pelvic side wall.

Conclusion: This stepwise approach for ovarian remnant resection provides a roadmap for the effective and safe excision of the ovarian remnant, while minimizing the risk of injury to the bladder, the ureters and the rectum.

Virtual Poster Session 3: Endometriosis
(10:00 AM – 10:10 AM)

10:00 AM: STATION A

2934 Minimally Invasive Treatment of Bladder Deep Endometriosis and Isthmocele
Vigueras Smith A, 1, 2* Cabrera R, 2 Zomer MT, 3 Kondo W, 1 Gynecology, Centro Hospitalar Universitário do Porto, Porto, Portugal; 2 Minimally Invasive Surgery, Angels Hospital, City of Mexico, Mexico; 3 Minimally Invasive Surgery, CEAGIC - NATCOES Hospital, Curitiba, Brazil *Corresponding author.

Video Objective: To demonstrate the endoscopic management of bladder deep endometriosis and isthmocele.

Setting: Bladder deep endometriosis, defined by the presence of detrusor muscle layer invasion, affect around 1%-2% of women. In nowadays, laparoscopic partial cystectomy is the gold standard surgical treatment. By other hand, the isthmocele is a defect of the anterior wall of the cervical canal at the site of the previous C-section, and affect around 0.6% of women’s. It will be symptomatic in about 30% of the cases with AUB as the main presentation. Laparoscopic treatment report between 50%-90% of symptom control, and will be choose when overlying myometrial mantle is less than 3mm and/or 50% of total myometrial thickness. Due the invasive nature of endometriosis, added to the inflammatory response following the c-section heal, it is not surprising that both pathologies could be anatomically closer. A 37 years old patient, with clinical history of dysuria, cyclic hematuria and post-menstrual spotting. Ultrasound evidence a 29 millimeter hypo-echogenic nodule at the bladder dome plus a 12mm isthmocele, with overlying miometrial mantle of 7mm.

Interventions: Hysteroscopic isthmoplasty was done using a mini-resectoscope including the treatment of both caudal and cranial edges and resection of all the diverticular mucosal hyperplasia. Posteriorly, laparoscopic partial cystectomy was done. Under general anesthesia, the patient was placed in 0 degrees dorsal decubitus with her arms alongside her body. Operative set-up include 15mmhg pneumoperitoneum and four trocars: a 10mm trocar at the umbilicus for a zero-degree laparoscope; a 5mm trocar in the right and left iliac fossa; and a 12mm trocar in the suprapubic area. Using mechanical, electrical and ultrasonic energy, partial cystectomy followed by two layer closure was done. During final chromotubation, massive leakage was noted coming from the isthmic area. Complementary laparoscopic resection and closure was done. Histopathological result show no cleavage plane between isthmus area and bladder endometriosis tissue.

Conclusion: Full endoscopic treatment of bladder endometriosis and Isthmocele is feasible, safe and effective in experienced hands. In this patient, procedure was uneventful, without any intra or post-operative complications.

Virtual Poster Session 3: Endometriosis
(10:00 AM – 10:10 AM)

10:00 AM: STATION B

2164 Utilization of Appendectomy in the Surgical Treatment of Endometriosis
Jorgensen EM, 1, 2* Modest AM, 1, 2 Awtrye GS, 2 King LP, 2 Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA; 3 OB/GYN, Beth Israel Deaconess Medical Center, Boston, MA *Corresponding author.

Study Objective: There is paucity of data and lack of expert consensus on the role of appendectomy in surgical treatment of endometriosis. We seek to describe the nationwide practice of appendectomy for endometriosis, and analyze its safety profile and surgical outcomes.

Design: Retrospective cohort. Comparisons were made using Chi-squared for proportions or t-test for means.

Setting: 708 United States hospitals in the participating in American College of Surgeons National Surgical Quality Improvement Program.


Interventions: Surgeries performed for endometriosis were identified by ICD-9/10 diagnosis code. Utilization of appendectomy was determined by querying these endometriosis surgeries for the CPT procedure codes for appendectomy.

Measurements and Main Results: We identified 14,776 endometriosis surgeries. Appendectomy was performed in 545 (3.7%) of all surgeries for endometriosis; of these, 352 (64.6%) were performed by gynecologists and 193 (35.4%) by general surgeons. Overall risk of perioperative complications in surgery for endometriosis did not differ with utilization of appendectomy (5.0% appendectomy vs 4.6% no appendectomy, p = 0.67); moreover, the incidence of complications with appendectomy did not differ by surgeon type (5.4% gynecologist vs 4.9% general surgeon, p = 1.0). Utilization of appendectomy was associated with increased operative time (149.0 ± 105.0 vs 117.6 ± 67.7 minutes, p = <0.001) and length of stay (1.9 ± 2.5 vs 1.3 ± 2.2 days, p = <0.001), but lower average work relative value unit (wRVU) compared to endometriosis surgery without appendectomy (14.5 ± 6.5 vs 15.5 ± 4.0, p = <0.001).

Conclusion: Appendectomy for endometriosis is rarely performed; when utilized, it is performed by both gynecologists and general surgeons. Utilization of was not associated with differences in overall in risk profile. However, appendectomy for endometriosis was associated with longer operative times and length of stay, and lower reimbursement.

Virtual Poster Session 3: Endometriosis
(10:00 AM – 10:10 AM)

10:00 AM: STATION C

2968 A Combination of Robotic-Assisted Excision and CO2 Laser Ablation for the Treatment of Superficial Diaphragmatic Endometriosis
Matthews BJ, 1, 2* Jan A, 2 Wright V, 2 Obstetrics and Gynecology, Boston University School of Medicine, Boston, MA; 3 Gynecology, Beth Israel Lahey Health, Burlington, MA *Corresponding author.

Video Objective: To demonstrate treatment of superficial diaphragmatic endometriosis with the combined modalities of robotic excision and CO2 laser ablation. To provide a rationale for using one particular modality over the other for a given lesion.

Setting: The patient is a 26-year-old G0 who presented with cyclic pelvic and shoulder pain. A diagnostic laparoscopy demonstrated endometriosis
Virtual Poster Session 3: Endometriosis

(10:00 AM – 10:10 AM)

1766 Changing Patients’ Lives with Neuropelveology.
Laparoscopic Neuromuscular Pelvic Decompression of Deep Infiltrating Endometriosis (DIE) Causing Motor Dysfunction of the Lower Extremity
Gonzalez AM, Artaceo S, Quionoz A, Jurio G, Ulker A, Caragno JA, Obstetrics and Gynecology, Hospital Naval Pedro Mollo, Buenos Aires, Argentina; Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL
*Corresponding author.

**Video Objective:** To describe the laparoscopic technique for pelvic neuromuscular decompression.

**Setting:** Gynecology Operating Room of a Large Academic Institution

**Interventions:** Laparoscopic neuromuscular pelvic decompression of deep infiltrating endometriosis causing motor dysfunction of the lower extremity.

**Conclusion:** Laparoscopic neuromuscular decompression is a feasible intervention that could restore ambulatory function. A comprehensive understanding of the pelvic neuromuscular system is essential to ensure good outcomes in complex gynecologic neurologic procedures.

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Virtual Poster Session 3: Endometriosis

(10:00 AM – 10:10 AM)

1501 Vaporization and Coagulation Techniques for Excision and Ablation of Endometriosis
Martin DC*, Obstetrics and Gynecology, University of Tennessee Health Science Center, Richmond, VA
*Corresponding author.

**Study Objective:** To demonstrate technical problems from the 1980s that resurfaced in 2018.

**Design:** Review of published reports.

**Setting:** Literature and web review.

**Patients or Participants:** Cases previously published.

**Interventions:** Laparoscopic laser and non-laser vaporization and coagulation.

**Measurements and Main Results:** A 2018 YouTube on non-laser vaporization demonstrated a problem with field distortion and incomplete vaporization that was seen in the 1980s with lasers. This presentation uses images and illustrations to review and discuss what we learned 30 years ago and how that applies to laser, electrosurgical, and kinetic energy by contrasting the outcomes for superficial and deep endometriosis. Those observations encouraged some of us to adopt Kurt Semm’s 1980s approach to excision of deep nodules.

The discussion includes single finger exams, exam under anesthesia before initiating surgery, exam during surgery, exam after ablation or excision, delineation of margins, appropriate power density, thermal damage, carbonization, techniques that obscure endometriosis, and complications including unnecessary repeat surgery.

**Conclusion:** Vaporization and coagulation techniques may be useful for small, focal, endometriotic lesions, but can be inadequate for deep infiltrating endometriosis.

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Virtual Poster Session 3: Endometriosis

(10:00 AM – 10:10 AM)

2609 Giant Endometrioma
Bellelis P*, ObGyn, University of Sao Paulo, Sao Paulo, Brazil
*Corresponding author.

**Video Objective:** To demonstrate an unusual presentation of endometriosis.

**Setting:** We describe a case of a 35 years-old woman referred to our center. The patient had no relevant past medical. She was asymptomatic but, in an annual checkup, it was identified a large complex mass in the pelvis. The pre-operative investigation involved a MRI and ultrasound with bowel preparation that showed a 22cm endometrioma. The patient had no clinical treatment. We scheduled a surgical procedure for endometriosis.

**Interventions:** A step-by-step surgical video, demonstrating a systematic approach, indicating surgical landmarks and a proper technique. It emphasizes mainly that especially in awkward situations we must pay attention even more and that it is possible to perform through laparoscopy.

**Conclusion:** Besides rare, large endometriomas can exist and a good strategy with surgical landmarks are fundamental.
Virtual Poster Session 3: Endometriosis (10:00 AM – 10:10 AM)

2806 Should Concomitant Appendectomy be Performed in Patients with Biopsy Proven Endometriosis?

Nikou A Farzan,1 * Tenzel NS,2 Hua P,3 Pan S,3 Orbuch L,4 Orbuch IK.1
1 Icahn School of Medicine at Mount Sinai, New York, NY; 2 Obstetrics, Gynecology, and Reproductive Science, Mount Sinai Health System, New York, NY; 3 Population Health Science and Policy, Icahn School of Medicine at Mount Sinai, New York, NY; 4 Obstetrics and Gynecology, Providence Saint John’s Health Center, Santa Monica, CA
*Corresponding author.

Study Objective: To determine the prevalence of appendiceal pathology (i.e. endometriosis, fibrous obliteration, tumor, acute/chronic inflammation) in patients with biopsy proven endometriosis.

Design: Retrospective chart review.

Setting: Two Large Metropolitan Academic Hospitals.

Patients or Participants: 100 patients between the ages of 16 to 51 diagnosed with endometriosis following minimally invasive excision surgery with concomitant appendectomy for suspected endometriosis from February 2012 to June 2017.

Interventions: Medical records and postoperative pathology reports were analyzed for all 100 patients with biopsy proven endometriosis for the presence of appendiceal pathology.

Measurements and Main Results: Among the 100 patients with biopsy proven endometriosis and concomitant appendectomy, 42% (95% CI:32.3-51.7%) were diagnosed with appendiceal pathology (i.e. endometriosis, fibrous obliteration, tumor, inflammation). Of these 100 patients, 18% (95% CI:10.5-25.5%) had underlying appendiceal endometriosis and 17% (95% CI: 9.6-24.4%) had underlying fibrous obliteration. Two percent (95% CI:0.0-4.7%) of patients were diagnosed with tumors, which comprised of one neuroendocrine carcinoid tumor (0.6 cm) and one LAMN (low grade appendiceal mucinous neoplasm). Five percent (95% CI:0.7-9.3%) of patients were diagnosed with inflammation, including acute and chronic appendicitis.

Conclusion: Our findings of a 42% prevalence rate of appendiceal pathology and 18% prevalence of appendiceal endometriosis suggests that surgeons should consider concomitant appendectomies in patients with biopsy proven endometriosis.

Virtual Poster Session 3: Endometriosis (10:00 AM – 10:10 AM)

2906 Enhanced Laparoscopic Identification of Peritoneal Endometriosis with Indocyanine Green Contrast: An Educational Video

Gobern JM,1 Mesés CM,2 * Meske SW1. 1 Department of OB/GYN, Main Line Health, Wynnewood, PA; 2 Department for Population Health, Lankenau Institute of Medical Research, Wynnewood, PA
*Corresponding author.

Video Objective: To demonstrate a laparoscopic surgical technique to enhance identification of peritoneal endometriosis for effective operative excision.

Setting: Academic Medical Center.

Interventions: Introduction of indocyanine green (ICG) contrast with fluorescence imaging for laparoscopic identification of apparent and occult endometriosis.

Endometriosis is a common medical condition of reproductive age women impacting up to 90% of women with pelvic pain. Laparoscopic excision is effective in pain reduction and considered the gold standard for histologic
diagnosis. Conversely, incomplete resection has been associated with persistent pain and recurrent disease.

Endometriosis is implantation of endometrial tissue outside of the uterus and may be challenging to identify laparoscopically secondary to its variable appearance. Lesions of peritoneal endometriosis include red flame like lesions, puckered black or bluish lesions, and subtle white opacified lesions. Evidence supports that angiogenesis is required for development and persistence of endometriosis. Additionally, studies have found no difference in vascular density between the various types of lesions. ICG is a nontoxic, nonionizing contrast agent that binds to blood lipoproteins. It was FDA approved in 1959 as a contrast agent and has been used clinically to measure cardiac output, liver function and study retinal vessels. Fluorescence imaging with ICG has been used in surgical oncology including sentinel lymph node mapping in gynecologic patients with endometrial cancer. More recently, fluorescence imaging with ICG laparoscopically, has been demonstrated to correlate with visible areas of endometriosis as well as identify occult endometriosis in >15% of women with visible endometriosis. More effective identification and excision of endometriosis with ICG enhanced laparoscopy, specifically occult disease, is proposed to significantly decrease postoperative pain and recurrence of endometriosis.

**Conclusion:** We demonstrate an effective laparoscopic surgical technique to employ the use of fluorescence imaging with ICG contrast to identify apparent and occult endometriosis to optimize surgical excision.

**Virtual Poster Session 3: Endometriosis**

(10:00 AM – 10:10 AM)

**10:00 AM: STATION K**

**2670 Laparoscopy in the Chronic Pelvic Pain Patient: Incidence and Outcomes of Subsequent Laparoscopies**

Shukr G,¹,² Eisenstein DI,¹ Katayir U,³ Cheng M,¹ Obstetrics and Gynecology, Henry Ford Health System, Detroit, MI; ²OB/GYN, Henry Ford Medical Center, West Bloomfield, MI; ³Women, Wayne State, Detroit, MI; ⁴Women’s Health, Wayne State, Detroit, MI

*Corresponding author.

**Study Objective:** Our aim is to determine the incidence of multiple laparoscopies for chronic pelvic pain over 10 years and to compare outcomes between patients who underwent single vs multiple laparoscopies.

**Design:** Retrospective case-control study.

**Setting:** Urban based tertiary care medical center.

**Patients or Participants:** Women with diagnosis of chronic pelvic pain that underwent one laparoscopy in comparison with those who underwent multiple laparoscopies in a 10-year period.

**Interventions:** Multiple Laparoscopies.

**Measurements and Main Results:** Parametric, nonparametric and descriptive statistics were employed. 792 patients were managed with laparoscopy for a diagnosis of chronic pelvic pain (CPP), 14% of which had multiple laparoscopies. 678 controls with single laparoscopy and 114 cases with multiple laparoscopies were identified. 406 (59%) had medical management prior to first laparoscopy in the control group and 82 (72%) in the cases. 559 had diagnostic and 119 had extirpative laparoscopies in the single laparoscopy group vs 91 diagnostic and 23 extirpative laparoscopies in the multiple laparoscopy group. Of the patients with persistent pain after first laparoscopy in the control group, 52 underwent hysterectomy. Of the 37 who followed up, 26 reported pain response and 5 no response. The average number of laparoscopies in the multiple laparoscopy group was 2.27. In the multiple laparoscopy group, 38 patients underwent hysterectomy. Of the 26 that followed up, 22 reported pain response and 4 no response. Of the total patients who underwent hysterectomy and had follow-up, 80% (54 of 67) reported pain response. Of the 792 patients who underwent laparoscopy, 25 had pathologic evidence of endometriosis in the single laparoscopy group vs 32 in the multiple laparoscopy group.

**Conclusion:** Approximately 1 in 7 patients are subject to multiple laparoscopies for CPP. Despite clinical symptoms, endometriosis is a minor contributor to CPP. Management of CPP with laparoscopy poorly correlates with response to hysterectomy.

**Virtual Poster Session 3: Endometriosis**

(10:00 AM – 10:10 AM)

**10:00 AM: STATION M**

**2852 Long Term Follow up of Carbon Dioxide Laser Vaporisation Versus Harmonic Scalpel Excision in the Treatment of Superficial Endometriosis: A Randomised Controlled Trial**

Shakir F,¹,² Clemente G,³ Jan H,³ Haines P,⁴ Pearson C,⁴ Kent AS,⁵

¹Gynaecology, Royal Free Hospital, London, United Kingdom; ²University Josep Trueta Hospital, S/N Franca Avenue, Girona, Spain; ³Gynaecology, Epsom and St Helier’s University Hospitals NHS Trust, London, United Kingdom; ⁴Royal Surrey County Hospital, Surrey, United Kingdom

*Corresponding author.

**Study Objective:** To evaluate if excision of endometriosis (rAFS stages I-III) with the harmonic scalpel, is superior to carbon dioxide laser vaporisation in terms of symptoms over a 3 year period.

**Design:** This was a randomized double blind controlled trial.

**Setting:** Set at a Tertiary referral unit.

**Patients or Participants:** 116 patients found to have endometriosis at laparoscopy were randomized in to the study.

**Interventions:** The study was powered for superiority, and patient’s randomized with a 1:1 allocation into receiving treatment either with laser or harmonic scalpel. Data was analyzed using SPSS version 21. The primary outcome measure was the visual analogue scale (VAS) score for chronic pelvic pain score at 6 months. Secondary outcomes included core EHP-30, HADS anxiety and depression score and VAS scores for chronic pelvic pain, dysmenorrhoea, dyschezia and dyspareunia, up to 3 years.

**Measurements and Main Results:** Pre operative chronic pelvic pain (VAS) for the laser and harmonic groups were 57.1 (IQR: 28.1-75.6) and 50.6 (IQR: 0-75.0) respectively, and at 6 months 43 (IQR: 0-66.5) and 30 (IQR: 0-60.7). The difference between the two were not statistically significant, p=0.228. At 12 months the chronic pelvic pain VAS scores for laser and harmonic groups were 50 (IQR: 20-74.7) and 13.1 (IQR: 0-49.0) respectively. The difference between the two was significant, p<0.05. At 3 years the chronic pelvic pain VAS for laser and harmonic were 31 (IQR:4.0-58) and 0 (IQR: 0-24.5) respectively. The difference between the two was significant, p<0.05.

**Conclusion:** Excision of endometriosis with harmonic is effective at improving chronic pelvic pain up to 3 years. This does not appear to be the case with CO2 laser vaporisation. In terms of most secondary outcomes laser performs as well as harmonic at 6 months but the trend is in favor of harmonic up to 3 years.

**Virtual Poster Session 3: Endometriosis**

(10:00 AM – 10:10 AM)


**Study Objective**: To externally and temporally validate the Ultrasound Based Endometriosis Staging System (UBESS) to predict the level of complexity of laparoscopic surgery for endometriosis.

**Design**: Multi-center retrospective diagnostic accuracy study between 2016 and 2018.

**Setting**: Four different centers with advanced ultrasound and laparoscopic services were recruited.

**Patients or Participants**: Patients with suspected endometriosis who required surgery (laparoscopic excision of endometriosis).

**Interventions**: UBESS I, II and III were correlated with the Royal College of Obstetricians and Gynaecologists (RCOG) surgical stages 1, 2 and 3. Comparison between temporal and external sites as well as each site was performed in terms of the diagnostic accuracy of UBESS.

**Measurements and Main Results**: 294/317 women were included in the final analysis. UBESS overall accurately classified 80%, 71% and 60% of women to RCOG levels 1, 2 and 3 respectively (Table 1). When ureterolysis (RCOG 3) in the presence of a normal ‘deep endometriosis’ scan were excluded, the performance of UBESS improved dramatically. These findings justify the search for other ultrasound markers to predict superficial pelvic side wall disease.

**Table 1. Diagnostic accuracy of UBESS overall (n=294)**

<table>
<thead>
<tr>
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<th>UBESS I</th>
<th>UBESS II</th>
<th>UBESS III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence</td>
<td>56%</td>
<td>7.2%</td>
<td>36.9%</td>
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<tr>
<td>Accuracy</td>
<td>78.2%</td>
<td>82.3%</td>
<td>81.6%</td>
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<tr>
<td>Sensitivity</td>
<td>78%</td>
<td>71.4%</td>
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</tr>
<tr>
<td>Specificity</td>
<td>78.3%</td>
<td>83.1%</td>
<td>94.1%</td>
</tr>
<tr>
<td>PPV</td>
<td>82.1%</td>
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</tr>
<tr>
<td>NPV</td>
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</tr>
</tbody>
</table>

**Table 2. Diagnostic accuracy of UBESS after excluding cases with ureterolysis without hard markers for endometriosis on ultrasound (n=240)**

<table>
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<tr>
<th></th>
<th>UBESS I</th>
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<td>Prevalence</td>
<td>68.3%</td>
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<td>Accuracy</td>
<td>83.8%</td>
<td>85%</td>
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</tr>
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<td>NPV</td>
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</table>

**Virtual Poster Session 3: Endometriosis (10:00 AM — 10:10 AM)**

**10:00 AM: STATION O**

**1990 Is Diagnosis of Appendix Endometriosis Dependent on Pathologic Analysis?: A Prospective Cohort Study**

Ross WT, Newell JM, Zaino R, Kunselman AR, Harkins GJ, Benton AS. Obstetrics and Gynecology, Penn State Milton S. Hershey Medical Center, Hershey, PA; Surgical and Anatomic Pathology, Penn State Milton S. Hershey Medical Center, Hershey, PA; Public Health Sciences, Penn State College of Medicine, Hershey, PA

*Corresponding author.

**Study Objective**: Reported cases of ovarian vein thrombosis associated with laparoscopic hysterectomy for benign reasons are rare. The majority of cases described have been postpartum; other risk factors include malignancy, sepsis, and recent pelvic/abdominal surgery. We present a case of a 29 y/o G4P2 diagnosed with right ovarian vein thrombosis two weeks status post uncomplicated total laparoscopic hysterectomy (TLH), bilateral salpingectomy, and cystoscopy for chronic pelvic pain and abnormal uterine bleeding related to endometriosis.

**Design**: Case report/literature review.

**Setting**: Academic affiliated gynecology specialty clinic.

**Patients or Participants**: 29 y/o G4P2 on half pack per day smoker with chronic pelvic pain previously treated with levonorgestrel containing IUD, depo medroxyprogesterone, and continuous OCPs without symptom resolution. She previously underwent diagnostic laparoscopies with fulguration and excision of endometriosis, as well as a robotic assisted presacral neurectomy. She underwent an uncomplicated TLH/bilateral salpingectomy/ cystoscopy. She presented two weeks post-op with severe right sided pelvic pain and fever. A right ovarian vein thrombosis was discovered on CT scan.

**Interventions**: Patient was admitted for antibiotics and therapeutic anticoagulation with enoxaparin, then discharged home at forty-eight hours. Two weeks later she was readmitted for continued vaginal bleeding. Anti-coagulation was discontinued and patient was discharged home. Due to continued severe RLQ pain, interventional radiology was contacted for possible thrombectomy but were unable to do so. The patient then underwent a laparoscopic right oophorectomy and right ovarian vein thrombectomy seven weeks after her initial TLH.

**Measurements and Main Results**: Right ovarian vein thrombus visualized and dissected out on laparoscopy with resolution of acute localized pelvic pain.

**Conclusion**: While multiple etiologies for pelvic pain and fever after TLH exist, it is important not to overlook gonadal vein thrombosis. We recommend pre-/post-operative anticoagulation in patients with high thrombotic risk undergoing any major procedure. This case illustrates a rare diagnosis of ovarian vein thrombosis in a non-pregnant patient after minimally invasive surgery.

**Virtual Poster Session 3: Endometriosis (10:00 AM — 10:10 AM)**

**10:00 AM: STATION N**

**2675 Ovarian Vein Thrombosis as Cause of Acute Pelvic Pain After Total Laparoscopic Hysterectomy**

Veloria D, Davenport ER, Stockwell EL, OBGYN, Sunrise GME, Las Vegas, NV; OBGYN, UNLV School of Medicine, Las Vegas, NV; Gynecology, Las Vegas Minimally Invasive Surgery, Las Vegas, NV

*Corresponding author.
Virtual Poster Session 3: Endometriosis  
(10:00 AM – 10:10 AM)

10:00 AM: STATION P

2607 Hysterectomy in Women with Endometriosis
Bellelis P.* ObGyn, University of Sao Paulo, Sao Paulo, Brazil
*Corresponding author.

Video Objective: To demonstrate that hysterectomy is not the ideal treatment for endometriosis and how to perform a hysterectomy in patients with endometriosis.

Setting: We describe a case of a 42-year-old woman referred to our center complaining of severe dysmenorrhea, dyspareunia and menorrhagia. The patient had 2 previous cesarean section and with no relevant past medical. The pre-operative investigation involved a transvaginal ultrasonography with bowel preparation that showed an infiltrative endometrial nodule on the paracervix and posterior vaginal fornix, rectosigmoid and vesicouterine space besides adenomyosis. The patient was in clinical treatment with medroxyprogesterone acetate, without response. We scheduled a surgical procedure for radical eradication of the deep infiltrating endometriosis and hysterectomy.

Interventions: A step-by-step surgical video, demonstrating a systematic approach in case of deep infiltrating endometriosis, indicating surgical landmarks and a proper technique. It emphasizes mainly that we should start with the endometriosis treatment before the hysterectomy.

Conclusion: According to literature, there are no randomized controlled trials for hysterectomy as the treatment for endometriosis. We should only offer hysterectomy with a radical removal of endometriosis and for those women who have completed their families and failed to respond to more conservative treatments.

Virtual Poster Session 3: Endometriosis
(10:00 AM – 10:10 AM)

1851 Diagnostic Accuracy and Interrater Agreement of Gynecological Sonographers in Evaluating the Pouch of Douglas for Obliteration Using the Sliding Sign Technique

Vanza K.1,* Leonardi M.1,2 Espada M.1 Condous G.1,2 Acute Gynaecology, Early Pregnancy and Advanced Endosurgery Unit, Nepean Hospital, Sydney, NSW, Australia; 2Sydney Medical School Nepean, University of Sydney, Sydney, NSW, Australia
*Corresponding author.

Study Objective: Evaluate the accuracy of sonographers in classifying pouch of Douglas (POD) obliteration state and their interrater agreement with the reference standard senior sonologist.

Design: Prospective diagnostic accuracy and interrater agreement study.

Setting: Gynecology-focused ultrasound practice.

Patients or Participants: Seven sonographers of varying experience.

Interventions: Sonographer were provided with a short educational program on POD obliteration and the sliding sign technique. None were routinely utilizing the sliding sign in practice prior to study initiation. Over two months, the sonographers prospectively and consecutively performed, recorded, and interpreted the state of the POD as positive, negative or indeterminate. Senior sonologist was blinded to the sonographers’ classification when the reference standard classification was made.

Measurements and Main Results: Diagnostic accuracy and interrater agreement using Cohen’s kappa were calculated (Table). 819 patients underwent basic TVS. The reference standard prevalence of a negative sliding sign was 43819 (5.3%).

Conclusion: With a low prevalence of a negative sliding sign, it is difficult to evaluate a sonographers’ ability to correctly classify this abnormal state. However, sonographers were uniformly highly specific in their classification of the POD state. As the awareness of the sliding sign technique spreads, it will be essential to understand how to educate, credential, and monitor performance and interpretation by sonographers, who perform the majority of gynecological scans internationally.

<table>
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2172 Effect of GRNH Antagonist, Elagolix on Size and Quantity of Endometriotic Lesions Following 2 Months of Therapy
Stemmer SM,1,2 Chacko AA,1 Obstetrics & Gynaecology, Virtua Hospital, Voorhees, NJ;2 Kasturba Medical College, Mangalore, India
*Corresponding author.

Study Objective: Data on the effect of GnRH antagonist, Elagolix on pathological lesions of endometriosis is lacking. We present a case where second look laparoscopy was done on a patient treated with Elagolix, where the effect of the drug on implants is described.

Design: Case report and review of the English literature.

Setting: Tertiary care hospital.

Patients or Participants: A 39-year-old female patient.

Interventions: A 39-year-old G3P2A1 female patient had long-standing history of dysmenorrhea, pelvic pain, and dyspareunia controlled by oral contraceptives. She underwent laparoscopic bilateral tubal sterilization and multiple endometriotic implants were observed in the left uterosacral liga-

Measurements and Main Results: Following initiation of therapy with Elagolix, the patient reported a significant improvement in her symptoms and quality of life. On second look laparoscopy, a marked reduction in size and number of implants were observed. Histopathological evaluation of biopsy from a residual implant was consistent with endometriosis.

Conclusion: Endometriosis is a chronic gynecological condition which often produces debilitating pain and infertility. Elagolix is a novel drug, which has been recently approved in the US for treatment of moderate to severe endometriosis-related pain. In this case report, a marked reduction of disease was observed both symptomatically and on direct visualization of lesions. There have been previous studies demonstrating the effect of Leuprolide, Danazol and aromatase inhibitors on endometriotic implants. However, more information is required to provide evidence on the effect of Elagolix on the disease process, duration of pain-free interval and recurrence of disease after cessation of therapy.

Virtual Poster Session 3: Endometriosis
(10:00 AM – 10:10 AM)

2087 Immunoregulatory Protein, V-Set and Immunoglobulin Domain-Containing 4 (VSIG4), is Overexpressed in Patients with Endometriosis
Jeon GH,1,* Byun JM,2 Kim KT,3 Jeong DH,4 Obstetrics and Gynecology, Haeundae Paik Hospital, Inje university College of Medicine, Busan, Korea, Republic of (South);2 Obstetrics and Gynecology, Busan Paik Hospital Inje university College of Medicine, Busan, Korea, Republic of (South);3 Obstetrics and Gynecology, Dong-eui Hospital, Busan, Korea, Republic of (South)
*Corresponding author.

Study Objective: VSIG4 has been identified as a potent negative regulator of T cell responses and is suggested to regulate anti-tumor immunity. This study investigates whether VSIG4 is significantly expressed in endometriosis patients and its potential as an endometriosis biomarker.

Design: Cross-sectional study.

Setting: University hospital.

Patients or Participants: 42 endometriosis and 21 non-endometriotic tumor patients.

Interventions: None.

Measurements and Main Results: Tumor tissues and peripheral blood samples were obtained during surgery from patients with endometriosis and non-endometriotic tumors. The levels of VSIG4 mRNA, VSIG4 protein expression in tumor tissue, and serum soluble VSIG4 concentration were compared between the endometriosis and control group. In addition, receiver operating characteristic (ROC) curve analysis was used to obtain optimal VSIG4 cut-off values for endometriosis prediction. After dividing the cohort using these optimized cut-off values, we examined the association between VSIG4 levels and the factors indicating endometriosis severity. The expressions of VSIG4 mRNA, VSIG4 protein, and serum VSIG4 concentration were significantly increased in the endometriosis group compared with the control group (P=0.001, 0.002, and 0.049, respectively). The optimized VSIG4 mRNA, VSIG4 protein, and serum VSIG4 concentration cut-off values as determined by ROC curve analysis were 0.71, 0.32, and 144.37 pg/mL, respectively. After cohort division using these values, the proportion of women with increased VSIG4 levels was significantly greater in the higher CA-125 (> 24.88 U/mL) group compared with the lower CA-125 (< 24.88 U/mL) group (P=0.015, 0.02, and 0.08, respectively). However, there was no association between VSIG4 levels and the factors indicating endometriosis severity.

Conclusion: The expression of VSIG4 in endometriosis patients is increased compared with non-endometriotic tumor patients, and higher VSIG4 levels are significantly associated with higher serum CA-125 levels. This finding supports that VSIG4's possible usefulness as a diagnostic biomarker for endometriosis.

Virtual Poster Session 3: Endometriosis
(10:00 AM – 10:10 AM)

2769 Laparoscopic Round Ligament Suspension for Dyspareunia in a Retroverted Uterus
Baker T,1,* Ramirez CI,1 Gobern JM,1 MIGS Division, Department of OB/GYN, San Antonio Military Medical Center, San Antonio, TX;2 MIGS Division, Obstetrics and Gynecology, San Antonio Military Medical Center, San Antonio, TX;3 Department of OB/GYN, Main Line Health, Wynnewood, PA
*Corresponding author.

Video Objective: This video shows the steps of laparoscopic round ligament suspension used to neutralize the position of a retroverted uterus in order to relieve deep dyspareunia.

Setting: A 35 year-old nulliparous patient presented for gynecologic care due to dysmenorrhea and dyspareunia refractory to medical treatment. She was found to have a retroverted uterus and pain was reproduced with palpation of the fundus with an otherwise normal exam. After discussion of options for management she desired diagnostic laparoscopy with possible round ligament suspension to address her retroverted uterus.

Interventions: During laparoscopic survey significant retroversion of the uterus was confirmed with no other etiology for her pain identified. Laparoscopic round ligament suspension was completely in order to neutralize the angle of her uterus. There were no complications, the uterus was noted to remain axial at time of post-operative exam, and her dyspareunia was significantly improved.

Conclusion: Laparoscopic suspension of the round ligament is a simple, straightforward procedure that should be considered for patients with dyspareunia due to a retroverted uterus.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

1233 Impact of Endometriosis on Surgical Outcomes in Total Laparoscopic Hysterectomy
Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION B

3034 Robotic-Assisted Ureteroneocystotomy and Psosas Hitch for Ureteral Endometriosis

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*Corresponding author.

Video Objective: We present a case of extrinsic urethral endometriosis. We review the peri-operative management with renal function testing, pre-operative imaging and stent placement. The patient had a robotic-assisted ureteroneocystotomy with psosas hitch for her severe disease. The goal of this video is to review peri-operative management of urinary tract endometriosis and to demonstrate the surgical technique of ureterolysis in extrinsic ureteral endometriosis and ureteroneocystotomy with psosas hitch.

Setting: the patient was managed in the outpatient setting as well as the inpatient surgical suite.

Interventions: Surgical: ureteroneocystotomy with psosas hitch.

Conclusion: Ureteral endometriosis is a rare manifestation of pelvic endometriosis that can be managed with appropriately with a peri-operative work-up including renal function tests and pelvic imaging. Ureteral re-implantation for severe distal disease must be considered.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION C

2426 Sliding Sign Testing Could be a Potential Alternative to Laparoscopy to Predict Endometriosis Infertility

Alfaraj SA,1,* Bedaiwy M,2 Yong PJ,2 Allaire C,2 Williams C,2 Lisonkova S,1 Noga H,1 1Obstetric and Gynecology, Reproductive Endocrinology and Infertility, University of British Columbia, Vancouver, BC, Canada; Vancouver, BC, Canada; 2Obstetrics & Gynaecology, University of British Columbia, Vancouver, BC, Canada; 3Obstetric and Gynecology, University of British Columbia, Vancouver, BC, Canada; 4Obstetric and Gynecology, Reproductive Endocrinology and Infertility, University of British Columbia, Vancouver, BC, Canada
*Corresponding author.

Study Objective: EFI is a robust tool to predict pregnancy rate in endometriosis patients who attempt non-in vitro fertilization conception. However, EFI calculation requires laparoscopy. Sliding sign is a newly established technique that can predict Pouch of Douglas (POD) obliteration with a high degree of accuracy. The objective of this study is to investigate the relationship between sliding sign and the EFI, and to explore the practicality of using sliding sign to predict EFI score less than seven.

Setting: Tertiary referral center at British Columbia Women’s Hospital.

Patients or Participants: Eighty-six women who are less than 40 years old.

Interventions: Dynamic ultrasonography for the sliding sign testing and EFI calculation during laparoscopic surgery.

Measurements and Main Results: Patients with a negative sliding sign (N=26, Group I) were older, had stage IV endometriosis, and a lower median EFI score than patients who had a positive sliding sign (N=60, Group II). Patients in group I had significantly lower surgical factor scores, setting a historical factors, group I participants had a longer duration of infertility with no significant difference in parity or age compared to group II. Logistic regression showed that an EFI score < 7 can be predicted with a high sensitivity of 87.9% and specificity of 81.1% with a negative sliding sign and EFI historical factors score. The area under the curve (AUC) was 0.93 (95% CI 0.85–0.99).

Conclusion: The sliding sign could be a potential alternative to the EFI surgical factors, and it could be used in combination with EFI historical factors to predict an EFI score < 7 for patients who are not scheduled for immediate surgery.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION D

2944 Transgluteal Pudendal Nerve Block

Reinert AE,* Hibner M, Castellanos ME, OB/GYN, St Joseph’s Hospital and Medical Center, Phoenix, AZ
*Corresponding author.

Video Objective: To describe the surgical technique of pudendal neurolysis via a transgluteal route as performed at St Joseph’s Hospital and Medical Center in Phoenix, Arizona.
Surgery, Portland, OR; two prescriptions were not affected by age (49.6 years vs. 43.2 years, 44.62%-76.64% p-value 0.15). Patients filling only one prescription versus filled only 10 pills and 15 patients (38.4%) filled the additional 20 pills (CI vaginal routes (N=10). In the post-operative period, 24 patients (61.5%) cologic surgery via laparoscopy or robotics (N=26), laparotomy (N=3), or... cecum. Complex robotic surgery was performed including ureteral catheter placement, resection of pelvic endometriosis, shave resection of colon, ileocecectomy, and full thickness bladder wall resection. This video focuses on removal of bladder disease, including preoperative workup and technique. The patient did well postoperatively with no complication and significant improvement in symptoms. Conclusion: Bladder wall endometriosis in the dome of the bladder is readily resectable using laparoscopic or robotic techniques.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION E

1425 Robotic Resection of Full Thickness Bladder Wall Endometriosis
Fogelson N.,1,* Christianson LA.1, 1Northwest Endometriosis and Pelvic Surgery, Portland, OR; 2Minimally Invasive Gynecologic Surgery, Legacy Health Systems, Portland, OR
*Corresponding author.

Video Objective: To demonstrate a case of invasive endometriosis of the bladder wall, with preoperative images and description of operative technique for thorough removal and bladder wall closure.

Setting: Private practice specialized in endometriosis care.

Interventions: A 27 year old woman with stage IV endometriosis presented with infertility and pelvic pain. Pre-operative evaluation and MRI demonstrated bladder wall disease, as well as disease of the sigmoid colon and cecum. Complex robotic surgery was performed including ureteral catheter placement, resection of pelvic endometriosis, shave resection of colon, ileocecectomy, and full thickness bladder wall resection. This video focuses on removal of bladder disease, including preoperative workup and technique. The patient did well postoperatively with no complication and significant improvement in symptoms. Conclusion: Bladder wall endometriosis in the dome of the bladder is readily resectable using laparoscopic or robotic techniques.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION F

1725 Dual-Opioid Post-Operative Prescription Model in Gynecologic Surgery — A Pilot Study
Islam MR,1* Cornella J, Wasson MN. Mayo Clinic Arizona, Phoenix, AZ
*Corresponding author.

