Laparoscopic Tips and Tricks: Advancing Your Skills (Didactic)

PROGRAM CHAIR
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Professional Education Information

Target Audience
Educational activities are developed to meet the needs of surgical gynecologists in practice and in training, as well as, other allied healthcare professionals in the field of gynecology.

Accreditation
AAGL is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

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Course Description

This course will help gynecologic surgeons advance their skills by providing strategies to overcome common clinical challenges and expand their surgical armamentarium. This will be accomplished through an in-depth review of key laparoscopic pelvic anatomy and tips to help navigate challenging clinical situations, such as obesity and difficult peritoneal access. Techniques for mastering challenging surgical procedures encountered in general practice, such as hysterectomy for the large uterus, support of the vaginal/cervical cuff at the time of hysterectomy, myomectomy, large ovarian cystectomy, tissue extraction, and the surgical management of endometriosis will be explored in detail. Experienced surgeons will utilize videos, evidence-based medicine and clinical expertise to provide participants with relevant knowledge, practical solutions, and step-by-step strategies which can be incorporated into current practice in order to safely and successfully complete more advanced surgery. The course is aimed at surgeons with some laparoscopic experience who are looking to advance their skills.

Course Objectives

At the conclusion of this course, the participant will be able to: 1) Locate the essential anatomy of the deep pelvic side wall; 2) apply strategies for difficult peritoneal access; 3) explain safe techniques for tissue extraction; 4) demonstrate steps used to simplify laparoscopic myomectomy; 5) implement approach to hysterectomy with a large uterus; and 6) apply techniques to support the vaginal cuff after hysterectomy in appropriate cases.

Course Outline

8:00 Welcome, Introductions and Course Overview  
S.N. Morris

8:05 Essential Pelvic Anatomy for Advanced Laparoscopic Surgery  
A.I. Brill

8:30 Difficult Peritoneal Access: Overcoming Adhesions and Obesity  
J.K. Robinson

8:55 Surgical Techniques for Superficial and Deep Endometriosis  
A.I. Brill

9:20 Ovarian Cystectomy: Preservation of Fertility  
S.N. Morris

9:45 Questions & Answers  
All Faculty

9:55 Break

10:10 The Large Uterus: Tips for Successful Laparoscopic Hysterectomy  
S.N. Morris
10:35  Simplifying Laparoscopic Myomectomy  S.N. Morris
11:00  Strategies for Safe and Efficient Tissue Removal  A.I. Brill
11:25  Cuff Management: Issues of Support and Controversies of the Cervix  J.K. Robinson
11:50  Questions & Answers  All Faculty
12:00  Course Evaluation
PLANNER DISCLOSURE
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).
Art Arellano, Professional Education Manager, AAGL*
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Consultant: Conceptus Incorporated
Frank D. Loffer, Executive Vice President/Medical Director, AAGL*
Linda Michels, Executive Director, AAGL*
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Grants/Research Support: Elsevier
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FACULTY DISCLOSURE
The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the “best available evidence” from medical literature (in alphabetical order by last name).
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James K. Robinson  
Consultant: Gyrus ACMI (Olympus), Intuitive Surgical  
Jubilee Brown*

Asterisk (*) denotes no financial relationships to disclose.
Learning Objectives: Able to describe:
- Describe topographical pelvic anatomy
- Review the key vascular anatomy of abdominal wall
- Identify the link between anatomy and technique
- Discuss the anatomical components of pelvic sidewall

Why Master Surgical Anatomy?
- More Efficient ➔ Faster
- More Effective ➔ Better Results
- More Confident ➔ Safer
- Can Minimize Complications!

No procedure should ever be considered a total failure......
It can always be used as a bad example!
Present surgical education systems are deficient in evaluating performance and competency.

Indication: endometriosis

Good Technique Without Anatomy

Always think of what’s under the surface
Identifying the Inferior Epigastric Vessels

LUQ

Left Upper Quadrant

Peritoneal Tenting

LUQ = 3

Pop
Laparoscopic Pelvic Anatomy is different from Laparotomic Pelvic Anatomy

Relinquishing the Big Picture

Where am I?

Magnification

Loss of Global View

Where am I???

3 U's: ureter ↔ uterosacral ↔ uterine a
Out of sight never out of mind

Dissecting the Lateral Sidewall

Anatomy

Dissection

fat is your friend!
Anatomical surgery demands awareness...
Difficult Peritoneal Access:
Overcoming Adhesions and Obesity
James K. Robinson, MD, MS
The George Washington University

• Consultant: Gyrus ACMI (Olympus), Intuitive Surgical

Objective

• At the conclusion of this session the participant will be able to:
  – Identify the risks inherent in primary peritoneal access.
  – Identify different approaches to primary peritoneal access.
  – Identify patients at the highest risk of peritoneal access complications.
  – Identify principals and techniques to minimize risks associated with high risk peritoneal access.
  – Identify principals and techniques of intraoperative adhesiolysis.
  – Identify principals and techniques of port site closure.

