Plenary 4: Robotics

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Professional Education Information

Target Audience
This educational activity is developed to meet the needs of residents, fellows and new minimally invasive specialists in the field of gynecology.

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Plenary 4: Robotics

Moderators: Bala Bhagavath, Tiffany R. Jackson, Martin A. Martino

Discussants: Amber Bradshaw, David I. Eisenstein, Kathy Huang, Matthew M. Palmer, Kristin Patzkowsky, Michael C. Pitter, Stacey A. Scheib, Sangeeta Senapati


This session provides a range of studies on robotic surgery techniques and outcomes of robotic surgery and comparison to laparoscopy.

Learning Objectives: At the conclusion of this course, the clinician will be able to: 1) Identify outcomes for different robotic procedures and techniques.

Course Outline

3:20  Comparison of Operative and Peri-Operative Results for Robotic and Laparoscopic Myomectomies  K.J. Sasaki

3:26  Discussant  S.A. Scheib

3:30  Standard Versus Robot-Assisted Laparoscopic Hysterectomy: A Prospective Randomized Trial  T.A. Deimling

3:36  Discussant  L.D. Schiff

3:40  A Wireless Audio System Improves Teamwork and Communication in Robotic Laparoscopic Surgery  Z. Tsafrir

3:46  Discussant  E.I. Eisenstein

3:50  Laparoscopic Versus Robotic Surgery Learning Curves  I. Livinti

3:56  Discussant  M.C. Pitter

4:00  Computerized Tomography Adiposity Morphometrics: A Novel Approach to Predict Pulmonary Intolerance in Endometrial Cancer Patients Undergoing Robotic Pelvic Surgery (RPS)  A.Y. Abdelbadee

4:06  Discussant  K. Patzkowsky

4:10  An Objective Tool to Differentiate Robotic Surgical Skill & Experience  K.M. Simpson

4:16  Discussant  K. Huang

4:20  Comparing the Robotic Single-Port Approach to Multi-Port, for Pelvic Lymph Node Dissection in the Treatment of Endometrial Pathology  A.M. Khafagy

4:26  Discussant  M.M. Palmer
<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
<th>Discussant</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:30</td>
<td>Evaluation of Symptom Resolution in Patients With a Small Number of Myomas Following Robotic-Assisted Laparoscopic Myomectomy</td>
<td>A. Mandelberger</td>
</tr>
<tr>
<td>4:36</td>
<td>Discussant</td>
<td>A. Bradshaw</td>
</tr>
<tr>
<td>4:40</td>
<td>Video: Robotically Assisted Radical Trachelectomy</td>
<td>M. Andou</td>
</tr>
<tr>
<td>4:46</td>
<td>Discussant</td>
<td>S. Senapati</td>
</tr>
<tr>
<td>4:50</td>
<td>Video: Repair of a Cystotomy During a Robot-Assisted Right Ureterolysis and Upper Vaginectomy: Review of Anatomy and Surgical Technique</td>
<td>E.M. George</td>
</tr>
<tr>
<td>4:56</td>
<td>Discussant</td>
<td>K. Huang</td>
</tr>
<tr>
<td>5:00</td>
<td>Adjourn</td>
<td></td>
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</table>
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The following members of AAGL have been involved in the educational planning of this workshop and have no conflict of interest to disclose (in alphabetical order by last name).
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Lauren D. Schiff*
Sangeeta Senapati
Consultant: Emmi
Khara M. Simpson*
Ziv Tsafrir
Other: Headset devices supplied by: Quail Digital
Contracted/Research: Blue Cross/Blue Shield

Asterisk (*) denotes no financial relationships to disclose.
Comparison of Operative and Peri-Operative Results for Robotic and Laparoscopic Myomectomies

Kirsten J. Sasaki, M.D.
Advanced Gynecologic Surgery Institute

• I have no financial relationships to disclose.

Background
• 1979: First reported LM (Semm, 1979)
• 2004: First case series RM (Advincula, 2004)
• LM vs. RM
  – 602 subjects: 284 LM, 318 RM
  – No difference: estimated blood loss (EBL), operating time, major complications, length of stay
  – RM: higher blood transfusion risk (2 studies, RR 6.21, 95% CI 1.14-33.95 and cost (1 study)
  – Uncertain: fibroid recurrence, fertility, and obstetric outcomes

Hypothesis
• The lack of haptic feedback will not impact the outcomes for robotic versus laparoscopic myomectomy.