Study Objective: Determine if providing two opioid prescriptions postoperatively is an effective strategy to decrease total number of opioids obtained.

Design: Retrospective descriptive study.

Setting: Tertiary care academic institution.

Patients or Participants: Thirty-nine patients undergoing gynecologic surgery.

Interventions: Two oral narcotic prescriptions were provided post-operatively. Patients were instructed to initially fill the first prescription with 10 pills. If the patient continued to have opioid requirement for pain control, she was instructed to fill the second prescription with an additional 20 pills. Opioids obtained within 6 weeks post-operatively were confirmed utilizing the Arizona Board of Pharmacy Controlled Substance Monitoring Program.

Measurements and Main Results: Thirty-nine patients underwent gynecologic surgery via laparoscopy or robotics (N=26), laparotomy (N=3), or vaginal routes (N=10). In the post-operative period, 24 patients (61.5%) filled only 10 pills and 15 patients (38.4%) filled the additional 20 pills (CI 44.62%-76.64% p-value 0.15). Patients filling only one prescription versus two prescriptions were not affected by age (49.6 years vs. 43.2 years, p-value 0.193), BMI (26.9 kg/m² vs. 29.3 kg/m² p-value 0.157), history of chronic pain (25% vs. 46.7%, p-value 0.163), smoking history (never smokers 66.7% vs. 66.7%, p-value 0.713), or post-operative IV narcotic use (morphine milligram equivalents) prior to discharge (23.3 mg vs. 31.2 mg p-value 0.187). There were no pain related post-operative clinic visits.

Conclusion: Providing dual narcotic prescriptions after gynecologic surgery can decrease the number of opioids obtained by patients postoperatively. Patient characteristics cannot be used to predict who fills the second prescription. This strategy was not associated with pain related post-operative visits.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION G

1957 Robotic Assisted Mesh Removal: Posterior Vaginal Mesh Kit and Perivesical Mesh Invading Obturator Internus
Sticco PL,* Ladanyi C, Furr RS. Minimally Invasive Gynecologic Surgery, University of Tennessee College of Medicine Chattanooga, Chattanooga, TN
*Corresponding author.

Video Objective: This video depicts a surgical approach in a patient with both a complicated and unclear surgical history, with inability to obtain complete surgical record. It demonstrates a robotic assisted laparoscopic approach to removal of mesh in a patient with persistent pelvic pain with an unclear or unknown mesh location.

Setting: This is a 60 year old woman with a remote history of hysterectomy for benign indications. Per patient, she subsequently developed symptomatic prolapse for which she underwent a “bladder sling” and two “hernia repairs” which necessitated suprapubic catheter post-operatively. She then experienced worsening pelvic pain since that time, now years later, and with constant rectal pressure and more recent post-coital bleeding. The patient is adamant on complete mesh removal. This was performed as an ambulatory surgery within a hospital setting.

Interventions: Pelvic examination revealed noticeable tenderness of anterior vaginal wall, with no exposed mesh or bleeding. The video itself depicts a robotic assisted laparoscopic removal of bilateral posterior vaginal mesh kit and left perivesical mesh invading obturator internus. Careful surgical technique involving bladder dissection off vaginal cuff, ureterolysis, and dissection throughout the space of Retzius down to the obturator internus muscle is carried out with complete removal of multiple mesh components.

Conclusion: Avoiding transection of the mesh along with meticulous dissection aids in traction and greatest chance of complete removal. Maintenance of hemostasis is critical for adequate visualization, especially within the space of Retzius. Knowledge of pelvic anatomy is paramount, as scarring, fibrosis, and mesh migration can distort normal anatomical planes.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION H

2413 Appendiceal Endometriosis: Laparoscopic Endoloop Appendectomy
Vigueras Smith A,1* Sunak R, Kalkarni N, Pinto Rosario D, Ferreira H. Gynecology, Centro Hospitalar Universitário do Porto, Porto, Portugal
*Corresponding author.

Video Objective: To demonstrate the surgical steps of the laparoscopic appendectomy for a deep endometriosis nodule using endoloops.
Setting: Endometriosis affect between 6%-10% of patients in reproductive age. Furthermore, gastrointestinal tract is involved between 5% to 34% of the cases, and specifically the appendix is invaded in about 2.8% to 5%. Appendiceal endometriosis encompass a wide range of manifestations including acute and chronic appendicitis, cyclic lower quadrant pain, melena, rectorrhagia, cecal intussuction and intestinal perforation. Laparoscopic appendectomy is widely performed in nowadays and include several techniques as stapler, endoloops and hand-made loops. Specific steps of the procedure must be known and understand. Here we present a laparoscopic appendectomy using 2 base endoloops in a 38 years old patient with clinical history of dysmenorrhoea, dayspareunia and cysic rectorrhagia. Pelvic Ultrasound and MRI were negative for appendiceal endometriosis.

Interventions: A completely laparoscopic approach to the pelvic and bowel endometriosis was performed. Under general anesthesia, the patient was placed in 0 degrees dorsal decubitus with her arms alongside her body. Operative set-up include 15 mmhg pneumoperitoneum created using the closed-Veress technique and four trocars: a 10-mm trocar at the umbilicus for a zero-degree laparoscope; a 5-mm trocar in the right-iliac fossa; a 5-mm trocar in left-iliac fossa; and a 12-mm trocar in the suprapubic area. Using blunt and sharp dissection with cold scissors, bipolar grasper and ultrasonic energy, complete resection of pelvic deep endometriosis was done followed by appendectomy using 2 endo-loops (Vizry 2-0) at their base. Specimen extraction was done using an endobag and fascial defect was closed by delayed-absorbable 1-0. Patient was discharged in the second day postoperative without any complications.

Conclusion: Appendectomy is a part of the global treatment of endometriosis and must be removed when involved. Laparoscopic resection using endoloops is feasible, safe and effective.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION I

Mautone D,1 Clarizia R,1,6 Roviglione G,1 Brunni F,1 Ceccarello M,1 Campolo F,2 Rossini R,2 Bertocchi E,2 Barogola G,2 Raffo G,3 Ceccaroni M.4 Gynecology and Obstetrics, Gynecologic Oncology, Minimally-Invasive Pelvic Surgery, International School of Surgical Anatomy, IRCCS Sacro Cuore Don Calabria Hospital, Negrar di Valpolicella, Verona, Italy; 2Gynecology and Obstetrics, Department of Surgical Sciences, City of Health and Science, University of Torino, Torino, Torino, Italy; 3General Surgery, IRCCS Sacro Cuore Don Calabria Hospital, Negrar di Valpolicella, Verona, Italy
*Corresponding author.

Study Objective: to define a surgical decision making algorithm in order to be able to select the right tailored-treatment to the patient with deep infiltrating endometriosis (DIE) involving the bowel endometriosis concerning experience and data of our center where more than 3000 procedures were performed.

Design: Retrospective data-analysis was performed in order to define a surgical decision-making algorithm.

Setting: Third-level Referral Center for endometriosis.

Patients or Participants: a total of 3040 patients with bowel DIE underwent to laparoscopic procedures from 2004 to 2018.

Interventions: 2460 cases of segmental colorectal resection, 298 cases of disc excision and 282 cases of rectal shaving.

Measurements and Main Results: Management plan for bowel DIE treatment need to consider different aspects: individual and clinical factors, preoperative morphological characteristics, impact on quality of life and surgical observation. Asymptomatic patients do not require surgery and must be followed clinically. The first-line treatment for symptomatic women is medical therapy. Indication for surgery is limited to the risk of bowel obstruction, in case of medical treatment’s failure and for infertile patients after in-vitro fertilization’s attempts. Using a strategy prioritizing shaving, whenever possible, allows, the right analysis of the size and the degree of infiltration of the nodule. Disc excision should be indicated for residual rectal nodules <2.5 cm with infiltration up to the rectal mucosa and invasion <50% of the circumference. Bowel segmental resection should be indicated for lesions > 2.5 cm (effective size of the nodule after shaving), in cases of multiple lesions, more than 50% of circumferential involvement, deeper than the submucosal layer or in presence of bowel obstructive symptoms.

Conclusion: Pre-operative classification of patients considering clinical factors, symptoms, needs and desire, is mandatory in order to define the best therapeutic strategy and to tailor the surgical procedure to the patient.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION J

3069 Analysis of the Plasma Lipid Composition in Patients with Uterine Myoma and Recurrent Fibroids Using Mass Spectrometry
Tonoyan NM,1,2* Kozachenko FF,1 Frankevich VE,1 Chagovets VV,1 Stepanian AA,2 Adamyan LV,1 V.I. Kulakov National Medical Research Center for Obstetrics, Gynecology and Perinatology, Ministry of Healthcare of Russia, Moscow, Russian Federation; 2Academia of Women’s Health and Endoscopic Surgery, Atlanta, GA
*Corresponding author.

Study Objective: Identification of biomarkers for the early non-invasive diagnosis of recurrent uterine fibroids based on the study of the lipid composition of blood plasma (LCBP) by electrospray mass spectrometry (EMS).

Design: Prospective Level II Study.

Setting: National Medical Research Center, Moscow, Russia.

Patients or Participants: 35 women with myoma (UF), 31 women with recurrent myoma (RUF), control group of 15 patients without myoma.

Interventions: Laparoscopic surgery for treatment of uterine fibroids. Blood samples were obtained before the surgery to determine the qualitative and quantitative assessment of LCBP using EMS and the multivariate PLS-DA method.

Measurements and Main Results: Phosphatidylcholines (PC) and sphingomyelins (SM) have been identified. In UF group we found PC (LPC 18: 2, PC 16: 0_20: 3, PC 18: 0_18: 3, PC 18: 0_16: 0_18: 2, PC 16: 0_20: 3, PC 18: 0_20: 3, PC 18: 0_18: 3, PC 18: 0_16: 0_18: 2, PC 16: 0_20: 3) and SM (SM d18: 1/22: 0, SM d18: 1/24: 0, SM d18: 1/24: 0, SM d18: 1/24: 0). In RUF group we found PC (PC 16: 0_22: 6, PC 16: 0_18: 2, PC 16: 0_20: 3, PC 18: 0_18: 3, PC 18: 0_18: 3) and sphingomyelin (d18: 1/24: 1, SM d18: 2/24: 1). In the control group we found the cholesterol esters (CE 18: 2, CE 20: 4), phosphatidylcholines (PC 18: 0_18: 2, PC 16: 0_22: 6), sphingomyelins (SM d12: 0 / 14: 1, SM d18: 1/22: 0, SM d18: 1/22: 0, SM d18: 1/24: 0, SM d18: 1/24: 0, SM d18: 2/16: 0, SM d18: 2/24: 1) and triglycerides (TG 14: 1_18: 2_18: 3, TG 16: 0_16: 0_18: 2_18: 3, TG 18: 0_18: 2_18: 3, TG 18: 0_18: 2_18: 3).

Conclusion: Significant differences were found in the lipid composition of blood plasma among patients without UF, with UF, and with RUF. Further research is needed to assess the feasibility of using these biomarkers in the early diagnosis of the disease and in predicting the recurrence of the disease.
Zhu Q.*, Liang Y. Zhang J. Department of Obstetrics and Gynecology, International Peace Maternity and Child Health Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China
*Corresponding author.

Study Objective: To compare the efficacy of postoperative adjuvant treatment [gonadotropin-releasing hormone agonist (GnRHa) and oral contraceptive pills (OCPs)] with expectant treatment in preventing recurrent of dysmenorrhea following conservative laparoscopic surgery for deep infiltrating endometriosis (DIE) with dysmenorrhea.

Design: Prospective cohort study.

Setting: University hospital.

Patients or Participants: Patients who suffered from dysmenorrhea and received conservative laparoscopic surgery for DIE between January 2012 and January 2016.

Interventions: After conservative surgery for DIE, either postoperative adjuvant drug therapy (GnRHa or OCPs) was administered for 6 months or expectant treatment according to shared medical decision-making approach.

Measurements and Main Results: 147 women were found to be study eligible. 46 women were included in the GnRHa group, 42 women in the OCPs group, and 45 women in the expectant group. Based on the GEE model. The postoperative dysmenorrhea scores of all 3 groups increased gradually (Wald $\chi^2$ test, P=0.000). However, Wald $\chi^2$ test the effect of postoperative treatments and showed that VAS scores for dysmenorrhea in the GnRHa and OCPs treatment groups were significantly lower than the expectant group, but there was no difference between the GnRHa and OCPs groups. During the 24 months after surgery, 25 (18.80%) patients experienced recurrent dysmenorrhea. Kaplan-Meier analysis and log-rank test represented that the cumulative recurrence rate in expectant group (14/45) was higher than that in the hormonal groups (5/46 in the GnRHa group and 6/42 in the OCPs group) ($X^2$=7.202, P=0.027), but this was not statistically significant between two hormonal groups ($X^2$=0.223, P=0.637). A Cox proportional hazards model illustrated that concurrent adenomyoma, vaginal DIE and high preoperative dysmenorrhea VAS score were independent risk factors recurrent of dysmenorrhea, while postoperative medical treatment manifested positive protective effect.

Conclusion: Compared with expectant treatment, postoperative medical management was more effective in relieving dysmenorrheic symptoms and preventing recurrent of dysmenorrhea. This study provided guiding clinical evidence for the postoperative decision-making process for DIE.

Virtual Poster Session 3: Endometriosis

10:10 AM – 10:20 AM

10:10 AM: STATION L

1548 The Combination of Candidate Genes in the Formation of Endometriosis in Women of Russia’s Central Region
Ponomarenko IV,* Charnosov MI, Department of Medical Biological Disciplines, Belgorod State University, Belgorod, Russian Federation
*Corresponding author.

Study Objective: Study of role of the combination genetic polymorphisms rs7759938, rs7766109 and rs13111134 in formation of endometriosis.

Design: Prospective cohort study.

Setting: Perinatal center St. Joasaph Belgorod Regional Clinic Hospital.

Patients or Participants: The research group consisted of 688 women between 2010 and 2013, of which 252 endometriosis patients and 436 persons of the control group. Main group and control group included Russian women who were native of Central Region of Russia and who were not relatives to each other. Patients with endometriosis were provided with clinical and gynecological examination, ultrasound investigation if pelvic floor, laparoscopic inspection with histologic confirmation after biopsy.

Interventions: Typing of single nucleotide polymorphism of the following genes was performed for patients with endometriosis women from control group: rs7759938, rs7766109 and rs13111134. Analysis of roles of combinations of genetic variants in occurrence of endometriosis was performed with the help of APSampler software.

Measurements and Main Results: It has been discovered that combination of genetic variant C rs7759938 with A rs7766109 and A rs13111134 occur in 10.89% of sick women, respectively, which is 1.86 times lower than that occur in control group (20.23%, $p_{bonf}=0.03$). When there are these combination of polymorphic markers, pathology risk of endometriosis is significantly lower (OR=0.48, CI 0.35-0.66).

Conclusion: Protective meaning at formation of endometriosis belongs to combination of genetic variants C rs7759938 with A rs7766109 and A rs13111134 (OR=0.48).

Virtual Poster Session 3: Endometriosis

10:10 AM – 10:20 AM

10:10 AM: STATION M

2616 Concomitant Appendectomy in Patients with Pelvic Pain: Can we Predict Abnormal Appendiceal Pathology?
Farzan Nikou A,1,* Tenzel NS,2 Hu P,3 Pan S,3 Orbuch L,2,4 Orbuch IK1
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*Corresponding author.

Study Objective: To determine the prevalence of appendix pathology (i.e. endometriosis, fibrous obliteration, tumor, acute/chronic inflammation) in patients with chronic pelvic pain. To determine whether preoperative symptoms, age (≤35 or >35), or intraoperative appendiceal appearance were associated with appendix pathology.

Design: Retrospective chart review.

Setting: Two Large Metropolitan Academic Hospitals.

Patients or Participants: 135 patients between the ages of 16 to 52 with chronic pelvic pain undergoing minimally invasive excision surgery with concomitant appendectomy for suspected endometriosis from January 2012 to June 2017.

Interventions: Data on appendix pathology, preoperative symptoms, age, and intraoperative appendix appearance was collected from medical records, operative reports, and postoperative pathology reports.

Measurements and Main Results: Among the 135 patients with chronic pelvic pain, 54 (40%, 95% CI:31.7-48.3%) had underlying abnormal appendiceal pathology: 18 (13.3%, 95% CI:7.6-19.1%) with endometriosis, 25 (18.5%, 95% CI:12.0-25.1%) with fibrous obliteration, 4 (3.0%, 95% CI:0.1-5.8%) with tumors, and 7 (5.2%, 95% CI:1.4-8.9%) with inflammation. Dyspareunia was the only statistically significant preoperative symptom that was associated with appendiceal pathology (p=0.04). Gastrointestinal symptoms (i.e. dyschezia, constipation, nausea, and diarrhea), dysmenorrhea, menorrhagia, dysuria, right lower quadrant pain, left lower quadrant pain, back pain, and presence of ovarian cyst were not significantly associated with appendiceal pathology. Rates of appendiceal pathology were not significantly different between age groups (≤35 vs >35) (p=0.24). Thickening, scarring/adehesions, discoloration, nodularity, vascular congestion, or irregular shape of the appendix were not significantly associated with underlying appendix pathology.

Conclusion: Neither age (≤35 or >35) nor intraoperative appendiceal appearance was associated with underlying appendiceal pathology, which had a prevalence of 40%. Only preoperative dyspareunia was associated
with appendiceal pathology, a connection that requires further study. Thus surgeons should consider concomitant appendectomy in patients with chronic pelvic pain.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION N

1853 Learning Curve for the Detection of Pouch of Douglas Obliteration and Deep Endometriosis of the Rectum in Gynecology Trainees
Espada M,1,2 Leonardi M,1,2 Stamataopoulos N,1 Georgousopoulou E,3 Lord SJ,1 Yanza K,1 Condous G1,2. 1Acute Gynaecology, Early Pregnancy and Advanced Endosurgery Unit, Nepean Hospital, Sydney, NSW, Australia; 2Sydney Medical School Nepean, University of Sydney, Sydney, NSW, Australia; 3School of Medicine, The University of Notre Dame Australia, Sydney, NSW, Australia
*Corresponding author.

Study Objective: Evaluate the learning curve of gynecology trainees to correctly classify pouch of Douglas (POD) obliteration state and identify rectal deep endometriosis (DE) in real-time while simultaneously performing and interpreting transvaginal ultrasound (TVS).

Design: Learning curve using the cumulative sum (LCCUSUM) prospective study.

Setting: A tertiary healthcare center in Sydney, Australia.

Patients or Participants: Three observers of varying pre-study ultrasound experience.

Interventions: Observers performed a pre-determined 150 supervised examinations (50 each) to assess for POD obliteration and rectal DE, having been blinded to the clinical history and reference standard findings. Immediate feedback and hands-on teaching were provided.

Measurements and Main Results: The acceptable performance rate (proficiency) was set at 15% failure, the unacceptable performance rate was set at 30%, and the equivalence zone was set at 5%. 150 examinations were performed on 145 patients, with rectal DE in 26 (17.3%) and negative sliding sign in 34/145 (22.7%). The overall accuracy of POD state classification was 92.7%, ranging from 90-96% amongst the observers. LCCUSUM for the overall accuracy of POD state classification observer 2 did not reach proficiency, whereas observers 1 and 3 were proficient, with acceptable performance rates of 94% and 95%, respectively. The overall accuracy of POD state classification amongst the observers. The overall accuracy of POD state classification was 92.7%, ranging from 90-96% amongst the observers. LCCUSUM for the overall accuracy of POD state classification observer 2 did not reach proficiency, whereas observers 1 and 3 were proficient, with acceptable performance rates of 94% and 95%, respectively.

Conclusion: One gynecology trainee became proficient in diagnosing rectal DE and POD obliteration in less than the 50 planned supervised ultrasounds. Contrary to similar studies, we propose that not all trainees can reach proficiency during a program based upon a pre-defined number of scans and competency-based education may be more appropriate.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION O

2015 Primary Umbilical Endometriosis Presenting with Enlarged Fibroid Uterus
Small Layne AN,1,2 Swainston D2. 1Las Vegas Minimally Invasive Surgery, Las Vegas, NV; 2Obstetrics and Gynecology, Women’s Health Associates of Southern Nevada, Las Vegas, NV
*Corresponding author.

Study Objective: Extra-genital endometriosis is rare, with umbilical endometriosis accounting for 0.4-4% of cases. Primary umbilical endometriosis (PUE) is even more uncommon and is not associated with prior surgery. The pathogenesis of this disease is unknown but may be secondary to hematogenous/lymphatic spread or coelomic metaplasia. Here we describe the presentation, diagnosis, and management of a case of PUE presenting along with a 19cm multi-fibroid uterus.

Design: Case report/literature review.

Setting: Academic affiliated gynecology practice.

Patients or Participants: 41yo G2P0 presented with a 2 year history of increasing pain at her umbilicus associated with odor. Symptoms progressed to cyclic bleeding during menses and gradual disfiguration of umbilicus. Biopsy revealed normal benign tissue. Patient also complained of heavy menstrual bleeding. She had no previous surgical history and medical history was significant for endometrial hyperplasia treated with progesterone.

Exam revealed a brown firm, tender, multinodular mass measuring 2cm associated with the umbilicus. MRI showed a T1 hypointense contrast-enhancing 2.4 x 2.1cm mass of the umbilicus extending into the subcutaneous tissue as well as a 19 x 13 x 19cm multi-fibroid uterus.

Interventions: The umbilicus and margin of subcutaneous tissue were excised by general surgery. Laparoscopic survey did not identify pelvic endometriosis. Robotic assisted hysterectomy was performed with tissue extraction through the umbilical defect. Fascia was repaired with 0 PDS and incision was closed to create a cosmetic umbilical appearance.

Measurements and Main Results: Umbilical endometriosis was confirmed on pathology. The uterine tissue weighed 1444 grams with benign leiomyoma and secretory endometrium. There was no pelvic endometriosis. There were no perioperative complications. Post-operatively she had relief of umbilical pain and bleeding.

Conclusion: PUE is a rare condition that should be considered in premenopausal women presenting with painful masses of the umbilicus especially if associated with bleeding at time of menses. Primary umbilical endometriosis can be successfully treated with surgical excision with favorable cosmetic outcome and relief of symptoms.

Video Objective: The objective of this video is to depict a robotic assisted laparoscopic resection of a retroperitoneal mass, showing a unique case where compression on the pelvic splanchnic nerves produced severe urinary symptoms in a patient which resolved immediately after the procedure. It also shows a rare case of extra gonadal retroperitoneal mature teratoma.

Setting: The patient is a 28 yo G1P1 who presented to care for worsening left lower quadrant pain and pressure, urinary frequency, urgency and hourly nocturia. History is significant for dysmenorrhea, abdominoplasty and acne taking spironolactone. Imaging revealed a mildly complex mass in the cul-de-sac measuring 10.6 x 8.3 x 7.3 cm, without thickening or nodularity, probably cystic and arising from the left ovary. She underwent laparoscopy for planned excision which was aborted as a retroperitoneal mass was identified involving the cul-de-sac and left pelvic sidewall without involvement of the ovaries, fallopian tubes and uterus. She was then referred to Gynecologic Oncology, Neurosurgery and then by Urogynecology.

Interventions: She underwent a robotic assisted laparoscopic removal of the retroperitoneal mass with care to avoid use of excessive cautery, excision of endometriosis, left ureterolysis, enterolysis, peri toneal biopsy and cystoscopy with a intraoperative left ureteral stent placed by Urology, removed at the end of the case. After removal of the mass her urinary symptoms and pelvic pain completely resolved. Her postoperative course
was uncomplicated. Pathologic findings of the retroperitoneal mass were consistent with a mature teratoma.

**Conclusion:** The retroperitoneal teratoma compressed the inferior hypogastric plexus which led to the patient’s symptoms. Careful dissection of the pararectal and paravesical space was performed to cause minimal damage to the inferior hypogastric plexus and surrounding nerves with complete resolution of symptoms. Limited use of electrocautery was employed to avoid thermal damage. Extragonadal teratoma is a rare finding.

**Virtual Poster Session 3: Endometriosis (10:10 AM – 10:20 AM)**

**10:10 AM: STATION Q**

1803 Post Morcellation Endometriosis: Is it Real?

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**Study Objective:** To describe the clinical characteristics of patients diagnosed with endometriosis following laparoscopic supracervical hysterectomy (LSH) with uncontained power morcellation.

**Design:** A systematic retrospective chart review was performed. The clinical presentation and histopathology were reviewed in each case for the incident and subsequent procedures. The menstrual phase at the time of LSH was determined from the pathology reports. Descriptive statistics were performed for the cohort.

**Setting:** N/A.

**Patients or Participants:** Patients who underwent LSH with uncontained power morcellation at Kaiser Permanente Southern California Medical Centers between 2006-2013. From a total of 47,010 hysterectomies, 5154 were LSH with uncontained power morcellation. We focused on the 261 LSH patients who then underwent a subsequent surgery.

**Interventions:** N/A.

**Measurements and Main Results:** The mean age and BMI of patients undergoing second surgery were 43.2 yrs. ± 0.8 and 29.4±0.7 respectively. Of the 261 patients who underwent subsequent surgery, a pathological diagnosis of endometriosis was confirmed in 58 patients: this was a new diagnosis in 93% (54/58). Patients with endometriosis were more likely to present with new onset pelvic pain and a mass (p<0.001) and require unilateral or bilateral oophorectomy or excision of a mass (p<0.001) as compared to those without endometriosis. There was no difference in age (p=0.09), ethnicity (p=0.96), BMI (p=0.96), mean uterine weight (p=0.19) or ovarian conservation (p=0.3) at the time of LSH between those patients who did and did not have a subsequent diagnosis of endometriosis. The use of preoperative hormonal medication (p=0.51) and phase of endometrium at the time of LSH (p=0.41) were not significantly different between the groups.

**Conclusion:** Morcellation seems to contribute to the development of endometriosis in some patients through an unknown mechanism. While uncontained power morcellation is no longer a common clinical scenario, it may still be necessary to consider that manual morcellation has potentially adverse consequences. Further study of the sequelae of non-power morcellation is warranted.

**Virtual Poster Session 3: Endometriosis (10:10 AM – 10:20 AM)**

**10:10 AM: STATION R**

1927 Fertility Preserving Laparoscopic Excision of Deep Rectal Infiltrating Endometriosis. Success with a Multidisciplinary Team

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**Video Objective:** The objective of this video is to demonstrate the multidisciplinary approach for surgical excision of deep infiltrating endometriosis of the rectum.

**Setting:** 31 y/o G0P0 presented with pelvic pain & dyspareunia and premenstrual severe constipation.

**Interventions:** The patient underwent laparoscopic excision of deep infiltrating endometriosis of the rectum, and excision of pararectal deep endometriotic nodule. Followed by low anterior resection of rectum and intracorporeal anastomosis.

**Conclusion:** Minimally invasive surgical management of deep infiltrating endometriosis nodules of the rectum is feasible with excellent fertility and surgical outcomes.

**Virtual Poster Session 3: Endometriosis (10:10 AM – 10:20 AM)**

1829 Current State of Pelvic Ultrasound for Endometriosis: Results of an International Survey

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**Study Objective:** Compare how obstetrician/gynecologists (OBGYNs) in four English-speaking regions (Australia/New Zealand (ANZ), Canada (CAN), United Kingdom (UK), and United States of America (USA)) think of and use transvaginal ultrasound (TVS) in the diagnosis and management of endometriosis.

**Design:** An online survey.

**Setting:** Between May and November 2018, the online survey was distributed in ANZ, CAN, UK and USA.

**Patients or Participants:** Independently-practicing OBGYNs belonging to the Royal Australian New Zealand College of Obstetricians and Gynaecologists, Society of Obstetricians and Gynaecologists of Canada, American College of Obstetricians and Gynecologists and British Society for Gynaecological Endoscopy.

**Interventions:** Questions on the diagnosis and management of endometriosis, with particular emphasis on the utility of ultrasound.

**Measurements and Main Results:** Questions were designed by the study team and piloted. The formal invitation was distributed via email through the respective societies with a reminder at two weeks. Responses were analyzed quantitatively using descriptive and inferential statistics. Missing data were excluded from the analysis. 1140 OBGYNs responded. Regional respondent number and response rate are as follows: ANZ 449(20.4%), CAN 156(10.4%), UK: 95 (14.2%), US: 440(1.4%). 65 respondents were disqualified based on practice composition. Differences in the utilization of the deep endometriosis (DE) TVS were noted, with ANZ members seemingly adopting the technology more readily. Similarly, ANZ respondents had the highest rates of expectation/belief in the utility of TVS for endometriosis. A high rate of disbelief of TVS utility exists broadly. Lastly, US members ranked endometriomas as the most important feature of endometriosis predict on imaging preoperatively, whereas UK members ranked rectovaginal septum and ANZ/CAN members ranked bowel DE as most important, respectively.

**Conclusion:** Regional differences were noted in the awareness of utility and adoption of TVS for diagnosis of endometriosis. This study should
serve as an important stepping stone in raising awareness and introducing educational campaigns to improve the utility and adoption of this essential preoperative and diagnostic tool.

Virtual Poster Session 3: Endometriosis
(10:10 AM – 10:20 AM)

10:10 AM: STATION T

1974 Is the World Endometriosis Research Foundation (WERF) Endometriosis Phenome and Biobanking Harmonisation Project (EPHECT) Questionnaire a Good Triaging Tool for Women with Ovarian and Posterior Compartment Endometriosis?

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Study Objective: We aim to demonstrate whether the WERF EPHexct Questionnaire can be used as a triaging tool to determine which women, based upon symptoms, are more likely to have ovarian and posterior compartment endometriosis on ultrasound.

Design: Prospective observational study (July 2018 to March 2019).

Setting: The WERF EPHexct Questionnaires were emailed to women with possible endometriosis booked in for a ‘deep endometriosis’ (DE) ultrasound at two specialized ultrasound centers.

Patients or Participants: Women with a history of pelvic pain, dysmenorrhea, dyspareunia and dyschezia were included.

Interventions: The DE ultrasounds were performed by advanced sonologists as per the IDEA consensus opinion. A subsection of the questionnaire focusing on bowel symptoms (during menses and in the preceding 3 months) was compared to DE ultrasound findings. Logistic regression analysis was performed to assess the correlation between online responses and ultrasound findings.

Measurements and Main Results: 217 women were emailed the online questionnaire; 156/217 (62%) responded prior to their DE ultrasound. The ultrasound prevalence of ovarian endometriomas, rectal DE and complete pouch of Douglas (POD) obliteration on ultrasound were 24%, 18% and 18%, respectively. There was no significant difference in the prevalence of disease in the respondents versus non-respondents (47%/47% posterior compartment, 31%/24% ovarian, respectively (p-value<0.05)). Older age, blood and mucus in stool and fullness and bloating were significant predictors of ovarian disease. Older age and blood in stool were predictive of posterior compartment disease, specifically rectal DE and POD obliteration.

Conclusion: When the WERF EPHexct Questionnaire is applied, bowel symptoms have the potential to be utilized as a triaging tool to determine which women require DE ultrasounds. A structured international symptomatology survey may be able to better target the utility of the DE ultrasound.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION A

1684 Urinary Tract Endometriosis: Ureterolysis

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Video Objective: Present an infrequent pathology of gynecological pelvic surgery, expose the clinical case and the theoretical framework in an educational way and show the surgical resolution made.

Setting: A 26 year old female patient, who complained of primary dysmenorrhea, associated with changes in her cathartic frequency. The pain persists despite treatment with Dienogest. MRI was performed, which showed left pyelocaliceal dilation as well as a 5 cm endometriotic nodule which involved the sigmoid. A ureteral catheter was placed and surgery was planned.

Interventions: We used a minimally invasive approach to perform ureterolysis and shaving of the intestinal nodule.

Conclusion: Hospital discharge was made the day after the procedure.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:30 AM: STATION C

2445 Appendiceal Pathology in Women with Endometriosis

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Study Objective: To report the prevalence of abnormal appendiceal pathology in women with pelvic pain and pathology-confirmed pelvic endometriosis.

Design: Retrospective case series.

Setting: Tertiary care referral center.

Patients or Participants: Forty patients with pelvic pain undergoing laparoscopy for possible endometriosis with concomitant laparoscopic appendectomy during a 5 month period.

Interventions: Laparoscopic excision of suspected endometriosis with concomitant laparoscopic appendectomy on patients with visible abnormalities of the appendix.

Measurements and Main Results: Forty patients underwent laparoscopic excision of suspected endometriosis with visible abnormalities involving the appendix and were treated with concomitant laparoscopic appendectomy. Of this subgroup, thirty-eight patients had pelvic endometriosis and eighteen patients (47.3%) had appendiceal pathology: appendicitis, two (5.3%) with mild acute inflammation, two (5.3%) with lymphoid hyperplasia, and two (5.3%) with fibrous obliteration. The prevalence of appendiceal pathology in patients with pelvic endometriosis was 47.3%.

Conclusion: Appendiceal pathology may be a contributing factor to pelvic pain in women with endometriosis and should be routinely inspected for visible abnormalities.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION D

2756 Obstetric Outcomes in a Contemporary Cohort of Women with Endometriosis at an Academic Medical Center

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Study Objective: Previous literature shows that women with endometriosis have higher rates of adverse pregnancy outcomes compared to the general population, including preterm birth, fetal growth restriction, and cesarean section. We aim to identify disease-specific risk factors and surgical treatments that impact obstetric outcomes.

Design: Retrospective cohort study.

Setting: Academic medical center.

Patients or Participants: Women who delivered at our institution from January 2002 to December 2018 with ICD-9/10 codes of endometriosis.

Interventions: We obtained demographic characteristics and pregnancy information from a prospectively-maintained dataset, and linked this to gynecologic data, including symptoms, infertility treatments, lesion types (superficial, deeply-infiltrative [DIE], endometrioma, adenomyosis), and prior surgeries for endometriosis—dichotomous variables for diagnostic laparoscopy, ablation/fulguration, ovarian cystectomy, superficial excision, and excision of DIE. Patients were stratified by gynecologic characteristics, and obstetric outcomes compared across groups.

Measurements and Main Results: Of 148 deliveries, 54 (36%) had superficial endometriosis, 14 (9.5%) DIE, 75 (51%) endometriomas, and 13 (8.8%) adenomyosis. Compared to other lesions, adenomyosis was associated with prior miscarriage (62% vs. 22%, p=0.004). Almost three-quarters (72%) of patients had undergone previous surgery, including 68% diagnostic laparoscopy, 22% ablation, 28% cystectomy, 8.8% superficial excision, and 4.1% DIE excision. 38% had previously been diagnosed with infertility, while 28% conceived through in vitro fertilization. Women with DIE more often delivered via cesarean section (71% vs. 40%, p=0.04). Compared to patients with zero or one prior surgery, the 25 patients with multiple prior surgeries (range 2 to >5) more frequently had small for gestational age infants (32% vs. 14%, p=0.015), which was independent of gestational age. There were no significant differences in obstetric outcomes (gestational age, delivery method or newborn weight) by type of endometriosis surgery.

Conclusion: More extensive surgical history, as evidenced by multiple prior endometriosis surgeries, was associated with having infants who were small for gestational age.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION E

2171 Need for Fertility Preservation in Woman with Endometriosis

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*Corresponding author.

Study Objective: To evaluate the impact of endometriosis for ovarian reserve via measurements of serum anti-Müllerian hormone, follicle stimulating hormone, estradiol stimulating hormone, and to indicate groups of patients where fertility preservation should be considered.

Design: From August 2017 to July 2018 a prospective cohort study was performed. It included 50 patients below 35 years with confirmed endometriosis who were followed by laparoscopic surgery. AMH, FSH and Estradiol levels were assessed before and approximately one month after surgery. The stage of endometriosis was evaluated by rAFS and rEnzian classification.

Setting: N/A.

Patients or Participants: N/A.

Interventions: All patients filled in a questionnaire of medical history and previous treatment. Afterwards they underwent laparoscopic removal of all endometriotic lesions. Post operatively they were divided into groups using rAFS and rEnzian classification.

Measurements and Main Results: The AMH level of operated patients was importantly reduced after surgery (from 2.95 ± 2.14 [mean ± SD] at baseline to 1.05 ± 1.56 at follow-up). There was a statistically significant correlation between the rate of serum AMH decline and stage of endometriosis according to rAFS classification (p=0.014). The decline was about 0.31 ± 0.8 [mean ± SD]; 0.08 ± 0.6; 1.68 ±1.44; 1.38 ± 1.9 respectively in group I, II, III, IV. In addition, patients with bilateral ovarian endometriomas showed the highest decline of AMH levels compared with unilateral ovarian endometriosis (about 2.16 ± 2.45 in bilateral group, about 1.42 ±1.31 in unilateral endometriosis). However, also patients who were not observed with cysts had a decreased level of AMH after surgery about 0.44 ± 1.2. FSH and Estradiol levels were not statistically significant.

Conclusion: The rate of serum AMH is significant indicator of ovarian reserve. It should be marked before all endometriosis surgeries as its level might be declined even in minimal and mild stages. Since it is reduced postoperatively all patients with endometriosis should be offered fertility preservation techniques.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION F

2406 The Role of Exercise in Decreasing Ongoing Pain in the Post-Excision Endometriosis Population

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*Corresponding author.

Study Objective: Endometriosis is a painful disease affecting quality of life in nearly 176 million women worldwide. Even post excision of endometriosis patients may continue to experience pain across multiple systems...
from gynecological pain to abdominal and musculoskeletal pain. Current best practices leaves women with the disease few options beyond surgery, especially for those suffering with central sensitization and nerve up-regulation due to the long term adaptations of the disease. Pelvic Physical Therapy can be a critical component to mobilize the body post operatively. An exercise prescription designed by a physical therapist may help integrate and quiet long standing nerve patterns thereby returning the woman with endometriosis back to her best possible quality of life.

**Design:** 35 women with endometriosis following excision of endometriosis were given a specific exercise program to help with nerve and pain not reduced by surgery alone. The CHPPS questionnaire was administered at onset of physical therapy and then at the 3 and 9 month mark.

**Setting:** Outpatient Private Physical Therapy Practice.

**Patients or Participants:** People with Endometriosis, post excision of the disease by a specialist.

**Interventions:** Specific Exercise prescription was given to 35 patients with endometriosis.

**Measurements and Main Results:** Of the 35 women, 24 reported increases in quality of life, 6 reported changes in pain but no increase in quality of life and 5 did not complete the study either due to compliance.

**Conclusion:** Women with endometriosis experience on average an 8 year diagnostic delay from onset of symptoms to treatment. This delay may increase issues within the central nervous system, additionally the overwhelming pain may cause a patient to become deconditioned. Even after the disease is removed, pain may remain. An exercise prescription by a pelvic physical therapist may help increase quality of life.

**Virtual Poster Session 3: Endometriosis**

**10:20 AM − 10:30 AM**

**10:20 AM: STATION G**

2991 Planned Multidisciplinary Surgical Approach to Deep Infiltrating Endometriosis

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*Corresponding author.