Complications Associated with Trocars

• Surgical Trocars associated with surgical complications more than any other laparoscopic device
  – Trocars 33%, Clips 9%, Veress 8%, Coagulation device 5%, Scissors/scalpel 3%
  – > 25% of all surgical malpractice claims site trocar insertion as the main cause if injury
• Fatal Trocar injuries
  – Vascular > Bowel

Maude Data Base. JMG. 2005;12:302

Risk of Adhesions with Prior Laparotomy

Omental and/or Bowel

• Prior surgical scar
  – Pfannensteil – 27%
  – Low Vertical – 55%
  – High Vertical – 67%
• When adhesions exist
  – Omental only - 84%
  – Omental and Bowel – 16%

Type of Prior Surgery and Adhesions

• Obstetrical – 22%
  – No difference b/w Pfannensteil vs midline
• Gynecologic – 42%
  – Pfannensteil – 31%
  – Midline – 70%

Entry Injury Videos

• Vascular Injury

• Bowel Injury

Modified 10 Step Veress Approach

1. Consider alternate approach in high risk patients (open or Palmer’s)
2. Safety check – patient flat, veress functional, no periumbilical masses
3. Incision – 5-10 mm intraumbilical incision (evert the umbilicus)
4. Insertion of veress – 90 degrees, elevate umbilical sheath
5. Do not move the veress needle – to avoid enlarging an injury
6. Pressure check – < 10 mmHg
7. Insufflate – to 25 mmHg
8. Trocar placement – 90 degrees
9. Injury check – 360 degree view and pressure reduction to 15 mmHg
10. Ancillary placement – Under direct visualization


Our Closed Approach

1. Evert the umbilicus (video)
2. Set the insufflator (video)
   • Pressure - 25 mmHg
   • Flow - 1 liter/min (low)
3. Insert veress through the umbilical base with carbon dioxide flowing (video)
   • Entry pressure will be < 3 mm Hg and often drop below 0.
4. Fill to 25 mmHg (pressure video)
5. Optical Trocar Placement (video)

Hasson Open Approach

• Harry Hasson first described the “open approach” in 1970.
• In 2000 he described his experience with 5284 consecutive patients.
• 0.5% complication rate associated with primary access.
• No major vascular or complicated GI injuries


Direct Optical Entry

• Utilizes a bladeless optical trocar
• Direct trocar placement through the base of the umbilicus under direct visualization without pre-insufflation.
• Studies have demonstrated similar safety to closed and open approaches
• Largest multi-centered trial with 17,350 consecutive patients


Which Approach is Better?

• Cochrane Database (2008)

– There is no significant difference in risk of primary entry associated complications between closed, open or direct entry approaches.

– Entry associated complication diminish with experience.
High Risk Patients

Risk Factors
- Prior Midline Laparotomy
- Morbid Obesity
- Very Thin
- Pregnancy
- Large Pelvic or abdominal mass

Palmer’s Point

- First described by Raoul Palmer in 1974.
- Ideal for:
  - Pelvic mass
  - Predictable adhesions
  - Pregnancy
  - Failed umbilical attempt
- Relative contraindications:
  - Hepatosplenomegaly
  - Prior gastric bypass or splenectomy
  - LUQ mass

Palmer’s Point Technique

- Closed Veress technique
- 2-5 mm incision 3 cm below the left costal margin in the mid-clavicular line
- Gastric suctioning
- Consider Trendelenburg

Microlaparoscopy at Palmer’s Point

- Microlaparoscopic veress/trocar is inserted via Palmer’s point
- 1.2 mm laproscope is introduced through the veress/trocar in order to inspect for periumbilical adhesions.

Microlaparoscopy and Adhesions

- 814 consecutive patients divided into 4 categories
  - Group 1 (469) – No prior abdominal surgery
  - Group 2 (125) – Prior laparoscopic surgery
  - Group 3 (131) – Prior suprapubic laparotomy
  - Group 4 (89) – Prior midline laparotomy
- Microlaparoscopy at Palmer’s point with umbilical adhesion analysis — 9.82% overall adhesion rate
  - Omental - Bowel
    - Group 1 – 0.68% 0.42%
    - Group 2 – 1.6% 0.80%
    - Group 3 – 19.8% 6.87%
    - Group 4 – 51.7% 31.46%
Visceral Slide and PUGSI

- **Visceral Slide**
  - The longitudinal distance the intestine or omentum travels as visualized by transabdominal US during an exaggerated inspiration and expiration cycle
    - Exaggerated = 1.5 x normal tidal volume
    - Normal is = or > 1 cm movement

- **PUGSI**
  - Periumbilical ultrasound guided saline infusion
    - Tend abdomen with towel clamps
    - Observe 19 ga needle enter peritoneum
    - Inject 10 ml sterile saline
    - Localized fluid pocket is abnormal finding
  - Abnormal PUGSI had a sensitivity and specificity of 100% for obliterating periumbilical adhesions

Ancillary Trocar Placement

- **DIRECT VISUALIZATION** to avoid:
  - Vascular – Inferior Epigastrics (Video)
  - Bowel
  - Bladder – (Video)
    - Always drain the bladder prior to suprapubic port placement
    - Consider backfilling the bladder to delineate the border