Materials and Methods
• Case-matched 2:1 (laparoscopic: robotic) cohort study using prospectively collected data from our practice from September 2009 through December 2014.
• Pre-operative Ultrasound and Hysterosonogram (HSN)
• Myomectomy
  – Port Placement: First port placed at umbilicus (12mm) and depending upon size of uterus and location of fibroids, 2-3 additional ports are placed
    • LM (5mm)
    • RM (8mm)
  – LM: Ultrasonic energy, RM: Monopolar energy
  – Barbed suture repair hysterotomy

OBJECTIVES

• Compare the peri-operative outcomes of robotic myomectomies (RM) and laparoscopic myomectomies (LM).
Materials and Methods

- Fibroids morcellated through umbilicus with power morcellator (contained starting April 2014)
- Follow-up: 2 weeks post-operatively
  - Pelvic US after 3 months
  - Cases matched for number and size (1-3, 3-5, 6-10, >10cm) of fibroids removed and timing of post-operative US (0-3, 3-6, 6-12, >12 months)
- Data Analysis:
  - Continuous variables: Student t-test
  - Categorical variables: Chi-square or Fischer’s exact test
  - Linear regression: Predictive variables on number of post-operative fibroids

Results

- No difference: age, pregnancy history, prior pelvic surgery or trocar number (p>0.05)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>LM (N=96)</th>
<th>RM (N=48)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time (min), mean (SD)</td>
<td>162.2 (80.2)</td>
<td>169.3 (87.2)</td>
<td>0.627</td>
</tr>
<tr>
<td>EBL (mL), mean (SD)</td>
<td>126.4 (189)</td>
<td>111.9 (171.9)</td>
<td>0.674</td>
</tr>
<tr>
<td>Conversion of surg. approach* N (%)</td>
<td>0 (0%)</td>
<td>3 (8.3%)</td>
<td>0.035</td>
</tr>
<tr>
<td>Complication rate** N (%)</td>
<td>2 (2.1%)</td>
<td>3 (6.5%)</td>
<td>0.533</td>
</tr>
<tr>
<td>Overnight admission rate, N (%)</td>
<td>15 (15.6%)</td>
<td>11 (23%)</td>
<td>0.284</td>
</tr>
<tr>
<td>Number of fibroids removed, mean (SD)</td>
<td>4.54 (4.6)</td>
<td>4.3 (4.2)</td>
<td>0.739</td>
</tr>
<tr>
<td>Number of fibroids on post-operative ultrasound, mean (SD)</td>
<td>0.4 (1.2)</td>
<td>0.3 (0.78)</td>
<td>0.591</td>
</tr>
</tbody>
</table>

* Conversion was done in LM (R) for both cases
** Complications: Ll/l (10), cervical laceration (1), Nt (high EBL, 1), cervical laceration (1)

Discussion

- RM and LM demonstrated similar outcomes in skilled surgical hands
- Lack of tactile haptics does not hinder RM outcomes
- Complete fibroid removal does not differ between RM and LM, and is correlated with number of fibroids

NEXT STEPS:
- Evaluate long-term with US and exam for symptoms and fibroid recurrence

Materials and Methods

Demographics

- Age (years)
- Gravity
- Parity
- History of prior pelvic surgery

Operative

- Operative time (min)
- Estimated blood loss (EBL) (mL)
- Number of fibroids removed
- Size of fibroids removed
- Conversion of surgical approach
- Complications
- Overnight admission

Post operative

- Number of fibroids on ultrasound
- Size of fibroids on ultrasound

Results

- Conversion rate
  - RM: 3 (6.3%) converted to LM
    - correlated with increased EBL (r=0.237, p=0.004) and operative time (r=0.143, r=0.038)
- Post-operative fibroid number
  - Number of fibroids removed intra-operatively predictor for both RM and LM

References

CJ S4  p=.002
Courtney Steller, 8/18/2015
Standard Laparoscopic versus Robot-Assisted Laparoscopic Hysterectomy: A Prospective Randomized Trial

Timothy A Deimling MD, MS
Assistant Professor of Obstetrics and Gynecology
Assistant MIGS Fellowship Program Director
The Penn State Milton S Hershey Medical Center

Objectives

- Compare the differences and similarities between robot-assisted and standard laparoscopic approaches to hysterectomy
- Discuss the progress made with respect to operative time in robotic surgery within a high volume practice

Background

- "There is no good data proving that robotic hysterectomy is as good as—let alone better—than existing minimally invasive alternatives."
- "Robotic hysterectomy is best used for unusual and complex conditions in which improved outcomes over standard minimally invasive approaches have been demonstrated." – Dr. James Breeden, ACOG President 2013