**Study Objective:** To describe a multidisciplinary minimally invasive approach to deep infiltrating endometriosis (DIE) with colorectal and gynecologic surgeons.

**Design:** A retrospective cohort study.

**Setting:** Between 2014-2018, all patients with suspected DIE and intestinal involvement were assessed by a team of minimally invasive gynecologic surgeons (MIGS) and colorectal surgeons at the University of North Carolina Hospitals. Perioperative data were abstracted from medical records and analyzed.

**Patients or Participants:** Women ≥18 years of age with suspected DIE.

**Interventions:** MIGS and colorectal surgical teams planned combined cases in patients with clinical suspicion, prior diagnosis or radiographical evidence of DIE. Preoperative work-up included imaging, predominantly lower endoanal ultrasound or pelvic MRI. Interventions indicated by patient’s goals and disease burden included variable combinations of gynecologic and colorectal procedures.

**Measurements and Main Results:** Thirty-three patients were included, with a mean age of 37 years and average BMI of 30.5. Most were African American (48.5%) or Caucasian (33.3%) and had a prior laparotomy (56.7%) or laparoscopic (90.9%) surgery. At the initial gynecologic consult, patients reported hematochezia (21.2%), constipation (45.5%), dyschezia (66.7%), and straining during bowel movement (21.2%). An endoanal ultrasound (54.6%) and/or pelvic MRI (39.4%) were obtained based on symptoms and exam for suspected DIE. Imaging findings suggestive of bowel disease were strongly correlated (80%), therefore all patients underwent a preoperative colorectal consult. Combined hysterectomy and bowel resection were performed in 18 cases (54.5%), excision of endometriosis and bowel resection for DIE in six cases (18.1%). Six excision of DIE cases required bowel adhesiolysis alone (18.1%) and one case needed no colorectal intervention (3%). One case required conversion to laparotomy (3%).

**Conclusion:** A planned multidisciplinary gynecological–colorectal approach for the management of DIE can be performed in a minimally invasive manner in patients with suspected colorectal disease. We recommend a stepwise approach of preoperative imaging and a colorectal consult to coordinate two surgical teams.

**Virtual Poster Session 3: Endometriosis**

**10:20 AM − 10:30 AM**

**10:20 AM: STATION H**

2908 Ultrasound Findings in Patients Referred to an Endometriosis Unit in a Tertiary Centre: Does Previous Surgery Matter?

Rius M,1* Ros C, Escura S, deGuirior C, Gracia M, Martínez-Zamora MÁ, Carmona F. Hospital Clinic, Barcelona, Spain

*Corresponding author.

**Study Objective:** The objective of this study is to analyze the ultrasound findings in patients referred to an endometriosis unit with and without previous endometriosis surgeries over one-year period.

**Design:** Retrospective study including 430 patients who had a first visit and an ultrasound scan at an endometriosis referral unit from January to December 2018. Information about surgical history and ultrasound findings was collected.

**Setting:** Endometriosis referral unit in a tertiary hospital in Barcelona, Spain.

**Patients or Participants:** 430 patients referred to the endometriosis unit were included.

**Interventions:** Ultrasound scan was performed according to the protocol established in this unit.

**Measurements and Main Results:** 177 patients (41.2%) had a previous history of endometriosis surgery. 72.9% of them had one previous surgery and 14.7% had two whereas 12.4% had three or more. Laparoscopy was the main route, which was used in 74.6% of them. The main procedures were endometriomas decapsulation (45.6%) followed by adnexal surgery (19.8%) and deep infiltrating endometriosis nodule excision (16%). Only 2.7% of patients had a previous bowel resection. When comparing the ultrasound findings between patients who have a previous endometriosis surgery with those without, statistically significant differences were found in the presence of ovarian adhesions, ovarian endometriomas, presence of intestinal endometriotic nodules and Douglas-blockage.

**Conclusion:** More than 40% of patients referred to the endometriosis unit had had a previous surgery. They had a higher rate of presence of intestinal endometriotic nodules among other ultrasound findings. Thus, it reinforces the need of referral units in order to establish a precise treatment either medical or surgical with high-skilled surgeons.

**Virtual Poster Session 3: Endometriosis**

**10:20 AM − 10:30 AM**

**10:20 AM: STATION I**

2043 Where do Women Draw the Line? Choosing Surgery for Endometriosis After Hormonal Medication Use

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*Corresponding author.
Study Objective: Identify the number and duration of hormonal management modalities utilized by patients with endometriosis prior to undergoing initial surgical evaluation.

Design: Cross-sectional study.

Setting: Tertiary care academic hospital.

Patients or Participants: Forty-four patients with pathology proven endometriosis.

Interventions: Patients were provided with a standardized questionnaire regarding the use of preoperative hormonal medical therapy. Medical therapy categories included: combined oral contraceptive pills (COCP), progestosterone only pills (POPs), progestosterone intrauterine devices (IUD), injections, implants, gonadotropin releasing hormone agonists (GnRH), selective progesterone receptor modulators, aromatase inhibitors, danazol, and GnRH antagonists.

Measurements and Main Results: Of 111 patients screened with pathology proven endometriosis, 52 patients met eligibility criteria. The response rate was 84.62% (n=44). Median age of patients was 33 years old. Mean number of gynecologic procedures patients had was 2.6. The mean use of medication was <1 (0.8) prior to undergoing initial surgery for endometriosis (p=0.87). Mean use according to age by decade were the following: 1.1 (20-29 years), 0.7 (30-39 years), 0.6 (40-50 years). Of patients surveyed, 50% used 1 or more hormonal medications whereas 50% did not use any. The mean length of time from the first medication use to initial surgery was 8.1 years. Patients who reported medication use prior to surgery used at least one of the following (N=22): COCP, POP, progesterone IUDs, injections, implants, and selective progesterone receptor modulators.

Conclusion: Despite available medical management options for endometriosis treatment, many patients do not use any hormonal medications before choosing surgical intervention. Although multiple modalities exist for medical management, this cohort mainly used progesterone based methods. These medications are used for many years and patients with endometriosis are at high risk for multiple gynecologic procedures.

Virtual Poster Session 3: Endometriosis

(10:20 AM – 10:30 AM)

10:20 AM: STATION J

2194 Symptomatic Recurrence of Endometiomata Following Plasmajet Treatment

Gherghe M,* Bjornsson S, Hardwick C. Obstetrics and Gynaecology, Queen Elizabeth University Hospital, Glasgow, United Kingdom *Corresponding author.

Study Objective: The current recommended treatment of endometriomata is surgical excision. Our study is assessing recurrence rates of endometrioma following plasma energy ablation treatment.

Design: 64 endometriomata were treated in 49 consecutive patients identified retrospectively from theatre records of a single operating surgeon, from January 2013 to December 2017. Electronic hospital records were used for data collection and to search for re-attendance for imaging or gynecology review within the whole health board. The maximum time from treatment to clinical review was 66 months. All Patients included in study were treated using plasma energy device, PlasmaJet.

Setting: University Hospital.

Patients or Participants: Forty-nine consecutive patients, identified retrospectively.

Interventions: Endometrioma ablation using plasma energy device.

Measurements and Main Results: Mean age at surgery was 35 year (+/- 5.8) with a recorded BMI of 26 (+/- 3.8). Median recurrence of symptoms of pain was 20 months. Symptomatic recurrence of endometrioma diagnosed within the health board was 6.2% when looking at total number of cysts treated, with an average time of 19 months from treatment to recurrence. Bilateral endometriomata predicted recurrence compared to unilateral disease with an OR 3.02, RR2.6. Women under the age of 35 years were more likely to be diagnosed with recurrence of endometriomata than women over 35 years with an OR 3.3, RR2.83. Secondary outcomes recorded were recurrence of pain, dysmenorrhea and peri-operative complications.

Conclusion: Recurrence of endometrioma in our study is comparable with published rate of recurrence after excision treatment (14-17%). Plasma energy ablation may have lower recurrence rates than other ablation techniques. Formal studies with long term follow up are required.

Virtual Poster Session 3: Endometriosis

(10:20 AM – 10:30 AM)

10:20 AM: STATION L

1533 Robotic-Assisted Laparoscopic Excision of Deep Infiltrating Endometriosis Involving the Ureter

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Video Objective: This video demonstrates a safe and effective minimally invasive technique for enterolysis, oophorectomy and subsequent
ureterolysis in the face of deep infiltrating (DIE) and deep fibrotic endometriosis.

**Setting:** The index patient is a 38 y/o G3P0212 patient with a history of endometriosis and a recurrent right endometrioma causing pelvic pain, dyschezia and dyspareunia. She was referred to our center for further management after previous surgical interventions failed to adequately address her symptoms.

**Interventions:** A preoperative pelvic MRI revealed a 7.6 cm right ovarian mass, replacing the majority of the right ovary and consistent with an endometrioma. Intraoperatively, the right ovary was encased in adhesions involving the small bowel, sigmoid colon, rectum and the right pelvic side wall. A deep fibrotic endometriotic nodule was also noted to be encasing the right ureter for most of its course towards the bladder. Careful and extensive dissection was performed, freeing the diseased ovary from all its attached structures. Resection of the fibrotic tissue surrounding the ureter was then carried out with good surgical rigor, thus successfully achieving the ureterolysis. A double J right ureteral stent was subsequently placed by the urology team. The patient had complete resolution of her pain symptoms at her post-operative visit.

**Conclusion:** Extensive fibrotic endometriosis involving the ureter can make ureterolysis quite difficult. Careful planning, knowledge of anatomical variance and proper surgical techniques are beneficial in overcoming such challenges. Despite its recalcitrant nature, endometriosis affecting the ureters can be effectively resected to afford a favorable outcome for patients.

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**Virtual Poster Session 3: Endometriosis**

**(10:20 AM – 10:30 AM)**

**2619 Does Laterality of Ovarian Endometrioma Predict the Presence of Appendiceal Pathology?**

Farzan Nikou A,1,2 Tenzel NS,1 Hua P,3 Orbuch L,4 Orbuch IK2,4. 

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*Corresponding author.

**Study Objective:** To determine if endometrioma laterality was predictive of underlying appendiceal pathology (i.e. endometriosis, fibrous obliteration, tumors, acute/chronic inflammation) in patients with chronic pelvic pain.

**Design:** Retrospective chart review.

**Setting:** Two Large Metropolitan Academic Hospitals.

**Patients or Participants:** 135 patients between the ages of 16 to 52 with chronic pelvic pain undergoing minimally invasive excision surgery with concomitant appendectomy from January 2012 to June 2017.

**Interventions:** Pathology reports were reviewed to document the presence of endometriomas and their respective laterality as well as the presence of underlying appendiceal pathology.

**Measurements and Main Results:** Of the 135 patients with chronic pelvic pain, 107 (79.3%) had no endometriomas, 8 (5.9%) had a unilateral right endometrioma, 8 (5.9%) had a unilateral left endometrioma, and 12 (8.9%) had bilateral endometriomas. In those with unilateral right endometriomas, 7 (88%) patients had an appendix pathology. The presence of a unilateral right endometrioma vs. no endometrioma was associated with the presence of appendiceal pathology (i.e. endometriosis, fibrous obliteration, tumor, inflammation) (p=0.009). The presence of a unilateral right vs. unilateral left endometrioma was not associated with appendiceal pathology (p=0.28). Additionally, of the 18 patients with appendiceal endometriosis, 4 (22%) had a unilateral right sided endometrioma, 1 (5.6%) had bilateral endometriomas, and 13 (72.2%) had no endometrioma.

**Conclusion:** In our sample of 135 patients, 5.9% had a unilateral right endometrioma. Of these patients, 88% had appendiceal pathology. In fact, the presence of a unilateral right endometrioma was significantly associated with appendiceal pathology (p=0.009). The association between the presence of a unilateral right endometrioma and appendiceal pathology needs further study.

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**Virtual Poster Session 3: Endometriosis**

**(10:20 AM – 10:30 AM)**

**2339 Dissection of Significant Anterior Uterine Adhesions**

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*Corresponding author.

**Video Objective:** Demonstrate the dissection of dense uterine adhesions to the anterior abdominal wall.

**Setting:** Patient with previous cesarean section, pelvic pain, severe dyspareunia and secondary infertility.

**Interventions:** Robotic assisted lysis of uterine adhesions to restore normal anatomy.

**Conclusion:** This patient was diagnosed with dense uterine adhesions to the anterior abdominal wall on a laparoscopy. She desired to be pain free and preserve fertility. The goal of this surgery was to restore normal anatomy. Dissection is performed by using alternate blunt, sharp and electrocautery application. Space should always be developed laterally first as the adhesions are most dense in the midline. This helps to find the correct plane between the structures. The defect in peritoneum is repaired and raw surface of uterus is draped with absorbable hemostatic wrap. This patient was able to conceive 6 months after the surgery and had significant improvement in her pelvic pain.

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**Virtual Poster Session 3: Endometriosis**

**(10:20 AM – 10:30 AM)**

**2622 an Endometriosis Field Guide: Proposing a Standardized Descriptive Nomenclature**

Mackenzie MW*. Ob Gyn, Mount Auburn Hospital/Beth Israel Deaconess Medical Center, Cambridge, MA

*Corresponding author.

**Video Objective:** Well recognized is the variety of presentations of endometriosis lesions beyond simply the classic "black powder-burn lesions" of John Sampson (1927). No standardized nomenclature exists to provide either gross morphologic description nor classification of the variety of endometriosis lesions. Borrowing from Dermatology systems of descriptive nomenclature, this video reviews a classification system specific for endometriosis focusing on Primary as well as Secondary lesion characteristics and then demonstrates use of the classification system for a variety of different endometriosis lesions. The purpose of this video is to propose a standardized nomenclature by which to describe the gross morphologic characteristics of endometriosis lesions seen on laparoscopic imaging at the time of surgery.

**Setting:** Laparoscopic excision of endometriosis lesions performed in the OR with then pathologic diagnostic correlation.

**Interventions:** During the course of laparoscopic radical excision of endometriosis, we identified a wide variety of "non-classic" or "atypical" lesions returning with pathologic diagnosis of endometriosis. These variety of lesions then formed the basis for a gross morphologic classification system by which such lesions can be standardly described.

**Conclusion:** The wide variety of endometriosis lesions can be described and classified according to a standardized nomenclature based on gross morphologic characteristics easily identified at laparoscopy. This standardized nomenclature not only supports a broader recognition of endometriosis lesions by surgeons but permits comparative studies of grossly identified endometriosis.
Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION P

1531 Ghost Ileostomy in Anterior Resection for Bowel Endometriosis: Technical Description
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*Corresponding author.

Video Objective: To demonstrate the application of the “ghost ileostomy” in the setting of laparoscopic segmental bowel resection of a symptomatic bowel endometriosis nodule.


Setting: Bowel endometriosis is defined as the endometriosis infiltration of the intestinal muscle layer (affects 45%-56% of patients with deep endometriosis. It is usually a multi-focal and multicentric disease affecting predominantly the sigmoid and the rectum. Surgery is indicated in the symptomatic cases or obstruction is present, and options include nodules and endometriosis. A completely laparoscopic approach was performed. Using blunt and sharp dissection with cold scissors, bipolar and advanced bipolar devices, complete removal of pelvic endometriosis was done. Afterwards, segmental bowel resection was performed using linear and circular endo-nodules and segmental resection (3-6% of anastomotic leakage). Ghost ileostomy is a simple and safe technique option to prevent anastomotic leakage with maximum preservation of patient quality of life. To the best of our knowledge, this is the first report of this technique application in the endometriosis setting.

Interventions: A completely laparoscopic approach was performed. Using blunt and sharp dissection with cold scissors, bipolar and advanced bipolar devices, complete removal of pelvic endometriosis was done. Afterwards, segmental bowel resection was performed using linear and circular endo-anal stapler technique with immediate end-to-end bowel anastomosis and transit reconstitution. Once anastomosis was done, the terminal ileal loop was identified, and an opening was made in the adjacent mesentery. Then, an elastic tape (vessel loop) was passed around the ileal loop and out of the abdomen through the right iliac fossa 5 mm port site incision. Finally, tape was fixed to the abdominal wall using non-absorbable stitches and a trans-anal tube was placed. The tape was removed 10 days after surgery and the loop dropped back. Patient was discharged in the 3rd day postoperatively without any complications and remains asymptomatic up to 1 month of follow up.

Conclusion: Ghost ileostomy is a simple, safe and feasible technique available in the setting of lower colorectal anastomosis following bowel endometriosis resection.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION Q

1576 Preoperative MRI is a Must If You Are Planning Sclerotherapy for Ovarian Endometrioma
Moon HS,* Koo JS, Nam GI Obstetrics & Gynecology, Good Moonhwa Hospital, Busan, Korea, Republic of (South)
*Corresponding author.

Video Objective: To evaluate the effect of preoperative MRI before sclerotherapy for ovarian endometrioma.

Setting: An academic teaching hospital.

Interventions: Ultrasound-guided aspiration followed by ethanol sclerotherapy was done for premenopausal women who are anticipating pregnancy or who are planning any kind of assisted reproductive technique. With the bladder completely emptied, the cystic lesion is localized using a transvaginal ultrasound. The 18 gauge ovum aspiration needle is penetrated into the cystic cavity under ultrasound guidance. Constant negative pressure is indirectly applied with a syringe. Once the cyst is adequately drained, normal saline is flushed into the cystic cavity for irrigation until the irrigated fluid becomes clear. Then the cystic cavity is irrigated with 95% ethanol and another ethanol is instilled in the cyst. Although variable according to size and duration, the majority of endometrioma present as a classic homogeneous hypoechoic cyst with diffuse ground glass appearance on ultrasound. However, even if preoperative ultrasound strongly suggests endometrioma, differential diagnosis must be made to rule out the possibility of other kind of ovarian cysts like dermoid cyst or mucinous cyst if one is planning sclerotherapy. Magnetic resonance imaging (MRI) is known to have greater specificity for the diagnosis of endometriomas. They appear bright on T1 weighted image due to hemorrhagic contents and will remain bright on T1 fat suppressed images. It shows shading on T2 weighted image secondary to high concentration of protein and degraded blood products.

Conclusion: We suggest that MRI should be performed in all women in whom sclerotherapy is being considered as a treatment for ovarian endometrioma to rule out other cystic ovarian lesions which might mimic the ultrasound findings of an endometrioma.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION R

1658 Hormone Replacement Therapy use After Premature Surgical Menopause
Garg N.1, 4 Behbehani S.2 Kosioriek H.1 Wasson MN3 Obstetrics & Gynecology, University of California, Irvine, Orange, CA; 2Gynecology, Mayo Clinic, Phoenix, AZ; 3Statistics, Mayo Clinic, Phoenix, AZ; 4Mayo Clinic Arizona, Phoenix, AZ
*Corresponding author.

Study Objective: Assess hormone replacement therapy (HRT) use in patients undergoing premature surgical menopause, and correlate that with surgical indication for menopause.

Setting: Academic tertiary care center.

Patients or Participants: Surgically menopausal patients aged ≤45 years who underwent minimally invasive hysterectomy with salpingo-oophorectomy from September 2012- June 2018.

Interventions: HRT prescription in the 6 week postoperative period.

Measurements and Main Results: Sixty-three patients met inclusion criteria. Of those, 52% were prescribed HRT in the 6 week postoperative period. Indications for surgical menopause included pelvic pain/endometriosis (32%), gynecological malignancy (21%), BRCA (18%), breast cancer (10%), Lynch syndrome (4.8%), and other (14%). Forty five percent of BRCA patients, 25% of gynecological malignancy patients and 80% of patients with pelvic pain used HRT postoperatively. In patients who utilized HRT postoperatively, 76% were offered preoperative HRT counseling, compared to 33% of patients who did not start postoperative HRT (p<0.001). Perioperative complications were not predictive of HRT use postoperatively. In patients who opted not to use HRT postoperatively (HRT contra-indicated or declined) 12% utilized alternative non hormonal therapy.

Conclusion: In patients who undergo premature surgical menopause, more than half utilized HRT postoperatively. Patients with pelvic pain are more likely to use HRT, whereas those with gynecologic or breast malignancy and genetic susceptibility for malignancy are less likely to use HRT. Preoperative HRT counseling is associated with postoperative HRT use.

Virtual Poster Session 3: Endometriosis
(10:20 AM – 10:30 AM)

10:20 AM: STATION S

2723 Success of Surgical Myofascial SCAR Release in Women with Chronic Abdominal Wall Pain After Previous Pelvic Surgery: A Case Series
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*Corresponding author.

Study Objective: To demonstrate the efficacy of a surgical technique to relieve abdominal wall pain associated with myofascial scar formation provoked by previous surgical incisions.

Design: Retrospective cohort study.

Setting: Community teaching hospital.

Patients or Participants: 51 women who underwent surgical myofascial scar release from 2011-2018 in a MIGS-focused private practice, identified by manual chart review of surgical schedule.

Interventions: An incision was made over the surgical scar and area of pain. The fascia was incised, exposing the underlying rectus or oblique muscle. Adhesions between the fascia and muscle were bluntly lysed and a myofascial nodule was excised if present. The ilioinguinal nerve was skeletonized and preserved if identified. The fascial incision was closed, taking care to avoid tethering the muscle to the fascia.

Measurements and Main Results: All patients experienced reproducible abdominal wall pain adjacent to a surgical scar in the absence of an organic pain source. 31 patients had at least one previous pfannenstiel incision with pain at the lateral end of the incision. 48 patients had a previous laparoscopy with pain adjacent to the site of a lower quadrant trocar site. Patients were assigned a pre and post-operative pain score based on severity of symptoms with pain adjacent to the site of a lower quadrant trocar site. Patients were assessed by manual chart review of surgical schedule.

Conclusion: Abdominal wall pain due to restricted muscle fiber mobility where it is adhered to fascia at the site of a previous surgical incision is an often overlooked source of pelvic pain. Surgical lysis of a myofascial scar in the appropriate candidate is a straightforward and efficient intervention that should be considered to treat this unique source of pelvic pain.

Virtual Poster Session 3: Endometriosis (10:20 AM – 10:30 AM)

10:20 AM: STATION T

2335 the Application of Air SAC Hemostasis Device in Laparoscopic Ovarian Cystectomy to Protect Ovarian Function

Zhang J, 1 Dai Y, Leng J. General Gynecology, Peking Union Medical College Hospital, Beijing, China 
*Corresponding author.

Video Objective: To evaluate the efficacy of air pressure device in laparoscopic ovarian endometrioma removal for ovarian wound hemostasis and the significance of ovarian function protection.

Setting: A prospective study in university hospital.

Interventions: We developed the air sac device and patented it. After the cyst removed, we placed the air sac pressure device into the pelvic cavity through the right trocar. And then we pumped the air into the sac through a three port valve. When the sac flowed up, the air in sac created air pressure to the wound surface of the ovary. The pressure was kept for 6-10 minutes to stop the bleeding. In 5 cases, the bleeding on ovarian wound surface was inhibited effectively, and the electric coagulation was reduced greatly.

Conclusion: The application of air sac hemostasis device in laparoscopic cystectomy could stop the bleeding effectively and then reduce the electric coagulation greatly. This may avoid the excessive heat damage to ovarian tissue.

Virtual Poster Session 3: Endometriosis (10:30 AM – 10:40 AM)

10:30 AM: STATION A

1836 Outcomes of Laparoscopic Management of Chronic Pelvic Pain and Endometriosis

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*Corresponding author.

Study Objective: To analyze the rate of re-operation and pelvic pain outcomes for patients who underwent laparoscopic surgery for chronic pelvic pain and endometriosis. Secondary objectives were to study the impact of surgery on quality of life and fertility outcomes.

Design: This is a retrospective study and a prospective online or telephone questionnaire of patients who underwent laparoscopic surgery for pelvic pain and/or endometriosis. The 12-Item Short Form Health Survey (SF-12) and the Female Sexual Function Index (FSFI) were used in part to develop the prospective questionnaire.

Setting: Tertiary care university referral center for minimally invasive gynecologic surgery.

Patients or Participants: Sixty-nine patients who underwent laparoscopic surgery for chronic pelvic pain.

Interventions: Retrospective chart review and prospective telephone or internet-based questionnaire.

Measurements and Main Results: Sixty-nine subjects consented and filled out a comprehensive questionnaire. Mean follow-up time was 28.3 months. Forty-three subjects who completed the questionnaire were visually found to have endometriosis. The rate of reoperation was 8.60% for patients with pathologic confirmation of endometriosis. 23.3% of patients with endometriosis underwent hysterectomy. The rate of re-operation was 9.09% for patients who did not undergo hysterectomy. 67.4% of patients with endometriosis were still pain-free at the time of the survey. The rate of re-operation for those without endometriosis was 0%. 30.2% of patients with endometriosis had a history of infertility for an average of 1.889 years prior to surgery. Following surgery, 83.3% of previously infertile patients with endometriosis attempted to conceive with 80.0% success rate. Subjects had significant improvement in each quality of life measurement and most sexual function indices analyzed.

Conclusion: Laparoscopic surgery for endometriosis had a low rate of re-operation, and long-term improvement in pelvic pain, sexual function, quality of life and fertility outcomes, with a high satisfaction rate.
aim to compare the economic costs of two diagnostic models of care for patients with potential endometriosis.

**Design:** A health economics study using a Markov model with a 12-month time horizon.

**Setting:** A tertiary gynecology clinic.

**Patients or Participants:** A hypothetical population of 1000 patients visiting a public gynecology clinic for potential endometriosis.

**Interventions:** Comparison of the conventional model (M1), which includes the basic TVS and diagnostic laparoscopy, and the novel model (M2), which includes the DE TVS.

**Measurements and Main Results:** The Markov model was built to estimate the change to government, health service and patient costs with the adoption of the DE TVS compared to standard diagnostic methods. Australian dollars (AUD) are also depicted in the United States and Canadian dollars (USD and CAD). Probabilistic sensitivity analysis was conducted to capture the uncertainty in the information used to populate the models. The total annual cost model (M2) is S$12,547,724.03 AUD / S$8,989,464.34 USD / $11,982,759.48 CAD, cheaper than the conventional model (M1), which cost S$13,472,161.67 AUD / S$9,651,751.71 USD / S$12,865,574.08 CAD.

**Conclusion:** For a population of 1000 women, the integration of the DE TVS may save healthcare costs of S$924,437.64 AUD / S$662,287.37 USD / S$898,946.43 USD / S$1,198,275.94 CAD annually.

**Virtual Poster Session 3: Endometriosis**

**(10:30 AM – 10:40 AM)**

**10:30 AM: STATION C**

**2515 Surgical Outcomes in 202 Patients Undergoing Laparoscopic Surgery for Endometriosis Over Three Years in a Referral Centre in Porto, Portugal**

Pinto Rosario D, 1 Kulkarni N, Viqueras Smith A, Sumak R, Ferreira H. Gynecology, Centro Hospitalar Universitário do Porto, Porto, Portugal *Corresponding author.

**Study Objective:** To evaluate surgical and clinical outcomes of women undergoing surgery for endometriosis.

**Design:** A review of patients undergoing surgery for endometriosis from 1st January 2016 to 31st March 2019.

**Setting:** Centro Materno Infantil do Norte (CMIN) a tertiary referral centre in Porto.

**Patients or Participants:** Electronic database was searched with the keyword “Endometriosis.” Of 237 cases, 202 were included in the final study.

**Interventions:** Of 202 patients, 195 (96.5%) had radical laparoscopic surgery for all visible lesions of endometriosis, including deep infiltrating endometriosis (DIE), 5 (2.4%) needed conversion to laparotomy, while 2 (0.9%) cases surgery had to be deferred.

**Measurements and Main Results:** Majority (n=181, 89.6%) were symptom-free, 21(10.3%) reported severe symptoms, 5 (23.8%) of these had recurrence on MRI.

**Conclusion:** Radical laparoscopic surgery with multidisciplinary care in the context of a tertiary care centre results in low complication rates and good clinical outcomes.

**Virtual Poster Session 3: Hysteroscopy**

**(10:30 AM – 10:40 AM)**

**10:30 AM: STATION D**

**1266 Management of Complete Septate Uterus, Duplicated Cervix, and Longitudinal Vaginal Septum**

Cesta MA, 1 Pasic RP, 2 Department of OB GYN and Women’s Health, University of Louisville Hospital, Louisville, KY; 2 OB/GYN, University of Louisville, Louisville, KY *Corresponding author.

**Video Objective:** Learn the benefit of synchronous laparoscopic and hysteroscopic approach to a complex Müllerian anomaly. Review laparoscopic resection of endometriosis and hysteroscopic resection of complete uterine septum.

**Setting:** 19 year old female with complex Müllerian anomaly desiring fertility referred to a minimally invasive gynecologic surgery practice for surgical management.

**Interventions:** Diagnostic laparoscopy with resection of endometriosis and hysteroscopic resection of uterine septum.

**Conclusion:** A combined laparoscopic and hysteroscopic approach is beneficial when considering surgical management of complex Müllerian anomalies.

**Virtual Poster Session 3: Hysteroscopy**

**(10:30 AM – 10:40 AM)**

**10:30 AM: STATION E**

**2272 Overdiagnosis of Uterine Arteriovenous Malformation in Radiology Reports on Pelvic Ultrasound in an Inner-City Teaching Hospital**

Kole M, 1 Fotouhi A, 2 Chapra V, 1 Craig B, 3 Sangha R, 1 OB/GYN, Henry Ford Hospital, Detroit, MI; 2 Wayne State Medical School, Detroit, MI; 3 Radiology, Henry Ford Hospital, Detroit, MI *Corresponding author.

**Study Objective:** Uterine arteriovenous malformations (AVMs) are rare occurrences, diagnosed radiologically, and often associated with bleeding and a history of uterine instrumentation. The objective of our study was to assess our health system’s rate of overdiagnosis of uterine AVM on pelvic ultrasound.

**Design:** A retrospective chart review was performed from 2008 to present including patients who had the word “AVM” mentioned in their pelvic ultrasound reports. These reports were reviewed, and patients were included in the study if the ultrasound report had language that either stated that uterine AVM could not be excluded from the differential diagnosis for bleeding or that AVM was likely. Patients were excluded if the report stated that based on the US findings AVM was unlikely or virtually ruled out. Patients were deemed to have a true AVM if confirmed by subsequent MRI or angiography.

**Setting:** Data was extracted from Henry Ford Health System’s electronic medical record extending from 2008 to present. The patient population sampled was from Southeast Michigan.

**Patients or Participants:** Women who presented with vaginal bleeding and underwent pelvic ultrasound.

**Interventions:** None.

**Measurements and Main Results:** 120 charts were reviewed that met our inclusion criteria. Of these, 19 (16%) were confirmed uterine AVM by either angiogram or MRI. An additional 21 (17%) had suspected AVMs but did not undergo confirmatory diagnosis. 80 (66%) had uterine AVM suggested as a diagnosis on their ultrasound report but were ultimately diagnosed with an alternative pathology, either clinically or with imaging.
Our data show that 60% of AVM diagnoses on ultrasound reports were likely an overdiagnosis. 43 (35%) of these patients were treated for retained products of conception either surgically or medically.

**Conclusion:** Overdiagnosis is clinically important not only due to cost implications, but because in the setting of true uterine AVM, surgical treatment for retained products via D&C is contraindicated.

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**Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)**

**10:30 AM: STATION F**

**2848 Treatment of Adenomyosis by Hysteroscopy**

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*Corresponding author.

**Video Objective:** To demonstrate a novel hysteroscopic surgery for adenomyosis.

**Setting:** The benign gynecology department at a university hospital.

**Interventions:** We performed a hysteroscopic minimally operation to treat symptomatic myometrial adenomyosis. The operations were performed under transabdominal ultrasound-guide. We used a cutting loop to resect the lesions repeatedly and progressively with the standard electrosurgery. The operation was considered complete when the pink fasciculate structure of the myometrium appeared. This study was approved by the institutional ethics committee of the International Peace Maternity and Child Health Hospital in Shanghai, China.

**Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)**

**10:30 AM: STATION G**

**1593 Transvaginal Repair of Cesarean Scar Isthmocele with Micro-Dehiscence**

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*Corresponding author.

**Study Objective:** Our objective is to report a case of Cesarean Scar Isthmocele (CSI) with micro-dehiscence with symptoms which was successfully repaired through transvaginal route.

**Design:** NA.

**Setting:** Diagnosis and surgical treatment performed in a large tertiary hospital.

**Patients or Participants:** This was a 28 year old, P1, who had previous 1 cesarean section 3 years back for breech presentation. She presented with very bothersome regular post menstrual brownish spotting and dysmenorrhea for more than 7 months. She had no other significant medical problems. saline hystero-sonography showed CSI of 1.4 × 0.8 cms with overlying myometrium of 2.2mm thickness. Saline was seen accumulating in vesico-uterine space through microdefects. She was also noted to have overlying myometrium of 2.2mm thickness. Saline was seen accumulating in vesico-uterine space through microdefects. She was also noted to have overlying myometrium of 2.2mm thickness. Saline was seen accumulating in vesico-uterine space through microdefects.

**Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)**

**1809 Hysteroscopic Management of Retained Products of Conception: The New Gold Standard?**

Pacheco LA,¹,² Timmons D,²,³ Saad-Nagib M,² Carugno JA,² Obstetrics and Gynecology, Centro Gutenberg, Malaga, Spain; ²Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL; ³Obstetrics, Gynecologic, and Reproductive Services, University of Miami, Miami, FL

*Corresponding author.

**Study Objective:** To evaluate the safety and effectiveness of operative hysteroscopy for management of retained products of conception (RPOC)

**Design:** Retrospective chart review.

**Setting:** Operating room of a gynecology endoscopy unit of a large community center.

**Patients or Participants:** Patients who underwent hysteroscopic removal of RPOCs between November 1, 2008 and December 31, 2017 performed by a single physician.

**Interventions:** Hysteroscopic removal of retained products of conception performed in the operating room under general anesthesia. Cases were categorized with RPOC type 0 to 3 according to the vascularity of the retained tissue noted on Doppler vaginal ultrasound as per the Gutenberg classification of RPOC.

**Measurements and Main Results:** Forty-five (n=45) patients met inclusion criteria. The average age was 35.9 years of age (SD: 4.45). The preceding pregnancy resulting in retained POCs was abortion comprising 64.4% (n=29) followed by vaginal deliveries (13.3%, n=6) and cesarean (11.1%, n=5). Groups were divided into low vascularity group (Type 0 and 1 of the Gutenberg classification, NV Group) and moderate to high vascularity group (Type 2 and 3 of the Gutenberg classification, HV Group). 37.9% of patients of the NV Group had previous treatment compared to 62.5% of the HV Group (p<0.01). The timing between the end of a pregnancy and the surgery for RPOCs was 2.62 months in the NV Group and 1.7 months in HV Group. Interestingly, all patients of the HV Group required the use of electrosurgical energy to achieve hemostasis during the procedure, compared to zero patients of the NV Group. (p<0.000).

**Conclusion:** Hysteroscopic removal of RPOC is a highly effective and safe surgical procedure. The use of electrosurgical energy is frequently needed to obtain hemostasis in the presence of highly vascular RPOC. Physicians should ensure the capacity to use electrosurgical energy to avoid intraoperative complications when performing removal of highly vascular RPOCs.
Measurements and Main Results: She was reviewed after 6 months when her postmenstrual spotting and dysmenorrhea had completely improved. Ultrasound scan showed improved appearance with minimal defect and myometrial thickness of 5mm.

Conclusion: The significance of finding of micro-dehiscence of cesarean scar and the future risk of uterine rupture during pregnancy is not clear due to lack of literature. Symptomatic cesarean scar isthmoeles with myometrial thickness of less than 3mm are best treated with surgical resection and resutting . Transvaginal route offers safe and minimally invasive technique to improve symptoms and potentially reduce the future risk of uterine rupture during pregnancy.

Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)

2860 Diagnostic Hysteroscopy in Missed Abortion
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*Corresponding author.

Video Objective: To present two surgical cases of diagnostic hysteroscopy at the time of uterine evacuation for spontaneous abortion and to review the literature on hysteroscopy use in the setting of spontaneous abortion.

Setting: One 37-year-old G4P1021 at 9 weeks 1 day gestation with spontaneous abortion and a history of uterine septum status post prior septal resection, who desired surgical management with uterine evacuation. The second case is a 38-year-old G5P1022 at 9 weeks gestation with spontaneous abortion and a history of recurrent pregnancy loss who desired surgical management with uterine evacuation. Both patients underwent uncomplicated diagnostic hysteroscopy and suction curettage at an academic medical center.

Interventions: In this surgical video, we present two cases of women with first trimester spontaneous abortion who desired surgical management with uterine evacuation. Both cases had preparative indications for uterine cavity inspection with hysteroscopy given their histories of a uterine anomaly and recurrent pregnancy loss. Diagnostic hysteroscopy was performed in both cases prior to the suction dilation and curettage procedures to closely inspect the cavities as well as identify the implantation site for site-specific curettage as compared to the traditional global suction curettage. Additionally, we summarize the current literature on hysteroscopy use in the setting of spontaneous abortion.

Conclusion: Diagnostic hysteroscopy at the time of uterine evacuation for patients with spontaneous abortion is a feasible alternative to traditional suction curettage alone and can provide additional clinical information regarding implantation site for directed resection as well as uterine cavity inspection for uterine anomalies or alternative pathology.

Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)

10:30 AM: STATION J

2053 the Fractional CO2 Laser in Korea: An Effective Treatment Option for Genitourinary Syndrome of Menopause
Kang HJ.1 Shim S.1 Han Y.1 Park KM.4, *Hwang H.5 Chung YJ.6
Kim MR. Park JY.1, 2Obstetrics & Gynecology, Seoul St. Mary’s Hospital, The Catholic University of Korea, Seoul, Korea, Republic of (South); 3The Catholic University of Korea, Seoul St. Mary’s hospital, Seoul, Korea, Republic of (South); 4Seoul St. Mary’s hospital, Seoul, Korea, Republic of (South); 5Seoul St. Mary’s hospital, Seoul, Korea, Republic of (South); 6Bucheon St. Mary’s hospital, Bucheon, Korea, Republic of (South); 7Department of Obstetrics and Gynecology, Seoul St Mary’s Hospital, The Catholic University of Korea, Seoul, Korea, Republic of (South)

*Corresponding author.

Study Objective: The genitourinary syndrome of menopause (GSM) is associated with bothersome symptoms in menopausal women. The GSM may have a negative impact on the quality of life of postmenopausal women, and it should be treated with an appropriate therapy. This study is aimed to evaluate the efficacy of fractional CO2 laser therapy (Laser therapy) in the treatment of GSM.

Design: GSM patients treated with Laser therapy and evaluates the progress before and after treatment using objective and subjective indicators.

Setting: We use the fractional CO2 laser (SmartXide2 V2LR, Monalisa Touch, DEKA, Italy). The therapy was applied every 4 weeks.

 Patients or Participants: The total of 38 women presenting with GSM were enrolled to Laser therapy, 22 patients are survivors of breast cancer.