Adhesiolysis

- Create planes
- Create windows
- Apply traction
- Do not tear
- Use cold scissors close to viscera
- Stay intraperitoneal
- Take your time !!!
- Run the bowel

Port Site Closure

- **Port Site Hernia** Incidence – 0.65-2.8% in General Surgery Literature
- All ports > or = 10 mm require fascial closure
- 5 and 8 mm ports sites should be closed if extensive manipulation could have expanded the fascial defect

Carter Thomason Video

• Maude Database. JMRI. 2005;12:302.
• Tinelli A. Surg Innov. 2011;18:203.
• Ahmad G. Cochrane Database. 2008;16(3).
Endometriosis

Techniques for Superficial & Deep Endometriosis

Andrew I. Brill, M.D.
Director, Minimally Invasive Gynecology
California Pacific Medical Center

Disclosures

- Consultant: Karl Storz Endoscopy-America, Ethicon Endo-Surgery, Conceptus Incorporated, CooperSurgical
- Speaker's Bureau: Karl Storz Endoscopy-America, Ethicon Endo-Surgery, Conceptus Incorporated, CooperSurgical

Learning Objectives

- Describe the laparoscopic appearance of endometriosis
- Explain the relationship between endometriosis and pelvic pain
- List the potential limits of medical and surgical therapy for endometriosis
- Incorporate strategy for anatomical removal of pelvic endometriosis

Endometriosis

General Considerations

- Progressive disease
- May exist in subclinical, microscopic forms that are not visible at time of laparoscopic evaluation
- Patients with higher stages more likely to experience recurrences and to have them earlier than women with lower stages
- Women with deeply infiltrative disease more likely to experience pain

A myriad of appearances
Endometriosis
Progenitors of Pain
- Location of lesion related to viscera
- Type of lesion
- Total number of lesions
- Depth of penetration of lesion
- Inflammation
- Stretching/scarring of tissue
- ? Chemical expressions

Deep cul-de-sac and paravaginal endometriosis correlate with focal points of tenderness
Ripps & Martin J Reprod Med 1992
digital rectal exam is sine qua non!

Relevance of r-AFS Classification
Vercellini et al F&S 1996
- Not correlated with frequency of pain symptoms
- Not correlated with severity of pain symptoms
- Why? - does not take into account
  - Cellular activity
  - Depth of infiltration
  - Individual lesions

Endometriosis
Support of Surgical Treatment
- Primal arguments favoring see-and-treat
  - Decreased treatment time
  - Decreased cost
  - Decreased number of side effects
  - No need for second 'operative' laparoscopy
  - Appeals to will of surgical ego

Endometriosis
Surgical Treatments Pro v Con
- Sharp excision
  - Dissection of implants from normal tissue
  - Pro- tissue specimen
  - Con- injury to adjacent structures and bleeding
  - Requires certain level of expertise
- Electrocoagulation
  - Destruction of implants by thermal energy
  - Pro- familiar technology and hemostasis
  - Con- injury to structures, lack of specimen, and possibility of incomplete destruction of implant
- Laser vaporization
  - Sharp dissection or vaporization with high density energy
  - Pro- ease of use and hemostasis
  - Con- lack of specimen, risk of incomplete destruction, injury to adjacent structure, expense of upkeep of laser

Endometriosis
Can Surgery be Curative?
- Make a diagnosis
- Remove / destroy all disease?
- Prevent recurrence?
- Identify a lesion?
**Endometriosis: Microscopic Disease**

<table>
<thead>
<tr>
<th>Author</th>
<th>Results</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murphy, 1986</td>
<td>25%</td>
<td>SEM</td>
</tr>
<tr>
<td>Vasquez, 1984</td>
<td>75%</td>
<td>LM &amp; SEM</td>
</tr>
<tr>
<td>Nicole, 1990</td>
<td>13% (with biopsy) 6% (without biopsy)</td>
<td>LM</td>
</tr>
<tr>
<td>Redwine, 1989</td>
<td>2%</td>
<td>LM</td>
</tr>
<tr>
<td>Portuondo, 1982</td>
<td>65% (bulbar washings)</td>
<td>CYTOLOGY</td>
</tr>
</tbody>
</table>

**Endometriosis: Recurrent Nightmares**

<table>
<thead>
<tr>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient MD</td>
</tr>
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</table>

**Endometriosis: Excision of Deep Lesions**

*Koninckx, F&S 1996*

- N = 225
- "complete" excision 90%
- Mean depth of penetration = 10mm (6-20mm)

**Complications**

- Perforation into posterior vaginal fornix 14%
- Enterotomy & bowel resection 6%
- Late bowel perforation/peritonitis 3%

**Surgery for Endometriosis**

*Net Results*

- Majority experience pain relief
- Recurrence rates are significant
- Stage I more apt to relapse
- Pregnancy rates are variable

**Treating Endometriosis with Surgery**

*Observations*

- Conservative surgery results in varied success rates
- All ablative techniques (laser, thermal, monopolar, and bipolar) are equivalent
- Resection has been regarded as superior; however, complete resection may not be possible secondary to microscopic disease and increased risk of complications
- Surgical complications are prevalent and under-reported
- Results are, and will always be surgeon dependent