Previous Studies

- Paraiso MF, et al.
  - Prospective randomized controlled trial comparing standard laparoscopic and robot-assisted hysterectomy
  - 27 patients randomized to standard and 26 to robot-assisted group
  - Longer total operative time in robot-assisted group by 72 minutes
- Sarlos D, et al.
  - Prospective randomized controlled trial comparing standard laparoscopic and robot-assisted hysterectomy
  - 100 total patients randomized
  - Longer total operative time in robot-assisted group by 31 minutes

Disclosure

- I have no financial relationships to disclose
Hypothesis

- Robot-assisted surgery will be non-inferior to standard laparoscopic surgery with respect to operative time during hysterectomy in the hands of an experienced minimally-invasive gynecologic surgeon.

Power Analysis

- Clinically significant time difference for hysterectomy procedure was defined as 15 minutes.
- Sample size determination:
  - 128 pts (64 per study arm) will provide 81% power to detect non-inferiority of robot-assisted laparoscopic hysterectomy vs standard laparoscopic hysterectomy with respect to operating time.
  - 144 pts (72 per study arm) to account for a possible 10% drop-out rate.
- IRB approval #00000164.
- Registered on clinicaltrials.gov (NCT02118974).

Materials & Methods

- Primary Outcome:
  - Operative time
    - Skin incision until closure
    - Included docking time for robot-assisted cases.
- Secondary Outcomes:
  - Pain score
    - Scale of 1-10 at two hours post-operatively.
  - Length of hospital stay
    - Time into OR until time of discharge.
  - Complications
    - Followed for 12 weeks total.

Results: Demographics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Robot-Assisted Mean +/- SD</th>
<th>Standard Mean +/- SD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>42.3 +/- 8.0</td>
<td>43.2 +/- 8.5</td>
<td>0.51</td>
</tr>
<tr>
<td>Body mass index (kg/m2)</td>
<td>30.6 +/- 7.8</td>
<td>32.1 +/- 9.3</td>
<td>0.31</td>
</tr>
<tr>
<td>Gravidity</td>
<td>2.0 (1.0, 3.0)</td>
<td>2.0 (1.0, 3.0)</td>
<td>0.69</td>
</tr>
<tr>
<td>Parity</td>
<td>2.0 (1.0, 3.0)</td>
<td>2.0 (1.0, 3.0)</td>
<td>0.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Robot-Assisted n (%)</th>
<th>Standard n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cesarean section</td>
<td>17 (23.6)</td>
<td>32 (44.4)</td>
<td>0.01</td>
</tr>
<tr>
<td>Prior laparotomy</td>
<td>3 (4.2)</td>
<td>4 (5.6)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Primary Outcome: Operative Time

- Length of Surgery
  - Skin incision to closure
  - Included docking/undocking time.
- Mean operative time in the robot-assisted laparoscopic group was 73.9 minutes (median=67 minutes).
- Mean operative time in standard laparoscopic group was 74.9 minutes (median=65.5 minutes).
Secondary Outcome: Post-op Pain

- Assessed at 2 hours post-op on scale 1-10
- Median pain score in the robot-assisted laparoscopic group was 3.0 (mean=3.8)
- Median pain score in standard laparoscopic group was 4.0 (mean=3.9)
- 25%ile, 75%iles for both groups were 2.0, 5.5 respectively

Secondary Outcome: Length of Stay

- Median length of stay in the robot-assisted laparoscopic group was 22.0 hours (mean=18.6 hours)
- Median length of stay in standard laparoscopic group was 22.0 hours (mean=22.0 hours)

Secondary Outcome: Complications

<table>
<thead>
<tr>
<th>Complications</th>
<th>Robot-Assisted n (%)</th>
<th>Standard n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra-operative</td>
<td>1 (1.4)</td>
<td>0 (0.0)</td>
<td>1.00</td>
</tr>
<tr>
<td>Post-operative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection</td>
<td>1 (1.4)</td>
<td>1 (1.4)</td>
<td>1.00</td>
</tr>
<tr>
<td>Bleeding</td>
<td>0 (0.0)</td>
<td>5 (6.9)</td>
<td>0.06</td>
</tr>
<tr>
<td>Cuff dehiscence</td>
<td>2 (2.8)</td>
<td>1 (1.4)</td>
<td>1.00</td>
</tr>
<tr>
<td>Other</td>
<td>2 (2.8)</td>
<td>0 (0.0)</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Discussion