Interventions: The severity of symptoms was assessed with a visual analog scale(VAS) at the baseline and every visit. We also measured the objective scale using the vaginal health index score (VHIS) at baseline and after completion of laser procedure. At each procedure, patient’s pain in VAS and the physician’s difficulty was recorded at each time. At last visit, the patients evaluate their satisfaction with the laser therapy using a 5 points Likert scale.

Measurements and Main Results: In our study, almost all symptoms showed the mean VAS score improvement. But only the relief in vaginal dryness improved significantly(p=0.05). On the other hand, the objective scale, the VHIS was significantly improved in comparison with baseline (p<0.001). Each component of VHIS (elasticity, fluid volume, vaginal pH, epithelial integrity, vaginal moisturization; p<0.001) was also significantly improved. The measurement by perineometer to assess the pelvic floor muscle was significantly improved (p=0.002).

Conclusion: This study shows that fractional CO2 laser treatment is effective in patients who suffering from genitourinary syndrome of menopause. Further studies should be performed to confirm the results and to assess the long-term effects of the laser therapy.

Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)

10:30 AM: STATION K

1397 Vnotes Hysterectomy for Multiple Fibroid Uterus by Atrium Technique
Naval S.1, *Naval R.2 Naval S2.3Minimally Invasive Surgery, Naval Multi Speciality Hospital, Jalaqon, India; 2Naval Multi Speciality Hospital, Jalaqon, India

*Corresponding author.

Video Objective: To describe technique of transvaginal natural orifice transluminal endoscopic surgery (vNOTES) of hysterectomy in a case of multiple fibroid uterus with the aid of transcervical instrumental uterine manipulation- ATRIUM technique.

Setting: Minimally invasive gynecological surgery department, Naval Multi Speciality Hospital, Jalaqon, India.

Interventions: Transvaginal natural orifice transluminal endoscopic surgery of hysterectomy.

Conclusion: During vNOTES hysterectomy, using a laparoscopy instrument placed transcervically into the uterus for manipulation gives a leverage that helps in good exposure of all uterine attachments. It prevents unintentional rotation of uterus and its attachments. Therefore, the surgeon is not required to use second hand for retraction of uterus during surgery. This allows surgeon to use second hand for retraction of bowel and adnexa. As the tip of instruments is not completely visible in vNOTES surgery, manipulation helps to deflect the uterus and its attachments away from important structures thus preventing inadvertent thermal damage from the tip of the instrument. This is a feasible and safe technique of vNOTES hysterectomy.
Virtual Poster Session 3: Hysteroscopy
(10:30 AM – 10:40 AM)

10:30 AM: STATION L

2935 Cost-Effectiveness of an Outpatient Uterine Assessment and Treatment Unit in Patients with Abnormal Uterine Bleeding: A Modelling Study

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*Corresponding author.

Study Objective: To assess the cost-effectiveness of a single-visit uterine assessment and treatment unit (UATU) compared with the current standard of care to diagnose and treat patients with abnormal uterine bleeding (AUB).

Design: A cost-effectiveness analysis using a decision tree model from the perspective of the publicly funded health care system in Canada.

Setting: An ambulatory women’s health clinic at a tertiary academic health sciences center (The Shirley E. Greenberg Women’s Health Center at The Ottawa Hospital (TOH)).

Patients or Participants: Patients presenting with abnormal uterine bleeding.

Interventions: Non-interventional.

Methods: We developed a probabilistic decision tree model to simulate the total costs and outcomes of women presenting with AUB receiving diagnosis and treatment at a UATU or usual care over a one-year time horizon. Probabilities, resource use, and time associated with each treatment option were obtained from a retrospective chart review of 200 randomly selected patients presenting with AUB at TOH between April 1st 2014 and March 31st 2017. Results were expressed as overall cost and time savings per patient. A series of sensitivity analyses were conducted to assess the robustness of the study findings. Costs are reported in 2018 Canadian dollars.

Measurements and Main Results: Compared to usual care, the UATU was associated with a decrease in overall cost ($1,331.90 [95% CI -1,337 to -1,326.8]) and a decrease in overall time to treatment (-74.50 days [95% CI -74.70 to -74.40]), dominating usual care. The point at which the sensitivity analysis did not impact the conclusions from our base-case analysis. Conclusion: An outpatient UATU is more cost-effective than usual care and should be recommended as the best use of limited health care resources.

Virtual Poster Session 3: Hysteroscopy
(10:30 AM – 10:40 AM)

10:30 AM: STATION M

1288 Robotic Assisted Ovarian and Fallopian Tube Transposition: A Video Presentation

Nicholson K, 1* Holubysva A, 2 Anro O, 1* Uhr A, 1 Department of OB/GYN, Northwell Health, Southside Hospital, Bay Shore, NY; 2Department of OB/GYN, Northwell Health, Northside Hospital, Bay Shore, NY; 3Northwell Health, Southside Hospital, Bay Shore, NY
*Corresponding author.

Video Objective: The objective of this video is to demonstrate the technique of performing an ovarian transposition using robotic assistance in order to preserve ovarian function in a patient who is planning to undergo pelvic radiation therapy.

Setting: The patient is a 29 y/o nulligravida with a history of stage 3B rectal adenocarcinoma. She is s/p neoadjuvant chemotherapy using Folfox and Capecitabine and is planning for pelvic radiation therapy. She elects to undergo a transposition procedure in order to reduce her risk of premature ovarian failure.

Interventions: The robotic trocars are placed in the standard gynecologic oncology robotic fashion in order to mobilize the ovaries above the pelvic brim and out of the radiation field. To avoid comprising the ovarian vascularature, retroperitoneal tunnels are created in the pelvic sidewalls bilaterally and the adnexa are pulled through. The ovaries are sutured in place superior to the anterior superior iliac spine and lateral to the psoas muscle. Surgical clips are placed at the border of each ovary for identification during radiation planning.

Conclusion: Pelvic radiation therapy is often required in the management of gynecologic and nongynecologic malignancies. The ovaries are extremely radiosensitive and very low doses can be associated with a high risk of ovarian failure. Premature menopause results in long-term deprivation of estrogen and can lead to increased risk of all-cause mortality, cardiovascular risk, and osteoporosis. Research indicates that many female patients diagnosed with cancer do not receive adequate information regarding ovarian preservation. One study reports that 50% of oncologists reported moderate to high confidence in knowledge of female fertility preservation.

Laparoscopic ovarian transposition is a great surgical option for reproductive age women undergoing gonadotoxic radiation. Robotic assisted ovarian transposition has the advantage of improved visualization and articulation of wrist movements. Robotics can help to overcome the limitations of laparoscopy, especially in complicated procedures.

Virtual Poster Session 3: Hysteroscopy
(10:30 AM – 10:40 AM)

10:30 AM: STATION N

2407 Surgical Technique: Posterior Culdotomy

Chu A, 1* Seckin SI, 2 Seckin TA, 3 OB/GYN, Lenox Hill Hospital, New York, NY; 2Mount Sinai West, New York, NY; 3Lenox Hill Hospital, New York, NY
*Corresponding author.

Video Objective: The purpose of this video is to demonstrate a posterior culdotomy; this is a simple surgical technique with a number of benefits.

Setting: We perform a laparoscopic myomectomy and create a posterior culdotomy for specimen removal.

Interventions: N/A.

Conclusion: In summary, we urge gynecologists and other surgical subspecialties to strongly consider this method of extraction.

Virtual Poster Session 3: Hysteroscopy
(10:30 AM – 10:40 AM)

10:30 AM: STATION O

2170 Vaginoscopy: A Minimally Invasive Approach to Hysteroscopy

Persenaire C, 1* Dayar S, 1 Traylor J, 2 Tsai SC, 1 Chaudhari A, 2 OB/GYN, Northwestern University Feinberg School of Medicine, Chicago, IL; 2Department of Obstetrics & Gynecology, Northwestern University Feinberg School of Medicine, Chicago, IL
*Corresponding author.

Video Objective: To demonstrate the vaginoscopic approach to hysteroscopy.

Setting: The patient is a 35-year-old G0 with a history of endometrial polyps previously treated with hysteroscopic resection who presented with recurrent intermenstrual spotting and evidence of endometrial polyp on ultrasound. She presented for hysteroscopic polypectomy in the outpatient setting.
Interventions: The patient underwent vaginoscopy with hysteroscopy under monitored anesthesia care using a 5-mm operative hystroscope. Manual coaptation of the labia allowed for vaginal distention, and the posterior approach was used to locate and enter the external cervical os without the use of a speculum or tenaculum. Full survey of the endometrial cavity was completed and a small area of polypoid tissue was sampled.

Conclusion: Vaginoscopy is recommended as the standard approach to hysteroscopy by the Royal College of Obstetricians and Gynecologists and the French College of Gynecologists and Obstetricians because of its many benefits over traditional hysteroscopy, including improved patient comfort and reduced need for anesthesia. Vaginoscopy may allow for hysteroscopic evaluation of patients otherwise thought to be poor candidates because of intolerance of a speculum examination, vaginal atrophy and/or cervical stenosis, as seen in pediatric, virginal and postmenopausal patients. Vaginoscopy may also afford benefits over traditional hysteroscopy by allowing direct inspection of the vagina and cervix, as well as management of cervical stenosis under direct, magnified visualization. Despite these benefits, uptake of this method has not been widespread in the United States, likely because it is not frequently taught. This video demonstrates a vaginoscopic procedure with adequate vaginal distention and a posterior approach to localization of the cervical os with the aim of improving provider comfort and adoption of this approach.

Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)
10:30 AM: STATION P
1329 Surgical Management of Longitudinal Vaginal Septum and Complete Uterine Septum Selter J, 1, * Arora C, 1 Rackow B, 1 * Obstetrics and Gynecology, Columbia University Medical Center, New York, NY; Obstetrics and Gynecology, Columbia University Medical Center, New York, NY; Obstetrics and Gynecology, Columbia University Medical Center, NY, NY *Corresponding author.

Video Objective: To illustrate the steps for surgical correction of a longitudinal vaginal septum and complete uterine septum using narrative video footage.

Setting: A longitudinal vaginal septum and complete uterine septum are anomalies of Mullerian duct development that occur during embryological development. The exact incidence of Mullerian anomalies is difficult to determine, since women with them are often not diagnosed if asymptomatic, but is approximately 2-3%. In women who present with infertility, the incidence of uterine anomalies is often higher, approximately 5-10%. Although some women with vaginal anomalies are asymptomatic, some may note difficulty inserting tampons or dyspareunia. Reproductive outcomes in women with a complete uterine septum include possible decreased chance of implantation, and increased risk of spontaneous abortion and preterm labor/delivery. Benefits of surgical correction of a uterine septum include possible improved reproductive success and decreased poor obstetric outcomes.

Interventions: In this video, we illustrate the key surgical steps of excision of a longitudinal vaginal septum and hysterectomy for a complete uterine septum resection. Key surgical steps include:
1. Exam under anesthesia Lidocaine with epinephrine injection into vaginal septum.
2. Excision of septum with mayo scissors and re-approximation of vaginal mucosal edges.
3. Dilatation of one side of cervical canal and placement of pediatric Foley catheter to instill methylene blue-dyed fluid.
4. Hysteroscopic incision of septum using bipolar resectoscope until blue dye is visualized.
5. Complete incision of uterine septum.
7. Vaginal packing placed to promote vaginal healing.

Conclusion: Surgical management of a longitudinal vaginal septum and complete uterine septum is a minimally invasive procedure to correct these Mullerian anomalies that could impact a woman’s quality of life and possible reproductive success in the future.

Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)
10:30 AM: STATION Q
2755 Clinical Manifestations and Reproductive Outcomes of Patients Undergoing Hysteroscopic Resection of Placental Site Nodules Chan CW, 1 Shah N, 2 Pereira N, 3, * Obstetrics and Gynecology, Weill Cornell Medicine, New York, NY; Obstetrics & Gynecology, Weill Cornell Medicine, New York, NY; The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY *Corresponding author.

Study Objective: To investigate the clinical manifestations and reproductive outcomes of patients undergoing hysteroscopic resection of PSNs.

Design: Retrospective chart review.

Setting: University-affiliated fertility center.

Patients or Participants: Patients with secondary infertility undergoing hysteroscopic polypectomy. The study cohort was compared based on final histopathology i.e., PSN (cases) vs. endometrial polyp (controls).

Interventions: Operative hysteroscopy.

Measurements and Main Results: Demographics (age, gravidity, parity, BMI) and reproductive history (preceding pregnancy type, number of prior miscarriages, duration of infertility) was compared among the PSN and endometrial polyp groups. Live birth rate after operative hysteroscopy was considered the primary outcome. Of the 2,688 hysteroscopic procedures during the study period, 2036 (75.7%) were excluded due to non-polypectomy diagnoses. Of these, 766 were excluded due to primary infertility. The 477 patients with secondary infertility were divided into PSN (n=34) and endometrial polyp (n=413) groups based on histopathology. The overall prevalence of PSNs in the study cohort was 7.8%. The median (IQR) age, gravidity, parity and BMI of women with PSNs was 38.5 (3.9) years, 2.41 (1.2), 0.9 (0.6) and 24.8 (6.7) kg/m^2, respectively. The preceding pregnancy was IVF-conceived in 53% of women; the other 47% were conceived naturally. The median number of miscarriages in women with PSNs was 1.50 (1.1), with a median infertility duration of 18.1 (9.4) months. Women with PSNs were older (38.5 vs. 35.0 years; P<0.001) and had a higher number of miscarriages (1.50 vs. 1; P<0.001) compared to women with endometrial polyps. There was no difference in live birth rates (67.6% vs. 65.1%) after hysteroscopic treatment of PSNs or endometrial polyps.

Conclusion: Among women undergoing hysteroscopic polypectomy, PSNs are more commonly observed in women who are older and with a higher number of miscarriages when compared to women with endometrial polyps. The live birth rates after operative hysteroscopy are comparable between the groups.
there was fundal submucous fibroid 3 × 2.5cm. Patient was counseled for intrauterine morcellation by Truclure under general anesthesia.

**Interventions:** Diagnostic Hysteroscopy was performed by vaginoscopic technique using the 2.9mm, 30 degree Betocchi hysteroscope with normal saline as distension medium. Submucous fibroid arising from fundus was confirmed. Injection Vasopressin 4 units in 80ml normal saline(0.05units/ml) was injected 10cc intracervically at 4o’clock and 8o’clock. Cervical dilution up to 10 hegas was easily done. Truclear with ultralp blade was introduced and the window was placed on the fibroid and cutting and aspiration was activated. In single insertion the pale looking fibroid was morcellated without damaging the rest of the endometrium. No bleeding was observed.

**Conclusion:** Hysteroscopic myomectomy is the first line treatment for symptomatic submucous fibroid in infertility. Truclear 8 mechanical morcellation is most suitable in infertile patients and vasopressin intracervical injection has dual benefits of smooth cervical dilatation with hemostatic effect on the fibroid.

**Virtual Poster Session 3: Hysteroscopy (10:30 AM – 10:40 AM)**

10:30 AM: STATION S

**1433 A 13 Year Review of Uterine Endometrial Ablation Device Events Using Categorization of Reports to the Manufacturer and User Facility Device Experience (Maude) Data Base**

Woo JJ,1,2 Johnson ME,2 Kalin BS,1 1Department of Gynecological Surgery, Scripps Clinic, La Jolla, CA; 2Virginia Commonwealth University School of Medicine, Richmond, VA

*Corresponding author.

**Study Objective:** Usefully categorize reports on endometrial ablation device events using the FDA MAUDE database.

**Design:** The FDA MAUDE database was reviewed using brand name searches: Novasure, Genesys HTA, Thermachoice, Minerva, and HerOption. Reported events were categorized as follows: Type I, non-injury equipment malfunction; Type II, an injury event not requiring hospitalization; Type III, an injury requiring hospitalization.

**Setting:** 13-year FDA MAUDE database review (2005-2018).

**Patients or Participants:** N/A.

**Interventions:** N/A.

**Measurements and Main Results:** 1518 MAUDE reports were categorized as follows: Novasure: Type I: 92/550 (16.7%), Type II: 273/550 (49.6%), Type III: 185/550 (33.6%); Genesys HTA: Type I: 140/432 (32.40%), Type II: 259/432 (58.1%), Type III: 42/432 (9.49%); Thermachoice: Type I: 315/466 (67.60%), Type II: 78/466 (16.74%), and Type III: 73/466 (15.67%); Minerva: Type I: 13/56 (23.21%), Type II: 9/56 (16.07%), and Type III: 34/56 (60.71%); Her Option: Type I: 4/14 (28.57%), Type II: 0 (0%), and Type III:10/14 (71.43%). Novasure, Minerva, and Her Option had a greater percent of events due to bowel injury while Genesys HTA and Thermachoice had a greater percent of events due to vaginal/cervical/external thermal injuries. Over 50% of HTA Genesys events were due to vaginal/cervical/external thermal injuries while greater than 50% of Novasure events were due to uterine perforation. Thermachoice had greater than 60% of events due to balloon rupture device malfunction.

**Conclusion:** The MAUDE database serves as a valuable tool for physicians to evaluate the safety and possible complications from existing and new technologies. Categorizing events as described here may improve clinicians’ ability to interpret MAUDE data. Large differences in report type were noted between brands of endometrial ablation devices. The percentage of Type III events by device were highest for HerOption, Minerva, and Novasure. Caution must be made when interpreting the data from the MAUDE database due to potential subjective and incomplete narrative, lack of outcome details, and erroneous or duplicate submissions.

**Virtual Poster Session 3: Hysterectomy (10:30 AM – 10:40 AM)**

10:30 AM: STATION T

**2453 Office Hysteroscopic Adhesiolysis in a Patient with Severe Asherman’s Syndrome**

Robinson JK, III1 Hazen ND2 2MIGS - National Center for Advanced Pelvic Surgery, Medstar Washington Hospital Center, Washington, DC; 1MIGS - National Center for Advanced Pelvic Surgery, Medstar Washington Hospital Center, Washington, DC

*Corresponding author.

**Video Objective:** To demonstrate our technique for adhesiolysis in an office hysterectomy setting.

**Setting:** Office Hysteroscopy. Our patient is a 40 year old nulliparous female with a history for fibroids and heavy uterine bleeding. She has had three hysteroscopic myomectomies, and a uterine artery embolization. In her evaluation prior to IVF she had a HSG and SIS that demonstrated a shortened uterine cavity and likely uterine adhesions.

**Interventions:** We demonstrate our technique for adhesiolysis of uterine synechiae utilizing a 5mm hysteroscope with a 5 fr. working channel and the semi-rigid scissors. Using internal landmarks, and a combination of blunt and sharp dissection we are able to restore the uterine cavity to its normal contour in the office, in spite of the dense adhesions. The presentation ends with a 2nd look hysteroscopy 3 weeks following the initial procedure.

**Conclusion:** Office hysterectomy is a viable and effective option for management of severe Asherman’s syndrome.

**Virtual Poster Session 3: Hysterectomy (10:40 AM – 10:50 AM)**

10:40 AM: STATION A

**1973 Sutureless Labiaplasty, is it Possible?**

Acosta-Osio GP* Clinical Director of Cosmetic Gynecology, Universidad Metropolitana & Fundación Hospital Universitario Metropolitano, Barranquilla, Colombia

*Corresponding author.

**Video Objective:** The purpose of this video is to present our surgical experience, the technique by performing the CO2 Laser cut without suture and to evaluate immediate or delayed complications and its safety.

**Setting:** The request for female labiaplasty surgery continues to increase. There are many doubts about which is the best technique and about its security.

**Interventions:** In the operating room, with spinal or epidural anesthesia according to the decision of the anesthesiologist, an evaluation of the shape of the lips is performed again, to be sure of the areas to be resected according to each patient; both lips are carefully and harmonically marked. After linearly marking the area to be resected, we placed bilateral clamps in the marked area so that they serve as a guide and help us with the hemostasis, then infiltrate marcaina with epinefrina, and wait about 2 or 3 minutes and then we proceed to cut over them, achieving a much clear and more continuous cut, adjusting the CO2 laser equipment for cutting, which is done slowly, while we do the adequate homeostasis. We remove the forceps to finish harmonizing the edges of the labia with the laser and, if necessary, complete the hemostasis without suture. We then leave a vaginal dressing with a healing cream, and we discharged the patient after being recovered anesthetically, with oral analgesics, antibiotic therapy and control appointment the following day, week, two weeks and then in a month.

**Conclusion:** The labiaplasty performed correctly by a professional trained in the technique, with the help of the CO2 laser, is a safe procedure with a very low complication rate, and provided very satisfactory aesthetic, functional and emotional results for this patient group, in addition to demonstrating that with the CO2 laser, it can be done sutureless. The labiaplasty is an art.
Virtual Poster Session 3: Hysteroscopy (10:40 AM – 10:50 AM)

10:40 AM: STATION B

1886 Hysterectomy and Adnexal Procedures by Vaginal Natural Orifice Transluminal Endoscopic Surgery (vNOTES): Korean Surgeons’ Initial Reports
Kim MS,* Jeong SY, Paik ES, Lee YY, Choi CH, Lee JW, Choi DS, Kim BG, Bae DS, Kim TJ. Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: To evaluate feasibility and safety of hysterectomy and adnexal procedures by vNOTES.

Design: Prospective observational study.

Setting: Prepare the surgery under general anesthesia and allow the patient to take a Trendelenburg posture.

Patients or Participants: Most of benign diseases except malignant disease were selected from the surgical candidates.

Interventions: There is no intervention other than surgery.

Measurements and Main Results: The first 26 patients were treated with vNOTES. Basic patient characteristics were measured, and the time of port installation and each stage of surgery was measured. The learning curve was assessed through the graph according to the number of operations using linear and logarithmic regression curve estimation. The complications of surgery were investigated.

The median age of the patients was 47.5 years (38-73). Median BMI was 22.4 (18.2-30.0). Median EBL was measured as 100 ml (20.0-500). The median value of hemoglobin changes before and after surgery was 1.8 (0.2-4.5). The day of hospitation from the day of surgery was 3 days (3-8). 18 (69.2%) cases had previous vaginal delivery history. 5 cases had previous Cesarean section. Five patients previously underwent a Cesarean section, two of which were Pfannenstiel incision and three of whom were low midline incision. The median portal time was 15 min (4-35) and the median total time was 85 min (43.1-132.0). From the 5th case in the learning curve, the port installation time was significantly shortened. Complications occurred during surgery in three patients who had undergone previous Cesarean section surgery. Two cases of bladder injury occurred during port installation due to adhesion of Cesarean section site and bladder. One case was a reoperation for intraperitoneal hemorrhage on the 13th postoperative day. There were no other complications.

Conclusion: To date, vNOTES does not seem to lag much behind other surgical methods in our institution. vNOTES is currently undergoing a prospective study, including pain and cosmetic aspects.

Virtual Poster Session 3: Hysteroscopy (10:40 AM – 10:50 AM)

10:40 AM: STATION C

2579 Isthmocele in a Patient with Secondary Infertility Saxena A,* Arora A, Jaiswal E. Tulip Multispeciality Hospital Pvt. Ltd, Sonepat, India
*Corresponding author.

Video Objective: The study objective is to evaluate the minimally invasive (Laparoscopic & Hysteroscopic) management of isthmocele in infertile patients and their short term follow up.

Setting: Tertiary referral center (Tulip Multispeciality Hospital).

Interventions: Seven patients who presented with infertility together with pelvic pain and abnormal uterine bleeding were taken. The diagnosis was made by transvaginal ultrasound, sonoalpinography, hysteroscopy or MRI. Laparoscopic resection of isthmocele was done.

Conclusion: At our center the laparoscopic management of isthmocele with hysteroscopic assistance has given excellent results in patients of infertility and abnormal uterine bleeding.

Virtual Poster Session 3: Hysteroscopy (10:40 AM – 10:50 AM)

10:40 AM: STATION D

1942 Transvaginal Natural Orifice Transluminal Endoscopic (vNOTES) Hysterectomy Learning Curve: The Feasibility in the Hands of Skilled Gynecologists Matanes E,1,4 Lauterbach R,1 Mor O,2 Lowenstein L.1 1Department of Obstetrics and Gynecology, Rambam Health Care Campus, Haifa, Israel; 2Rambam Health Care Campus, Department of Obstetrics and Gynecology, Haifa, Israel
*Corresponding author.

Study Objective: During Transvaginal Natural Orifice Transluminal Endoscopic Surgery (vNOTES) the surgeon operates exclusively through a single vaginal entry point, leaving no external scarring. The aim of this study is to evaluate the learning curve of vNOTES hysterectomy in the hands of experienced gynecologists, based on surgical times and short-term outcomes.

Design: A retrospective study of the first 25 vNOTES hysterectomy surgeries performed between July-December 2018 at the Rambam Health Care Campus by a single surgeon.

Setting: A retrospective study.

Patients or Participants: Women who underwent hysterectomy for benign indication.

Interventions: Hysterectomy.

Measurements and Main Results: The primary outcome was hysterectomy time. Secondary outcomes included intra-operative bleeding, length of hospitalization, post-operative pain and need for analgesia. Sociodemographic and clinical data were retrieved from patients’ electronic charts. Patients’ median age was 64.5 years (range 40-79); Median hysterectomy time was 38 minutes (range 30-49) from first cut to completion of hysterectomy. Comparisons between median hysterectomy time in the first 10 hysterectomies and in the 15 sequential procedures demonstrated a significant decrease in median total hysterectomy time, 45 minutes (range 41-49) vs. 32 minutes (range 30-38) respectively (P=0.024). The median estimated intraoperative blood loss decreased from 100 ml (range 70-200) in the first 10 hysterectomies to 40 ml (range 20-100) in the 15 sequential procedures (P=0.011).

Conclusion: vNOTES hysterectomy is a feasible procedure in the hands of an experienced gynecologist with an exponential improvement in surgical performance in a short period as expressed by the improvement in hysterectomy time, low complication rates, negligible blood loss, minimal post-surgical pain, fast recovery, short hospitalization Importantly, vNOTES allows easier and safer access to adnexal removal compared to conventional vaginal surgery. Long-term follow up requires further investigation.

Virtual Poster Session 3: Hysteroscopy (10:40 AM – 10:50 AM)

10:40 AM: STATION E

2484 Clinical Outcomes Among Women with Abnormal Uterine Bleeding Treated with Inpatient or Outpatient Hysterectomy Versus Endometrial Ablation Bonafede M,1,2 Tran OV,1 Miller JD,1 Pohlman S,2 Troeger K.1 1Life Sciences, IBM Watson Health, Cambridge, MA; 2Outcomes Research, Hologic Inc, Marlborough, MA
*Corresponding author.
Study Objective: To describe clinical and economic outcomes among women with abnormal uterine bleeding (AUB) treated with global endometrial ablation (GEA) versus inpatient and outpatient hysterectomy.

Design: US retrospective claims analysis.

Setting: N/A.

Patients or Participants: Women undergoing GEA or hysterectomy (index event) between 1/1/2012 and 4/30/2017 with ≥2 non-diagnostic claims indicating AUB before or on the index date in the IBM MarketScan Commercial Database. Women were required to have 12 months pre- and post-index continuous enrollment. Women with evidence of pregnancy, delivery, menopause, non-skin cancer or receiving total abdominal hysterectomy were excluded. Follow-up healthcare costs and the incidence of complications (such as cervical occlusion, cervical/uterine/bowel perforation, fluid overload, pyometra, cervicitis, device complications and cervical trauma) were reported. Re-intervention, defined as hysteroscopy or repeat GEA, was reported during the five-year post-index among GEA patients.

Interventions: GEA or hysterectomy.

Measurements and Main Results: 117,801 women met the study criteria (56.6% GEA, 43.4% hysterectomy). 84.0% of hysterectomy cases occurred in an outpatient setting. Mean age was lower for GEA patients (42.7 vs. 43.2). Total healthcare costs in the first month post-index among GEA patients were less than one-half of hysterectomy ($7,018 vs. $15,402), a similar finding when limited to inpatient ($17,672) or outpatient hysterectomy ($14,971) (all p < 0.001). Total costs over the entire first year of follow-up were lower for GEA than hysterectomy ($13,719 vs. $21,684, p < 0.001). Complications were more common among inpatient and outpatient hysterectomy than GEA patients (22.2% and 16.8% vs. 5.0%, both p < 0.001). Among GEA patients, yearly hysterectomy rates declined from 5.06% to 2.13% and yearly repeat GEA rates declined from 0.46% to 0.03% from the 1st to 5th year post-index.

Conclusion: This analysis of a large, national claims database found that GEA was approximately one-half the cost of hysterectomy (inpatient or outpatient) for the treatment of AUB with fewer complications and declining rates of re-intervention.

Virtual Poster Session 3: Hysteroscopy (10:40 AM – 10:50 AM)

10:40 AM: STATION G

2955 Removal of Intrauterine Device in 13-Week Pregnant Women

Araujo RS*, Gynecology and Obstetrics, Federal University of Paraiba, Joao Pessoa, Brazil

*Corresponding author.

Video Objective: Demonstrate the performance of hysteroscopy in a pregnant patient, which is a challenging but feasible situation in experienced hands.

Setting: Patient underwent implantation of an intrauterine device for contraception, but it evolved with amenorrhea and diagnosis of gestation during the course of the 12th week. The patient chose to remove the device, even though it was oriented for the related risks.

Interventions: The patient was sedated and submitted to ambulatorial hysteroscopy using the Bettocchi set and performed removal of the intrauterine device by seizing forceps. After the procedure, ultrasound was performed with verification of preserved fetal vitality, and gestation progressed normally, with subsequent delivery to term.

Conclusion: In exceptional situations it is possible to perform hysteroscopy in a pregnant patient.

Virtual Poster Session 3: Hysteroscopy (10:40 AM – 10:50 AM)

10:40 AM: STATION H

1225 Early Prediction of Methotrexate Treatment Success by 24‒Hour Pretreatment HCG Increment and Day 1‒4 HCG Ratio


1Departments of Obstetrics and Gynecology, Hadassah Medical Center, Jerusalem, Israel; 2Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; *Corresponding author.

Study Objective: Several studies have tried to identify early markers for treatment outcome after methotrexate (MTX) treatment for an ectopic pregnancy (EP) including pretreatment and day 4 hCG levels and corresponding ratio, and hCG increment during the initial 24 hours following treatment, with conflicting results. We aim to re-evaluate the role the aforementioned markers in the earlier identification of treatment success in a large cohort of women.

Design: A retrospective cohort study.


Patients or Participants: All women diagnosed with an EP and treated by intention of single-dose regimen of intramuscular MTX.

Interventions: A comparison of maternal and gestation characteristics was performed between treatment success and failure groups.

Measurements and Main Results: 292 women treated with single-dose intramuscular MTX for EP during were included in this study. Treatment success rate with a single dose of MTX of the overall cohort was 62.7% (183/292). Only two independent determinants were significantly associated with the treatment success: initial 24 hours hCG percentage of increment (adjusted odds ratio [OR]: 1.82; 95% confidence intervals [CI]: 1.26, 2.63; p < 0.001) and percentage hCG change in day 1 to 4 (adjusted odds ratio [OR]: 1.12; 95% confidence intervals [CI]: 1.02, 1.21; p < 0.001).

The optimal cut-off points for prediction of treatment success are increment of less than 17% in pre-treatment 24 hours and a decrease of more than 22% in day 1-4 hCG.
Conclusion: A low rise in hCG levels 24 hours prior to treatment with MTX, alongside a decline in hCG levels from day 1 to day 4 may predict success of medical treatment of EP.

Virtual Poster Session 3: Hysteroscopy
(10:40 AM – 10:50 AM)

10:40 AM: STATION I

1438 Experience with the Storz Trophyscope® Versus Cooper Surgical Endosee® for Office Diagnostic Hysteroscopy
Leon MG,1,*,2 DeStephano CC,2 Nguyen A3,1 Obstetrics, Gynecology, and Reproductive Sciences, The University of Texas Health Science Center at Houston/ McGovern Medical School, Houston, TX; 2Minimally Invasive Gynecology Surgery, Mayo Clinic College of Medicine and Science, Jacksonville, FL; 3Obstetrics and Gynecology, Mayo Clinic College of Medicine and Science, Jacksonville, FL
*Corresponding author.

Study Objective: Determine use patterns and success rates for office diagnostic hysteroscopy with the 2.9 mm Storz TROPHYSOCPE® and handheld portable Cooper Surgical Endosee device in a clinic setting.

Design: Prospective cohort study of a hysteroscopy quality improvement database.

Setting: Gynecology clinic in a tertiary care center.

Patients or Participants: Patients undergoing office hysteroscopy with either the Storz Trophyscope or Cooper Surgical Endosee device.

Interventions: Diagnostic office hysteroscopy.

Measurements and Main Results: Of the 172 office hysteroscopies, 78 utilized the Trophyscope, with 8 (10%) being inadequate, while 94 utilized Endosee, with 13 (14%) being inadequate (p=64). Of the 13 inadequate Endosee hysteroscopies, 3 (23%) were due to visualization, 5 (39%) due to patient intolerance, 3 (23%) due to cervical stenosis, and 2 (15%) due to both patient intolerance and stenosis. Of the 8 inadequate Trophyscope hysteroscopies, 7 (87%) were due to patient intolerance and 1 (13%) to cervical stenosis (p=0.14). Of the 151 adequate office procedures performed, 52 cases underwent subsequent procedures in the operating room (OR) with hysteroscopy or hysterectomy (Table 1). Of these, 27 (84%) of 32 Endosee cases and 15 (75%) of 20 Trophyscope cases were in agreement with findings from the OR procedure (p=0.48).

Conclusion: There is no difference in adequate visualization or pathologic diagnoses with the Endosee and Trophyscope devices in this prospective cohort. Larger, adequately powered studies are needed to confirm the sensitivity and specificity for these newer, disposable office hysteroscopic devices.

Virtual Poster Session 3: Hysteroscopy
(10:40 AM – 10:50 AM)

10:40 AM: STATION J

2535 Unusual Approach to Hysteroscopically-Guided Myomectomy in a Woman with a Septate Uterus

Spires BP,* Elder R, Moulder JK. Obstetrics and Gynecology, University of Tennessee Medical Center Knoxville, Graduate School of Medicine, Knoxville, TN
*Corresponding author.

Video Objective: Demonstrate innovative approach of hysteroscopically-guided myomectomy in a woman with a septate uterus.

Setting: 49 y/o with abnormal uterine bleeding secondary to a submucosal fibroid and presumed uterine didelphys who was found to have a partial septate uterus and duplicated cervix.

Interventions: Diagnostic hysteroscopy, dilation and curettage, with hysteroscopically-guided myomectomy under direct visualization by the hysteroscope by inserting the hysteroscope into one cervix while preforming instrumentation of the fibroid through the other cervix.

Conclusion: Uterine anomalies may be challenging to characterize based on exam or ultrasound alone. Surgical management of gynecological pathologies, such as fibroids, requires understanding of normal and anomalous anatomic landmarks and innovative application of common instrumentation. This patient’s unique anatomy allowed intrauterine instrumentation normally preformed blindly to be directly visualized by hysteroscopy. This allowed safe and effective treatment in a technically challenging case.

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10:40 AM: STATION K

1261 Risk Factors for Recurrent Ectopic Pregnancy Following Single-Dose Methotrexate Treatment
1Departments of Obstetrics and Gynecology, Hadassah Medical Center, Jerusalem, Israel; 2Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; 3Hadassah Medical Center, Jerusalem, Israel
*Corresponding author.

Study Objective: We aimed to investigate the predisposing factors for recurrent ectopic pregnancy (REP) following single-dose methotrexate (MTX) treatment.

Design: A retrospective cohort study.

Setting: A tertiary medical center.

Patients or Participants: All patients diagnosed with a first EP and treated by intention of single-dose regimen of intramuscular MTX.

Interventions: Cases (REP) and controls (first-time only EP) were compared in order to identify risk factors for REP. Forward stepwise multivariate logistic regression analyses were subsequently carried out.

Measurements and Main Results: 272 women were included in the cohort of the study. Of those 22 (8.1%) had a REP, Women in the REP group had higher proportion of history of abortions (45.4% vs. 23.6%, p<0.02), higher rates of previous pelvic surgery and a history of both pelvic and uterine surgery (45.4% vs. 6.4%, 4.5% vs. 1.6%, respectively, p<0.001). Conception by assisted reproductive technology (ART) was more common among the non REP group (22.9% vs. 4.5%, p<0.04). Success of single-dose MTX treatment was lower in the REP group compared to the non REP group.

Table 1. Comparison of Office Hysteroscopy Diagnosis and Surgical Pathology

<table>
<thead>
<tr>
<th>Diagnosis on Office Hysteroscopy (N=52)</th>
<th>Consistent with OR</th>
<th>Inconsistent with OR</th>
<th>Inconsistent Pathology after Surgical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyp (N=26)</td>
<td>22 (85%)</td>
<td>4 (15%)</td>
<td>1 fibroid/ 3 no identifiable lesion</td>
</tr>
<tr>
<td>No identifiable lesions (N=16)</td>
<td>12 (75%)</td>
<td>4 (25%)</td>
<td>2 polyps/ 2 fibroids</td>
</tr>
<tr>
<td>Hyperplasia (N=3)</td>
<td>1 (33%)</td>
<td>2 (67%)</td>
<td>1 endometrial cancer/ 1 benign endometrial tissue</td>
</tr>
<tr>
<td>Leiomyomata (N=6)</td>
<td>6 (100%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Malignancy (N=1)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
</tbody>
</table>
(36.3% vs. 65.7%, \( p=0.006 \)). A history of prior pelvic surgery was independently associated with the occurrence of a REP (OR 17.6, 95% CI 4.9-63.1, \( p=0.001 \)). Treatment success of single-dose MTX was independently protective for REP (OR 2.5, 95% CI 0.80-0.76, \( p=0.02 \)).

**Conclusion:** Among women with EP, attention should be paid to women with previous pelvic surgery. Efforts should be made in order to achieve medical treatment success to prevent REP.

**Virtual Poster Session 3: Hysteroscopy**

**(10:40 AM – 10:50 AM)**

**1026 The Role of Ultrasound in the Management of Third Stage of Second Trimester Delivery: A Retrospective Cohort Study**

Levin G, 1, 2, 3 Dior UP, 2 Benshushan A, 2 Shushan A, 3 Rottenstreich A, 1

1Departments of Obstetrics and Gynecology, Hadassah Medical Center, Jerusalem, Israel; 2Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; 3Hadassah Medical Center, Jerusalem, Israel

*Corresponding author.

**Study Objective:** The use of intraoperative sonographic guidance for second trimester elective dilation and curettage (D & E) procedure reduces medical induction up to 236/7 weeks estimated gestational age who underwent uterine evacuation.

**Design:** A retrospective cohort study.

**Setting:** A Gynecology department at a tertiary university-affiliated medical center.

**Patients or Participants:** Patients undergoing second trimester medical induction up to 23 6/7 weeks estimated gestational age who underwent uterine evacuation after delivery of the fetus.

**Interventions:** Women undergoing curettage procedure under continuous ultrasound guidance were compared with those undergoing curettage without ultrasound guidance.