**Putative Reasons for Surgical Failures**

- Microscopic lesions not destroyed
- Atypical appearing lesions missed by surgeon
- Inaccessible lesions (deep & behind structures)
- Incomplete ablation or resection
- Other causes of pain besides endometriosis
- Any combination of the above
Endometriosis: Surgical Principles

- Identify bladder, bowel, vessels, and ureter
- Restore anatomical relationships
- Treat endometrioma as last surgical step
- Mobilize/identify the ureter (ureterolysis)
- Mobilize/identify the rectum (probe/ring)
- Preferentially use mechanical dissection
- Judiciously employ energy-based devices

Retroperitoneal Dissection

Peritoneal Resection

Peri-ureteral Dissection

know your instrumentation

Uterosacral Resection
Peri-rectal Excision

Rectovaginal Dissection

Observations

Surgical treatments

- Efficacious for reduction or elimination in symptoms
- Rates of recurrence are quite similar to medical therapy
- Insufficient data to recommend best approach (e.g., coagulation vs resection)
Ovarian Cystectomy: Preservation of fertility

Stephanie Morris, MD
Newton-Wellesley Hospital, MA
Harvard Medical School

Disclosure

- I have no financial relationships to disclose.

Objectives:

- Explain the risks associated with ovarian cystectomy and the clinical implications
- Demonstrate technique for laparoscopic ovarian cystectomy with the goal of fertility preservation

Pre-operative evaluation

- Imaging: Ultrasound
- Serum markers
- Referral to gyn oncology (ACOG)
  - Premenopausal (younger than 50 years)
  - CA125 levels greater than 200 units/mL
  - Ascites
  - Evidence of abdominal or distant metastasis
  - Family history of breast or ovarian cancer (in a first-degree relative)

Laparoscopy vs. Laparotomy

- Laparoscopic surgery for benign ovarian tumors was associated with
  - Fewer adverse outcomes
    - (intraop complications, post op fever/infections)
    - Less post op pain
    - Fewer days in the hospital
Surgical technique

• Incision
• Removal of cyst wall
• Preservation of ovarian tissue
• +/- Closure of ovarian cortex
• Adhesion prevention

Cyst rupture/spill: What does it really mean?

• Laparoscopy vs. laparotomy
• Clinical Significance
  – Peritonitis with dermoid cysts
  – Malignancy

Dermoid cyst: Risk of peritonitis

• +/- Increased risk of spill with laparoscopy
  – Rates vary from 15-100%
  – Review of 14 studies w/ 470 l/s dermoid cytectomies
    • 310 cases with spill (66%)
    • Risk of peritonitis 0.2%
• Cyst size not related to risk of spill
  – Trend towards increased spill with increased size
• Laparoscopy does not increase risk of peritonitis

Minimizing Risk of Peritonitis

• Contain spillage
  – Within bag
  – Within cul de sac
• Copious irrigation

What does rupture/spillage of an malignancy mean clinically?

• Early ovarian cancer prognosis
  – Stage 1A
  – Stage 1C spontaneous
  – Stage 1C iatrogenic
• Some studies suggest prognosis of 1C same with iatrogenic or spontaneous rupture
• Others suggest other factors – tumor grade, ascites, dense adhesions – were assoc with poor outcomes

Suture vs. Bipolar for Hemostasis

• Intra-ovarian suture for hemostasis causes less post op adhesions than bipolar
• Bipolar electrocoagulation adversely affects ovarian function, compared with suture
  – Fedele L. J AAGL, 2004
To Close or Not to Close
• Closure of ovarian cortex

Cystectomy and fertility
• Endometrioma
• Non-endometriotic cysts
• Effect of surgical technique

Endometrioma and fertility
• Effect of endometrioma on fertility
  — IVF patients with poorer response
• Treatment of cysts does not necessarily improve response
  — No consensus
  — ESHRE recommends removal of endometrioma > 4 cm to confirm diagnosis, improve access to follicles and to possibly improve ovarian response
• Decreased serum AMH after resection of endometrioma
  — Lee D. Gynecol Endo, 2011
  — AMH decreased more with endometrioma vs. non-endometrioma cysts and more with bilateral cysts than unilateral
    — Chang H. Fertil Steril, 2010
  — Endometrioma and prior ovarian cystectomy for endometrioma both decreased serum AMH
    — Hwu Y. Reprod Bio Endo, 2011
  — Bilateral endometrioma has more profound negative impact than unilateral endometrioma (regardless of either conservative or surgical intervention)
    — Hwu Y. Reprod Bio Endo, 2011
  — More quantitative rather than qualitative damage
    — Ragni G. Am J Ob Gyn 2005

Endometriomas and fertility
• More follicles are removed with cystectomy for endometrioma than other benign ovarian cysts
  — Shi J. J Gynecol Ob. 2011 – YES
  — Dogan I. Int J Gyn Ob. 2001 – NO
• Decreased serum AMH after resection of endometrioma
  — Lee D. Gynecol Endo, 2011
• AMH decreased more with endometrioma vs. non-endometrioma cysts and more with bilateral cysts than unilateral
• Endometrioma and prior ovarian cystectomy for endometrioma both decreased serum AMH