- First prospective randomized controlled trial to confirm that robot-assisted surgery is non-inferior to standard laparoscopic surgery with respect to operative time during hysterectomy in hands of experienced minimally invasive surgeon

Strengths

- First prospective randomized study with both robotics and laparoscopic expertise
- Experienced minimally-invasive gynecologic surgical team
- Surgical scrub and circulating nurses had experience in both procedures
  - Allowed for randomization immediately prior to surgery
- Academic teaching institution
  - Complete resident involvement
  - Applicable to other academic teaching facilities

Limitations

- Short-term follow-up
- 12 weeks
- One institution
- Single minimally-invasive gynecologic surgical team

Conclusions

- Robot-assisted surgery is non-inferior to standard laparoscopic surgery with respect to operative time during hysterectomy in hands of experienced minimally invasive surgeon
- Future Studies
  - Evaluate cost, long-term follow-up
References


Questions

- Thank you
  - Gerald Harkins MD
  - Penn State Hershey Fellowship Program Director
  - Kristin Riley MD
  - Jennifer Eldridge MD
  - Allen Kunselier MS
  - Lawrie Romberger
A Wireless Audio System Improves Teamwork and Communication in Robotic Laparoscopic Surgery

Ziv Tsafrir, MD
Division of Minimally Invasive Gynecology, Henry Ford Health System, Detroit, Michigan.

Evaluate the effect of using a wireless audio headset device on operating room (OR) communication, efficiency and patient outcomes in robotic surgeries.

Background

• Team communication in the operating room (OR) is essential to minimize errors and reduce morbidity and mortality.

Methods

• Prospective Controlled Trial
  – Participants: surgeon, assistants (fellow, resident), CRNA, scrub technician, circulating nurse.
  – Setting: Gynecology, and Urology cases

Background

• Robotic OR presents Unique NEW challenge in communication
  – Lack of face-to-face communication
  – Physical Distance between surgeon and bedside assistant & nursing
  – Teaching challenge
  – Poor quality built-in communication tools
  – Increased background noise
• The association between noise level at the OR and post complications.

• Other: Headset devices supplied by: Quail Digital
• Contracted/Research: Blue Cross/BlueShield
Methods

- Participants filled out a survey after each case
  - 4 domains were evaluated
    - Communication
    - Performance
    - Teamwork
    - Mental load
- Sound level measuring device.
- Exit questionnaire
- Objective surgical outcomes

Results

- 137 procedures
- 843 questionnaires, response rate = 89%
- Overall score of the
  - With headsets = 110.2 ± 6.0
  - No headsets = 98.5 ± 6.0;
    • p<.001

Results

- Noise: no significant difference in average noise levels in the OR between the groups. However, cases in which headsets were not used demonstrated a higher percentage of time with a peak noise level above 70dB at the console (8.2 ± 0.6 vs. 5.3 ± 0.6, p<.001).

Results

- There were no significant differences between the study and control groups in length of surgery, estimated blood loss and postoperative complications.

Conclusions

- The use of wireless headset devices in robotic surgeries was associated with improved quality of communication between team members, as well as a reduction in the noise level in the OR.

REFERENCES

Laparoscopic versus Robotic Surgery Learning Curves
Ioana Livinti, MD, Bronx Lebanon Hospital Center, Bronx, NY

Robotic simulation training
"New sequence of skills taught in surgical programs"

Disclosure
I have no financial relationships to disclose.

Objective
- Optimize robotic-assisted laparoscopic surgery for surgical training and to demonstrate proficiency skills

Study Participants

Design

Measurements
- Accuracy
- Mistakes
Conclusions
- Participants using robotic simulator had increased accuracy, showed fewer mistakes, and more completed tasks compared to the laparoscopic simulator.
- The improvement with subsequent trial in each category seen with the robotic simulator indicates a faster learning curve with robotic surgery.
- Advantages with the robotic simulator:
  - increased degrees of freedom,
  - downscaling of movements,
  - increased stability
  - no fulcrum effect
  - restoration of eye-hand target axis
- Improved performance in surgical tasks that were afterwards performed laparoscopically.

References

Thank you! Q&A?
Computerized Tomography Adiposity Morphometrics: a Novel Approach to predict Pulmonary Intolerance in Endometrial Cancer Patients Undergoing Robotic Pelvic Surgery (RPS)

Ahmed Y. AbdelBadee
Reproductive Biology, University Hospitals Case Medical Center, Cleveland, Ohio

I have no financial relationships to disclose

OBJECTIVES

• To identify the morphometric characteristics of obese patients that best predict pulmonary intolerance to robotic pelvic surgery using a novel method for quantifying adipose distribution.