**Measurements and Main Results:** One hundred ninety-four patients underwent a curettage without intraoperative sonographic guidance, while 79 underwent the procedure utilizing intraoperative sonographic guidance. The overall rate of composite adverse outcome was higher among those undergoing curettage under intraoperative sonographic guidance as compared with no sonographic guidance (39.2% vs. 20.6%, \( P=0.002 \)). Placental morbidity (12.6% vs. 5.6%, \( P=0.04 \)) and infectious complications (7.5% vs. 2.5%, \( P=0.05 \)) were more frequent among those undergoing curettage using intraoperative sonographic guidance. In a multivariate logistic regression analysis, intraoperative ultrasound guidance was the only independent factor positively associated with an adverse outcome (\( P=0.001 \)). Procedure time was longer when ultrasound guidance was used; 95 min vs. 65 min (\( P=0.001 \)).

**Conclusion:** Intraoperative ultrasound guidance during curettage after second trimester uterine evacuation is associated with a higher complication rate than no guidance.

**Virtual Poster Session 3: Hysteroscopy**

**(10:40 AM – 10:50 AM)**

**2776 Uterine Volume Assessment as a Predictor of in vitro Fertilization Pregnancy Outcomes**

Shah N, 1 Chan CW, 2 Pereira N, 1 OB/GYN, Weill Cornell Medicine, New York, NY; 2OB/GYN, Weill Cornell Medicine, New York, NY

**Study Objective:** To investigate the association between uterine size and pregnancy outcomes in IVF cycles.

**Design:** A retrospective cohort study.

**Setting:** University-affiliated fertility center.

**Patients or Participants:** Women with primary infertility <40 years undergoing IVF with fresh embryo transfer (ET) resulting in live singleton births.

**Interventions:** Fresh ET.

**Measurements and Main Results:** Uterine volume was used as a surrogate for uterine size. Uterine measurements (length, width, thickness) were obtained in each woman. Uterine volume was calculated using the prolate ellipsoid volume formula \( V=0.52 \times L \times W \times T \). Baseline demographics, IVF cycle characteristics and perinatal outcomes were measured. Term birth, defined by live birth >37 weeks of gestation was considered the primary outcome of interest. The odds of pre-term and term birth were estimated in each uterine volume quartile. A receiving-operator-characteristic (ROC) curve with a corresponding area-under-the-curve (AUC) was generated to assess the performance of uterine volume as predictor of term birth. The study included 261 patients with live singleton births. The median (IQR) age, height, weight, body mass index (BMI) and uterine volume for the study cohort was 34 (31-39) years, 163 (160-167) cm, 170 (122-155) lbs, 22.1 (20.3-24.9) kg/m² and 55.5 (43.2-67.9) mL, respectively. The rates of term birth and pre-term birth were 224/261 (85.8%) and 37/261 (14.2%). There was no difference in the baseline demographics or IVF cycle characteristics of women with term birth or pre-term births. The overall odds of term birth increased with uterine volume. Specifically, the odds of term birth in 4th quartile (highest uterine volume) were 3.4 (95% CI 2.1-7.4; \( P=0.01 \)) times higher than the 1st quartile. Uterine volume was found to be a strong predictor of term birth (AUC=0.87).

**Conclusion:** Our findings suggest that baseline uterine volume is a strong predictor of term birth after fresh ET. These findings require prospective validation in larger sample sizes given the multifactorial nature of term birth.

**Virtual Poster Session 3: Hysteroscopy**

**(10:40 AM – 10:50 AM)**

**1931 Laparoscopic Tuboplasty**

Norris S, 1 Sobel M, 2 Chen C, 3 OB/GYN, University of Toronto, Toronto, ON, Canada; 2Mount Sinai Hospital, University of Toronto, Toronto, ON, Canada; 3OB/GYN, University of Toronto, Toronto, ON, Canada

*Corresponding author.

**Video Objective:** To review tuboplasty techniques for alleviating fallopian tube blockage. Tuboplasty consists of fimbrioplasty, salpingo-ovariolysis and salpingostomy.

**Setting:** A 28yo G0 female patient with primary infertility and bilateral fallopian tube occlusion seen at an urban tertiary care hospital.

**Interventions:** There are several techniques for alleviating blockages and reconstructing the fallopian tubes which are collectively referred to as tuboplasty. Tuboplasty can be further subdivided into fimbrioplasty, salpingo-ovariolysis, and salpingostomy. Such procedures are performed by experts in tubal reconstruction and with the increasing prevalence of in vitro fertilization, there is less exposure to these techniques. We review a case of bilateral tubal occlusion which was managed with salpingo-ovariolysis and salpingostomy. The steps of salpingo-ovariolysis and salpingostomy are reviewed and demonstrated through video. Studies have
reported live birth rates following salpingostomy between 20-37% and in cases of mild tubal disease, live birth rates increase up to 40-60%.

**Conclusion:** Tubal reconstructive surgery remains an important option to offer patients who want to avoid in vitro fertilization and who have mild tubal disease.

**Virtual Poster Session 3: Hysteroscopy**
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**10:40 AM: STATION O**

**2495 A Retrospective Review of Outpatient Endometrial Ablation Using Minitouch for Treatment of Heavy Menstrual Bleeding**

Chan J*. Department of Obstetrics and Gynaecology, University Hospital of North Midlands NHS Trust, Stroke-on-Trent, United Kingdom

*Corresponding author.

**Study Objective:** To determine the outcomes of using Minitouch endometrial ablation as outpatient treatment for heavy menstrual bleeding (HMB) at an established ambulatory gynecology center in a UK teaching hospital.

**Design:** Retrospective cohort study.

**Setting:** Procedures were performed as outpatient at Central Treatment Suite at Royal Stoke University Hospital, as per department-approved protocol by one of six gynecology consultants. Patients were reviewed from 4 months post-op at consultation or by telephone.

**Patients or Participants:** Between March 2017 and March 2019, 35 patients with HMB who opted for outpatient endometrial ablation received the treatment.

**Interventions:** Minitouch without/with intracervical local anesthesia. Diagnostic outpatient hysteroscopy +/- endometrial sampling was performed immediately before treatment procedure confirming suitability. Where present, intrauterine device was removed before ablation. Patients were not selected for timing of their menstrual cycle and received no endometrial pre-treatment.

**Measurements and Main Results:** In 24 months, 35 patients received treatment. Average patient age was 46 (range 31-55). One patient was nulliporous, 9(26%) had previous caesarean section, 30(86%) received previous treatment for HMB. Utero-cervical length ranged from 6-10cm. Histology confirmed normal endometrium in all cases. Procedure was well tolerated overall with no failure of equipment. Average treatment time was 145s (Range 33-229s). Vasovagal episode was the only observed peri-operative complication (2/35, 5.7%) requiring conservative management. No uterus perforation occurred. No patient required emergency hospital admission post-op. To date, 22 patients were reviewed. Average time to follow-up was 4.9 months. 91% reported satisfactorily improved bleeding patterns including amenorrhea or oligomenorrhea (14/22, 64%) and less HMB (6/22, 27%). 9% reported same or worsened bleeding requiring further management.

**Conclusion:** With its flexibility and smaller size over other devices minimizing the need for cervical dilatation and patient discomfort, the use of Minitouch for outpatient treatment of HMB at our center was shown to be well-tolerated, with high reliability of procedure completion, good safety and efficacy outcomes.

**Virtual Poster Session 3: Hysteroscopy**
*(10:40 AM − 10:50 AM)*

**10:40 AM: STATION Q**

**1817 Is Paracervical Block Useful to Decrease Pain During in Office?**

Lederer MH,1 Grady MM,1 Timmons D,*,2 Palin H,2 Carugno JA3.

1University of Miami Miller School of Medicine, Miami, FL; 2Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL; 3Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Pembroke Pines, FL.

*Corresponding author.

**Study Objective:** To determine if paracervical block significantly decreases pain during in-office hysteroscopy.

**Design:** Retrospective chart review.

**Setting:** Gynecologic in-office procedure room in an academic medical center.

**Patients or Participants:** Patient undergoing in office hysteroscopy.

**Interventions:** In office hysteroscopy was performed using a STORZ Betocchi hystroscope with continuous flow using a 5 mm external sheet and a 30° 2.9 mm optic. All the procedures were performed by the same physician.

**Measurements and Main Results:** 50 patient’s charts were reviewed, 21 received a paracervical block and 29 did not receive any local anesthesia. Of the 21 that received the block, mean age was 46.1 years, 27.6% were nulliprious, 24.1% were postmenopausal. Of the 29 patients who received no local anesthesia, mean age was 46.9 years (p=0.783), 48.3% were nulliporous, 27.6% were postmenopausal. In both groups, the most common reasons for hysteroscopy were abnormal uterine bleeding (AUB). Pain was recorded for all patients immediately after finalizing the procedure using a Likert-like scale from 1 to 10. The average pain score for the patients who received the paracervical block was 3.48 compared to 4.07 in those not having the block (p=0.348). Neither obesity nor nulliparity were found to

**1260 Medical Treatment Success of Recurrent Ectopic Pregnancy vs. Primary Ectopic Pregnancy: A Case Control Study**


1Departments of Obstetrics and Gynecology, Hadassah Medical Center, Jerusalem, Israel; 2Department of Obstetrics and Gynecology, Hadassah-Hebrew University Medical Center, Ein-Kerem, Jerusalem, Israel; 3Hadassah Medical Center, Jerusalem, Israel

*Corresponding author.

**Study Objective:** We aim in our study to evaluate whether there is a significant difference between women presenting with primary tubal ectopic pregnancy (EP) or recurrent ectopic pregnancy (REP) that are treated medically with methotrexate (MTX).

**Design:** A retrospective cohort study.

**Setting:** A tertiary medical center during 2010-2018.

**Patients or Participants:** All patients diagnosed with an EP and treated by intention of single-dose regimen of intramuscular MTX.

**Interventions:** Cases (REP) and controls (first-time only EP) were compared.

**Measurements and Main Results:** 262 patients had primary EPs and 32 had a REP. Women with REP had significantly higher gravidity order and higher incidence of previous abortions (5 vs. 3, median, p<0.001, 59.3% vs. 32.8%, p<0.001, respectively). Women with REP had a higher proportion of a history of previous surgery in general, and specifically pelvic surgery (46.8% vs. 20.6%, p<0.001, 24.4% vs. 7.2%, p<0.001, respectively). Treatment success was lower in the REP group (40.6% vs. 66.4%, p=0.006). The only preoperative determinant independently associated with REP was higher gravidity) Odds Ratio 1.22, Confidence Interval 1.03-1.46, p=0.02.

**Conclusion:** Our study suggests that while women with REP may not represent a unique sub-group of women with EP, medical treatment success with a single-dose regimen of MTX is lower than expected and hence different regimens should be considered.

**Virtual Poster Session 3: Hysteroscopy**
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be associated with increased pain, however postmenopausal women overall were found to have higher reported pain (p=0.013). If given a paracervical block, mean pain in postmenopausal women was 4.29 compared to 6.00 without block (p=2.15).

Conclusion: Hysteroscopy as a safe and relatively low pain procedure. Local anesthetic in the form of a paracervical block has been used historically to decrease pain during the procedure. Paracervical block does not significantly decrease pain during procedure, even in menopausal women who were found to have higher pain scales on average. Therefore, future studies should further investigate strategies to decrease pain during office hysteroscopy especially for postmenopausal women.

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10:40 AM: STATION R

2021 Hysteroscopic Polypectomy with Stone Retrieval Basket
Movilla PR, 1, * Rosenblatt PL, 1. 1Minimally Invasive Gynecologic Surgery, Newton Wellesley Hospital, Newton, MA; 2Mount Auburn Hospital, Cambridge, MA
*Corresponding author.

Video Objective: To present an alternative approach to hysteroscopic endometrial polypectomy. Currently most hysteroscopic polypectomy procedures are performed using a single use instruments such as a bipolar resectoscope or one of the several commercially available hysteroscopic morcellation devices. This surgical procedure allows the completion of a hysteroscopic polypectomy without incurring the costs associated with these single use instruments.

Setting: A 70-year-old female with post-menopausal bleeding and an ultrasound finding concerning for an endometrial polyp.

Intervention: Hysteroscopic removal of an endometrial polyp with a urologic stone retrieval basket.

Conclusion: The utilization of a stone retrieval basket is a novel and effective method for retrieving a wide based endometrial polyp following incomplete resection with hysteroscopic scissors.

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10:40 AM: STATION S

1514 Impact of Hysteroscopic Surgical Management of Cesarean Scar Syndrome on Pregnancy Rate: A Prospective Observational Study
Takahashi A, 1, * Kimura F, 1 Tsujii S, 1 Yamanaka A, 2 Takashima A, 1 Takebayashi A, 1 Murakami T, 1 Obstetrics and Gynecology, Shiga University of Medical Science, Otsu, Japan; 2Obstetrics and Gynecology, Nagahama Red Cross Hospital, Nagahama, Japan; 1Obstetrics and Gynecology, Higashi-Omih General Medical Hospital, Higashi-Omih, Japan
*Corresponding author.

Study Objective: To evaluate fertility outcomes following hysteroscopic treatment of isthmoceles women with cesarean scar syndrome.

Design: Prospective observational study.

Setting: Academic department in a university hospital.

Patients or Participants: A series of 36 patient who had undergone hysteroscopic surgery for secondary infertility due to defects with retention of bloody fluid in the uterine cavity between July 2014 and Dec 2018.

Interventions: In the first step, the inferior edge of the isthmocele was resected using a cutting loop electrode. Next, the bottom of the isthmocele containing the dendritic vessels was cauterized using a ball electrode.

Measurements and Main Results: After a mean follow up of 12.5 months the overall pregnancy rate was 44.4% (n=16). Fifteen of those patients delivered healthy babies by cesarean section at 37-38 weeks of gestation, and 1 case was an early abortion. Among those patients who conceived, 5 patients conceived spontaneously and 11 patients by assisted reproductive techniques.

The mean thickness of the myometrium and volume of isthmocele significantly increased from 2.85 ± 1.8 mm and 2138 ± 1960 mm³ before surgery to 4.73 ± 2.4 mm and 1183 ± 1383 mm³ after surgery (p=0.014, and p<0.001), respectively. After surgery, myometrial thickness was not different between pregnant and non-pregnant patients, but isthmocele volume of pregnant women was significantly smaller than those of non-pregnant (p=0.047).

Conclusion: Hysteroscopic treatment with cesarean scar defect was effective in improving the fertility. Therefore, we propose that hysteroscopic surgery might be applied as first line treatment in secondary infertility women with cesarean scar defect.

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10:40 AM: STATION T

1447 FDA Notice on Transvaginal Energy-Based Devices (TV-EBD) for Laser Vaginal Therapy: Was it Justified?
Kennedy MJ, 1 * Stepp KJ, 1 Futral C, 2 Atrium Health, Charlotte, NC; 2Urology Research, Atrium Health, Charlotte, NC
*Corresponding author.

Study Objective: Our aim in this study was to shed light on the origin of evidence for reported adverse events detailed in the Manufacturer and User Facility Device Experience (MAUDE) given by the FDA communication regarding the use of laser vaginal device therapy.

Design: The MAUDE database was queried from 2010-2018 for adverse events related to manufacturers who currently offer laser vaginal therapy devices. Each adverse event was then categorized based on the details of the event as device error, provider error, a common risk, patient-reported lack of efficacy, or a procedure related adverse event. Additionally, social media outlets such as Twitter were reviewed to gather public opinion on laser vaginal therapy in response to the recent FDA communication.

Setting: N/A.

Patients or Participants: N/A.

Interventions: N/A.

Measurements and Main Results: A total of 40 adverse events were reported on the MAUDE database regarding laser vaginal therapy devices in the queried time frame. Of that 40, 27 were unique events, while the other 13 were duplicate reports. Of the 27, 12 were categorized as patient-reported lack of efficacy, 8 were provider error, 3 were device error, 2 were common risk, and 2 were, with the provided information in MAUDE, procedure related AEs. Social media responses revealed largely negative opinions on laser vaginal therapy devices.

Conclusion: Many of the reported adverse events on the MAUDE database revealed a fundamental lack of education, either to the providers, or to the patients, on the efficacy of laser vaginal therapy. Almost half of the total individual reports to MAUDE (12) were patients with previous medical histories regarding vaginal dryness, incontinence or sexual dysfunction reporting continued lack of improvement. These reports support the concern of miscommunication with device manufacturer. As with any medical treatment, in-depth consultation with a professional help reduce any procedural risk.
Virtual Poster Session 4: Hysteroscopy
(1:00 PM — 1:10 PM)

1:00 PM: STATION A

2531 LiNA Operascope: Pilot Evaluation of a Single-use Operative Hysteroscopy System
Althoff K*, LiNA Medical, Glostrup, Denmark
*Corresponding author.

Study Objective: To evaluate the performance of a single-use, battery powered, operative hysteroscope in an office setting.

Design: Performance questionnaire survey with predefined scales (5 = very satisfied, 1 = very dissatisfied)


Patients or Participants: Patients undergoing diagnostic and operative hysteroscopy

Interventions: The LiNA OperaScope is a single-use, battery operated system for see and treat hysteroscopy in the office and hospital setting. The 4.2 mm diameter cannula contains a miniature camera and LED illumination at the distal tip. The catheter tip is pre-curved and 360° steerable by a turning knob on the handle. The center of this turning knob is the insertion channel for hysteroscopic instruments up to 1.86 mm (5.5 Fr). Distention and flushing of the uterine cavity is facilitated with separate in-flow and out-flow channels with individual stopcocks at the handle. The HDMI cable at the bottom of the handle can be connected to an external monitor with HDMI input, or connected to the OperaScope Recording Module for recording of video or pictures to a standard USB drive.

Measurements and Main Results: 15 gynecologists completed the device performance questionnaire. 93% (14/15) were very satisfied and 7% (1/15) satisfied with the functionality of the device and its ease of insertion. All evaluators were satisfied or very satisfied with the quality of visualization. 93% (14/15) rated patient comfort and tolerability as very satisfying. The performance of the recording module was rated as satisfying by 78% (11/14), very satisfying by 14% (2/14) and neutral by 7% (1/14). All evaluators were overall very satisfied (10/15) or satisfied (5/10) with the device.

Conclusion: The OperaScope system can provide highly satisfying visualization of the endometrial cavity during diagnostic and operative hysteroscopic procedures.

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1:00 PM: STATION B

1894 Delivery Outcome in the Third Trimester after Hysteroscopic Adhesiolysis
Gao B.1, Xu D.1, Guan X.2, *Obstetrics and Gynecology, The Third Xiangya Hospital of Central South University, Changsha, China;
*Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX
*Corresponding author.

Study Objective: To investigate the delivery outcome of women in the third trimester who previously underwent hysteroscopic adhesiolysis (HA).

Design: Retrospective cohort study.

Setting: University-affiliated hospital.

Patients or Participants: A total of 127 women with a history of HA before pregnancy and delivery in the third trimester from May 2011 to May 2018 were enrolled (Study Group). Additionally, a total of 127 women with a negative history of HA were randomly selected from those with delivery in the third trimester during the same period of time (Control Group).

Interventions: None.

Measurements and Main Results: We investigated demographic characteristics, obstetrics parameters, and infant parameters to evaluate the history of HA and its effects on third trimester delivery outcomes. There was neither significant difference between the Study and Control Groups in delivery gestational age (38.71±2.3 weeks versus 38.71±3.0 weeks), nor in birth outcomes of the newborn (P>0.05). However, the cesarean section rate in the study group was significantly higher than that of the control group (60.0% versus 44.1%, P<0.05). In addition, when compared to the control group, women who had a history of HA had a higher risk of placental problems (P<0.05), such as placenta previa (11.8% versus 3.2%), difficulty in placental separation (43.3% versus 8.7%), placenta implantation (20.5% versus 0%), placental adhesion (26.0% versus 3.1%), and placental residue (6.3% versus 3.9%). The women who had a history of HA may undergo additional postpartum curettage (51.2% versus 4.7%, P<0.05) when compared with the control group, accompanied by additional postpartum hemorrhage (11% versus 0.8%, P<0.05). Such cases were more likely to be found in patients with severe intrauterine adhesion compared with those with mild to moderate adhesions (P<0.05).

Conclusion: The history of HA might be an important risk factor inducing placental problems and postpartum hemorrhage in the third trimester. More attention should be paid to the labor of pregnant women with a history of HA.

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1:00 PM: STATION C

Ferreira H, Vigueras Smith A, Kulkarni N, Pinto Rosario D, Sumak R. Gynecology, Centro Hospitalar Universitario do Porto, Porto, Portugal
*Corresponding author.

Video Objective: to demonstrate a new NOTES technique in gynecology which can be used for hysterectomy and salpingo-oophorectomy in patients with uterine and adnexal pathology.

Setting: NOTES yields access to the abdominal cavity without any incisions on the abdominal wall (scarless surgery), and the natural orifices of the body surface, such as the mouth and the vagina, serve as the gateway to the peritoneal cavity. Recently, clinical application of transvaginal NOTES has broadened significantly in gynecology. A 63-year-old woman (gravidia 2 para 2) was referred to our clinic with left-sided abdominal pain and a history of a persistent ovarian cyst. The ultrasound revealed a left complex hypoechoic ovarian cyst of 4 cm. Tumor markers were normal and no suspicion for malignancy. The NOTES technique was planned due to the possibility of pelvic adhesions and her concerns about cosmesis.

Interventions: transvaginal NOTES hysterectomy with bilateral adnexectomy using one grasper and a vessel sealing instrument under the visualization of a 0° scope through an ALEXIS system. The procedure was performed under Trendelenburg position without any abdominal scar.

Conclusion: Using transvaginal NOTES by applying the method of single-incision laparoscopic surgery via the vaginal route, adnexal surgery and hysterectomy could be performed safely and effectively in selected patients

Virtual Poster Session 4: Hysteroscopy
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1:00 PM: STATION D

1671 Transumbilical Notes Pectopexy: Tips and Tricks
Wang Q.1, *Liu J.2, Guo X.1, Chen B.1, Guan X.1, Xinxing City Central Hospital Gynecologic Oncology, Xinxing, China; *Gynecology, Third Affiliated Hospital of Guangzhou Medical University, Guangzhou, China;
1Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX
*Corresponding author.

Video Objective: Pectopexy is the most effective procedure to treat pelvic organ prolapse and can be used as an alternative to sacropexy. The minimally invasive access for pectopexy is divided into single-port and multi-port with or without robotic assistance. Transumbilical natural orifice transluminal endoscopic surgery (transumbilical laparoscopic single site surgery,
transumbilical LESS is an emerging minimally invasive approach, which reduces abdominal incision and enhances aesthetics. Pectopexy is an ingenious combination of the two approaches, which achieves a good clinical effect. These advantages outweigh the difficulties in learning the new technique. Our purpose was to show the surgical skills of the transumbilical LESS.

Setting: Xinhaiang City Central Hospital Gynecologic Oncology, China

Interventions: Transumbilical single-site laparoscopic pectopexy was performed, which was a combination of laparoscopic and single-site surgeries.

Conclusion: Transumbilical LESS allows the surgeon to perform iliopectineal ligament after accessing the entire abdomen via a single port. This procedure can achieve a good clinical effect.

Virtual Poster Session 4: Hysteroscopy (1:00 PM — 1:10 PM)

1:00 PM: STATION E

1867 Transvaginal Single-Port Laparoscopic Hysterectomy for Large Uterus

Wang X,1,2,* Chen Y,1,1 Gynecology, Obstetrics and Gynecology Hospital of fudan university, Shanghai, China; 2Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China

*Corresponding author.

Video Objective: To demonstrate the transvaginal natural orifice transluminal endoscopic surgery (NOTES) hysterectomy for large uterine (the size of six months pregnancy) with combined transvaginal surgical and single-site surgical skills

Setting: Academic tertiary care hospital

Patient: A 55-year-old woman

Interventions: Transvaginal NOTES hysterectomy with combined transvaginal surgical and single-site surgical skills

Measurements and Main Results: A 55-year-old woman (gravida 2 para 2) with a preoperative magnetic resonance imaging diagnosis of myoma associated necrosis (the uterus is as large as 6 months pregnancy) requested hysterectomy and bilateral adnexectomy. She presented with a 5-year history of myoma. The operation took roughly 85 minutes, and total blood loss was approximately 100mL. The patient recovered well and was discharged 2 days after surgery. The pathology revealed a necrotic myoma.

Conclusion: Combined with traditional transvaginal anterior / posterior colpotomy, single-site surgical skills allow the surgeon to accomplish hysterecmy for large uterine without abdominal incision, and let patient recover rapidly.

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1:00 PM: STATION F

1824 Description of the Endocerviscoscopy Technique for the Identification of Acetowhite Lesions Before Cervical Cone

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*Corresponding author.

Video Objective: To describe the endocerviccoscopy technique for the identification of acetowhite lesions before cervical cone.

Setting: All women with a diagnosis of persistent low-grade squamous intraepithelial lesions and non-visible or partially visible union colposcopy and patients with HSIL and non-visible or partially visible union colposcopy. Patients with previous excisional treatments were excluded.

Interventions: Endocervicoscopy technique for identification of acetowhite lesions placed in the endocervical canal

Conclusion: We show our experience in the implementation of a previously described practice. We show a good correlation between the location seen in the endocervicoscopy and the surgical piece, that is the main objective to achieve tailored treatments.
Video Objective: Demonstrate the treatment of a congenital uterine malformation (UB2-C2), hysteroscopically in conjunction with laparoscopic revision.

Setting: We present the case of a 44-year-old woman with abnormal uterine bleeding. At clinical assessment she refers >8 days of transvaginal bleeding; and less than 15 days without bleeding.

Interventions: We used a 5 mm LIGASURE BLUNT-TIP, to dissect the internal iliac arteries, followed by hysteroscopy to confirm no remnants of the pregnancy and 3 patients free intrauterine adhesions synchronously.

Measurements and Main Results: No one was converted to laparotomy. Intra-operative bleeding was minimal and the postoperative recoveries were uneventful. Human chorionic gonadotropin was normalized after 3-4 weeks.

Conclusion: Laparoscopy with temporary internal iliac artery occlusion technique offers effective surgical management of cesarean scar pregnancy, and hysteroscopy is necessary to deal with intrauterine lesions.

Virtual Poster Session 4: Hysteroscopy
(1:00 PM — 1:10 PM)

1:00 PM: STATION I

2989 Uterus with Complete Double Cervix and Complete Longitudinal Vaginal Septum. A Case Report

Navarro Martin JM, 1, 3, 4 Rodriguez, B, 3 Escalera S, 2 Lopez, JC, 2 Gonzalez, M, 2 Gynecology, Hospital Español, Mexico City, DF, Mexico; 2Ginecologia, Hospital Español, Mexico City, DF, Mexico; 1Hospital Español, Mexico City, DF, Mexico

*Corresponding author.

Video Objective: Demonstrate the treatment of a congenital uterine malformation (UB2-C2), hysteroscopically in conjunction with laparoscopic revision.

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Virtual Poster Session 4: Hysteroscopy
(1:00 PM — 1:10 PM)

1:00 PM: STATION J

2278 Spontaneous vs. Assisted Reproductive Technology-related Ectopic Pregnancy – Are There Any Differences?

Josephy D, 1, 2 * Ovadia M, 1 Schonman R, 1, 2 Klein Z, 1, 2 Markovitch G, 1, 2 1Department of Obstetrics and Gynecology, Meir Medical Center, Kfar Saba, Israel; 2Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

*Corresponding author.

Study Objective: Extraterine pregnancy (EUP) is a complication of assisted reproductive technology (ART). Data regarding specific clinical characteristics and treatment success rate of ART-related EUP are scant. This study assessed differences in clinical presentation, management and treatment success rate between spontaneous and ART-related EUP.


Setting: Department of Obstetrics and Gynecology, Meir Medical Center, Kfar Saba, Israel


Interventions: Electronic medical record data of 278 spontaneous EUP were compared to 125 ART-related EUP (36 after ovulation induction and 89 after in vitro fertilization (IVF)). Symptoms, laboratory tests, ultrasound findings and treatment modalities were compared between groups.

Measurements and Main Results: Women with spontaneous EUP were more likely to be symptomatic than those who conceived after IVF (81.8% vs. 68.5%, p=0.022). Surgery was used as first-line treatment in 21.9% of spontaneous pregnancies, as compared to 37.1% of IVF pregnancies (p=0.004), IVF cases required additional methotrexate following conservative treatment failure less often than did those with spontaneous EUP (33.3% vs. 55.2%, p=0.019).

Conclusion: Women with IVF-related EUP were less symptomatic upon presentation and underwent surgery for first-line treatment more often than those with spontaneous EUP did. The type of conception was not a prognostic factor for success of first-line conservative treatment. Observation alone was more successful among IVF pregnancies.

Virtual Poster Session 4: Hysteroscopy
(1:00 PM — 1:10 PM)

1:00 PM: STATION K

2736 Vaginoscopy: An Underutilized Surgical Approach in Cases of Distorted Anatomy

Tjadern AM, 1 * Yang LC. Obstetrics and Gynecology, Loyola University Medical Center, Chicago, IL

*Corresponding author.

Video Objective: To demonstrate the use of vaginoscopy in difficult cases of distorted anatomy.

Setting: Distorted anatomy of the female reproductive tract, such as a deep vagina, a stenotic cervix, or lower genital tract obstruction from mass effect, may make evaluation of the vagina, cervix, and endometrial cavity extraordinarily difficult. Vaginoscopy may be helpful in overcoming these anatomic challenges.

Interventions: This video demonstrates vaginoscopy in four case scenarios. In the first case, we demonstrate how vaginoscopy can be used to remove a malpositioned IUD in an obese patient, whose cervix and IUD strings could not be visualized with in-office speculum exam. The second case demonstrates evaluation of the vagina and endometrial cavity in a postmenopausal patient with vaginal atrophy and cervical stenosis. The third case focuses on IUD removal in a patient with a large rectal mass distorting the vaginal canal and subsequently blocking visualization of the IUD strings in-office. Finally, the fourth case demonstrates vaginoscopy in the case of a severely retroflexed uterus.

Conclusion: Vaginoscopy is a simple and effective technique that can improve visualization and access in complex cases resulting from anatomic distortion.

Virtual Poster Session 4: Hysteroscopy
(1:00 PM — 1:10 PM)

1:00 PM: STATION L

1678 Cold Scissor Ploughing Technique in Hysteroscopic Adhesiolysis - A Comparative Study

Zhao X, 1 Guo B, 1, 2 * Guan X, 1 Xu D, 1 Obstetrics and Gynecology, The Third Xiangya Hospital of Central South University, Changsha, China; 2Obstetrics and Gynecology, The Third Xiangya Hospital of Central South University, Changsha, China

*Corresponding author.

Video Objective: To demonstrate the use of cold scissor ploughing technique in cases of intrauterine adhesions.
University, Changsha, China; 1 Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX
*Corresponding author.

**Study Objective:** To investigate the efficacy, feasibility, and safety of cold scissor ploughing technique in hysteroscopic adhesiolysis for intrauterine adhesions.

**Design:** Retrospective cohort study.

**Setting:** University-affiliated hospital.

**Patients or Participants:** A total of 179 intrauterine adhesion (IUA) patients who had undergone hysteroscopic adhesiolysis (HA) at the Third Xiangya Hospital of Central South University were enrolled in this study from January 2016 to October 2017. They were divided into three groups according to the surgical technique used. The groups were: cold scissors ploughing group (PG) (n=81); traditional group (TG) (n=42); and, electro-surgical group (EG) (n=56).

**Interventions:** PG: use cold scissors to dissect the adhesion and cut the scar tissue using a ploughing technique; TG: use cold scissors to dissect the adhesion, but not deal with the scar tissue; and, EG: use resectoscope to dissect the adhesion with an energy L-hook electrode.

**Measurements and Main Results:** American Fertility Society (AFS) scores, along with adhesion types and areas; visible uterine horn and tubal ostia; menstrual recovery; pregnancy rates and live birth rates were evaluated to determine surgical efficacy. Feasibility was evaluated by technique replacement rates. Safety was evaluated by intra- and post-operative complication rates. Neither patient pre-operation history or adhesion rates were significant (P>0.05). There were significant differences between PG and TG, as well as PG and EG in: postoperative AFS scores; IUA reverse scores, along with adhesion types and areas; visible uterine horn and tubal ostia; menstrual recovery; pregnancy rates and live birth rates were evaluated to determine surgical efficacy. Feasibility was evaluated by technique replacement rates. Safety was evaluated by intra- and post-operative complication rates. Neither patient pre-operation history or adhesion rates were significant (P>0.05). There were significant differences between PG and TG, as well as PG and EG in: postoperative AFS scores; IUA reverse scores

**Conclusion:** Cold scissor ploughing is effective, feasible, and safe for HA, which is worth further study.

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**Virtual Poster Session 4: Hysteroscopy (1:00 PM — 1:10 PM)**

**2128 Vaginal Surgery for Cesarean Scar Defect**

Capmas P.1,2,3*, Beri Q.1, Fernandez H.4,5,1 Hospital Bicetre, Le Kremlin Bicetre, France; 2Paris Sud University, Le Kremlin Bicetre, France; 3CESP, Villejuif, France; 4CESP, Le Kremlin Bicetre, France; 5Gynecology, Hospital Bicetre, Le Kremlin Bicetre, France
*Corresponding author.

**Study Objective:** In case of cesarean scar defect, evaluation of the residual myometrium with hysterosonography before and after vaginal surgery

**Design:** Uncinectric retrospective study

**Setting:** From January 2014 to July 2017 in the gynecologic department of a teaching hospital

**Patients or Participants:** Women who had a cesarean scar defect requiring a vaginal surgery

**Interventions:** Vaginal surgery was performed. A uterine suture was performed

**Measurements and Main Results:** 30 women were included. Symptoms were improved for 39.2% of women and 26 women had a pregnancy including 14 women with infertility. The myometrial wall was significantly increased after surgery compared to the preoperative measurement.

**Conclusion:** Vaginal surgery seems to be effective for cesarean scar defect. A prospective study should be performed.

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**Virtual Poster Session 4: Urogynecology (1:00 PM — 1:10 PM)**

**1316 Extended Release Local Anesthetic for Postsurgical Vaginal Pain after Posterior Colporrhaphy and Perineorrhaphy: A Randomized Controlled Study**

Evans S.1,2,*, Abimbola O.2, Myers EM.1, Tarr ME.1, Atrium Health, Charlotte, NC; 2School of Medicine, University of North Carolina, Chapel Hill, NC; 3Obstetrics and Gynecology, Division of Female Pelvic Reconstructive Surgery, Atrium Health, Charlotte, NC
*Corresponding author.

**Study Objective:** To evaluate the effect of intraoperative infiltration of liposomal bupivacaine on postoperative vaginal pain among patients undergoing pelvic reconstructive surgery including posterior colporrhaphy and/or perineorrhaphy.

**Design:** Randomized, double-blind, placebo-controlled trial.
Patients or Participants: 127 women undergoing posterior colporrhaphy and/or perineorrhaphy were screened, and 72 were enrolled and included in the final analysis: 37 (51.4%) randomized to liposomal bupivacaine and 35 (48.6%) to placebo.

Interventions: Liposomal bupivacaine or normal saline placebo was injected into the posterior vaginal compartment and perineal body using a systematic technique.

Measurements and Main Results: The primary outcome was vaginal pain as measured by a visual analog scale (VAS). Participants completed twice daily pain and medication diaries starting on postoperative day 0 until the end of postoperative day 3. Surgical and demographic characteristics were similar. Median VAS was not statistically different at any time point (p=0.81). Median NRS recorded in PACU were lower for the intervention group (0.0 [IQR 2.0]) vs 1.5 [IQR 4.0], p=0.05). There were no differences seen in any other secondary outcomes. There were no differences in narcotic use (37.5 vs 37.5 mme, p=0.51), time to first opioid administration (89.5 vs 68.0 minutes, p=0.56), number of antiemetic doses required (2.0 vs 3.0, p=0.07), median hospital length of stay (21.9 vs 24.0 hours, p=0.98), median length of stay in PACU (100 vs 93 minutes, p=0.32), proportion of patients who had a bowel movement within first 3 postoperative days (59.5 vs 65.7%, p=0.36) or who passed their voiding trial prior to hospital discharge (59.5 vs 45.7%, p=0.24). There were no differences in patient satisfaction or in adverse events.

Conclusion: In this study of pelvic reconstructive surgeries with posterior colporrhaphy and/or perineorrhaphy, there were no differences in pain scores, nor any secondary outcomes, between liposomal bupivacaine and placebo injected into the posterior vaginal compartment.

Virtual Poster Session 4: Urogynecology (1:00 PM — 1:10 PM)

1:00 PM: STATION P

2110 Vaginal CO2 Laser as Minimal Non-Invasive Treatment for Urinary Stress Incontinence

Alcalay M,1,2,4 Greenshpan A,2 Ben Ami M,3 Schiff E,1 Obstetrics and Gynecology, Chaim Sheba Medical Center, Ramat Gan, Israel; 2Obstetrics and Gynecology, Sheba Medical Center, Tel-Hashomer, Israel; 4Corresponding author.

Study Objective: To assess the efficacy of vaginal CO2 laser in women with urodynamic stress incontinence (USI) that were followed for one year. Design: Prospective multicenter study. Following laser treatments, the patients were followed for 3, 6 and 12 months. Setting: University affiliated hospitals Patients or Participants: Patients with USI that were graded as mild or moderate were allowed to participate. We recruited 32 patients with USI, of whom 29 completed follow-up for 12 months. Interventions: Every patient had three sessions of CO2 laser, 4-5 weeks apart.

Measurements and Main Results: We used 1-hour pad test (ICS protocol), stress test, questionnaires (PFDI-20, PFIQ, Patient Global Impression of Improvement (PGI-I)) and a 3-day urinary diary at each follow-up visit. Second urodynamic test was performed at 6 months follow-up. No serious adverse events were recorded. Minor side effects that were related to treatment included: transient vaginal secretion (4 patients), vaginal irritation (1 patients), transient fever (1 patient), and UTI (1 patient). The patients’ 1 hour pad test showed significant decrease from 2 months FU and onward. Pad test and PGI-I showed time - dependency. 68.9% (20 of 29) of the patients felt improvement (PGI-I) at 12 month following the treatment, of whom 11 (37.9%) described it as “very significant” or “significant” and 9 (31%) “some” improvement. Patient’s bladder symptoms (PFDI) improved significantly between 1 to 6 months and accordingly quality of life (PFIQ) improved significantly. At 6 months - stress test with full bladder was negative in 68%, however, urodynamic assessment was negative for stress incontinence only in 38.7%.

Conclusion: Vaginal CO2 laser was found a safe non-invasive treatment for patients with urodynamic proven stress incontinence. Significant subjective improvement was time dependent and 68.9% reported improvement at 12-month follow-up. The objective urodynamic cure was 38.7%. The short-term efficacy is promising, however, long term follow-up and optimizing treatment protocol are needed.

Virtual Poster Session 4: Urogynecology (1:00 PM — 1:10 PM)

1:00 PM: STATION Q

2578 Promising Effect of Platelet-Rich Plasma And CO2 Laser in Urinary Incontinence

Behnia-Willison F,1 Nguyen TTT,2,4 Carey RJ,1 Lam AM3,4 Flinders Endogynaecology, Flinders Medical Centre, Adelaide, SA, Australia; 2FBW Gynaecology Plus, Adelaide, SA, Australia; 3Centre for Advanced Reproductive Endosurgery, Sydney, NSW, Australia *Corresponding author.