Surgical treatment
• Drainage – not recommended
  — Recurrence rate of up to 88% at 6 mo
  — No Pathology
• Fenestration and ablation
• Excision

Ablation vs. excision
• Excision was associated with
  — Reduced rate of recurrence
  — Reduced need for further surgery
  — Reduced rate of symptoms
    • dysmenorrhea, dyspareunia and non-menstrual pain
  — Increased rate of spontaneous pregnancy
Ablation vs. excision

- Markers of ovarian function decreased after both cystectomy and coagulation of endometrioma, but more after cystectomy
  - Antral follicle count decreased after both cystectomy and coagulation, but more after cystectomy
  - Ovarian response to ovulation induction was reduced in cystectomy compared to coagulation group
  - RCT of women with bilateral endometriomas – one side cystectomy vs one side coagulation

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- Fedele L. Bipolar electrocautery vs suRut of ovariety after laparoscopic excision of ovarian endometriomas. J AMMS, 2004

How big is too big?

- Size not necessarily a contraindication to laparoscopy

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- Somigliana E. The presence of ovarian endometriomas is associated with a reduced responsiveness to gonadotropins. Hum Reprod 2000
- Tsoumpu I. The role of laparoscopic ovarian cystectomy vs coagulation in bilateral endometriomas: a prospective study. Hum Reprod 2006
- Sagiv R. Obstet Gynecol 2005

26
The Large Uterus: Tips for Laparoscopic Hysterectomy

Stephanie Morris, MD
Newton-Wellesley Hospital, MA
Harvard Medical School

OBJECTIVE

• Demonstrate step-wise approach to hysterectomy of the large fibroid uterus
  – 5 Key Pre- & Peri-operative considerations
  – 5 Key Steps to performing laparoscopic hysterectomy

1. Pre operative considerations

• Patient selection
  – Set yourself up for success
  – Prior surgery
  – BMI
• Pre-operative lupron
  – Improves pre and post operative Hgb/Hct
  – Decreases uterine volume
  – Decreases procedure related blood loss

2. Patient positioning

• Arms tucked at sides
• Gel pad/foam
• Dorsal lithotomy

3. Uterine manipulator

• Total vs supracervical
• Can be of limited use with very large uterus initially
• Take the time to place properly
  – Use as a landmark – part of the anatomy

DISCLOSURE

• I have no financial relationships to disclose.
4. Port placement
- Camera port position
- Lateral port position
  - Location of adenxa

5. 30 degree laparoscope
- Improves visualization
- Bladder flap
- Lateral view
- During transection of uterus from vagina or cervix

Use of a 30 degree scope

Hysterectomy Key Steps
- 6. Round ligament and bladder flap
- 7. Adenxa - release lateral attachments
- 8. Post leaf and uterine vessels
- 9. Vaginal cuff: transection and closure
- 10. Specimen removal
6. Round ligament and bladder flap
- Round ligament:
  - Open up round ligament
  - Stay lateral
  - Go through whole round ligament
- Anterior Leaf/Bladder Flap
  - 30 degree scope
  - Use cervical cup to help identify midline
  - Identify cervix to help restore normal anatomy
  - Push manipulator cephalad to put bladder on stretch

6. Round ligament and bladder flap
- Video Opening Up Round
- Video Anterior Leaf
- Video Use of 30 Degree
- Video Use of Manipulator to Push Bladder

7. The adnexa
- Stay close to ovary
  - BSO or no BSO
- Avoid ascending branch of the uterine vessels
- Back bleeding can be hard to control

7. The adnexa
- Video Adnexa Release

8. Posterior leaf and Uterine Vessels
- Release ureter laterally
- Allow skeletonization of uterine vessels
- Peel fibroid out of broad ligament
- Video Post Leaf Release Ureter Laterally
- Video Post Leaf Skeletonization of Uterine Vessels
- Video Peel Fibroid Out Of
8. Posterior leaf and Uterine Vessels

Distancing Your Ureters

“Pushing” the uterus cephalad increases the distance between the colpotomy site, uterine vessels, and ureters.

Uterine Manipulators: Importance of colpotomy cup

- Skelotonize uterine vessels
- Desiccate only the vessels
- Avoid ureters
- Koh cup – above level of cup and dissect down
- Push manipulator cephalad to displace bladder and ureters
- Secure both sides before transection of the vessels

Uterine vessels

- Skelotonize uterine vessels
- Desiccate only the vessels
- Avoid ureters
- Koh cup – above level of cup and dissect down
- Push manipulator cephalad to displace bladder and ureters
- Secure both sides before transection of the vessels

Video: Skeletonization of Uterine Vessels

Picture: Location of Uterine Vessels

Uterine vessels for TLH

Now with a lateral fibroid
9a. The Vaginal Cuff: transection

9b. The vaginal cuff: closure

9c: LSH: cervical stump

10. Specimen removal

- LSH
  - Morcellation
- TLH
  - Vaginal removal
  - Vaginal morcellation
    - In bag
    - Not in bag
  - Laparoscopic morcellation

Obstacles: bladder adhesions

- Back fill bladder
- VIDEO BLADDER ADHESIONS
- VIDEO BACK FILLING BLADDER
- OVER SEW BLADDER

References

Simplifying Laparoscopic Myomectomy

Stephanie Morris, MD
Newton-Wellesley Hospital, MA
Harvard Medical School

DISCLOSURE

• I have no financial relationships to disclose.