Background

• Anesthetic intolerance limits universal application of robotic pelvic surgery in the obese.
• Body mass index (BMI) does not describe obesity distribution.
• Imaging techniques can quantify adipose tissue quantification.

Methods

• University Hospitals Case Medical Center, Cleveland, Ohio
• Retrospective cohort study
• 51 endometrial cancer patients who underwent surgery to uniformly include robotic hysterectomy and lymphadenectomy (2008 and 2014)
• Computerized tomography (CT) imaging within 1 year of surgery.
• Intraoperative Physiologic parameters
Measurements

Figure 1: Waist circumference
Figure 2: Total fat volume (TFV)
Figure 3: Subcutaneous fat volume (SFV)

Patient Demographics and Clinical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>% (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y), median (range)</td>
<td>68 [27 – 88]</td>
</tr>
<tr>
<td>BMI mean (range)</td>
<td>24 [20.5 – 30]</td>
</tr>
<tr>
<td>Smoking</td>
<td>31 [18.6%]</td>
</tr>
<tr>
<td>Comorbidity:</td>
<td></td>
</tr>
<tr>
<td>Heart Disease</td>
<td>40 [17.6%]</td>
</tr>
<tr>
<td>Diabetes</td>
<td>14 [33.3%]</td>
</tr>
<tr>
<td>Pulmonary Disease</td>
<td>31 [18.6%]</td>
</tr>
<tr>
<td>Obstructive sleep apnea</td>
<td>8 [13.3%]</td>
</tr>
<tr>
<td>Previous Pelvic or abdominal surgery</td>
<td>26 [54.7%]</td>
</tr>
</tbody>
</table>

| AGA:                   |       |
| 1                      | 2 [4.4%] |
| II                     | 27 [45.8%] |
| III                    | 10 [19.2%] |
| IV                     | 11 [19.2%] |
| FIGO stage:            |       |
| I                      | 46 [80.9%] |
| II                     | 1 [1.7%] |
| III                    | 10 [16.9%] |
| IV                     | 2 [3.4%] |

Study strengths:

1) uniform female patient population
2) standard staging surgery for endometrial cancer
3) high prevalence of co-morbidities
4) novel technique based on a simple slice fat volume measurement.

Study weakness:

1) Retrospective nature
2) Extremes of body habitus may not have been represented

Conclusion

- Patients with increased visceral adiposity exhibit increased physiologic stress during robotic pelvic surgery.
- CT morphometric techniques may be clinically useful in the preoperative risk assessment of patients undergoing surgery.
- The novel CT quantified morphometrics identify viscera! obese patients who are more likely to manifest physiologic intolerance to robotic pelvic surgery.
- Of the measures analyzed, visceral fat volume (VFV) at L2-L3 best predicts the highest intraoperative airway pressures in the obese.

References

An Objective Tool to Differentiate Robotic Surgical Skill & Experience
Khara M. Simpson MD
Columbia University Medical Center

I have no financial relationships to disclose.

OBJECTIVES

- Review the history of objective assessment of surgical skill and the development of GEARS (Global Evaluative Assessment of Robotic Skills)
- Share new findings regarding GEARS
- Discuss the utility of GEARS in future use

History of GEARS

- OSATS 1996: Objective Structured Assessment of Technical Skills
- GOALS 2005: Global Objective Assessment of Laparoscopic Skills
- GEARS 2012: Global Evaluative Assessment of Robotic Skills

GEARS Validation (Goh et al 2012)
- N=29 (4 Attendings; 25 Residents)
- Robotic prostatectomy performance reviewed by non-blinded observers
- Construct validity/good interrater reliability
- No differences in scoring between intermediate surgeons (PGY6 - mean robotic cases = 30) and expert surgeons (mean robotic cases = 190)

Study Objectives

(1) To re-examine the relationship of the GEARS score to expertise level with a larger sample size
(2) To identify which categories best distinguish expertise
(3) To evaluate additional structured objective assessments (error based and task based scoring) to better categorize surgeon skill level
Methods

• Subjects were divided based on their robotic experience and performed a simple cystotomy closure on an animate model
  • Novices 0-25 robotic cases
  • Intermediates 26-99 robotic cases
  • Experts – 100+ robotic cases
• Videos were collected and reviews performed by blinded surgeons using GEARS, errors, and tasks assessments

Participants

<table>
<thead>
<tr>
<th>Exp Level</th>
<th>Male</th>
<th>Female</th>
<th>Med. Student</th>
<th>Resident</th>
<th>Fellow</th>
<th>Attending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novices</td>
<td>28</td>
<td>17</td>
<td>1</td>
<td>12</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>Intermid.</td>
<td>30</td>
<td>17</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Experts</td>
<td>22</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>21</td>
</tr>
</tbody>
</table>

Results (1) Task Time / Total GEARS

• There were differences between task time and GEARS across experience groups (p = 0.01).