Study Objective: To evaluate the safety, feasibility and efficacy of transvaginal fractional micro-ablative CO2 laser therapy in combination with platelet rich plasma (PRP) for the treatment of urinary urge incontinence in women.

Design: Prospective observational cohort study.


Patients or Participants: 128 women, of whom 62 women were diagnosed with stress urinary incontinence and 66 women with urinary urge incontinence.

Interventions: PRP and CO2 laser were used for 3 treatments. There was 4-6 weeks interval between each treatment.

Measurements and Main Results: Patient outcomes were reviewed subjectively and objectively at baseline, 3 months and 12 months. The Australian Pelvic Floor Questionnaire (APFQ) and physical examination were employed to assess outcomes.

• Patients with moderate to severe stress incontinence improved 63% at 12 months (p=0.001)
• Patients with moderate to severe urge incontinence improved 55% at 12 months (p=0.003)

Conclusion: PRP and vaginal laser appear to be promising alternative treatments for urinary incontinence with potential reduction in cost to both the patient and national health systems without any complications or side-effects. However, the true efficacy of these modalities need to be examined in an RCT setting.

Virtual Poster Session 4: Urogynecology (1:00 PM — 1:10 PM)

1:00 PM: STATION R

2738 Comparing Postoperative Pain with Laparoscopic Versus Robotic Sacrocolpopexy

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Study Objective: To compare postoperative pain and pain-related outcomes following laparoscopic (LS-MISC) versus robotic minimally invasive sacrocolpopexy (R-MISC).

Design: Secondary analysis of placebo-controlled RCT examining preoperative IV acetaminophen on postoperative pain following MISC.

Setting: Planned secondary analysis of multicenter RCT.
Patients or Participants: Women undergoing MISC.

Interventions: Primary outcome was total narcotics within 24 hours in morphine mg equivalents (MME) comparing LS-MISC and R-MISC.

Measurements and Main Results: We included 90 subjects undergoing MISC: 65 LS-MISC and 25 R-MISC. Most were Caucasian (97.8%) and postmenopausal (88.9%) with mean age 61.2±7.2 years and BMI 27.6±4.4 kg/m². IV acetaminophen did not impact pain in the original study and was similar between LS-MISC and R-MISC. Baseline POP-Q stage was similar between groups. Concomitant hysterectomy was performed in 67% with LS-MISC, 60% with R-MISC (p=0.49). LS-MISC underwent more concomitant perineorrhaphies (15.4% vs 0%, p=0.04) and posterior repairs (18.5% vs 0%, p=0.02). Operative time was longer with LS-MISC (208.5±57.3 vs 143.6±21.0 minutes, p=0.001). Length of stay was also longer with LS-MISC (0.9±0.4 vs 0.7±0.4 days, p=0.02). Women undergoing LS-MISC consumed more narcotics in the first 24 hours when including intraoperative narcotics (48.5±25.5 vs 35.1±14.6 MME, p=0.003). Using linear regression correcting for operative time and concomitant vaginal repairs, this difference disappeared. Likewise, when intraoperative narcotics were excluded, there was no difference. AFS-PQ-R side effect questionnaire (0-10 points) only showed increased drowsiness with LS-MISC (4.4±3.3 vs 2.8±2.6, p=0.045). PROMIS scores (pain’s impact on quality of life) were similar. There were no differences in 24 hour post-operative VAS scores, narcotic use in first week after surgery, nausea, urinary retention, or return of bowel function.

Conclusion: L-MISC showed increased length of stay and drowsiness. Most other outcomes showed either no difference or differences disappeared once adjusting for confounders as with primary outcome. Overall, MME narcotic use and VAS pain scales were low as were narcotic medication side effects.

Virtual Poster Session 4: Urogynecology

(1:00 PM – 1:10 PM)

1:00 PM: STATION S

1295 A National Population-Based Survey of the Prevalence, Potential Risk Factors, and Symptom-Specific Bother in Symptomatic Pelvic Organ Prolapse in Adult Chinese Women—Pelvic Organ Prolapse Quantification System Based Study

Zhu L.* Zhang Y. Department of Gynecology and Obstetrics, Peking Union Medical College Hospital, Peking Union Medical College, Beijing, China

*Corresponding author.

Study Objective: To provide estimates of the prevalence and potential risk factors associated with pelvic organ prolapse (POP) based on Pelvic Organ Prolapse quantification (POP-Q) system and the bother it imposes in a nationwide population-based sample of adult women in China.

Design: A national cross-sectional study from February 2014 through March 2016.

Setting: Mainland China.

Patients or Participants: A nationally representative sample of 54,000 adults who were 20 years old or older were sampled using multi-stage, stratified, cluster sampling at six populous provinces in mainland China among participants of National Mass Screening on Breast and Cervical Cancers.

Interventions: No interventions were conducted.

Measurements and Main Results: POP was assessed using POP-Q stage and validation questionnaires. Multivariable logistic regression was used to assess factors associated with each degree or bother POP. The prevalence of symptomatic POP (POP-Q stage II or higher) was 9.56%. Stage II POP was the most common (7.52%) and mainly involved anterior compartment. Incidence increased with age for all stages (P≤0.05). Minor or moderate bother were the most common responses that were reported for every stage of POP (9.72%). Only 0.08% of the participants reported that the condition had a severe impact on their quality of life. Older age, postmenopausal status, and multiple vaginal deliveries increased the odds of every kind of POP (p ≤ 0.05).

Conclusion: Based on physical objective examination, our study yielded a Lower prevalence than that in other surveys and mainly involved anterior compartment, which suggests that it should be considered for medical intervention. Older age, postmenopausal status, and multiple vaginal deliveries increased the odds of every kind of POP.
Virtual Poster Session 4: Urogynecology (1:10 PM — 1:20 PM)

1:10 PM: STATION B

2340 Novel Surgical Approach Incorporating A Dermal Allograft with the Sacropinous and Uterosacral Ligaments to Address Apical Prolapse

Jarnagin BK*, Center For Pelvic Health, Franklin, TN
*Corresponding author.

Video Objective: To show a novel approach to support the apex in a post-hysterectomy vaginal vault prolapse. Increasing data shows the importance of apical support, and we know from prior studies that the anterior compartment recovers more often. This technique offers support of both the anterior and posterior apex in a manner that augments the apex to reduce recurrences.

Setting: 64 year old female with multi-compartment post-hysterectomy vaginal vault prolapse.

Interventions: The video explains the surgical technique utilized in a step-by-step approach.

Conclusion: The procedure shown combines different techniques that have been described separately with the addition of combining them and augmenting the apex. This offers a vaginal procedure that increases support of the apex both anteriorly and posteriorly to reduce recurrent prolapse.

Virtual Poster Session 4: Urogynecology (1:10 PM — 1:20 PM)

1:10 PM: STATION C

2059 TSS – Time Sparing Sacrocolpopexy: How to Reduce the Operative Time of Laparoscopic Sacrocolpopexy

Rossitto C,1,3,4 * Natale P,1 Zeloni R,1 Russo P,1 Cianci S,4 Scambia G,4 Guelli Aletti S,5 Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome Italy, Rome, Italy;1 Division of Gynecology, San Carlo di Nancy, GVM Care&Research, Rome Italy, Rome, Italy;4 Division of Gynecology, Division of Gynecology, San Carlo di Nancy Hospital GVM Care&Research, Rome, Italy, Rome, Italy;5 Division of Gynecologic Oncology, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy, Rome, Italy;3 Division of Gynecologic Oncology, Woman and Child Health Sciences and Public Health, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy
*Corresponding author.

Video Objective: Laparoscopic sacrocolpopexy (LSC) is known to achieve lower recurrence rates, shorter recovery time, and less dyspareunia. However, LSC is problematic because it requires specific laparoscopic skills and the laparoscopy takes longer than other competing operations. In this video, we present the surgical techniques for LSC we are using with a view to shortening operation times and reducing complications. We named this approach Time Sparing Sacrocolpopexy (TSS)

Design: Prospective Clinical Trial

Setting: San Carlo di Nancy Hospital GVM Care & Research, Rome

Patients: Ninety women with symptomatic stage 3 or greater POP underwent LSC in our hospital between November 2016 and January 2019.

Interventions: Ninety women with symptomatic stage 3 or greater POP underwent LSC in our hospital between November 2016 and January 2019. In the first 80 operations we followed the nerve-preserving technique described by Ercoli et al. in 2017. In the final 10 operations we modified the technique in order to reduce operative time. The main changes were: (1) Use of Bipolar loop to cut the cervix instead of the monopolar hook, (2) make a stitch on the meshes in order to reduce the time of introduction e positioning of them in the pelvis, (3) replacing part of the classic LSC stitches with (i) Abstack® fixations to fix meshes to the anterior and posterior vaginal wall, but maintaining nonabsorbable stitches at the urethrovaginal junction, at the cervix, at the level of levator ani muscle and at the sacrum.

Measurements and Main Results: Operative Time. Intra and post-operative related complications. The operation time decreased (around 40%) as the surgical technique improved through experience. No major intra- or postoperative complications occurred.

Conclusion: These modifications to the technique will help shorten operation times and reduce complications of LSC.
Conclusion: TVL \( \geq 7.5 \) cm and a higher POPDI-6 score at baseline were independent predictors of long-term pessary use after successful fitting in women with symptomatic POP.

Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION E

2032 Laparoscopic Pectopexy for Prolapse Repair
Jain N\(^*\), Obs & Gynae, Vardhman Trauma & Laparoscopy Centre Pvt. Ltd, Muzaffarnagar, India

*Corresponding author.

Video Objective: To study the efficacy and safety of Laparoscopic Pectopexy

Setting: Tertiary care center

Interventions: Since October 2015 till March 2019 — 50 cases of pectopexy have been done. Most of the cases have been of Hysterectomy in age group of 27-36 years (mean age 32 years) and 7 cases of Laparoscopic Subtotal Hysterectomy in age group of 42-67 years (average age 54.5). And 4 cases of vault prolapse. Our technique combines site specific repair with mesh augmented repair. Reattachment pelvic support is pubocervical fascia which is dissected after pushing the bladder down, and plicated with 1-0 polyester suture. After plication of Pubocervical fascia a 15 cm by 3 cm size mesh is applied over the cervical stump / lower uterine segment / vaginal vault in the center. The lateral attachments of the mesh are fixed over to the iliopelvic ligament on both the sides. Iliopelvic ligament is the posterior prolongation of the Cooper’s ligament. For a global repair and long term good results plication of the uterosacral ligaments is done.

Conclusion: Pectopexy appears to be a new, useful tool in the armamentarium of gynecological endoscopists for hysterectomy in patients desirous of further child bearing as it provides bilateral support at level of pericervical ring. It is also applicable for vault prolapse repair and after Laparoscopic Subtotal Hysterectomy for vault suspension.

Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION F

2957 Non-Mesh Sacropinous Ligament Suspension for the Correction of Massive Vaginal Vault Prolapse and Ascites in a Patient With Stage IV Metastatic Colon Cancer
Duncan CJ\(^*\), Urogynecology, Ascension Health, St. Agnes Hospital, Baltimore, MD

*Corresponding author.

Video Objective: The objective of this video is to demonstrate a non-mesh sacropinous ligament (SSL) suspension for massive vaginal vault prolapse with ascites in a patient with stage IV metastatic colon cancer. Polyether-ketone (PEEK) anchors and porcine bladder extracellular matrix for fixation and bio-scaffolding are utilized. The patient desired to undergo definitive surgical treatment of her symptomatic prolapse for the purposes of “personal dignity”. The patient also desired to maintain sexual options. Fixation utilizing PEEK anchors provides a vaginal repair that requires less dissection than traditional approaches to the SSL since anchoring is performed via palpation rather than tissue visualization. This is of great importance in patients with massive vault prolapse because of the obliteration of the operative field. The extracellular matrix provides bio-scaffolding which promotes constructive remodeling of the tissue rather than encapsulation of synthetic mesh.

Risks and benefits were discussed at length including the direct spread of disease if the peritoneal cavity were entered. Synthetic polypropylene mesh continues to show diminishing acceptance with patients and continues to be a source of mass tort litigation. Internationally several jurisdictions have restricted the accessibility or banned the use of transvaginal mesh.

Setting: St. Agnes Hospital, Baltimore, Maryland

Interventions: The patient underwent transvaginal SSL suspension, anterior and posterior colporrhaphy, vaginal enterocoele repair and perineoplasty utilizing PEEK anchors and porcine urinary bladder extracellular matrix. There were no intra-operative or post-operative complications. The follow up has been 8 months. The patient is currently sexually active.

Conclusion: Sacropinous ligament suspension for the correction of massive vaginal vault prolapse utilizing PEEK anchors and porcine urinary bladder extracellular matrix is a reasonable alternative to transvaginal synthetic mesh repairs. Advantages to this vaginal approach include: 1) Avoidance of laparoscopic risks in a patient with massive ascites, 2) Avoidance of chronic pain, erosion and extrusion associated with synthetic mesh.

Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION G

1289 Urinary Retention Following Outpatient Minimally Invasive Hysterectomy
Behbehani S,1 *Delara RRM,2 Yi J3, Suarez ME,3 Kunze K,3 Wasson MN,4 Gynecology, Mayo Clinic, Phoenix, AZ; Gynecology, Mayo Clinic, Phoenix; 3Mayo Clinic Arizona, Phoenix, AZ

*Corresponding author.

Study Objective: Identify risk factors associated with postoperative urinary retention in patients undergoing minimally invasive outpatient hysterectomy.

Design: Retrospective cohort study

Setting: Academic medical center

Patients: All patients undergoing outpatient minimally invasive hysterectomy between January, 2013 to July, 2018 were considered for inclusion.

Interventions: Outpatient laparoscopic, vaginal, or robotically-assisted-laparoscopic hysterectomy.

Measurements and Main Results: A total of 543 patients met inclusion criteria. Postoperative urinary retention occurred in 175 patients (cases) and 368 patients successfully passed their voiding trial in the postanesthesia care unit (controls), for a pass rate of 68%. Cases were older (mean age 54.5 years, SD=11.9 vs. 49 years SD=10.2, p < 0.01), more parous (2 (1.5) vs. 1.5 (1.2), p < 0.01), and more likely to be menopausal (45.7% vs. 36%, p < 0.01) compared to controls. Concomitant Female Pelvic Medicine & Reconstructive Surgery (FPMRS) procedures were performed at the time of hysterectomy in 46% of cases compared to only 6% of controls (p < 0.01). Patients who had postoperative urinary retention received more perioperative opioids (total morphine equivalent of 14.7 mg vs. 11 mg, p =0.03), intravenous fluids (1185.1 mL vs 992.9 mL, p < 0.01), and had longer operating times (127.6 (53.1) minutes vs. 96.8 (41.9) minutes, p < 0.01) compared to controls. There were more urinary tract infections in cases compared to controls (11.4% vs. 4.4%, p < 0.01). Logistic regression showed that patients with concomitant FPMRS procedure had 10 times greater odds of being cases compared to patients without FPMRS procedures (OR=10.34; 95% CI 5.23–21.23, p < 0.01).

Conclusion: In patients undergoing minimally invasive outpatient hysterectomy, performing concomitant FPMRS procedures, having a longer operating time, and increased perioperative narcotic use is shown to increase the risk of postoperative urinary retention. The rate of urinary tract infection is higher in patients who experience postoperative urinary retention.
Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION H

1473 Laparoscopic Sacrocolpopexy Plus Colporrhaphy with an SIS Graft Versus Total Pelvic Floor Reconstruction for Advanced Prolapse: A Retrospective Cohort Study
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Study Objective: Transvaginal mesh (TVM) results in a greater anatomic cure but more complications. We aimed to compare laparoscopic sacrocolpopexy (LSC) plus colporrhaphy with a small intestine submucosa (SIS) graft versus TVM for advanced pelvic organ prolapse (POP).

Design: Retrospective study, with more than one year follow-up.

Setting: Tertiary university-affiliated hospital.

Patients or Participants: Between September 2015 and November 2016, 76 patients with advanced POP who underwent LSC plus colporrhaphy with an SIS graft or TVM.

Interventions: LSC plus colporrhaphy with an SIS graft or TVM.

Measurements and Main Results: Data regarding surgical procedures and patient demographic variables were recorded. Anatomical outcomes were evaluated using POP quantification (POP-Q). Functional outcomes related to POP and sexual life were evaluated using the Pelvic Floor Distress Inventory (PFDI-20) and the Pelvic Floor Impact Questionnaire (PFHQ-7). Chi-squared and Student’s t-tests were used for two independent samples. 76 patients were enrolled in this study with 26 patients in the LSC plus colporrhaphy with an SIS graft group (group A) and 50 patients with TVM group (group B). All patients in both groups demonstrated significant improvement in anatomical outcomes (p < 0.05) after surgery. PFDI-20 scores were significantly improved 12 months after operation in both groups (p < 0.001). PFHQ-12 scores were significantly improved in patients after surgery, especially patients in group A (p < 0.001). Mesh exposure occurred in both groups as follows: 8 patients (30.7%) in group A and 5 patients (10%) in group B.

Conclusion: Even though both surgeries showed excellent results for subjective and objective outcomes, the use of an SIS graft might increase the exposure of mesh. We do not recommend LSC plus colporrhaphy with an SIS graft for advanced multiple-compartment prolapse.

Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION I

1368 Analysis of Robotic-Assisted Rectus Abdominis Flap Harvest for Pelvic Reconstruction: A Single Institution Experience
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Study Objective: The rectus abdominis muscle flap can be used as a workhorse flap for pelvic reconstruction, providing a large volume of soft tissue that can be used in treatment of comorbid conditions including genital fistulas, post-radiation pelvic exenteration and abdominoperineal resection defects. Intrapelvic harvest of the rectus muscle using a robotic approach allows avoidance of laparotomy and subsequent disruption of the anterior rectus sheath, thus preserving the integrity of the abdominal wall. The purpose of this study was to analyze outcomes and post-operative complications in patients undergoing robotic-assisted rectus abdominis flap harvest for pelvic floor reconstruction.

Design: Retrospective analysis of patient demographic and clinical characteristics was performed of patients who underwent robotic-assisted rectus abdominis harvest for pelvic floor reconstruction from 10/1/2016—10/31/2018. Post-operative complications analyzed included bowel obstructions, infections, abcess collections, emergency-room visits and readmission.

Setting: Academic Center.

Patients or Participants: N/A

Interventions: N/A

Measurements and Main Results: A total of 6 patients (4 female, 2 male) with mean age of 69.2 years (range=57-79) and follow-up time of 9.2 months (range=5-12). Muscle flap harvest was performed on the right side in 4 patients and on the left in 2 patients. Indications for reconstructive surgery included: vesicovaginal fistula, complex pelvic organ prolapse, anterior and posterior exenteration, partial and total vaginectomy, partial vulvectomy, and abdominoperineal resection. Only 2 of the 6 patients had received neoadjuvant chemoradiation. Three patients reported no complications following reconstruction; one patient reported occasional abdominal pain; one patient had intermittent bowel obstruction; and one patient developed a pelvic abscess requiring readmission. One out of 6 cases was converted to laparotomy however this was not due to the rectus harvest. All 6 patients achieved satisfactory healing of pelvic wound following robotic-assisted rectus abdominis flap.

Conclusion: Robotic-assisted rectus abdominis flap harvest for pelvic floor reconstruction is a reliable means of defect closure, despite the presence of substantial comorbidities and risk factors in this patient cohort. Patient selection and counseling is crucial to optimize surgical outcomes in this complex population.

Virtual Poster Session 4: Urogynecology
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1:10 PM: STATION J

3012 Lessons Learned from Ten Litigated Cases of Genitourinary and Gastrointestinal Fistulas Post Benign Gynecological Surgery: A Multi-Center Case Series
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Study Objective: We aim to summarize all litigated cases of vesicovaginal, colovaginal and ureteric-vaginal fistulas from benign gynecological surgeries in Canada between 1997 to 2017. We outline the initial postoperative presentation, course of treatment and recovery, clinical and legal outcomes associated with each case.

Design: Retrospective case series of 10 genitourinary, gastrointestinal and enterocutaneous fistulas occurring post gynecological surgeries for benign indications.

Setting: Eight secondary and tertiary hospitals across Canada.

Patients or Participants: Ten women aged 18 years or older receiving laparoscopic, vaginal or open surgeries to treat benign gynecological conditions.

Interventions: Benign gynecological procedures including laparoscopic-assisted vaginal (1 case), vaginal (1 case) and open abdominal hysterectomies (3 cases), laparoscopic cystectomy (2 cases), laparoscopic cauter of endometriosis (2 cases) and operative hysterectomy (1 case).

Measurements and Main Results: Median age at time of initial operation was 43 (range 39-55). The most common post-op presentation was fever, abdominal pain and tachycardia between post-op days (POD) 4–10. A bladder, small bowel or rectal injury was found on imaging at the time of presentation for 9 out of 10 cases, with one case diagnosed five weeks post-op on outpatient serial CT scans. All patients required a laparotomy with involvement from a general surgeon or urologist, and five patients received second and third look laparotomies and bowel resections. 7 patients required ICU observation post-op. In all cases, the fistulas manifested as delayed presentations for unrecognized intra-operative bladder, bowel or
Virtual Poster Session 4: Urogynecology
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1:10 PM: STATION K

1395 Treatment of Vaginal Mesh Exposure with Platelet Rich Plasma and CO2 Laser
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*Corresponding author.

Study Objective: To present our experience of treating vaginal mesh exposure with various modalities including Platelet Rich Plasma (PRP) and Co2 Laser

Design: Prospective cohort study

Setting: Patients referred to a gynecologist with a special interest in urogynecology who worked at Adelaide, Sydney, and Geelong

Patients or Participants: 34 patients with symptomatic mesh exposure between 2009 and 2018

Interventions: All patients were offered treatment with vaginal topical estrogen. Patients who continued to be symptomatic were treated with either PRP alone or surgical excision and PRP injection. These patients have been followed up on an annual basis since the time of treatment.

Measurements and Main Results:

- 5 women declined topical estrogen due to personal or family history of Breast cancer
  - 4 patients received PRP and had complete re-epithelialization of the vaginal mucosa
  - 1 patient received combined PRP and laser
- 29 Women used vaginal estrogen
  - 6 women responded to long-term (3-6 months) E2 treatment and needed no further treatment.
  - 9 were treated with laser and PRP alone
  - 14 women required surgery
- 4 women did not respond to E2 treatment and did not wish to have surgery; they received PRP and had complete re-epithelialization of the vaginal mucosa.
- 14 women underwent surgical excision and primary closure with PRP injection at the time
  - 10 had laser and PRP
  - 9 of the 14 women needed no further surgery after six months.
- 3 women had repeat surgery for further mesh exposure.

Conclusion: The treatment of symptomatic vaginal mesh exposure might be complex in some cases. In recurrent cases, multi-modal treatment may be required. PRP and PRP autologous graft may benefit women whose mesh exposure is associated with severe atrophy or where large areas of vaginal epithelium need removal.

Virtual Poster Session 4: Urogynecology
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1:10 PM: STATION L

2234 Comparing Pain Levels and Blood Loss Following Pelvic Floor Reconstructive Surgery Between Vaginal Packing Soaked with Either Estrogen, Bupivacaine or Saline
Jolliffe CJ,1* Michael A,2 Myros P,3 Li X,3 Abraham T,2 Kung RC,1 Gagnon LH,1 Bodley J,1 Lee PE,1 Division of Urogynecology, Department of Obstetrics and Gynecology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, ON, Canada; 2Obstetrics and Gynecology, University of Toronto, Faculty of Medicine, Toronto, ON, Canada; 3University of Toronto, Faculty of Medicine, Toronto, ON, Canada
*Corresponding author.

Study Objective: To determine if there is any difference in outcomes between estrogen, bupivacaine and saline-soaked vaginal packing, in patients following pelvic floor reconstructive surgery (PFRS). The primary outcome is post-operative pain, as rated by patients using a visual analog scale (VAS) 2 and 6 hours post-surgery and on the morning of post-operative day 1 (POD#1). Secondary outcomes include: intra-operative estimated blood loss (EBL), change in hemoglobin, pain medication use, urinary retention, and length of stay (LOS) in hospital.

Design: Prospective cohort study.

Setting: Tertiary academic care center.

Patients or Participants: Patients undergoing PFRS for pelvic organ prolapse and/or stress urinary incontinence by four trained urogynecologists at an academic center. 142 patients have been enrolled.

Interventions: Women undergoing vaginal surgery received vaginal packing that was soaked with saline, 0.25% Bupivacaine or conjugated estrogen vaginal cream, according to physician preference.

Measurements and Main Results: The study population included 142 patients (saline: n=40; bupivacaine: n=47; estrogen: n=55). Results of ANOVA showed no significant differences between the three treatment methods for post-operative pain scores (at 2 hours and 6 hours post-surgery as well as morning of POD#1). The average VAS (2 hours) was 2.24, 2.30 and 2.66 and among patients receiving saline, Bupivacaine and estrogen respectively (p=0.4656). There were no significant differences between any of the three treatment methods in VAS pain scores at 6 hours (p=0.2181), and POD#1 (p=0.2832). No significant difference was found with EBL between the three groups (p=0.8914).

Conclusion: This study did not find a difference between the use of saline, bupivacaine and estrogen cream with vaginal packing after pelvic floor reconstructive surgery on post-operative VAS pain scores, EBL, LOS or urinary retention. Saline soaked packing is an equivalent, but less expensive, alternative to estrogen or bupivacaine vaginal packing — and could replace estrogen-soaked packing in those who have contraindications to estrogen use.

Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION M

2671 Lefort Colpocleisis
Raju R,1* Occhino JA,1,2 Linder BJ1,2, 1Department of Obstetrics and Gynecology, Mayo Clinic, Rochester, MN; 2Division of Urogynecology, Mayo Clinic, Rochester, MN
*Corresponding author.

Video Objective: To present the technical considerations and pearls to performing a LeFort Colpocleisis.

Setting: Patient is a 76 year old female with history of a vaginal bulge for the past 6 months and a failed pessary trial. She also reports urge-predominant mixed urinary incontinence with worsening stress urinary incontinence with reduction of the pelvic organ prolapse. She is not sexually active and does not plan on any future sexual activity. She does not have any abnormal pap smears and denies postmenopausal bleeding. Her past medical history is significant for multiple comorbid conditions including cardiac issues with a pacemaker, chronic kidney disease, hypertension and diabetes. Her past surgical history is complicated by aortic valve replacement (porcine valve), tubal ligation and a left total knee replacement. On exam she has a Stage IV uterine, anterior and posterior vaginal wall prolapse. Her past medical history is significant for multiple comorbid conditions including cardiac issues with a pacemaker, chronic kidney disease, hypertension and diabetes. Her past surgical history is complicated by aortic valve replacement (porcine valve), tubal ligation and a left total knee replacement. On exam she has a Stage IV uterine, anterior and posterior vaginal wall prolapse. Her past medical history is significant for multiple comorbid conditions including cardiac issues with a pacemaker, chronic kidney disease, hypertension and diabetes. Her past surgical history is complicated by aortic valve replacement (porcine valve), tubal ligation and a left total knee replacement. On exam she has a Stage IV uterine, anterior and posterior vaginal wall prolapse. Her past medical history is significant for multiple comorbid conditions including cardiac issues with a pacemaker, chronic kidney disease, hypertension and diabetes. Her past surgical history is complicated by aortic valve replacement (porcine valve), tubal ligation and a left total knee replacement.
Virtual Poster Session 4: Urogynecology (1:10 PM — 1:20 PM)

1406 Same-Day Discharge Following Vaginal Hysterecomy with Pelvic Floor Reconstruction: A Pilot Study

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Study Objective: Determine safety and feasibility of same-day discharge in patients undergoing vaginal hysterectomy with pelvic floor reconstruction.

Design: Prospective cohort pilot study.

Setting: Single academic medical center.

Participants: Women undergoing vaginal hysterectomy with pelvic floor reconstruction were considered for inclusion in the study.

Interventions: Same-day discharge or overnight hospitalization following surgery.

Measurements and Main Results: A total cohort of 55 women undergoing vaginal hysterectomy and pelvic floor reconstruction for pelvic organ prolapse and/or urinary incontinence was identified. The control group consisted of 19 women that were planned for overnight hospitalization. The intervention group had 36 women that were planned for same-day discharge. In the intervention group, 63.9% of patients (n=23) were successfully discharged home and 36.1% (n=13) required an unplanned overnight admission. Reasons for unplanned admission included persistent anesthetic effects (dizziness/nausea/drowsiness) (n=9; 69%), uncontrolled pain (n=1, 7.7%), fever (n=1, 7.7%), and anemia (n=2, 15.4%). With return to operating room for hematoma evacuation (n=1; 7.7%). Voiding trial was passed on first attempt in 30 patients (54.5%). The percentage of successful voiding trials on the first attempt was 30.8% for patients requiring unplanned admission and 78.9% for patients with planned overnight hospitalization (p = 0.011). There were no significant differences in the number of emergency department visits (p=0.677) or unplanned office visits (p=0.193) between the control and intervention groups.

Conclusion: Same-day discharge after vaginal hysterectomy with pelvic floor reconstruction appears to be safe and feasible. Patients who were discharged the same-day did not require a higher volume of emergency department or office evaluations.

Virtual Poster Session 4: Urogynecology (1:10 PM — 1:20 PM)

1820 Resection of Uterus, Fallopian Tubes and Gonades by Laparoscopy in Patient with Sexual Ambiguity

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*Corresponding author.

Video Objective: Describe a clinical case of a patient with sexual ambiguity and his laparoscopic surgical treatment.

Setting: 33-year-old patient with a sexual ambiguity and male identification who required resection of gonads and atrophic organs. Was performed in Prado Clinic in Medellin, Colombia.

Interventions: Laparoscopic hysterectomy plus gonadal resection was performed in a patient with a male phenotype in whom uterine manipulator placement wasn’t possible.

Conclusion: In this moment, focus on sexual ambiguity has been changed. Now there is a greater emphasis on a conservative approach and the delay of irreversible surgery until adulthood. That new approach allows the individualization of the patient and makes surgical decision once a gender identity is presented. Laparoscopic surgery has been found to be a tool for the adequate treatment that allows a complete visualization of the atrophic organs and gonads. Generating almost imperceptible scars in the long term and preventing possible malignant transformation in the future.
Virtual Poster Session 4: Urogynecology
(1:10 PM — 1:20 PM)

1:10 PM: STATION Q

2725 A New Approach to the Surgical Treatment of Stage III and IV Pelvic Organ Prolapse (POP) - Preliminary Results
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*Corresponding author.

Setting: The study was conducted within the 2nd Department of Obstetrics and Gynaecology, Medical University in Wroclaw, Poland.

Patients or Participants: 36 women with the initial diagnosis of severe POP (3rd and 4th stage) has been qualified for the study

Interventions: The surgery was performed either by laparotomy (20) or laparoscopy (16). The insoluble monofilament suture was used to suspend cervix to the fascia of the RA, and additionally reinforced with polypropylene mesh placed above the fascia. The uterine body was either preserved, or in the case of any pathology, the suspension was preceded by supracervical hysterectomy.

Measurements and Main Results: Preliminary results are promising - 84.6% of objective and subjective improvement. Six women (16.6%) had a relapse and 4 women (11.1%) required reoperation.

Conclusion: Presented technique seems to be a safe and effective alternative to other POP treatment methods. It is associated with a negligible complications rate. Laparoscopic approach with it’s superiority to laparotomy - on the basis of improvement in gynecological examination - and subjectively using the certified questionnaires: PFDDI-20 and POP-Q - 12 months after the surgery. Further control is planned 3 and 5 years after the procedure.

Virtual Poster Session 4: Robotics
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1:10 PM: STATION R

2728 Robotic Assisted Excision of a Uterine Rudimentary Horn
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*Corresponding author.

Video Objective: The objective of this video is to portray a robotic assisted removal of a uterine rudimentary horn and excision of endometriosis in a patient with a Mullerian anomaly and dysmenorrhea.

Setting: The patient is a 32 year old G2P1001 who presented with a 6 month history of worsening dysmenorrhea with multiple emergency department visits secondary to pain. Patient has a history of a prior uncomplicated full-term delivery via cesarean section 1 year prior and a laparoscopic appendectomy, with a different provider, where a right salpingo-oophorectomy was performed. The patient reported her dysmenorrhea became severe after the latter surgery. She first underwent a diagnostic hysteroscopy and laparoscopy where she was diagnosed with a unicorne uterus with a right rudimentary horn. The hysteroscopy was significant for one cervix with passage to one uterine cavity with good visualization of the left ostia, right ostia was not visualized. The diagnostic laparoscopy showed a wide appearing uterus with two definite uterine bodies. The right side appeared to be a redundant fundus with a myoma appearance, the left adnexal structures appeared normal, the right adnexal structures were surgically absent. Choriotabulation was performed and the left fallopian tube was patent.

Interventions: Patient underwent a robotic assisted removal of the uterine rudimentary horn from a unicornuate uterus. The dissection was performed meticulously with care to excise the rudimentary horn without compromise to the right uterine vasculature or the unicornuate cavity. Hysteroscopy was then performed to confirm the integrity of the unicornuate cavity.

Conclusion: We hypothesize that after removal of the right fallopian tube retrograde menstrual flow was blocked and caused her severe dysmenorrhea. After the excision of the rudimentary horn the patient’s pain improved and went on to naturally conceive an intrauterine pregnancy. The Patient is currently in her second trimester.
Meridian Health, Neptune, NJ; Obstetrics and Gynecology, Hackensack Meridian Health, Neptune, NJ; Gynecologic Oncology, Hackensack Meridian Health, Neptune, NJ

*Corresponding author.

**Video Objective:** To Demonstrate Robot-assisted total laparoscopic hysterectomy, bilateral salpingo-oophorectomy (TLHBSO) using 3 arms and a uterine manipulator.

**Setting:** The da Vinci XI Platform is used to perform a simple extraperitoneal TLHBSO.

**Interventions:** A step-by-step choreography demonstrates 5 main exercises of a robot-assisted TLHBSO mainly: 1- The posterior dissection, 2- The anterior dissection, 3- The lateral dissection, 4- The colpotomy, 5- The cuff closure and suspension. Attention is drawn to the position of the uterus and the direction of counter-traction necessary to complete each step. The function of the third arm is emphasized. Relevant anatomy shown. Necessary laparoscopic surgical techniques demonstrated.

**Conclusion:** The principles of this step-by-step choreographed method can be reproducible with every platform, docking preference, and surgeon handiness. The 5 exercises break down the procedure for the trainee as specific tasks to complete and master separately. This facilitates the learning process and maintains operating room efficiency.

**Virtual Poster Session 4: Robotics**

(1:20 PM — 1:30 PM)

### 1:20 PM: STATION A

**2529 Increased Surgical Site Infections in Robotic Hysterectomies in a Large Health System**

Mandelberger A, 1, 2, *Neal KL, 1 Bueser R, 1 Nimaroff ML, 1 OB/GYN, Northwell Health, Manhasset, NY; 2Minimally Invasive Gynecologic Surgery, North Shore University Hospital, Manhasset, NY

*Corresponding author.

**Study Objective:** To describe cases of surgical site infection (SSI) after hysterectomy in a large health system and investigate adherence to infection prevention guidelines.

**Design:** Retrospective observational study.

**Setting:** 6 hospitals in New York, both community and academic centers.

**Patients or Participants:** Patients with surgical site infections as defined by CDC after hysterectomy in 2016 and 2017.

**Interventions:** n/a

**Measurements and Main Results:** Available data from 6 hospitals across a large health system in New York were analyzed. A total of 4589 inpatient open, robotic, and laparoscopic hysterectomies were performed in 2016 and 2017 of which 48 cases of surgical site infection were identified and reviewed. Overall SSI incidence was found to be 1.05%. Mean age of SSI cases was 53.5, and mean BMI 33.7. Among the SSI cases, 20 (41.7%) originated from a robotic approach, 1 (2.1%) straight laparoscopic, and 27 (56.2%) were open. This gave an SSI incidence of 1.98% for robotic, 0.13% for straight laparoscopic, and 0.97% for open approach. 41 (85.4%) SSI cases had total hysterectomies vs 7 (14.6%) supracervical. 34 (70.8%) of cases had a history of prior abdominal surgery. The most common infection type was intraabdominal at 19 cases (39.6%). Incisional infections accounted for 11 cases (22.9%), and vaginal cuff infection accounted for 4 (8.3%). The most common pathogens encountered were bacteroides fragilis (16.2%) and staphylococcus aureus (16.2%). Of 10 cases that used second-line antibiotics, 70% did not adhere to system protocol for dosing or antibiotic choice.

**Conclusion:** A review of cases reveals robotic hysterectomies as having the highest rate of SSI in the 6 hospitals examined at 1.98% as compared to laparoscopic hysterectomies with an SSI rate of 0.13% over 2 years. Further research is needed to validate these findings over time and geographic location, and examine reasons why robotic surgery may confirm a higher infection rate than laparoscopic in these locations.

### 1:20 PM: STATION B

**2026 Robot-Assisted Laparoscopic Adenomyomectomy is a Feasible Option of Uterus-Sparing Surgery:**

**Adenomyomectomy Cohort Study**

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*Corresponding author.

**Study Objective:** To compare surgical outcomes of open adenomyomectomy and robot-assisted laparoscopic adenomyomectomy.

**Design:** Cohort study.

**Setting:** Fibroid Center of tertiary university hospital.

**Patients or Participants:** Among adenomyomectomy cohort, forty-two patients who underwent robot-assisted laparoscopic adenomyomectomy and 16 patients who underwent open adenomyomectomy.

**Interventions:** N/A

**Measurements and Main Results:** All 58 patients with severe secondary dysmenorrhea and pelvic pain visited Seoul St. Mary’s hospital between 2012 and 2017. Eighty-one percent of patients were nulliparous woman (47 patients among 58 patients). Adenomyosis was diagnosed by pelvic ultrasonography. To determine the exact location and size of the lesion and its relation to the uterine cavity, pelvic MRI was performed in all patients. Their mean age, pre-operative CA-125 level, hemoglobin changes after surgery, estimated blood loss were comparable between two groups. The size of adenomyosis was larger in open than robot surgery group. Operation time was longer in robot than open surgery group (open vs robot 244.8±44.2 vs 281.8±77.1 min). Percentage of packed RBC transfusion during surgery was higher in open than robot surgery group (open vs robot 50% vs 14.3%). Hospital stay was shorter in robot than open surgery group (open vs robot 6.1±1.1 vs 2.7±0.7 days). All patients discharged without major complication.

**Conclusion:** Adenomyosis is a common benign gynecologic disease, however, conservative surgical option for preserving fertility is challenging. Adenomyomectomy is a conservative surgical option for preserving fertility. Comparing with open surgery, robot-assisted laparoscopic adenomyomectomy is a feasible option of uterus-sparing surgery using minimally invasive approach.

### 1:20 PM: STATION C

**2878 Posterior Approach to Uterine Artery Ligation**

**Fiori C, 1 *Patel NR, 2 Namaky DD, 1 OB/GYN, TriHealth, Cincinnati, OH; 2Medical Education, OB/GYN, TriHealth/Good Samaritan Hospital, Cincinnati, OH**

*Corresponding author.