OBJECTIVE

• Demonstrate steps to simplify laparoscopic myomectomy
  – Pre-operative planning
  – Ways to reduce intra-operative blood loss
  – Surgical techniques
  – Tips for removing different types of fibroids

Patient selection

• Number of fibroids
• Size of fibroids
  – How big is too big?

Patient selection

• Number of fibroids
• Size of fibroids
  – How big is too big?
• Location

Pre-Operative Imaging

• Ultrasound
  – Limited when numerous fibroids
**Pre-Operative Imaging**

- **MRI**
  - Great for mapping fibroid location and

**Pre-operative use of GnRH Agonists**

- Improves pre- and post-op hgb/hct
- Decreases uterine volume and fibroid size
  - 35-65%
- Decreases procedure related blood loss
  - Does not change need for blood transfusion
- +/- Decrease in OR time
  - Studies vary
  - Several individual RCT studies show less OR time
  - Meta-analysis, no difference in OR time (Cochrane)

*Effect on surgical planes*

- Cochrane Review 2011; Lethaby A. 2002; Zullo F. 1998; Gutmann, 2005

**In the OR**

- **Port placement**
  - Higher lateral ports
  - Higher midline ports
  - LUQ port
  - 5mm and 10mm

**In the OR**

- **Energy Source**
  - Bipolar
  - Monopolar
  - Ultrasonic Energy
  - Laser

**In the OR**

- **Myoma manipulators**
- **Morcellator**

*Efficiency*
Intra-operative Hemostasis:
- Vasopressin
  - ↓ blood loss
  - ↓ need for transfusion
    - Cochrane review: 300 cc less EBL
    - Dilute vasopressin (0.05-0.3 units/ml)
    - Most studies for open myomectomies

Intra-operative Hemostasis
- Vasopressin
- Laparoscopic tourniquet
- Direction of incision
- "Pedicle" of the fibroid
- Use of thermal energy vs. suture

Hemostasis
- Pre-op Lupron
- Vasopressin
- Laparoscopic tourniquet
- Direction of incision
- "Pedicle" of the fibroid
- Use of thermal energy

Intra-Operative Vasopressin
- Dilute vasopressin (0.05-0.3 units/ml)
  - 20 units in 100 cc (0.2 units/ml)
- Decrease blood loss and need for transfusion
  - Better or the same as using a tourniquet
  - Cochrane review: 300 cc less EBL with vasopressin
- Most studies for open myomectomies
- VIDEO OF VASOPRESSIN INJECTION
  - Subserosal and base

Direction of Incision
- Vertical or transverse
- Considerations:
  - Vasculature
  - Ease of repair
- VIDEO

Pedunculated fibroids
Pedunculated fibroids: Using a loop ligasure

Intramural and subserosal fibroids

Suturing techniques and aides
- Same technique as open
- Multiple layer closure
- Suturing aides
  - Unidirectional barbed suture – Quill, VLock
  - Suture clips – Lapra-Ty

Multi-layered closure

Suture clips

Submucosal fibroids
Specimen removal

- Morcellation
- Mini-lap

References

- Fletcher H et al. Randomized comparison of vasopressin and tourniquet as hemostatic agents during myomectomy. Obstet Gynecol 1996; 87: 1014-9
Strategies for Safe and Efficient Tissue Removal

Andrew I. Brill, MD
Director, Minimally Invasive Gynecology
California Pacific Medical Center
San Francisco, CA

Disclosures

- Consultant: Karl Storz Endoscopy-America, Ethicon Endo-Surgery, Conceptus Incorporated, CooperSurgical
- Speaker's Bureau: Karl Storz Endoscopy-America, Ethicon Endo-Surgery, Conceptus Incorporated, CooperSurgical

Learning Objectives

- Describe methods for removal of different types of tissue
- List steps to minimize risk during tissue morcellation
- Employ methods to facilitate tissue removal during laparoscopy
- Enumerate the types of instruments available for laparoscopic tissue extraction

Mass Tissue Removal

Know Alternatives & Approaches

- Different Anatomy
- Consistency of Tissue
- Volume of Tissue

- OR...................

Equipment Won’t Work!
By Type of Tissue

- **Benign**
  - Sterile
  - Infectious
    - Contamination (bag)
- **Suspicious for Malignancy**
  - Seeding (bag)
- **Malignant**
  - Seeding (bag)

Relative Tissue Consistency

- **Soft** – Fallopian Tube / Myoma
- **Fluid-filled** – Ovarian Cyst
- **Particulate** – Dermoid Cyst
- **Firm** – Fundus / Myoma
- **Hard** – Calcified Myoma or Dermoid

Tissue Capture

- **Graspers**
  - Atraumatic – 5 & 10 mm
    - Less damage, less risk
    - Hold poorly
    - Fatigue