Results (2) GEARS Categories

• Bimanual dexterity and efficiency were the best at differentiating intermediates from experts

Conclusions

• GEARS is able to differentiate robotic surgical experience at different levels.
• GEARS had internal consistency, inter-rater reliability, and construct validity.
• Future Directions
  • Credentialing/Privileging
  • Development of specialty specific OSATS and standardization of scoring
  • Better categorize GEARS autonomy

REFERENCES

Comparing the Robotic Single-Port Approach to Multi-Port, for Pelvic Lymph Node Dissection in the Treatment of Endometrial Pathology

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PGY-3 Ob/Gyn Resident
Inova Fairfax Hospital

The authors declare that there are no conflicts of interest.

I have no financial relationships to disclose.

Objective

Examine the differences between the robotic pelvic lymph node dissection (PLND) using the single-port approach to the multi-port approach, with respect to patient, tumor, and surgery characteristics.

Introduction

• Robotic single port pelvic lymph node dissection was first described in 2014 in Italy.1
• Use of single port approach helps reduce the complications from placement of multiple trocars.2
• Single incision- laparoscopy has been in used in the past to manage endometrial cancers.3

Methods

Type of study: Retrospective chart review
Level of care: Tertiary healthcare center

• The charts of the patients who underwent robotic pelvic lymph node dissection in the period from February 2014 to February 2015 were reviewed. Variables of interest were the age of the patient, body mass index (BMI), operative time (defined as the time noted in anesthesia records between procedure start and finish), and the number of lymph nodes removed on the right pelvic side and the left pelvic side as described in the pathology report.

• Other gynecologic malignancies were excluded from the analysis because the single-port approach for pelvic lymph node dissection was not used in the event that cervical or ovarian cancer were suspected.

Methods Continued

• All surgeries were performed by one highly trained gynecologic oncologist at a single institution.
• The operative notes were reviewed for confirmation of whether or not the pelvic lymph node dissection was done via the single port or the multiport approach.
• The pathology reports were reviewed to determine the pathology and stage of the disease (endometrial cancer).
• Categorical variables were compared using the Fischer’s exact or chi-squared test.
• The continuous variables were compared using the t-test for means and Mann-Whitney U test for medians.
**Results**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Single-Port approach (N = 10)</th>
<th>Multi-Port approach (N = 41)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean, SD)</td>
<td>60.80 (10.94)</td>
<td>65.00 (12.06)</td>
<td>0.32</td>
</tr>
<tr>
<td>BMI (mean, SD)</td>
<td>29.35 (8.42)</td>
<td>34.73 (10.06)</td>
<td>0.13</td>
</tr>
<tr>
<td>Operative time in minutes (mean, SD)</td>
<td>122.80 (19.55)</td>
<td>132.63 (45.51)</td>
<td>0.51</td>
</tr>
<tr>
<td>EBL (mean, SD)</td>
<td>57.50 (23.72)</td>
<td>110.70 (78.55)</td>
<td>0.04</td>
</tr>
</tbody>
</table>

**Results Continued**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Single-Port approach (N = 10)</th>
<th>Multi-Port approach (N = 41)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td># of right pelvic lymph nodes removed (median, range)</td>
<td>5 (0-9)</td>
<td>7 (3-18)</td>
<td>0.42</td>
</tr>
<tr>
<td># of left pelvic lymph nodes removed (median, range)</td>
<td>6 (2-18)</td>
<td>7 (5-19)</td>
<td>0.56</td>
</tr>
<tr>
<td>Total lymph nodes removed (median, range)</td>
<td>6 (2-28)</td>
<td>12 (3-52)</td>
<td>0.04</td>
</tr>
<tr>
<td>Endometrial pathology: N (%)</td>
<td></td>
<td></td>
<td>0.34</td>
</tr>
<tr>
<td>- Complex atypical hyperplasia</td>
<td>0 (0.00)</td>
<td>2 (5.13)</td>
<td>0.04</td>
</tr>
<tr>
<td>- Grade I endometrioid</td>
<td>6 (60.00)</td>
<td>14 (34.15)</td>
<td>0.03</td>
</tr>
<tr>
<td>- Grade II endometrioid</td>
<td>0 (0.00)</td>
<td>11 (26.83)</td>
<td>0.03</td>
</tr>
<tr>
<td>- Grade III endometrioid</td>
<td>1 (10.00)</td>
<td>7 (17.07)</td>
<td>0.03</td>
</tr>
<tr>
<td>- Serous/Papillary</td>
<td>0 (0.00)</td>
<td>6 (14.63)</td>
<td>0.03</td>
</tr>
<tr>
<td>- Squamous cell</td>
<td>0 (0.00)</td>
<td>1 (2.44)</td>
<td>0.03</td>
</tr>
</tbody>
</table>