**Video Objective:** This video demonstrates an alternative approach to uterine artery ligation during a Robotic Assisted Total Laparoscopic Hysterectomy in the setting of an obliterated anterior cul-de-sac.

**Setting:** This a case of a 29 year old with two prior cesarean sections presenting for Robotic Assisted Total Laparoscopic Hysterectomy for abnormal uterine bleeding. Upon entry, the uterus is found to be densely adherent to the anterior abdominal wall.

**Interventions:** The uterine arteries were dissected out, desiccated, and transected from the posterior aspect of the uterus due to the limited access anteriorly secondary to bladder adhesions.
Conclusion: In conclusion, an obliterated anterior cul-de-sac due to previous surgeries makes it difficult to access the uterine arteries secondary to poor visualization. By approaching uterine artery ligation from the posterior aspect, one may avoid inadvertent injury to vasculature or the bladder and reduce the amount of bleeding during the bladder dissection.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

2180 Experience of Centro Medico Nacional “20 De Noviembre” in Robotic-assisted Hysterectomy for Large Uteri: A Case Series of 20 Women Cortes AL,1,* Cortes Vazquez A,1 Gallardo Valencia LE Sr,1 Gongora Rodriguez A,2 Reyes Santillan VN,1 Goitia GA1,1 Laparoscopic and Robotic Surgery, Centro Medico Nacional 20 de Noviembre, Mexico City, DF, Mexico; 2 Reproductive Endocrinology, Centro Medico Nacional 20 de Noviembre, Mexico City, DF, Mexico *Corresponding author.

Study Objective: To determine the outcomes of robotic-assisted laparoscopic hysterectomy for benign conditions in women with large uteri.

Design: A prospective and recruiting cases for robotic-assisted laparoscopic hysterectomy for benign indications at Centro Medico Nacional “20 de Noviembre” by one surgeon with training in minimally invasive and Robotic surgery between May 2016 to August 2018.

Setting: Centro Medico Nacional “20 de Noviembre” ISSSTE.

Patients or Participants: Only women with large uteri (defined as greater than 750g) were included in this study.

Interventions: Robotic hysterectomy.

Measurements and Main Results: A total of 20 women were included in the analysis: 11 patients had uterine weights 750-999g and 9 had uterine weights greater than 1000g with the largest being 1,450g. The average surgical times were 131 min (53-301 min) and 156 min (82-338 min), respectively. The average estimated blood loss was 50cc; no blood transfusions were required. There were no intra-operative conversions. There were none major intraoperative complications. There were 2 minor postoperative complications (acute urinary retention and a wound dehiscence of an umbilical port site); both were in the 750-999g group. All patients in both groups were hospitalized 0-1 days.

Conclusion: In skilled hands, robotic-assisted laparoscopic hysterectomy in women with large uteri is an acceptable option, associated with minimal complications.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1369 Cost and Outcomes Analysis of Robotic, Laparoscopic, and Abdominal Hysterectomy for Benign Disease in a Community Hospital Setting Yoo N,* Cernadas M, Pericis D, Saint Peters University Hospital, New Brunswick, NJ *Corresponding author.

Study Objective: To compare overall costs and quality measures of various methods of benign hysterectomies at a community based hospital system.

Design: A retrospective review of all hysterectomies for benign indications at Saint Peters University Hospital between March 2017 to Dec 2018. Robotic assisted laparoscopic hysterectomies, laparoscopic hysterectomies, and abdominal hysterectomies were compared.

Setting: Data was collected from admission to discharge. In the OR, all patients were in comparable sized OR rooms and staff were trained in the procedure performed. Patients undergoing robotic assisted hysterectomies and laparoscopic hysterectomies were placed in the dorsal lithotomy position with trendelenberg. Those undergoing abdominal hysterectomies were placed in the dorsal supine position.

Patients or Participants: The study included 288 women who underwent benign hysterectomy by any method at Saint Peters University Hospital from March 2017 to Dec 2018. 86 (40.4%) patients underwent a robotic assisted laparoscopic hysterectomy, 60 (28.0%) underwent a laparoscopic hysterectomy, and 68 (31.7%) underwent an abdominal hysterectomy.

Interventions: All patients received a hysterectomy in one of the three following methods: robotic assisted laparoscopic hysterectomy, laparoscopic hysterectomy, and abdominal hysterectomy. Concomitant procedures of a salpingo-oophorectomy and/or cystoscopy were performed if indicated.

Measurements and Main Results: A retrospective chart review was performed for all benign hysterectomies from March 2017 to December 2018 using student t test and a multivariate regression analysis. The primary outcome was the direct total cost of the patient’s hospitalization related to their hysterectomy. Secondary outcomes included estimated blood loss, surgery time, days in the hospital postoperatively, and complications postoperatively. Mean total costs of robotically assisted hysterectomies were $26,452 less than abdominal hysterectomies (p<0.001) and $10,401 less than laparoscopic hysterectomies (p<0.001). These savings held true even after controlling for age, prior surgery, and uterine weight.

Conclusion: Overall, total cost was significantly influenced by the mode of hysterectomy, with robotic assisted hysterectomies being the most cost effective.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

2751 A New Approach to the 4-Point Transversus Abdominis Plane Block Ladanyi C,1,* Mohling S.1 Minimally Invasive Gynecologic Surgery, University of Tennessee College of Medicine Chattanooga, Chattanooga, TN; 2 Obstetrics and Gynecology, Minimally Invasive Gynecology, University of Tennessee, College of Medicine, Chattanooga, TN *Corresponding author.

Study Objective: To educate gynecologic surgeons on the background, indications, technique, and outcomes of a four-point transversus abdominis plane (TAP) block delivered under laparoscopic guidance.

Design: We devised a technique for a laparoscopic assisted four-point TAP block. We have described the indications, supplies needed, and medications administered. We performed a cadaveric dissection of the anterior-lateral abdominal wall to identify the neurovascular plane used for anesthetic injection. To the best of our knowledge, we are the first to perform a four-point TAP block at the subcostal and lateral positions, under laparoscopic visualization, for robotic-assisted gynecologic procedures including hysterectomies.

Setting: Academic community hospital setting and institutional cadaver lab.

Patients or Participants: N/A

Interventions: N/A

Measurements and Main Results: N/A

Conclusion: A four-point TAP block is a safe, efficacious, yet simple procedure which can be performed by the surgeon under laparoscopic visualization.
Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1:20 PM: STATION G

2175 Use of a Mathematical Model for the Prediction of Surgical Time in Robotic Myomectomy

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Study Objective: To evaluate the factors associated with console time during robotic myomectomy. And to incorporate them in a mathematical formula that could predict the surgical time.

Design: Prospective and descriptive study.
Setting: Centro Medico Nacional 20 de Noviembre.

Patients or Participants: All patients who underwent robotic myomectomy.

Interventions: All the demographic and surgical information from patients who underwent a robotic myomectomy were collected before and during the procedure. The data collected were age, body mass index, number of myomas, size of the biggest myoma, parity, surgical bleeding, Dooking time, console time and surgical time. Using the factors that correlated the most with the console time. A multiple linear regression model was made and a formula. We believe that the utilization of a mathematical model can be used to increase the efficiency in operating rooms.

Measurements and Main Results: In robotic myomectomy the only factor that correlates the most with surgical time is the fibroids size. We observed that there is a direct relationship between surgical time and fibroids size. Therefore console time can be predicted as: Surgical time = 84.316 + 13.089 (fibroids size).

Conclusion: Surgical time can be predicted with the aforementioned formula. We believe that the utilization of a mathematical model can be used to increase the efficiency in operating rooms.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1:20 PM: STATION H

2351 The da Vinci SP Surgical System has an Advantage in Performing Surgery on a Giant Uterine Leiomyoma Weighing 2340g

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Study Objective: To describe the experience of robotic-assisted single port supracervical hysterectomy with bilateral salpingectomy on a giant uterine leiomyoma using the da Vinci SP surgical system.

Design: A Case report.
Setting: Robot Surgery Center of Ewha Womans University Hospital.

Patients or Participants: A 45-year old virgin woman with huge uterine leiomyoma sized about 26 × 23 cm².

Interventions: Robotic-assisted single port SCH with BS using the da Vinci SP surgical system.

Measurements and Main Results: The recently introduced da Vinci SP surgical system include a fully wristed camera which can offer an easy movement of camera and instruments to 360 degree at once. Therefore this surgical system has an advantage on the surgery which requiring procedures both below and above the umbilicus with only the single incision inside the umbilicus. We present a case of huge uterine leiomyoma of intramural type measured about 26 × 23 cm² which is successfully performed the SCH with BS using the da Vinci SP system. Total operative time was 145 minutes and the estimated blood loss was 250 mL. The hospital stay was 2.5 days. No operative or postoperative complications occurred. To the best of our knowledge, this is the largest leiomyoma case of robotic-assisted single port SCH using the da Vinci SP system and we have known the advantage of the da Vinci SP surgical system on the huge intraabdominal mass requiring procedures above the umbilicus level as in this case.

Conclusion: The da Vinci SP surgical system enables easy rotation of camera and instruments at once and this make it easy to perform the procedures which are performed above the umbilicus for the huge uterine leiomyoma reaching the diaphragm.
Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1155 Robotic Laparoendoscopic Single-Site Radical Hysterectomy and Pelvic Lymphadenectomy with Conventional Surgical Instruments in Cervical Cancer
Ding J, 1 Li X, 2 Zhang X, 2 Hua K, 3 The Department of Gynecology, the Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China; 2The Obstetrics and Gynecology Hospital of Fudan University, Shanghai, China; 3the, Shanghai, China
*Corresponding author.

Video Objective: To describe and demonstrate the feasibility and safety of robotic laparoendoscopic single-site radical hysterectomy and pelvic lymphadenectomy with conventional robotic surgical instruments.

Setting: A university hospital.

Interventions: Robotic laparoendoscopic single-site radical hysterectomy and pelvic lymphadenectomy with conventional robotic surgical instruments. All of the interventions were performed using a da Vinci Si surgical system and all the surgery instrumentation was conventional robotic instruments. A uterine manipulator and an indwelling catheter (Foley catheter) were used. The patient was in the Trendelenburg position, and the robot was placed between her legs. By adopting the principle of the crispstick technique for R-LESS, a 30° robotic lens was placed in the upward configuration to reduce collision and achieve a better view.

Conclusion: Our preliminary experience has demonstrated that with experienced laparoscopic skills, R-LESS with the da Vinci Si system is a feasible and safe surgical approach for performance of radical hysterectomy and pelvic lymphadenectomy with conventional robotic surgical instruments. Further studies with greater number of patients in multiple settings will help us to fully elucidate the role of da Vinci Si surgical system in single-site gynecologic surgery.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

2960 An Overview of Uterine Scar Defects Post Cesarean Section
Santandreu MO, 1 Patel AA, 2 Abitban B, 1 Pachtman S, 2 Nimaroff ML, 1, 2 OBGYN, Northwell, Manhasset, NY; 3 OBGYN, Northwell Health, Manhasset, NY; 4 OBGYN/MFM, Northwell, Manhasset, NY; *Minimally Invasive Gynecologic Surgery, North Shore University Hospital, Manhasset, NY
*Corresponding author.

Study Objective: Using a patient’s obstetrical history, symptomatology, and radiologic findings of cesarean scar defects (CSD) to establish criteria to triage patients who require surgical repair. Additionally, to outline surgical technique for successful robotic-assisted laparoscopic repair of CSDs.

Design: Comprehensive overview of diagnosis, radiological findings and repair of CSD.

Setting: Two large tertiary care academic medical centers.

Patients or Participants: Patients with previous cesarean section who are referred for possible surgical intervention for CSD.

Interventions: Robotic-assisted laparoscopic approach after proper multidisciplinary planning with Radiologist, Maternal fetal medicine specialist, and minimally-invasive gynecologic surgeon.

Measurements and Main Results: Cesarean scar defects are readily visible on ultrasound evaluation, and is a finding in many patients following cesarean section. Currently, there are no accepted guidelines to aid in the decision for when surgical management is required. The study will combine obstetrical history, symptomatology, and, most importantly, radiologic findings to aid clinicians in designing a treatment plan. Radiologic findings include degree of myometrial thinning and presence/width of the serosal dehiscence. If surgical intervention is necessary, outline the steps to robotic assisted laparoscopic repair of CSD. Included in this analysis are radiographic images of defects and video of surgical repairs.

Conclusion: There are numerous reports of the minimally invasive repair of CSD; however, it remains unknown in the obstetrical literature when interventions are required. Patients with minimal myometrial thinning and without evidence of serosal dehiscence may not require repair of the defect. More evidence is needed to observe obstetrical outcomes with or without repair.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1542 Robotic Single Port Laparoscopy Using the Da Vinci SP Surgical System For Benign Gynecologic Disease; Preliminary Report
Shin HJ, 1 * Yoo H, 2 Lee JH, 2 Lee SR, 3 Jeong K, 3 Moon HS. 3 Obstetrics and Gynecology, College of Medicine, Ewha Womans University, Seoul, Korea, Republic of (South); 3 Obstetrics & Gynecology, College of Medicine, Ewha Womans University, Seoul, Korea, Republic of (South); 3 The Department of Obstetrics and Gynecology, Asian Medical Center, University of Ulsan, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: To report our initial experience of robotic single port laparoscopy using the da Vinci SP® surgical system for benign gynecologic diseases.

Design: Retrospective cohort study.

Setting: Academic tertiary care hospital.

Patients or Participants: 31 women with benign gynecologic diseases.

Interventions: Robotic single port laparoscopy.

Measurements and Main Results: From December to January 2019, hysterectomy, myomectomy, adnexectomy, and sacrocolpopexy were performed in 7, 12, 5, and 7 women, respectively. The mean age and body mass index of patients were 47.7±12.8 years and 22.7±3.1 kg/m2. In terms of operative outcomes, the mean docking time, operating time, estimated blood loss, and hospitalization were 2.2±2.1 minutes, 126.3±61.6 minutes, 93.9±76.9 mL, and 4.6±0.7 days. There was no laparoconversion or major complication.
Conclusion: Robotic single port laparoscopy using the da Vinci SP surgical system might be an alternative surgical technique for various benign gynecologic diseases. However, further studies are required to clarify the feasibility and safety of the new robot surgical system.

Virtual Poster Session 4: Robotics (1:20 PM — 1:30 PM)

1:20 PM: STATION N

2065 Robot-Assisted Laparoscopy Repair of a C-Section Scar Defect: A Case Report
Carpenedo Tomasi M, Ribeiro HA, Ohara F, Goncalves ALL, Ribeiro PA. Irmandade da Santa Casa de Misericórida de São Paulo, São Paulo, Brazil
*Corresponding author.

Video Objective: A case report that describe a robot-assisted laparoscopy repair of a cesarean scar defect (isthmoccele) after a pregnancy loss.

Setting: Quaternary hospital in São Paulo, Brazil

Interventions: A 33-year-old woman came to our service reporting a 39-week gestational loss, 3 months before, after a low risk pregnancy, with spontaneous labor followed by uterine rupture and placental abruption. She already had a previously C-section. She also referred post-menstrual bleeding with increase in bleeding days per cycle. Complementary MRI showed a defect in the uterine wall with hemorrhagic foci inside and scarcely vascularized scar.

In Brazil, C-section is considered an epidemic, accounting for 57% of deliveries, ranking second in the world. The prevalence of isthmoccele ranges from 19% to 84%, a direct relation to the increase in C-sections.

Patient underwent a robotic-assisted laparoscopy isthmoccele correction in a da Vinci Xi Surgical System. We used 3 robotic 8-mm ports and one laparoscopic 5-mm port and left-sided docking. The vesicouterine space was dissected and the defect was exposed. With monopolar energy, the defect was resected and the health myometrium visualized. A poliglactine 0 suture was performed, in single layer with X stitches, recombining the uterine anterior wall.

In post surgery, the patient had a good evolution, with hospital discharge in the day after the procedure. In the follow-up, she had a significant improvement of post menstrual bleeding and a reduction in number of bleeding days per cycle.

Conclusion: The robotic-assisted laparoscopy view, with the 3-D dimension, and the forceps joint make the suture easily to be performed by the gynecologic surgeon.

Virtual Poster Session 4: Robotics (1:20 PM — 1:30 PM)

1:20 PM: STATION O

2144 Robotic Isthmoccele Repair of a Big Cesarean Scar Defect - A Feasible Technique
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*Corresponding author.

Video Objective: Describe a robotic isthmoccele repair of a big cesarean section scar defect.

Setting: Isthmoccele is a reservoir, pouplike defect, at the site of a previous cesarean section, normally resulted of a cesarean scar defect or dehiscence. Its prevalence may be underestimated. A rare, but important repercussion, is cervical scar pregnancy, one of the rarest forms of ectopic pregnancy, with a high risk of uterine rupture and haemorrhage. Half of the cases occurs to patients who had only one prior caesarea.

Isthmoccele’s treatment must be chosen among different alternatives (hysteroscopic, vaginal, laparatomic, laparoscopic), considering symptoms, plans for future conception, and the size of the defect. Isthmoccele resection with myometrium myoplastia must be considered if the residual myometrium thickness is less than 3 mm.

Interventions: A 38-year-old woman, with 1 previous cesarean section and 1 cervical scar ectopic pregnancy treated with methotrexate 8 months ago, preparing to conceive, presented with a large isthmoccele. Preoperative MRI exhibited a $26 \times 22$ mm defect, with a $1 \text{ mm}$ remaining myometrium. A robotic approach was used to identify the cervical niche, using a uterine manipulator with its tip balloon placed downwards, right above the internal cervical orifice. After correct identification, the bladder was caudally dissected and the uterine isthmus limits were completed exposed. The isthmoccele was resected. All connective tissue was enucleated until vivid myometrium was seen all over its circumference. The defect was closed in two layers with 2.0 vicryl interrupted sutures.

Conclusion: Robotic isthmoccele repair is a feasible technique when correctly chosen. Due to the raising number of cesarean sections, gynecologists will face this problem more frequently and must be aware of its indications as well as different approaches.
Conclusion: Reduced port robotic-assisted hysterectomy is a safe, effective, and efficient surgery for appropriately selected women. Outcomes appear similar across uterine weights with increased operative time, estimated blood loss, and odds of ureterolysis increasing as specimen weight increases.

Virtual Poster Session 4: Robotics
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1:20 PM: STATION Q

1659 Factors Associated with Use of Robot-Assistance for Hysterectomy in Treating Benign Disease
Zhang W.1, Schenbri M.2, Jacoby AF.1, Lager JC.1, Opoika-Anane J.1, Jacoby V.1 Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco, San Francisco, CA

*Corresponding author.

Study Objective: To evaluate what factors are associated with the use of robot assistance in benign gynecologic hysterectomies.

Design: We performed a cross-sectional analysis of the 2007 - 2014 Nationwide Inpatient Sample database. All women age ≥18 years who underwent hysterectomy were identified using ICD-9-CM procedure codes. A second ICD-9-CM code was used to identify cases with robot assistance. Patients who underwent treatment for cancer or have concomitant cesarean deliveries were excluded. Logistic regression was used to assess independent demographic, clinical or health system factors associated with undergoing a robotic-assisted procedure versus traditional laparoscopy or abdominal approaches.

Setting: N/A

Patients or Participants: N/A

Interventions: N/A

Measurements and Main Results: When compared to all routes of hysterectomy, patients age > 34 (OR 1.16), median household income above the first quartile (OR 1.13) and a diagnosis of obesity (OR 1.19), endometriosis (OR 1.15), uterine prolapse (OR 1.11), abnormal uterine bleeding (OR 1.22) and pelvic pain (OR 1.24) were more likely to undergo robot-assisted hysterectomy. Those undergoing treatment in urban (OR 3.36) and large hospitals (OR 1.47) were more likely to undergo robot-assisted hysterectomy. Medicaid insurance holders (OR 0.64) and Black (OR 0.74), Hispanic (OR 0.97) and Asian/Pacific Islander (OR 0.78) races were associated with lower likelihood of undergoing robot-assisted hysterectomy. Similar factors were found when examining predictors of robot-assisted hysterectomy among all laparoscopic hysterectomies, although patient race, income, and diagnosis were not associated with undergoing robot-assisted hysterectomy in this subgroup.

Conclusion: In addition to clinical diagnosis, many demographic and health system factors are associated with use of robot-assistance for hysterectomy. This may indicate decreased access to the robot among underserved patient populations coupled with the capacity of large, urban facilities to make capital investments in robotic equipment.

Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1:20 PM: STATION R

1165 Degree of Trendelenburg Position Required for Robotic Assisted Laparoscopic Gynecologic Surgery
Wagner EM.1, *Chandler JN.1, Mihalov LS.2. Gynecology, Virginia Mason Medical Center, Seattle, WA

*Corresponding author.

Study Objective: To elucidate the range of Trendelenburg position required for benign robotic (computer) assisted gynecologic surgery.

Design: Descriptive study.

Setting: A surgeon at our institution (an academic tertiary care center) routinely placed patients in the minimal amount of Trendelenburg necessary to expose the target anatomy, measured the degree with a smart phone app and documented the degree in operative reports.

Patients or Participants: All robotic cases from November 1, 2011 through July 31, 2018.

Interventions: N/A

Measurements and Main Results: 338 out of 380 identified cases had Trendelenburg degrees recorded. Mean Trendelenburg was 15.4 degrees (range from 7 to 31). 85% of cases (287/338) were completed with 18 degrees or less of Trendelenburg. Addition of Modifier 22 billing code (signifying a more complicated surgery) was associated with higher mean Trendelenburg of 16.0 (n=83; range 9-30) compared to 15.2 (n= 255; range 7-31) for normal coding (p=0.05). Higher BMI was associated with higher mean Trendelenburg from 15.0 (n=218; range 7-25) for BMI less than 30 to 16.3 (n=120; range 9-31) for BMI greater than 30 (p=0.001). Surgeries that included hysterectomy (mean Trendelenburg 15.4, n=309, range 7-31) showed no difference compared with other gynecologic procedures (mean Trendelenburg of 15.3; n=29, range 10-30) (p=0.9). For hysterectomy cases, increasing uterine weight was associated with increasing degree of Trendelenburg. Uteri less than 250 g required 15.2 degrees (n=217; range 7-31), uteri from 250-499g required 15.7 (n=59; range 8-24), and uteri greater than 500g required 16.75 degrees (n=32; range 8-25) which is statistically different as compared to those under 250g (p=0.02).

Conclusion: Steep Trendelenburg is not always needed for gynecologic surgery. The majority of cases can be accomplished with less than 18 degrees of Trendelenburg. BMI, case difficulty and uterine size were associated with requiring steeper Trendelenburg. We recommend personalized positioning by placing the patient in the minimal amount of Trendelenburg required to adequately expose the target anatomy.
Virtual Poster Session 4: Robotics
(1:20 PM — 1:30 PM)

1:20 PM: STATION T

2590 Robotic Block of Uterine Vessels in Different Anatomical Locations
Wang HF,1* Chuang YC2. 1Department of Gynecology & Obstetrics, Far Eastern Memorial Hospital, New Taipei City, Taiwan; 2OBS&GYN, Far Eastern Memorial Hospital, New Taipei City, Taiwan
*Corresponding author.

Video Objective: Robotic block and dissection of uterine vessels in three different anatomical locations.

Setting: Since uterine arteries are responsible for 83% of blood flow supply to the uterine, we believe that control of uterine vessels is the most important step in the surgical procedures of hysterectomy, myomectomy or even uterus-sparing postpartum hemorrhage surgery.

Interventions: Our clinical experience indicates that dissection and block uterine arteries by Da Vinci Robot are best conducted at three different anatomical locations: (1) The place where the uterine artery is divided from the internal iliac artery. (2) Where the uterine artery travels across the ureter. (3) The site at which the uterine artery enters the cervix.

Conclusion: Da Vinci robot advantageously provides 3D visualization and the rotatable endorivist, making the procedure of dissecting at different anatomical locations much easier and safer. Getting familiar with the anatomical sites can greatly help the aforementioned surgical procedures.

Virtual Poster Session 4: Robotics
(1:30 PM — 1:40 PM)

1:30 PM: STATION A

2990 Evaluation of the Incidence and Types of Complications in Patients Undergoing for Robot — Assisted Hysterectomy in a Third Level Care Hospital in Mexico
Carmona MP,1* Rivera M, Jimenez Cabrera DA. Advanced Robotic Surgery Center, Regional High Especiality Hospital, Zumpango, Zumpango, EM, Mexico
*Corresponding author.

Study Objective: To evaluate the incidence and types of complications in patients undergoing Robot-assisted hysterectomy.

Design: Retrospective study.

Setting: 3rd level care hospital in Zumpango, State of Mexico.

Patients or Participants: Women undergoing robotic-assisted laparoscopic hysterectomy.

Interventions: Robotic-assisted laparoscopic hysterectomy.

Interventions: A total of 49 patients were included; the main indication for the procedure was uterine myomatositis in 75.5%, abnormal uterine bleeding refractory to treatment in 12.24% and in the rest, endometrial intraepithelial neoplasia, cervical cancer in situ among others.

The incidence of complications was 20.40% (10 patients in total), some of them presenting up to two different complications. Complications were classified according to the scale of Clavien and Dindo, finding type I in 58% (most frequent seromas, lesion in the serosa of the sigmoid rectum and a perforation in the posterior cul-de-sac with uterine mobilizer). Type II in 8.3% (one patient with erosive gastritis requiring transfusion) and type III b in 33.3% with two conversions to open surgery (one for hemorrhage and one for non-recoverable equipment failure) and two re interventions (laparotomy due to hemoperitoneum and a laparoscopy for residual abscess drainage) no type IV or V lesions were found.

Measurements and Main Results: The files of the patients undergoing robotic assisted laparoscopic hysterectomy from May 1, 2014 to April 30, 2019 were analyzed.

Conclusion: The incidence of complications is similar to that reported in open surgery and discretely larger than laparoscopic, however type I complications were the most frequent.

The high incidence of probably due to what we are is a school hospital and surgeons are training period.

Virtual Poster Session 4: Robotics
(1:30 PM — 1:40 PM)

1:30 PM: STATION B

2993 Trans Console Authority Gradient On Robotic Platform Dual Consoles in Resident Surgical Education
Breen MT*. Women’s Health, UT Dell School of Medicine, Austin, TX
*Corresponding author.

Study Objective: To analyze and evaluate the role of dual console robotic technology in the surgical training environment of gynecologic surgical resident training. Modeled after aviation training dual controls with training pilots the trans cockpit authority gradient has been implicated in aviation accidents and “ near misses”. Extrapolating these phenomena to robotic console training and evaluating with Likert scale analysis can assist with both learner and trainer surgical efficiency and safety.

Design: Descriptive.

Setting: Academic Multicenter Teaching Hospitals with Gynecology residents and general gynecology, FPMRS and gyn- oncology robotic faculty.

Patients or Participants: PGY 2-4 Obstetrical and Gynecology residents in training.

Interventions: Following systematic analysis of trans console authority gradient.

Measurements and Main Results: Likert analysis and OR observational analysis favors dual console for effective training, intraoperative surgical hand offs showed diminishment of negative perceptions across the console authority gradient.

Conclusion: Affirmation of learner and instructor affinity for dual robotic consoles in training. Recognition that the trans console authority gradient can affect learner comfort and the learning environment.

Virtual Poster Session 4: Oncology
(1:30 PM — 1:40 PM)

1:30 PM: STATION C

2662 Accurate Dissection in Robotic Surgery Using the Double Bipolar Method—With Pinpoint Accuracy
Andou M*. Obstetrics and Gynecology, Kurashiki Medical Center, Kurashiki, Japan
*Corresponding author.

Video Objective: To demonstrate the accuracy of dissection of the double bipolar method in robotic surgery.

We will show operative techniques used in real surgical settings for procedures such as modified radical hysterectomy and retroperitoneal lymphadenectomy for clinical stage I endometrial cancer.

Setting: Urban general hospital in Japan.

Patients: From December 26, 2018 to April 22, 2019, 21 patients underwent these techniques.

Interventions: We performed robotic modified radical hysterectomy and bilateral salpingo-oophorectomy with pelvic lymphadenectomy robotically on a clinical stage Ia case (grade 1-2 histology). Some patients also underwent laparoscopic extraperitoneal paraaortic lymphadenectomy, and the case shown was clinical stage Ib (or grade 3 histology). This technique was pioneered by Prof Ichiro Uyama, a robotic gastrointestinal surgeon. We use robotic Maryland forceps as the cutting device with a Valleylab FT10 energy platform (ForceTriad energy platform) at macromode 60W. The advantage of this technique is that many of the concerns surrounding the use of other instrumentation such as monopolar scissors, where adjacent tissue may be inadvertently injured, are removed by the pinpoint
accuracy of this technique. This technique is important for bladder and ureteral dissection and exposure of vessels. As the cuts are made in the very limited point by a lightning strike mechanism, causing spark vaporization of the tissue, there is minimal thermal spread to adjacent organs.

**Measurements and Main Results:** Estimated blood loss was 201mL, operation time was 171mins. No patients who underwent these interventions suffered organ injury or required a blood transfusion.

**Conclusion:** The pinpoint accuracy of the bipolar method allowed for safe and complete dissection.

**Virtual Poster Session 4: Oncology**

**(1:30 PM — 1:40 PM)**

**1:30 PM: STATION D**

**2794 Nerve Sparing Radical Hysterectomy Versus Conventional Radical Hysterectomy in Early-Stage Cervical Cancer: A Systematic Review And Meta-Analysis**

Lee SH,* Bae JW, Han M, Cho YJ, Park JW, Oh SR, Kim SJ, Choe SY, Yun JH. Lee Y. Obstetrics and Gynecology, Dong-A University Medical Center, Busan, Korea, Republic of (South)

*Corresponding author.

**Study Objective:** To compare the oncologic outcome of nerve-sparing radical hysterectomy and conventional radical hysterectomy through meta-analysis.

**Design:** A systematic review and meta-analysis of 4 randomized controlled trials, 8 case-control, and 11 comparative cohort studies that compared the morbidity and pelvic dysfunctions, and oncologic outcomes in both surgical methods.

**Setting:** A total of 23 studies were included in this meta-analysis; included studies reporting data of patients affected by cervical cancer; included studies written in English language; included studies including ≥20 patients; included studies reporting data of patients with a comparison of clinical outcomes between nerve-sparing radical hysterectomy and conventional radical hysterectomy. Data were extracted and risk of bias was assessed by four independent reviewers.

**Patients or Participants:** Overall, 1769 patients were included: 884 (49.2%) and 912 (50.8%) patients undergoing nerve-sparing radical hysterectomy and conventional radical hysterectomy, respectively.

**Interventions:** The meta-analyses were conducted using software designed for composing Cochrane reviews (Review Manager Version 5.3).

**Measurements and Main Results:** Looking at perioperative parameters, we observed that nerve-sparing radical hysterectomy was associated with a lower intraoperative blood loss and a shorter length of hospital stay in comparison with conventional radical hysterectomy. Patients undergoing nerve-sparing radical hysterectomy experienced lower urinary, colorectal, and sexual dysfunctions than patients undergoing conventional radical hysterectomy. Among parametric factors, resected parametrial widths was the gold standard for diagnosis. The 5-year disease free survival and 5-year overall survival rates were similar between groups.

**Conclusion:** The collected data up to now demonstrated that the nerve-sparing approach guarantees minimized surgical-related pelvic dysfunctions, similar oncologic outcomes as conventional radical hysterectomy. However, because of the low quality of the articles included, more evidence is needed. Further RCTs should be conducted to strengthen the superiorty and safety of NSRH.

**Virtual Poster Session 4: Oncology**

**(1:30 PM — 1:40 PM)**

**1:30 PM: STATION H**

**1948 Robotic Type II B Posterior Exenteration for Recurrent Vaginal Cancer**

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*Corresponding author.

**Study Objective:** To compare the accuracy of MRI, PET-CT, and frozen biopsy before fertility-sparing radical trachelectomy in early stage cervical cancer.

**Design:** This was a retrospective study on 134 young women with early stage cervical cancer who tried fertility-sparing laparoscopic or robotic radical trachelectomy. All patients underwent preoperative MRI and PET-CT. Comprehensive lymph node dissection was performed during surgery. Retrieved lymph nodes were sent for frozen biopsy before undertaking radical trachelectomy. The diagnostic accuracy of MRI, PET-CT, and frozen biopsy was compared using McNemar test and logistic regression using generalized estimating equations. The final pathologic report on lymph nodes was the gold standard for diagnosis.

**Setting:** University hospital.

**Patients or Participants:** 134 patients with early stage cervical cancer.

**Interventions:** Fertility-sparing, robotic or laparoscopic radical trachelectomy.

**Measurements and Main Results:** The retrieved lymph nodes totaled 3362 and mean of retrieved lymph nodes was 25 (range 7- 96). Twenty patients (14.9%) showed positive lymph node areas and 39 out of 986 (4.0%) lymph nodes areas were positive. There was no significant difference in sensitivity (22.6% versus 31.0%, p=0.99), specificity (94.3% versus 95.3%, p=0.83), and accuracy (90.8% versus 92.3%, p=0.5) between MRI and PET-CT in station-by-station analysis. There was significant difference in sensitivity, specificity, accuracy between MRI and frozen biopsy in station-by-station analysis. There was also a significant difference between PET-CT and frozen biopsy.

**Conclusion:** When comparing patients with patients, frozen biopsy approach is significantly better than MRI and PET-CT to evaluate sensitivity, specificity, and accuracy. Frozen biopsy of all lymph nodes retrieved during surgery is still the best method to evaluate lymph node status before fertility-sparing radical trachelectomy.

**Virtual Poster Session 4: Oncology**

**(1:30 PM — 1:40 PM)**

**1879 Comparison of MRI, PET-CT, and Frozen Biopsy in The Evaluation of Lymph Node Status Before Fertility-Sparing Robotic or Laparoscopic Radical Trachelectomy in Early Stage Cervical Cancer**

Park JY, Kim JH. Department of Obstetrics and Gynecology, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Korea, Republic of (South)

*Corresponding author.

**Study Objective:** To compare the accuracy of MRI, PET-CT, and frozen biopsy before fertility-sparing radical trachelectomy in early stage cervical cancer.

**Design:** This was a retrospective study on 134 young women with early stage cervical cancer who tried fertility-sparing laparoscopic or robotic radical trachelectomy. All patients underwent preoperative MRI and PET-CT. Comprehensive lymph node dissection was performed during surgery. Retrieved lymph nodes were sent for frozen biopsy before undertaking radical trachelectomy. The diagnostic accuracy of MRI, PET-CT, and frozen biopsy was compared using McNemar test and logistic regression using generalized estimating equations. The final pathologic report on lymph nodes was the gold standard for diagnosis.

**Setting:** University hospital.

**Patients or Participants:** 134 patients with early stage cervical cancer.

**Interventions:** Fertility-sparing, robotic or laparoscopic radical trachelectomy.

**Measurements and Main Results:** The retrieved lymph nodes totaled 3362 and mean of retrieved lymph nodes was 25 (range 7- 96). Twenty patients (14.9%) showed positive lymph node areas and 39 out of 986 (4.0%) lymph nodes areas were positive. There was no significant difference in sensitivity (22.6% versus 31.0%, p=0.99), specificity (94.3% versus 95.3%, p=0.83), and accuracy (90.8% versus 92.3%, p=0.5) between MRI and PET-CT in station-by-station analysis. There was significant difference in sensitivity, specificity, accuracy between MRI and frozen biopsy in station-by-station analysis. There was also a significant difference between PET-CT and frozen biopsy.

**Conclusion:** When comparing patients with patients, frozen biopsy approach is significantly better than MRI and PET-CT to evaluate sensitivity, specificity, and accuracy. Frozen biopsy of all lymph nodes retrieved during surgery is still the best method to evaluate lymph node status before fertility-sparing radical trachelectomy.

**Video Objective:** To demonstrate a surgical video where-in a robotic-assisted posterior pelvic exenteration was performed in a case of recurrent vaginal cancer.

**Setting:** A tertiary referral center.

**Interventions:** We present a case of a 55 year-old Hispanic female with a history of stage II squamous cell vaginal carcinoma. She was initially treated with concurrent chemotherapy (cisplatin) and radiation (pelvic and vaginal) in 2016. She had a biopsy proven isolated recurrence located in posterior aspect of upper third of the vagina. A robotic type II B posterior pelvic exenteration was demonstrated step by step in this video. Besides the technical aspects of the procedure, pelvic anatomic landmarks have also been emphasized.

**Conclusion:** Robotic approach to highly morbid pelvic exenteration procedures should be considered in selected patients with recurrent gynecologic malignancies, who present without evidence of distant metastatic disease.
Virtual Poster Session 4: Oncology  
(1:30 PM — 1:40 PM)

1:30 PM: STATION I

1757 Applicability of Two Venous Thromboembolism Risk Assessment Models in Gynecologic Surgical Patients  
Gao T,1,* Liu C,2 Zhang Z,1 Beijing Chao-yang Hospital, Beijing, China;  
1Gynecology and Obstetrics, Beijing Chao-Yang Hospital, Capital Medical University, Beijing, China  
*Corresponding author.

Study Objective: The aim of this study was to examine the applicability of the Caprini risk assessment model and gynecologic Caprini risk assessment model for postoperative venous thromboembolism risk assessment in gynecologic surgical patients and make a comparison between the two risk assessment models.

Design: A database of a randomized controlled trial was employed. Scores of Caprini and gynecologic Caprini risk assessment model were calculated for each patient. Patients were categorized into four risk level groups according to scores of risk assessment models.

Setting: N/A

Patients or Participants: N/A

Interventions: N/A

Measurements and Main Results: A total of 800 patients were included. The overall incidence of venous thromboembolism was 5.8%. By Caprini risk assessment model, no patient was at very low risk, 4.3% were at low risk, 44.4% were at moderate risk, and 51.4% were at high risk. The venous thromboembolism incidence of the low, moderate, and high risk group were 2.9%, 2.3%, and 9.0%, respectively. Spearman’s rank correlation coefficient was 0.500 (p=0.667). 98.5% of patients with the malignant disease were categorized into the highest risk group. By gynecologic Caprini risk assessment model, 7.8% of the patients were at low risk, 28.0% were at moderate risk, 32.0% were at high risk, and 32.3% were at very high risk. The venous thromboembolism incidence of the low, moderate, high, and very high risk group was 0.0%, 1.2%, 5.1%, and 11.6%, respectively. Spearman’s rank correlation coefficient was 1.000 (p<0.01).

Conclusion: Gynecologic Caprini risk assessment model was suitable for venous thromboembolism risk assessment for gynecologic surgical patients. Current Caprini risk assessment model could not be applied to gynecologic surgical patients.

Virtual Poster Session 4: Oncology  
(1:30 PM — 1:40 PM)

1:30 PM: STATION K

2126 Perioperative Outcomes of Combined Gynecologic Oncology and Urogynecologic Surgeries  
Fan KW,1,* Shu MK,2 Eddih A,2 Tyson C1,1 Minimally Invasive Advanced Pelvic Floor Surgery Fellowship, Millard Fillmore Suburban Hospital, Buffalo, NY; 2University at Buffalo, Buffalo, NY; 3Minimally Invasive Advanced Pelvic Floor Surgery Fellowship, Millard Fillmore Suburban Hospital, Williamsville, NY; 4Applied Healthcare Research Management (AHRM) Inc., Buffalo, NY  
*Corresponding author.