Spoon Forceps

- ultimate atraumatic grasper -

Tissue Capture

- **Traumatic** – 5 & 10 mm
  - More damage, more risk
  - Hold well

Recommended Practices

Insert Instruments PARALLEL to Abdominal Wall!
**Recommended Practices**

- **Visualize instrument tips**
- **If not observed:**
  - Keep tips closed
  - Do not move instrument
- **Awareness**
  - Sidewalls: vessels, nerves
  - Bowel
  - Bladder

**Via Cannula**
- Pull tissue into cannula
  - Open valve / disassemble & extract
  - Remove tissue with cannula

**Laparoscopic Retrieval Bags**

- **Mechanical devices**
  - Easy to use
  - Weak bag materials!
  - Risk ➔ rupture and spread

**Cook Lap Sac**

- **Strong – parachute / nylon material**
- **Harder to use**

**Cook Lap Sac - Technique**

- Insertion – roll up and push through cannula or abdominal defect
- Open neck with graspers
- Fill with irrigating fluid to distend
- Insert tissue
- Close neck with string
**Cook Lap Sac Technique (cont)**

- Grasp string and neck of bag
- Bring out abdominal wall
- Suction fluid to decompress
- Morcellate/extract tissue
  - Under direct vision to avoid perforation of bag

**Laparoscopic Mass Tissue Removal**

- Open laparoscopy
- Culdotomy
- Manual morcellation
- Electromechanical morcellation

**Extraction Sites**

- **Umbilicus – 10, 12 mm - cutting**
  - Operating scope and grasper
  - Direct removal
    - Easy to extend and repair incision
    - 5 mm scope in lower or LUQ port
  - Direct Morcellation
    - Scalpel
**Tissue Extraction Sites**

- **Lower ports** (lateral > median)
  - 5 mm
    - ectopic, simple cyst, hydrosalpx
  - 10–15 mm
    - dermoid, myoma

**Extraction Sites**

- **Culdotomy**
  - Advantages
    - Direct vision from above
    - Hold bowel away
    - Feed tissue from above

**Extraction Sites**

- **Culdotomy**
  - Risks and disadvantages
    - Infection
    - Bleeding / hemATOMA
    - Dyspareunia
    - Adhesions?
    - Need to reposition patient
  - Transcervical for LSH

**Loop Excision**

- **Storz SuperLoop and Lina Loop**
  - Strategy
    - Clarity of vital anatomy
    - Symmetric application
    - Level of vascular pedicles
    - Velocity and gap for electrosection

**Lina Loop**

**Storz Supraloop**
**Electromechanical Morcellation**

**Primary Goals**

*Safety and Efficacy*

**Risks**
- Tissue remnants
- Vascular injury
- Visceral injury
- Richter’s or fascial hernia

**Technique**
- Grasp tissue near edge
- PULL tissue into device
- Minimize movement of device
- Observe cutting edge at all times
Morcellation Port Locale?
Uterine / fibroid dimensions?
Capacity of pelvis?
Viscera and vessels?
Comfort with assistant?

Electromechanical Morcellation
Port Selection—Midline Suprapubic

Electromechanical Morcellation
Port Selection—Umbilical

Electromechanical Morcellation
Port Selection—Lateral Lower

In Situ Electromechanical Morcellation
Efficiency Parameters
• Core guard opposite tissue contour
• Hammock created by assistant
• 30-degree lens to observe entry and exit points
• Pull steadily away from uterus with claw
• Target interface between myoma and uterus
• Finish the base of the myoma conventionally
• Avoid for low lateral or submucous elements

Create Tissue Hammock
**Efficiency: Surfacing and Unpeeling**

**Electromechanical Morcellation: Efficiency**

- Tissue Density
  - per
  - Visual and Auditory Cues

- Soft
  - Adenomyosis
  - Degenerated Myoma

- Firm
  - Uterus and Myoma

- Hard
  - Myoma

**Core and Steer**

**Unpeel**

**Preventing Hernia Post-Morcellation**

- Close fascial and peritoneal defects!

**Thank You**
Cuff Management: Issues of Support and Controversies of the Cervix
James K. Robinson, MD, MS
The George Washington University

Objective

- At the conclusion of this session the participant will be able to:
  - Identify risks and benefits of laparoscopic total (TLH) vs subtotal (LSH) hysterectomy
  - Identify principals and techniques to minimize apical prolapse after laparoscopic hysterectomy (LH)
  - Identify principals and techniques to minimize vaginal cuff cellulitis and dehiscence after LH
  - Identify principals and techniques to minimize genito-urinary injury and fistula formation after LH

Outline – 24 slides + video

- Historical perspective
- TLH vs LSH
  - Marfori Data
- Cervical Management
  - Amputation and endocervix (Videos – amputation, dessication, closure)
- Apical Prolapse
  - US Lig suspension (Video)
- Cuff infection and dehiscence
  - Closure (Video)
- Genito-urinary injury and fistula formation
  - Simple Cystoscopy (Video)

Timeline

- First reported elective hysterectomy
  - 1813, vaginal hysterectomy by Conrad Langenbeck
  - 1863, first abdominal hysterectomy (subtotal) by Charles Clay
  - 1929, first total abdominal hysterectomy EH Richardson
  - 1989, first laparoscopic hysterectomy by Reich
  - 1990, first laparoscopic supracervical hyst by Lyons
  - 45% women over 70 in US is s/p hyst