**Conclusions**

- Single-port pelvic lymph node dissection is feasible and can be considered for patients with early low grade endometrial cancers.
- More studies are needed to assess that actual benefit as well as effects on mortality and recurrence rates compared to other surgical modalities of treatment.
- Additional studies are needed to evaluate what type of patients are the best candidates for this approach.

**References**


**Acknowledgements**

- G. Scott Rose, M.D.
- Rami Z. Tabbarah, M.D.
- George B. Iskander, M.B., B.Ch.
- Payam Kalsaki Kashi, M.D., Ph.D.

**Questions?**
EVALUATION OF SYMPTOM RESOLUTION IN PATIENTS WITH A SMALL NUMBER OF MYOMAS FOLLOWING ROBOTIC-ASSISTED LAPAROSCOPIC MYOMECTOMY

Adrienne Mandelberger MD
Icahn School of Medicine at Mt Sinai

Disclosure

I have no financial relationships to disclose.

Objectives

Assess the recurrence of symptoms in patients who had a robotic myomectomy with a single surgeon at Mount Sinai Hospital from June 2006 to May 2013.

Background

• Robotic/laparoscopic myomectomy: shorter LOS, shorter recovery, less analgesic use
• Little data on long-term outcomes after robotic myomectomy. No data on symptom resolution
• 512 patients: recurrence rate 11.7% at 1 yr, 36% at 3yr, 53% at 5yr – no mention of symptoms
• 87% would choose laparoscopic myomectomy again
• QOL data at 1 and 3 mo, improved over baseline

Methods

• 337 patients that underwent robotic myomectomy by a single provider at university hospital
• Procedure timeframe: June 2006 – May 2013
• Charts reviewed and patients contacted for follow up data

Results

Age 40.55 +/- 12.24 years (range 24-55)
BMI 24.53 +/- 4.9
# fibroids 3.34 +/- 2.9 (range 1-21)
Weight of fibroids 331.23g +/- 310.36g
Results

Of 337 patients, 254 (75%) were successfully contacted and had follow up data recorded.

Mean time of follow up data 4.2 years, range 10 mo – 7.9 years.

Symptom resolution

- No resolution
- Small improvement
- Significant improvement
- Complete resolution

Conclusions

Robotic myomectomy is an effective long-term management option for fibroid symptom relief for women who desire fertility preservation with a small number of fibroids.

94% of patients achieve significant or complete relief from symptoms long term.

References


Robotically-Assisted Radical Trachelectomy

Masaaki Andou, MD, PhD
Kurashiki Medical Center, Kurashiki, Okayama Prefecture, Japan

**Objective:** To introduce robotics into complicated laparoscopic gynecologic procedures such as radical trachelectomy, a technically demanding procedure, which can present a difficult learning curve.

**Design:** Retrospective study.

**Setting:** Academic affiliated regional city hospital.

**Patients:** 10 patients wishing to preserve their fertility have undergone robotically assisted radical trachelectomy for stage IA2-IB1 cervical cancer (less than 2.5cm size disease).

**Interventions:** Before the robot is rolled in, a vaginal cuff is created to prevent the scattering of tumor cells. The robotic radical trachelectomy procedure begins with the pelvic lymphadenectomy, mobilization of the ureter, then division of the cardinal ligament, sacrouterine ligament and the deep vesicouterine ligament. This is followed by the amputation of the cervix and finally reconstruction. This is performed totally robotically while preserving uterine artery.

**Measurements and Main Results:** All surgeries concluded without complications and patient recovery was uneventful. This procedure has only been recently introduced and as yet no cases have experienced pregnancy or delivery to date, nor can we currently accurate assess the medium or long term oncologic outcomes. However, as this procedure is the robotic counterpart of our total laparoscopic technique, which has so far resulted in a delivery rate of 58%, we are optimistic that this surgery will produce a similar result. As for the oncologic outcome of our laparoscopic series, the death of recurrence rate currently stands at one patient in 75.

