



# AGL 2022

## 51st GLOBAL CONGRESS ON MIGS

December 1–4, 2022 | Gaylord Rockies Resort and Convention Center | Aurora, Colorado

# SYLLABUS

## Surgical Tutorial 6: Laparoscopic Hysterectomy

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Sangeeta Senapati, MD, MS – Consultant: Myovant, PEC< Emmi; Ownership Interest: KLAAS

Kelly N. Wright, MD – Consulting: Aqua Therapeutics, Ethicon, Hologic, Karl Storz

## **Surgical Tutorial 6: Laparoscopic Hysterectomy**

**Chair:** Hye-Chun Hur, MD, MPH

**Faculty:** Sangeeta Senapati, MD, MS, Kelly N. Wright, MD

### **Course Description**

*At the conclusion of this course, the participant will be able to:* 1) Identify complex cases to allow for appropriate preoperative counseling and surgical planning; 2) Employ intraoperative strategies to minimize blood loss during complex laparoscopic hysterectomies for large mass size or anatomically challenging fibroids; and 3) Integrate tips and tricks to minimize complications like visceral organ injury or cuff dehiscence during complex laparoscopic hysterectomies presenting with extensive adhesions or advanced endometriosis.

### **Learning Objectives**

*At the conclusion of this course, the participant will be able to:* 1) Identify complex cases to allow for appropriate preoperative counseling and surgical planning; 2) Employ intraoperative strategies to minimize blood loss during complex laparoscopic hysterectomies for large mass size or anatomically challenging fibroids; and 3) Integrate tips and tricks to minimize complications like visceral organ injury or cuff dehiscence during complex laparoscopic hysterectomies presenting with extensive adhesions or advanced endometriosis.

### **Course Outline**

3:15 pm	Welcome, Introduction and Course Overview	H.C. Hur
3:20 pm	Tackling the Complex Laparoscopic Hysterectomy (Adhesions, Endometriosis): Breaking it Down to “Doable” Steps	K.N. Wright
3:35 pm	Tackling the Complex Hysterectomy (Large Mass Size, Challenging Fibroids, and Hypervascular Uterus): Optimizing Success and Avoiding Common Pitfalls	S. Senapati
3:55 pm	Specimen Extraction, Cuff Closure, and Management of Cuff Complications	H.C. Hur
4:05 pm	Questions & Answers	All Faculty
4:15 pm	Adjourn	

## Tackling the Complex Laparoscopic Hysterectomy: breaking it down to doable steps (a focus on endometriosis and adhesions)

Kelly Wright, MD, FACOG, FACS  
Director, Division of Minimally Invasive Gynecologic Surgery  
Associate Professor, Obstetrics and Gynecology  
Associate Program Director, FMIGS  
Cedars-Sinai Medical Center



## Disclosures

Consulting:

- Aqua Therapeutics
- Ethicon
- Hologic
- Karl Storz



## Objectives

1. Articulate keys to laparoscopic success
2. Approach the difficult anterior culdesac
3. Approach the difficult posterior culdesac
4. Prevent and identify injuries



## Back to basics: The keys to laparoscopic success

## Back to basics

- Reproducible set-up
- Consistent comfortable entry
- Know the steps that set up the next steps