LSH vs TLH “Do I stay or do I go?”
Summary (Eat dessert first)

LSH Advantages
- ↓ Evisceration
- ↓ Cuff infection
- ↓ GU injury
- ↓ Granulation
- ? Impact in future vault prolapse
- ↑ Early satisfaction scores

TLH Advantages
- ↓ Post-operative bleeding
- ↓ Dysplasia and cervical cancer
- No risk of future trachelectomy
- LSH should be used cautiously in women with CPP/known endometriosis
- ↓ Spread of malignancy (when intact)

Disclosure

- Consultant: Gyrus ACMI (Olympus), Intuitive Surgical
**Cervical Management**

- **Cyclic Bleeding**
- Reoperation for cyclic bleeding is 1-2%.
- Tips
  - Reverse conization (video link)
  - Endocervical Desiccation (video link)
  - Cervical Closure (video link)

**Reoperation**

- 8/1706
- 8/1706
- No
- Febrile Infection

**Level 1 Support**

- Suture/Thakar R et al. NEJM 2002; 347;1318.
- AJOG
  - 24%—1%)
  - 2%.
  - 7
  - 2%
  - 1%
  - 1%
  - 1%
  - 1%
  - 1%

---

**Loop Amputation**

- Radiofrequency cervical amputation
- Video Link
- Limited somewhat by uterine size
- Does not allow for conization or cervical closure

**Tips**

- Video Link
- HMG
- Thakar R et al. NEJM 2002; 347;1318.
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---

**Avoiding Apical Prolapse**

- Assess apical descent
- Incorporate US ligament complex at apical insertion in all TLHs
- Utilize high US ligament suspension when significant apical descent already exists

**Tips**

- Assess apical descent
- Incorporate US ligament complex at apical insertion in all TLHs
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**Infection**

- Fallopian tubes do they matter?

---

**Cuff Infection**

- Tips
  - Test and treat preoperative vaginitis
  - Thorough pre-operative vaginal preparation
  - Pre-incision antibiotics
  - Rapid drainage of post-operative abscess
  - Aggressive 2 week antibiotic treatment for all vaginal cuff infections

---

**Apical Prolapse**

- Only short follow-up studies exist for LH
- Show no difference in rate of prolapse
- Level 1 Support
  - Sacrocervical ligament complex
  - Attached to cervix and upper vagina

---

**Cuff Infection**

- Fallopian tubes – Do they matter?
  - RCT of TLH +/- salpingectomy
  - 2/137 infections with bil salpingectomy
  - 14/145 infections w/o
  - p=0.01

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  - Thorough pre-operative vaginal preparation
  - Pre-incision antibiotics
  - Rapid drainage of post-operative abscess
  - Aggressive 2 week antibiotic treatment for all vaginal cuff infections
Cuff Dehiscence - Incidence

- TAH/VH - 0.14 – 0.28%
- TLH - 0.79-4.93%
- Robotic TLH – 4.1%

LSh – Case Report

Risk Factors *
- Menopause
- Cuff cellulitis/abscess
- Hematoma
- Tissue Ischemia

Prevention *
- Preoperative vaginal estrogen
- Prevent infection
- Maintain hemostasis
- Minimize thermal injury
- 1 cm tissue bites
- Barbed suture ?
- Chronic valsalva
- Early Cotus
- Immunosuppresion
- Smoking

Genito-urinary Injuries

- Retrospective review
  - 1110 pts over 10yrs by 48 surgeons

<table>
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<th>OR</th>
<th>CI</th>
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- 2.7% risk injury with TLH in Finland database (>1100)
  - 0.29% in large series of LSH (>1700)

- Fistula
  - National Swedish registry 1973-2003 rates (100,000 person years)
    - TAH – 28 (371/117,000)
    - SCH – 14 (69/45,000) – almost all bowel
    - TVH – 20 (22/19,000)
    - TLH/LAVH – 96 (7/1800) – almost all urogenital

- Morcellation Considerations
• Jones T. JMG. 2007;14:570-7.
• Thukral R et al. NEJM 2002;347:1318.
• Normand D et al. AOG 2009;301:536-41.
• Hurk H et al. JMG 2007;14:111.
• Apfelqvist et al. JMG 2006;53:312-7.
• Harlli AM. Obstet Gynecol 1997;176:118-22.
• Schuster M. JMG. 2012;19:861.
• Anapanda R. JMG. 2011;18:184.
• Oralka Z. Genes, Chromosomes & Cancer 2010;49:1132.
CULTURAL AND LINGUISTIC COMPETENCY

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](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](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](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].

---

**US Population Language Spoken at Home**

- English: 80.3%
- Spanish: 19.7%
- Indo-Euro: 0.5%
- Asian: 0.3%
- Other: 0.2%

19.7% of the US Population speaks a language other than English at home.

**California Language Spoken at Home**

- English: 40.0%
- Spanish: 31.5%
- Indo-Euro: 10.9%
- Asian: 7.9%
- Other: 7.7%

In California, this number is 41.5%.