**Conclusion:** Robotics bring dexterity, precision and reproducibility to the surgical environment and these advantages are applied in this procedure. The introduction of robotic devices is the newest innovation in surgery. Our robotically assisted radical trachelectomy technique offers both doctor friendly surgical circumstances and a patiently friendly result.
Repair of a Cystotomy During a Robot-Assisted Right Ureterolysis and Upper Vaginectomy: Review of Anatomy and Surgical Technique

Erin George, MD
Columbia University Medical Center, New York, New York

Objective: To show a surgical educational video highlighting the anatomy of the urinary tract and illustrating the surgical technique involved in the repair of a cystotomy during a right ureterolysis and upper vaginectomy in a case with extensive adhesive disease.

Design: Anatomy review followed by a demonstration of the operative technique used to help prevent a urinary tract injury as well as identify and repair a bladder injury with narrated video footage highlighting key components of the procedure.

Setting: The majority of urinary tract injuries occur during gynecologic surgery. Risk factors include history of a cesarean delivery, prior abdominal surgery, endometriosis, and low-volume surgeons. The majority of bladder injuries are diagnosed intraoperatively, while the majority of ureteral injuries are overlooked. An understanding of pelvic anatomy and most likely sites of injury may aid in the prevention, diagnosis, and repair. Further, with the increasing drive for a minimally invasive approach, the robotic platform is becoming a popular alternative in the repair of these injuries.

Interventions: Robot-assisted approach to the repair of a cystotomy during a robot-assisted right ureterolysis and upper vaginectomy highlighting the following:

1. Anatomy of the urinary tract and most likely sites of injury during routine gynecologic procedures
2. Different types of bladder injury and important considerations at the time of repair
3. Operative technique to help identify relevant anatomy and minimize the risk of injury

Conclusion: Operative cases with extensive adhesive disease are at increased risk of urinary tract injury. Knowledge of pelvic anatomy and operative technique is paramount in helping reduce that risk.
Governor Arnold Schwarzenegger signed into law **AB 1195** (eff. 7/1/06) requiring local CME providers, such as the AAGL, to assist in enhancing the cultural and linguistic competency of California's physicians (researchers and doctors without patient contact are exempt). This mandate follows the federal Civil Rights Act of 1964, Executive Order 13166 (2000) and the Dymally-Alatorre Bilingual Services Act (1973), all of which recognize, as confirmed by the US Census Bureau, that substantial numbers of patients possess limited English proficiency (LEP).

**California Business & Professions Code §2190.1(c)(3)** requires a review and explanation of the laws identified above so as to fulfill AAGL's obligations pursuant to California law. Additional guidance is provided by the Institute for Medical Quality at http://www.imq.org.

**Title VI of the Civil Rights Act of 1964** prohibits recipients of federal financial assistance from discriminating against or otherwise excluding individuals on the basis of race, color, or national origin in any of their activities. In 1974, the US Supreme Court recognized LEP individuals as potential victims of national origin discrimination. In all situations, federal agencies are required to assess the number or proportion of LEP individuals in the eligible service population, the frequency with which they come into contact with the program, the importance of the services, and the resources available to the recipient, including the mix of oral and written language services. Additional details may be found in the Department of Justice Policy Guidance Document: Enforcement of Title VI of the Civil Rights Act of 1964 http://www.usdoj.gov/crt/cor/pubs.htm.

**Executive Order 13166**, “Improving Access to Services for Persons with Limited English Proficiency”, signed by the President on August 11, 2000 http://www.usdoj.gov/crt/cor/13166.htm was the genesis of the Guidance Document mentioned above. The Executive Order requires all federal agencies, including those which provide federal financial assistance, to examine the services they provide, identify any need for services to LEP individuals, and develop and implement a system to provide those services so LEP persons can have meaningful access.

**Dymally-Alatorre Bilingual Services Act** (California Government Code §7290 et seq.) requires every California state agency which either provides information to, or has contact with, the public to provide bilingual interpreters as well as translated materials explaining those services whenever the local agency serves LEP members of a group whose numbers exceed 5% of the general population.

If you add staff to assist with LEP patients, confirm their translation skills, not just their language skills. A 2007 Northern California study from Sutter Health confirmed that being bilingual does not guarantee competence as a medical interpreter. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2078538.