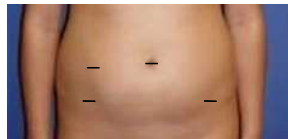
## Abdominal entry



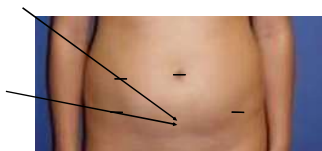
Port positioning



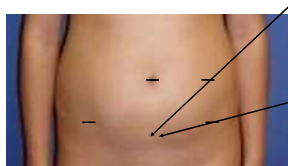
Port positioning



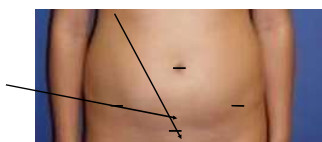
Port positioning



Port positioning



Port positioning



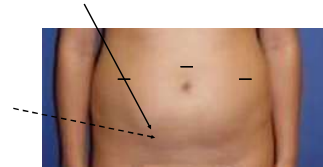
Port positioning



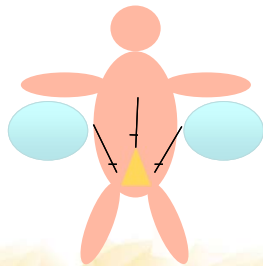
## Port positioning



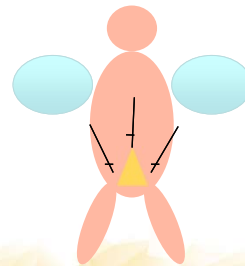
## Port positioning



## Laparoscopic set-up




## Laparoscopic set-up



## Ergonomics


- Work-related musculoskeletal disorders (WMSDs) are common among gynecologic surgeons
  - 66-95% open surgery
  - 73-100% laparoscopy
  - 54-87% vaginal surgery
  - 23-80% robotic surgery

 **Ergonomics in gynecologic surgery**

*Belene Catanzarite<sup>MD</sup>, Jasmine Tan Kim<sup>MD</sup>, and Sharen Adam Murrell<sup>MD</sup>*

### Ergonomics in the OR: *Protecting the surgeon*

Peter Rosenblatt, MD<sup>1</sup>  
Jessica McKinney, PT, MS<sup>2</sup>  
Sonia Adams, MD

 **Mount Auburn Hospital**  
Harvard Medical School  
Marathon Physical Therapy

## Laparoscopic set-up





## Laparoscopic set-up



## Laparoscopic set-up



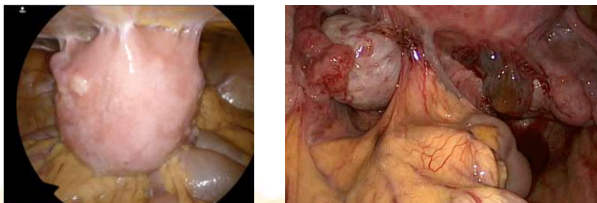
## Reproducible laparoscopic set-up

- Stand at the shoulders
  - Tuck arms, no toboggans
- Arms at a 90 – 120 degree angle
- Monitor across from you
- Right handed = stand on the right
- RLQ port as low as possible for suturing

*If it feels awkward, something is wrong*

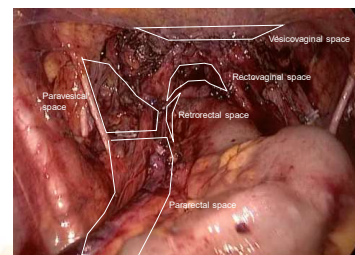
## Circle the dragon

## Approaching adhesive disease



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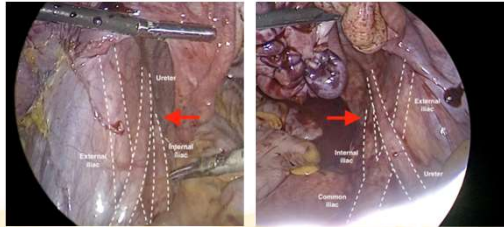
## Using your spaces



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## Using our sidewalls



## Anterior culdesac video

## Posterior culdesac video

## Putting it all together (endo+fibroids video)

## Recognizing injury

## GU injury

79 studies of over 100,000 patients

- 0.3% ureteric injury
- 0.8% bladder injury

However up to 4.3% for hysterectomy

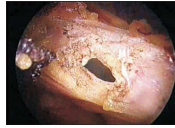
- 1.8% ureteric injury – junction of ureter and uterine artery
- 2.9% bladder injury

Review  
**Urinary Tract Injury at Benign Gynecologic Surgery and the Role of Cystoscopy**  
A Systematic Review and Meta-analysis  
Brahmananda Telukdharry, MD, DMSc, Donna Gilman, MD, PhD, and Gordon Plessman, MD

## Bladder injury

### Management

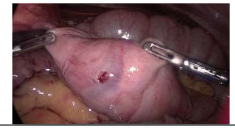
- Dome:
  - Less than 1cm: repair or catheterization
  - Less than 2cm: 1-layer
  - Greater than 2cm: 2-layer
- Test for water-tightness
- Catheterization 5-14 days
- Antibiotics not needed
- Retrograde cystogram before removing catheter for larger injuries
- Injuries near the trigone: consult, stent



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## Bowel injury is rare

- 90 studies including 474,000 patients
- Incidence of 1 in 769 (0.13%)
- Increased by complexity of procedure:
  - 0.39% for hysterectomy
- ~50% was small bowel
- ~50% occurred during first entry
- No deaths associated with recognized injury
- 3.2% mortality rate for unrecognized entry



Review  
**Bowel Injury in Gynecologic Laparoscopy**  
A Systematic Review

Natalia C. Llerena, et al., Anoop B. Shah, et al., and Mayra P. Milad, et al.