Study Objective: To compare perioperative outcomes of patients undergoing standard oncology staging versus combined oncology staging and urogynecologic procedures for pelvic floor dysfunction repair.

Design: A retrospective cohort study of two gynecologic oncology patients groups who underwent robotic assisted surgical staging versus surgical staging with concomitant pelvic floor repair.

Setting: Many women diagnosed with a gynecologic malignancy may have comorbid urogynecologic conditions including pelvic organ prolapse and/or urinary incontinence. Despite a significant prevalence of symptomatic pelvic floor disorders among oncologic patients, few of these patients undergo concomitant pelvic floor procedures. Literature examining the perioperative impact of combining surgeries is currently lacking.

Patients or Participants: 29 women were identified and controls (n = 14) were matched to combined cases (n = 15).

Interventions: Surgical staging defined as robotic-assisted total laparoscopic hysterectomy, bilateral salpingo-oophorectomy, and lymphadenectomy. Pelvic floor procedures include: laparoscopic uterosacral ligament suspension, Moschowitz culdoplasty, transobturator sling, and vaginal repair.

Measurements and Main Results: Both groups had similar mean robotic console time, (178 minutes vs 160 minutes, p = 0.15), however combined procedure cases had increased total operative time compared to controls, (301 minutes vs 210 minutes p < 0.0001). Concurrent cases had increased blood loss estimated by absolute change in hemoglobin (-2.34g/dL vs -1.71g/dL, p = 0.043). Additional urogynecologic procedure increased risk of discharge with an indwelling urinary catheter (76.9% vs 0%, p < 0.0001). Total pain requirements were similar between the two groups (35 MME versus 23 MME, p = 0.46). Postoperative complications were similar between the two groups defined by hospital revisits comparing cases to controls (14.3% vs 13.3%, p = 1).

Conclusion: Combined case surgery for oncologic staging and urogynecologic pelvic floor repair is a well tolerated combination procedure. Increased total operative time for combined cases is expected, with statistically significant risk for postoperative acute urinary retention typical for urogynecologic procedures.

Virtual Poster Session 4: Oncology  
(1:30 PM — 1:40 PM)

1:30 PM: STATION J

1796 Learning Curve Could Affect the Surgical Outcome of Radical Hysterectomy in Cervical Cancer  
Kim S,4,* Song JY,2 Lee JK,1 Lee NW1,1 Obstetrics & Gynecology, Korea University College of Medicine, Seoul, Korea, Republic of (South); 2Korea University College of Medicine, Seoul, Korea, Democratic People’s Republic of (North); 3Korea University College of Medicine, Seoul, Korea, Republic of (South)  
*Corresponding author.

Study Objective: Minimally invasive surgery has become essential technology in field of gynecologic malignancies including cervical cancer. We reviewed our experience and evaluated the results of radical hysterectomy in patients with early stage cervical cancer.

Design: Retrospective analysis.

Setting: Ergonomics.

Patients or Participants: This retrospective study included patients with early stage cervical cancer (Ia1 ~ Ia2) who were treated with radical hysterectomy from May 2006 to April 2018.

Interventions: This retrospective study included patients with early stage cervical cancer (Ia1 ~ Ia2) who were treated with radical hysterectomy from May 2006 to April 2018.

Measurements and Main Results: Learning curves of each group showed two distinct phases. The minimal cases required to achieve surgical improvement were 16 in ARH, 14 in LRH, and 15 in RRH. Progression-free survival and overall survival were not different between the two groups at 5 years (p=0.876 and p=0.876, respectively). But when the groups were stratified by the phases of the learning curves, the patients included in early phase surgery showed poor PFS in RRH (p=0.043).

Conclusion: The learning curve could significantly affect the oncologic outcome in robotically assisted radical hysterectomy. Enough experience is necessary to improve surgical outcome in RRH. Further, a prospective randomized study regarding sufficient surgical competence is necessary for elaborate analysis of feasibility of minimally invasive radical hysterectomy.

Virtual Poster Session 4: Oncology  
(1:30 PM — 1:40 PM)

1:30 PM: STATION J

1796 Learning Curve Could Affect the Surgical Outcome of Radical Hysterectomy in Cervical Cancer  
Kim S,1,* Song JY,2 Lee JK,1 Lee NW1,1 Obstetrics & Gynecology, Korea University College of Medicine, Seoul, Korea, Republic of (South); 2Korea University College of Medicine, Seoul, Korea, Democratic People’s Republic of (North); 3Korea University College of Medicine, Seoul, Korea, Republic of (South)  
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Conclusion: The learning curve could significantly affect the oncologic outcome in robotically assisted radical hysterectomy. Enough experience is necessary to improve surgical outcome in RRH. Further, a prospective randomized study regarding sufficient surgical competence is necessary for elaborate analysis of feasibility of minimally invasive radical hysterectomy.
Virtual Poster Session 4: Oncology
(1:30 PM — 1:40 PM)

1:30 PM: STATION L

2303 Comparison of Laparoscopy and Laparotomy in Primary Cytoreductive Surgery of Advanced Epithelial Ovarian Cancer
Eom JM,* Choi JS, Bae J, Lee WM, Jung US, Lee H. Obstetrics and Gynecology, Hanyang University College of Medicine, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: The aim of this study was to assess the surgical and oncologic outcome of laparoscopic primary cytoreductive surgery on advanced epithelial ovarian cancer in comparison with conventional laparotomy surgery.

Setting: University hospital in Korea.

Patients or Participants: Patients with FIGO stage up to III ovarian cancer undergoing laparoscopic primary cytoreductive surgery from January 2011 to March 2019 were matched to controls treated with laparotomic cytoreduction during the same period.

Interventions: Laparoscopic and laparotomic optimal cytoreduction.

Measurements and Main Results: The surgical and long-term outcome with advanced ovarian cancer were compared. The laparoscopic group (n=30) and laparotomic group (n=24) had similar age, BMI, stages, histologic type and final stage. There were no significant differences in operating time (P = 0.08) and blood loss (P = 0.34). The laparoscopic group exhibited significantly shorter hospital stay (P = 0.002) and time to start to treatment (P = 0.08) and blood loss (P = 0.34). The laparoscopic group (n=30) and laparotomic group (n=24) had similar age, BMI, stages, histological type and final stage. There were no significant differences in operating time (P = 0.08) and blood loss (P = 0.34). The laparoscopic group exhibited significantly shorter hospital stay (P = 0.002) and time to start to treatment (P = 0.08) and blood loss (P = 0.34). No significant difference were observed either in intra-operative or in perioperative complications between the two groups (P = 0.67). No statistical difference was observed for percentage of R0 resection (99.5% vs. 97.3 %, P < 0.001). No significant differences were observed in the progression-free survival and overall survival between the two groups during the medium follow-up.

Conclusion: Laparoscopic and laparotomic primary cytoreduction were similar in surgical and oncologic outcome. Laparoscopic primary cytoreduction in highly selected patients with advanced ovarian cancer was feasible and not to inferior in laparotomic surgery. Prospective randomized trials are required to evaluate the overall oncologic outcomes.

Virtual Poster Session 4: Oncology
(1:30 PM — 1:40 PM)

1:30 PM: STATION M

1870 Comparison of Laparoscopic Versus Open Radical Hysterectomy in Early Cervical Cancer after Completing Learning Curve and Reducing Intraproital Tumor Exposure
Park JY,* Kim JH. Department of Obstetrics and Gynecology, University of Ulsan College of Medicine, Asian Medical Center, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: The main limitation of LACC trial is that the surgeon validation criteria for laparoscopic radical hysterectomy was not enough to include surgeons who completed learning curve for laparoscopic radical hysterectomy. So, the comparison between open and laparoscopic surgery was unfair. In addition, there was no safety measure to reduce intraperitoneal tumor exposure during laparoscopic radical hysterectomy. The aim of this study was to compare the survival outcomes between laparoscopic versus open radical hysterectomy in early cervical cancer after completing learning curve and reducing intraperitoneal tumor exposure.

Design: This was a retrospective study including patients with stage IA2 – II A2 cervical cancer who underwent laparoscopic or open radical hysterectomy. All surgeons completed the learning curve for laparoscopic radical hysterectomy. To reduce the intraperitoneal tumor exposure during laparoscopic radical hysterectomy, all broken tumor tissues were washed out before colpotomy, and colpotomy and stump repair has been performed transvaginally. The survival outcomes were compared between laparoscopic and open radical hysterectomy.

Setting: University hospital.

Patients or Participants: 2,222 patients with early cervical cancer

Interventions: Laparoscopic and open radical hysterectomy.

Measurements and Main Results: During the study period, 854 and 1368 patients underwent open and laparoscopic radical hysterectomy, respectively. The 5-year DFS and OS did not differ between laparoscopic and open radical hysterectomy. The survival outcomes did not differ between laparoscopic and open radical hysterectomy both in patients with tumor < 4 cm and with tumor > 4 cm. The use of laparoscopic surgery increased gradually and has become the main surgical approach during the study period. Each year’s survival rate was not compromised despite the increased use of laparoscopic radical hysterectomy.

Conclusion: The survival outcome of laparoscopic radical hysterectomy is comparable to open radical hysterectomy after completing learning curve and reducing intraperitoneal tumor exposure during surgery.

Virtual Poster Session 4: Oncology
(1:30 PM — 1:40 PM)

1:30 PM: STATION N

1538 Incidence of Gynecologic Cancers in Women after Uterine Fibroid Embolization
Lee EM,1,2,4 Matthews BJ,1 Rodriguez JV,1 Perkins R,1 Morgan JR,3 O’Horo S,4 Paasche-Orlow MK.1 Obstetrics and Gynecology, Boston University School of Medicine, Boston, MA; 2General Internal Medicine, Boston University School of Medicine, Boston, MA; 3Infectious Diseases, Boston University School of Medicine, Boston, MA; 4Interventional Radiology, Boston University School of Medicine, Boston, MA
*Corresponding author.

Study Objective: To estimate the likelihood that patients who have undergone uterine fibroid embolization (UFE) for leiomyomata will go on to develop subsequent gynecologic cancer that may have been prevented with hysterectomy.

Setting: We identified women over 18 years old without prior diagnosis of cancer who had undergone UFE for treatment of leiomyomata in the MarketScan database between 2007 and 2016. Records were then electronically queried for any diagnostic or procedure codes (ICD9, ICD10, and CPT) related to uterine, cervical, tubal, or ovarian malignancies occurring after the UFE procedure date through the end of data available. All charts identified through electronic query all had codes manually reviewed by a minimum of three coders to confirm diagnosis of cancer, and discrepancies were resolved by consensus. Diagnosis of cancer was defined as having at least two codes for gynecological malignancy submitted at least one week apart and/or with malignancy codes linked to tissue pathology results. Descriptive statistics were generated for the final study sample.

Setting: N/A

Patients or Participants: Patient data was obtained from MarketScan, a database of diagnostic and treatment data for over 60 million commercially insured individuals in the US.

Interventions: N/A

Measurements and Main Results: Between 2007 and 2016, 20,575 women underwent UFE. Fifty-one women met criteria for exhibiting cancer within 2.3 years from the date of UFE with a standard deviation of ±2.14 years and a range of 17 days to 7.8 years.

Conclusion: A small fraction of women undergoing UFE develop subsequent gynecologic malignancies. Women choosing uterine preservation with UFE should be counseled about the risk of developing gynecologic...
malignancies in the future, some of which may be preventable with hysterectomy.

Virtual Poster Session 4: Oncology (1:30 PM — 1:40 PM)

1:30 PM: STATION O

1251 Opportunistic Salpingectomy at Time of Non-Gynecologic Laparoscopic Procedures Would Significantly Reduce Ovarian Cancer Mortality and Would Reduce Overall Healthcare Expenditures

Hughes BN,1*, Herzog TJ,1 Drury LK,2 Brown J,2 Naumann RW.2 Cancer Institute, University of Cincinnati, Cincinnati, OH; 2Levine Cancer Institute, Atrium Health, Charlotte, NC

*Corresponding author.

Study Objective: To determine the cost-effectiveness of opportunistic salpingectomy (OpSalp) at time of non-gynecologic laparoscopic procedures and determine the impact on ovarian cancer (OvCa) mortality.

Design: A recursive Markov model was constructed including age adjusted rates for hysterectomy, BLT, appendectomy, cholecystectomy, colon resection, and hernia. The impact of OpSalp on women over 40 and BSO on women over 50 was calculated. The model was run from age 20 to 85 and calculated life-expectancy, cost of surgery, and cost of OvCa.

Setting: N/A

Patients or Participants: N/A

Interventions: N/A

Measurements and Main Results: OpSalp at the time of these surgeries would reduce OvCa deaths by 6.7%, and adding BSO would reduce mortality by 10.0%. Adding these procedures to OpSalp during hysterectomy and BTL would reduce OvCa mortality by 17.0%, preventing 2,388 deaths in the US. If BSO were performed over 50, this would increase to 20.2%, preventing 2,847 deaths from OvCa. OpSalp during cholecystectomy would prevent the most deaths from OvCa at 617 compared to OpSalp at the time of Colon Cancer surgery which would prevent 24 OvCa deaths per year. Considering only the cost of the procedure, the Incremental Cost Effectiveness Ratio (ICER) for OpSalp at elective procedures is $13,234 (range $7,066-$16,245). OpSalp was most cost-effective during appendectomy and least cost-effective during hernia surgery. When considering the cost of caring for ovarian cancer, OpSalp produces a cost savings during appendectomy and cholecystectomy. At a 3% discount rate, we estimate that a system of universal OpSalp for common elective procedures would save an estimated $406 per capita. This would translate into a $877,000,000 savings annually in the United States.

Conclusion: Universal OpSalp during hysterectomy, BTL and elective surgery will significantly reduce OvCa mortality and reduce overall healthcare expenditures due to prevention of OvCa. Therefore, it would be reasonable to perform OpSalp in all women undergoing elective surgery.

Virtual Poster Session 4: Oncology (1:30 PM — 1:40 PM)

1:30 PM: STATION P

2898 200 Cases of Endometrial Cancer — 10 Year

Outcomes

Skelly C,1* Wilson S,2 McCracken G.1 Obstetrics & Gynaecology, Antrim Area Hospital, Antrim, United Kingdom; 2Obstetrics & Gynaecology, Craigavon Area Hospital, Craigavon, United Kingdom

*Corresponding author.

Study Objective: To investigate the outcomes of 200 women with early stage Endometrial Cancer managed at a District General Hospital over a 10 year period.

Design: Retrospective audit of 200 patients with confirmed endometrial cancer, within one Trust in Northern Ireland, from 2009-2018. Information was collected from Northern Ireland Electronic Care Record, and subsequently analyzed using Microsoft Excel.

Setting: Southern Health and Social Care Trust, Northern Ireland

Patients or Participants: 200 patients were identified from one surgeon’s database of recorded cases

Interventions: N/A

Measurements and Main Results: 88% were overweight or obese, 74% presented with postmenopausal bleeding, 54% women underwent total laparoscopic hysterectomy (TLH), 28.5% abdominal hysterectomy, 13.5% vaginal hysterectomy (VH), 3.5% Laparoscopic assisted vaginal hysterectomy (LAVH), 0.5% transcervical resection and mirena. Overall complication rate was 5% for both laparoscopic and abdominal hysterectomy groups, 1% for vaginal and LAVH. Breakdown of specific complications available.

Conversion rate from laparoscopic to open hysterectomy was 3.6%. Pre-operative histology compared with hysterectomy specimen matched in 78% cases, 3% were significantly upgraded from low to high grade. Pre-operative radiological staging matched the hysterectomy specimen in 69% of cases, 6% were upstaged from Stage 1 to Stage 2 or 3. Overall confirmed recurrence rate was 2.5%. None were detected through standard follow-up pathways.

Conclusion: This study supports the strong association between high BMI and endometrial cancer. Despite obesity presenting significant surgical challenges, complication rates are low considering the patient demographic. The shortest median length of stay was with vaginal and laparoscopic hysterectomy. Preoperative grading and staging are relatively accurate in our department. Confirmed recurrence rates are low, although a significant proportion of patients are still in follow-up. Clinical follow-up is not useful in detecting recurrence in the majority of patients, which supports a Self Directed Aftercare approach in the majority of early stage endometrial cancers.

Virtual Poster Session 4: Oncology (1:30 PM — 1:40 PM)

1:30 PM: STATION R

2615 Robotic Tumor Debunking Off External Iliac Vessels for Management of Recurrent Ovarian Cancer

Matila L,1 Khudraoui W,2* Hosier H,2 Menderes G.1 Obstetrics, Gynecology & Reproductive Sciences, Yale School of Medicine, New Haven, CT; 2Obstetrics and Gynecology, Yale New Haven Health, Bridgeport Hospital, Bridgeport, CT; 3Obstetrics, Gynecology & Reproductive Sciences, Yale New Haven Hospital, New Haven, CT

*Corresponding author.

Video Objective: To demonstrate a surgical video where-in a tumor nodule was resected off the external iliac vessels.

Setting: Tertiary referral center.

Interventions: 69 year-old Caucasian female with Lynch Syndrome, with BRCA-2 positive Stage IIC high grade serous ovarian adenocarcinoma and underwent optimal debulking followed by adjuvant chemotherapy in 1966. Given her Lynch syndrome and mismatch repair deficient (microsatellite instability-high) tumor, she was started on pembrolizumab. The patient had excellent clinical response to pembrolizumab until February 2019, when PET-CT showed hypermetabolic mass adjacent to external iliac vessels concerning for recurrence. She was then consented for robotic tumor debulking.

Patient was placed in Trendelenburg position and 15° leftward tilt to expose the right pelvic sidewall and paracolic gutter. To optimally target the surgical field of interest, all robotic trocars were placed in a straight line starting from 5 cm above symphysis pubis on the left side extending to left subcostal line between the midline vertical and the left midclavicular lines. The cecum and the ascending colon were mobilized. The nodule was densely adherent to the external iliac artery. Many collateral blood feeding into the nodule were skeletonized and cut. The tumor nodule was successfully resected off the right external iliac artery and vein without any injury.
The procedure was completed without any complications. Patient was discharged home on postoperative day one. The pathology revealed ovarian adenocarcinoma with negative margins.

**Conclusion:** To optimize targeting and visualization of the surgical field in right pelvic sidewall/paraortic gutter, robotic arms can be placed in a straight line from above the pubic symphysis extending to the left subcostal line and between the midline vertical and midclavicular lines. Robotic tumor debulking should be considered in selected patients with recurrent ovarian cancer who present with oligo-metastatic disease, in the absence of carcinomatosis.

**Virtual Poster Session 4: Oncology**
(1:30 PM — 1:40 PM)

1:30 PM: STATION A

### 1354 The Safety and Efficacy Of Intra-Arterial Versus Intra-Venous Neoadjuvant Chemotherapy in Patients with Locally Advanced Cervical Cancer: A Meta-Analysis

**Liu C, Bai H, Zhang Z. Gynecology and obstetrics, Beijing Chao-Yang Hospital, Capital Medical University, Beijing, China**

*Corresponding author.

**Study Objective:** The aim of this study was to evaluate the safety and efficacy of intra-arterial (NCIA) versus intravenous (NCIV) neoadjuvant chemotherapy in managing patients with locally advanced cervical cancer (LACC).

**Design:** The PubMed, EMBASE, PMC, Web of Science and Cochrane databases were searched to identify correlational studies published in English. Prospective controlled studies that evaluated the treatment effect of NCIA or NCIV in patients with LACC were pooled for a meta-analysis.

**Setting:** N/A

**Patients or Participants:** N/A

**Interventions:** N/A

**Measurements and Main Results:** A total of three eligible studies with 112 LACC patients were eventually included in this analysis. The baseline regimen of neoadjuvant chemotherapy (NACT) was platinum-based chemotherapy. The total clinical response rate (RR) was 71.4%, and the pathological complete response (PCR) was 11.5% overall. The grade 3/4 toxicity rate was 27.2%. In the NCIA group, the RR was 83.1% (complete response [CR], 22.0%; partial response [PR], 61.0%), which was significantly higher than the 58.5% RR (CR, 11.3%; PR, 47.2%) in the NCIV group (P=0.005). The PCR was 15.5% in the NCIA group, which was slightly higher than 6.5% PCR in the NCIV group (P=0.43). The grade 3/4 toxicity rate was 17.2% in the NCIA group, which was slightly higher than the 13.8% toxicity rate in the NCIV group (P=0.38).

**Conclusion:** Platinum-based NACT was well tolerated in patients with LACC and showed moderate response activity. Compared to NCIV, NCIA showed an evident advantage in the clinical response with a similar toxicity rate. The clinical efficacy of NCIA deserves further evaluation.

**Virtual Poster Session 4: Oncology**
(1:30 PM — 1:40 PM)

1:30 PM: STATION T

### 2534 Opioid Use and Misuse among Gynecologic Oncology Patients


*Corresponding author.

**Study Objective:** To determine opioid and benzodiazepine prescribing practices in the gynecologic oncology population and determine if this patient population is at risk for narcotic abuse.

**Design:** This was an IRB-approved, retrospective study of opioid and benzodiazepine prescriptions for cervical, ovarian (including fallopian tube and primary peritoneal), and uterine cancer patients within a single health-care system from January 2016 to August 2018. Demographics and prescription details were extracted from the electronic medical record.

**Setting:** A tertiary care academic nonprofit healthcare system.

**Patients or Participants:** Patients with ovarian, uterine, or cervical cancer that received an opioid or benzodiazepine prescription.

**Interventions:** N/A

**Measurements and Main Results:** 6407 prescriptions for opioids/benzodiazepines were dispensed to 5386 patients over a total of 5931 prescribing encounters for cervical (n=1965, 33%), ovarian (n=1801, 30%), or uterine cancers (n=2165, 37%). The setting for prescription distribution was 50.9% outpatient, 25.6% inpatient, and 21% emergency center. Cervical cancer patients were more likely to have received a prescription in an emergency center (p<0.0001) or from a pain/palliative care specialist (p<0.0001). Opioids were prescribed in 87%, benzodiazepines in 5.2%, and both in 6.6% of encounters. Ovarian cancer patients were more often prescribed benzodiazepines (p<0.0001), but cervical cancer patients were more often prescribed both opioids and benzodiazepines in a single encounter (p<0.0001). The mean morphine equivalent (MME) prescribed was higher for patients with cervical cancer (64.5mg) compared to ovarian (49.5mg) or uterine cancer (46.8mg) (p<0.0001). At least one risk factor for opioid abuse was noted in 22% of encounters. Cervical cancer patients were more likely to have these risk factors present (28.1%) compared with ovarian (20.2%) or uterine cancer (16.5%, p<0.0001). Cervical cancer patients also had a higher number of risk factors present (p<0.001).

**Conclusion:** Opioid prescribing patterns differed for cervical, ovarian, and uterine cancer patients. Patients with cervical cancer were more likely to have risk factors present for opioid and benzodiazepine misuse, abuse, and diversion.

**Virtual Poster Session 4: Oncology**
(1:40 PM — 1:50 PM)

1:40 PM: STATION A

### 1868 Prognostic Value of Preoperative Lymphocyte-Monocyte Ratio in Patients with Ovarian Clear Cell Carcinoma

**Kwon BS,* Yoon HJ, Lee HJ. Department of Obstetrics and Gynecology, Pusan National University School of Medicine, and Biomedical Research Institute, Pusan National University Hospital, Busan, Korea, Republic of (South)**

*Corresponding author.

**Study Objective:** The aim of the present study was to determine the prognostic significances of markers of preoperative systemic inflammatory response (SIR) in patients with ovarian clear cell carcinoma (OCCC).

**Design:** A total of 109 patients diagnosed with OCCC that underwent primary cytoreductive surgery and adjuvant platinum-based chemotherapy from 2009 to 2012 were enrolled in this retrospective study. SIR markers were calculated from complete blood cell counts determined before surgery.

**Setting:** This study was performed in Pusan National University Hospital, Busan, Korea.

**Patients or Participants:** 109 OCCC patients that had underwent primary debulking and adjuvant paclitaxel and carboplatin chemotherapy at university hospitals between April 2007 and June 2012.

**Interventions:** Preoperative blood samples were drawn 1 to 2 weeks prior to surgery. ROC curve analysis was used to obtain optimal NLR, LMR and PLR cutoff values for predicting survival outcomes.

**Measurements and Main Results:** The optimized NLR, LMR and PLR cut-off values as determined by ROC curve analysis for PFS and OS were 2.3, 4.2, and 123.6, respectively. When the cohort was divided using these optimized cut-offs, NLR and LMR were found to be significantly associated with clinicopathologic factors, NLR with FIGO stage, the presence of...
malignant ascites, and platinum response, and LMR with FIGO stage, lymph node metastasis, malignant ascites, and platinum response. Kaplan-Meier analysis revealed a high NLR (> 2.3) was significantly associated with low 5-year PFS and OS rates and that a high LMR was significantly associated with high 5-year PFS and OS rates. Multivariate analysis identified FIGO stage, residual mass, and platinum response as independent prognostic factors of PFS, and FIGO stage, residual mass, platinum response, and LMR as independent prognostic factors of OS.

Conclusion: Markers of systemic inflammatory response provide useful prognostic information and lymphocyte-to-monocyte ratio is the most reliable independent prognostic factor of overall survival in patients with ovarian clear cell carcinoma.

Virtual Poster Session 4: Oncology
(1:40 PM − 1:50 PM)

1:40 PM: STATION C

2921 Trends in Endometrial Hyperplasia Over the Past Decade – Is It on the Increase?

Skelly C,1 * Breen J,1 Johnston KM2.1 Obstetrics & Gynaecology, Antrim Area Hospital, Antrim, United Kingdom; 2 Antrim Hospital, Antrim, United Kingdom
*Corresponding author.

Study Objective: Atypical Hyperplasia carries a 30% risk of developing endometrial cancer over 20 years. Endometrial cancer has increased by 54% since the 1998. Overall hysterectomy rates are falling, and obesity increases. We reviewed 3 snapshot years over 10 years, in terms of hyperplasia numbers, management and surveillance.


Setting: Northern Health and Social Care Trust, Northern Ireland

Patients or Participants: 74 patients with a histological diagnosis of endometrial hyperplasia with or without atypia were identified.

Interventions: Single-site laparoscopic vaginal combined hysterectomy + bilateral accessory resection + pelvic lymphadenectomy.

Conclusion: Single-site laparoscopy is an alternative surgical choice for endometrial cancer.

Virtual Poster Session 4: Oncology
(1:40 PM − 1:50 PM)

1:40 PM: STATION D

2000 Survival Outcomes of Neoadjuvant Chemotherapy Followed By Laparoscopic or Open Radical Hysterectomy Versus Concurrent Chemoradiation in Patients with Locally Advanced Cervical Cancer

Cho HW,1 * Lee JK,2 Ouh YT,2 1 Korea University Guro Hospital, Seoul, Korea, Republic of (South); 2 Obstetrics and Gynecology, Korea University Guro Hospital, Seoul, Korea, Republic of (South)
*Corresponding author.

Study Objective: This study aimed to compare the survival outcomes of NACT followed by laparoscopic or open radical hysterectomy versus CCRT in patients with locally advanced cervical cancer.

Design: Retrospective single-center study.

Setting: Retrospective single-center study.

Patients or Participants: Patients who were diagnosed as cervical cancer stage Iib to IVA at the Korea University Guro Hospital (February 2002~March 2014).

Interventions: NACT followed by laparoscopic or open radical hysterectomy versus CCRT.

Measurements and Main Results: Patients were categorized into two groups according to treatment method: NACT followed by laparoscopic and open radical hysterectomy with or without adjuvant chemotherapy (NCRH group) and concurrent chemoradiation (CCRT group). Survival outcomes and morbidity of the treatment were compared between the two groups using the Kaplan-Meier’s analysis.

Conclusion: Neoadjuvant chemotherapy followed by laparoscopic and open radical hysterectomy seems to be a safe treatment option for locally advanced cervical cancer, in terms of similar survival outcomes and morbidity of treatment with CCRT. However, the present study is too limited to permit conclusions due to its small sample size and retrospective design despite statistical methods for adjusting confounding factors.

Virtual Poster Session 4: Laparoscopy
(1:40 PM − 1:50 PM)

1:40 PM: STATION E

1206 The Effect of Sub-Cutaneous and Intra-Peritoneal Anesthesia on Post Laparoscopic Pain: A Randomized Controlled Trial

Gluck O,1 * Barber E,1 Feldstein O,1 Kerner R,1 Keidar R,1 Ginath S,1 Wolfson I,2 Bar J,1 Sagin R,1 Obstetrics and Gynecology, E. Wolfson Medical Center, Holon, Israel; 2 Operation room, E. Wolfson Medical Center, Holon, Israel
*Corresponding author.

Study Objective: To evaluate whether sub-cutaneous (SC) trocar site and intra-peritoneal (IP) anesthesia reduce post-operative pain.

Design: This is a randomized, controlled, double-blinded trial. The patients were randomly assigned to one of 4 groups:
Study Objective: To compare using the acellular porcine small intestinal submucosa (SIS) graft or the Interceed in patients with MRKH syndrome undergoing creation of a neovagina.

Design: Retrospective study.

Setting: Academic affiliated community hospital.

Patients or Participants: Patients with MRKH syndrome undergoing creation of a neovagina from 2016 to 2018 were retrospectively investigated.

Interventions: Wharton-Sheares-George neovaginoplasty was performed using the acellular porcine small intestinal submucosa (SIS) graft or the Interceed.

Measurements and Main Results: Overall 67 patients were included (24 for the SIS graft, 43 for the Interceed) for analysis. The operating time, the estimated blood loss and return of bowel activity in the SIS graft group were similar with that in the Interceed group. However, the total cost in the SIS group was significantly higher than that in the Interceed group due to the cost of the SIS graft ($2570 per graft). All patients had a continuous mold wearing time for 6 months postoperatively and then returned for their follow-up. The mean length and width of the neovagina in the SIS graft group were similar with the Interceed group (7.0±0.6 cm vs 7.1±0.8 cm, P=0.54, 2.8±0.3 cm vs 2.7±0.5 cm, P=0.74, respectively). However, the incidence of granulation at the vaginal apex was higher in the SIS graft group than in the Interceed group (6/24 vs 4/43, p<0.001). Sixteen (66.7%) patients in the SIS group and thirty-one (72.1%) in the Interceed group subsequently had a sexual partner. There was no statistically significant difference in the total FSFI scores (27.54±4.50 vs 26.81±3.21, p=0.71) between the two groups.

Conclusion: Our results demonstrated that Wharton-Sheares-George neovaginoplasty provided the patients to have satisfactory sexual intercourse. The Interceed played a role in the reconstruction of neovagina no less than the SIS graft.

Virtual Poster Session 4: Basic Science/Research/Education (1:40 PM — 1:50 PM)

1:40 PM: STATION H

2920 A Retrospective Look at Gynecological Surgical Complications

Patel AA,1,* Ninaroff ML2 1OBGYN, Northwell Health, Manhasset, NY; 2Minimally Invasive Gynecologic Surgery, North Shore University Hospital, Manhasset, NY

*Corresponding author.

Study Objective: The objective of this study is to evaluate the gynecology caseload in our health system and readdress major and minor complications during gynecological surgery.
**Study Objective:** A retrospective chart review from 2017-2018 of all gynecology cases performed by attending of various gynecological training including Minimally Invasive Gyn Surgery, Gyn Oncology, Urogynecology and general OB/GYN. The chart review looks at all major and minor documented complications from surgery.

**Setting:** OR cases from 2017-2018 collected over an entire health system, 21 hospitals in total. Cases include abdominal, laparoscopic and robotic cases in the Northwell health system.

**Patients or Participants:** A total of 7375 cases were reviewed, all cases were performed in the OR during 2017-2018.

**Interventions:** N/A

**Measurements and Main Results:** A total of 7375 cases were reviewed: 4326 laparoscopic, 1653 abdominal, and 1396 robotic. 682 cases were noted to have complications from surgery, which is a 9.2% incidence. Complications were seen in 175 open cases (10.59%), 415 laparoscopic cases (9.59%) and 92 robotic procedures (6.59%). There were GU complications in 25.14%, intraoperative puncture of an organ in 11.26%, post operative hematoma in 9.2%, intra-operative hematoma/hemorrhage 3.95%, sepsis in 3.5%, surgical site infection in 3.07%, pulmonary embolism in 2%, DVT was found in 1.90%, intestinal obstruction 0.58%, CV in 0.23%, other in 0.21%

**Conclusion:** More surgical complications were seen in abdominal cases versus minimally invasive cases. Out of all the major and minor complications seen in gyn surgery the more common complication were GU complications. Currently in the process of analyzing complications based on surgeon experience and training with the hypothesis that surgeons who see more cases in gyn surgery the more common complication were GU complications.

**Virtual Poster Session 4: Robotics (1:40 PM — 1:50 PM)**

1:40 PM: STATION I

1783 Does Robot-Assisted Laparoscopy Improve Outcomes in Ovarian Dermoid Cystectomy?

Vettathu MS,1,2 * Allswede MT,1,2 Martin M,1 Hoffman JT1,2, 1Obstetrics and Gynecology, Sparrow Hospital, Lansing, MI; 2Obstetrics and Gynecology, Michigan State University College of Human Medicine, East Lansing, MI

*Corresponding author.

**Study Objective:** To evaluate whether using robot assisted laparoscopic technique (RAL) reduces cyst disruption with spillage during benign ovarian teratoma cystectomy compared to straight laparoscopic technique (SLA) and laparotomy (LAP).

**Setting:** Community teaching hospital.

**Patients or Participants:** All patients who underwent unilateral ovarian cystectomy with pathology confirmed dermoid cyst from 1/2013 to 12/2018. 101 patients met inclusion criteria.

**Interventions:** Unilateral ovarian cystectomy

**Measurements and Main Results:** Intraoperative spillage rates were not significantly different for LAP 19/38 (50%), SLA 28/45 (62%), and RAL 12/18 (67%). See table below for complete results.

**Conclusion:** Robot-assisted laparoscopy did not reduce intraoperative spillage of dermoid cyst contents compared to traditional laparoscopy or laparotomy. In patients with large (>6cm) dermoid cysts the use of RAL decreased blood loss, length of postoperative hospital stay, need for inpatient admission and conversion to LAP (compared to SLA), but increased the length of surgery and hospital cost compared to LAP. We conclude that larger dermoid cysts may be treated with RAL instead of LAP. Smaller cysts may have equivalent outcomes with traditional laparoscopic techniques.

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### Virtual Poster Session 4: Urogynecology (1:40 PM — 1:50 PM)

1:40 PM: STATION J

1463 Postvoid Residual Measurements by Bladder Ultrasound in Obese Women: Are They Accurate?

Bastawros D,1,2 * Hendley N,2 Zhao J,3 Myers EM,3 Taylor GB,1

Kennedy MJ,1 Steep KJ,2 Tarr ME,1 1Atrium Health, Charlotte, NC; 2University of Chicago, Chicago, IL; 3Center for Outcomes Research and Evaluation (CORE), Charlotte, NC; *Obstetrics and Gynecology, Division of Female Pelvic Reconstructive Surgery, Atrium Health, Charlotte, NC *Corresponding author.

**Study Objective:** To evaluate the accuracy of bladder scanner measurements in assessing post-void residual (PVR) volumes in obese women [body mass index (BMI)≥30 kg/m²] as compared to non-obese women (BMI<30 kg/m²).

**Design:** Prospective.

**Setting:** Academic center.

**Patients or Participants:** Women undergoing multichannel urodynamic studies from June to September 2018.

**Interventions:** After uroflowmetry, PVR was measured with the BVI 3000. The largest volume of three attempts was recorded. Sterile straight catheterization was performed immediately after. The primary outcome was the difference between bladder scanner PVR and catheterized PVR in obese and non-obese women.

**Measurements and Main Results:** 133/157 women (57 obese, 76 non-obese) were eligible for inclusion. Obese women were younger (54.9 vs 61.5, p<0.01). Both groups had a median pelvic organ prolapse quantification (POP-Q) stage of 2, however, there was a significant difference with the non-obese women having a range of higher grade prolapse.

---

<table>
<thead>
<tr>
<th></th>
<th>LAP (N=91)</th>
<th>SLA (N=63)</th>
<th>RAL (N=12)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Outcome</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Intraoperative spillage rates</td>
<td>19 (50%)</td>
<td>28 (62%)</td>
<td>12 (67%)</td>
<td>0.39</td>
</tr>
<tr>
<td><strong>Secondary Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preoperative cyst size (cm)</td>
<td>7.5 (1.6-18.6)</td>
<td>5.9 (1.9-11.8)</td>
<td>8.4 (3.9-16.4)</td>
<td>0.007</td>
</tr>
<tr>
<td>Length of surgery (minutes)</td>
<td>76 (40-142)</td>
<td>79 (24-140)</td>
<td>130 (64-275)</td>
<td>0.0003</td>
</tr>
<tr>
<td>Length of postoperative stay(minutes)</td>
<td>1289 (110-6177)</td>
<td>263 (114-1320)</td>
<td>445 (158-2790)</td>
<td>0.000001</td>
</tr>
<tr>
<td>Postoperative level of service(inpatient)</td>
<td>27 (71%)</td>
<td>6 (15%)</td>
<td>2 (11%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Hospital cost (US Dollars)</td>
<td>$4393 (3079-6729)</td>
<td>$4585 (2818-6729)</td>
<td>$7037 (4118-12851)</td>
<td>0.008</td>
</tr>
<tr>
<td>Average blood loss (ml)</td>
<td>64 (10-400)</td>
<td>37 (10-200)</td>
<td>51 (10-200)</td>
<td>0.144</td>
</tr>
<tr>
<td>Other complications</td>
<td>3 (7%)</td>
<td>1 (2%)</td>
<td>1 (5%)</td>
<td>0.49</td>
</tr>
<tr>
<td>Convert to laparotomy</td>
<td>6 (13%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0.17</td>
</tr>
</tbody>
</table>
There was no difference between obese and non-obese women in the PVR differences between bladder scanner and catheterization values (-30±65.9 mL vs -24.4±70.8mL, p=0.64). Multivariable linear regression analysis did not show a difference between groups. For the obese group, 5 out of 57 (8.8%) had a difference of over 50 mL, while 3 out of 76 (4.0%) in the non-obese group had a difference of over 50 mL between bladder scanner and catheterization PVR volumes (p=0.29). Sensitivity of the bladder scanner identifying catheterization PVR volumes less than 100 mL in obese women was 50% (95% CI 0.34-0.66) and 48.8% (95% CI 0.33-0.64) in non-obese women. For PVR less than 100 mL, the specificity of the bladder scanner was 76.2% in obese women (95% CI 0.58-0.94) and 77.1% (95% CI 0.63-0.91) in non-obese women.

**Conclusion:** There is no significant difference in PVR measurements by bladder scan versus catheterization in obese versus non-obese women.
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