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Thank you!  
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# Tackling the Complex Laparoscopic Hysterectomy: Optimizing Success and Avoiding Common Pitfalls

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Clinical Associate Professor  
Pritzker School of Medicine, University of Chicago



## Disclosure

- Consultant: Myovant, PEC, Emmi
- Ownership Interest: KLAAS



## Objectives

- Discuss appropriate preoperative counseling and surgical planning
- Optimize intraoperative strategies to tackle a challenging/enlarged uterus
- Demonstrate techniques to safely address vascular supply to the uterus/fibroids

## Can this be done laparoscopically?

- A non-vaginal hysterectomy candidate who by traditional methods would have undergone hysterectomy abdominally



There are no absolute contraindications, just relative: **surgeon experience, anatomical considerations, operating field, anesthesia, abdominal entry issues...**

Aarts et al JWM 2015

## Pretreatment

- Luprolide
- Relugolix/estradiol/norethindrone
- Elagolix +/- norethindrone/estradiol
- Letrazole

Lethaby A et al Cochrane Rev 2017  
Schaff W et al NEJM 2020  
Al-Hendy A et al NEJM 2021

## Patient Positioning

- Dorsal lithotomy
- Arms padded and tucked at sides
- Steep Trendelenburg
- Decompress stomach & bladder



## Positioning

- Obese patients AND long cases are at a greater risk of pressure sores and neural injuries!

- Ultrafins: Yellowfins for the obese
- Shoulder braces or other antiskid measures
- Vacuum beanbag
- Toboggans or arm supports
- Neck support



Work with anesthesia! +/- T-berg

**Don't forget surgeon positioning!**

## Technical Steps

- Survey of operative field: Create a game plan
- Adnexal management
- Round ligament & entry into broad ligament
- Vesico-uterine reflection
- Skeletonization & ligation of uterine vasculature
- Management of vaginal cuff
  - Colpotomy
  - Closure
- Specimen extraction

## Laparoscopic Access

- Direct vs. open (Hasson technique) vs. Veress needle (standard, long)
- Left upper quadrant (Palmer's Point)
- Transumbilical

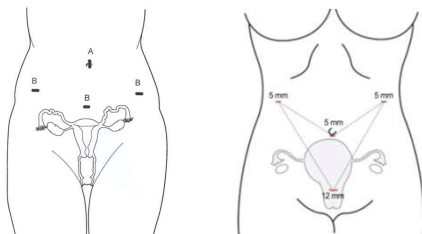
## Ports and Port Placement

- Balloon tipped ports
- Increase pneumoperitoneum to 18-20mm Hg
- Consider more lateral +/- superior port placement
  - More exposure
  - Decreased the torque on the ports



Youn et al J Kor Med Sci 2007

## Trocar Placement - cephalad



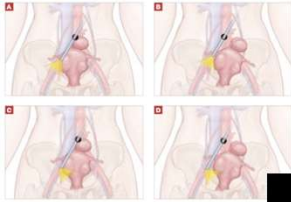
Youn et al J Kor Med Sci 2007

## Tailored Port Placement

- Complex cases - consider using > 3 ports
  - 2 ipsilaterally to allow bimanual engagement
- Placement of ports should allow most operating to occur using 1/2 - 2/3 instrument length



## Angled Scope



## Electrosurgical Vessel Sealing Technology



Halo PK  
LigaSure  
EnSeal  
Harmonic Ace  
Thunderbeat



NorthShore  
HEALTH SERVICES

## Instruments

### Uterine Manipulator

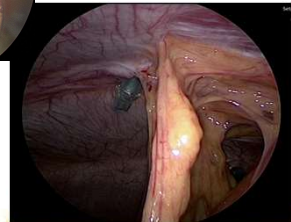
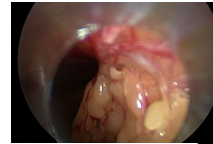
- VCARE
- RUMI + Koh colpotomy rings
- Advincula Arch/Delineator



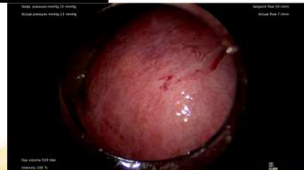
### TLH configuration

(Koh colpotomy ring, ZUMI uterine manipulator, vaginal balloon pneumo-occluder)

## Port Hopping



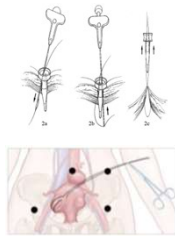
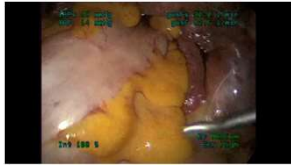
## Adnexa



## Round Ligament



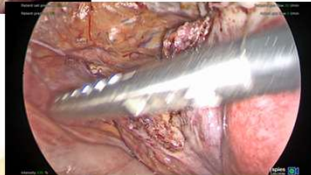
## Retraction Techniques



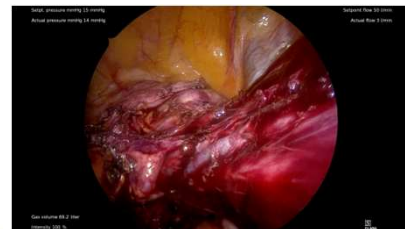
## Retraction Techniques



## Uterine Vasculature



## Large Uterine Vasculature



## Uterine Artery – Alternate Approach

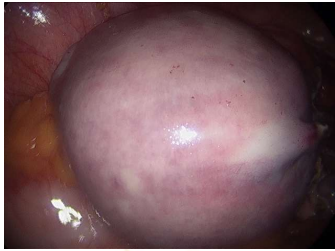


## Vascular Clips

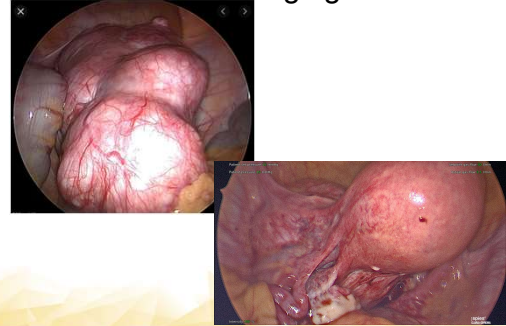




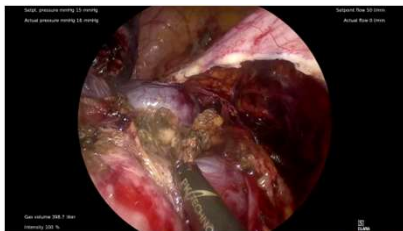
## Blanched Uterus



## The more challenging cases...



## Retroperitoneal Fibroids



## Ureteral Stents?

- Ureter will be more prominent and rigid
  - Lighted?
- 3141 patients underwent gynecologic surgery  
ureteral injury occurred in 1.2% of patients  
with stents and 1.09% without stents
- NO difference in ureteral injury with or without  
stents

Chou MT Int Urogyn J Pelvic Floor Dysfunct 2009

## Cystoscopy – Safety Check!

- Overall urinary tract injury rate 0.73%<sup>1</sup>
  - Risk is greater than with abdominal hysterectomy<sup>2</sup>
  - May have delayed injury from thermal damage
- Procedure: 70 degree or 30 degree scope
  - Water, saline, or 10% dextrose as the distention media
  - Can use IV indigo carmine, IV methylene blue, IV fluorescein, or preoperative oral phenazo-pyridine for visualization of ureteral jets of urine

Adelman et al JMIIG 2014<sup>1</sup>  
Aarts et al Cochrane Database Syst Rev. 2015<sup>2</sup>

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## The Magic of MIGS: Specimen extraction, Cuff Closure, and Cuff Dehiscence Complications

Hye-Chun Hur, MD, MPH

Director of Gynecology, NYU Langone Hospital - Brooklyn  
Vice Chair of Faculty Development, Dept of Ob-Gyn, Grossman School of Med  
Minimally Invasive Gynecologic Surgery



## Disclosure

- Author: Up To Date (Vaginal dehiscence)



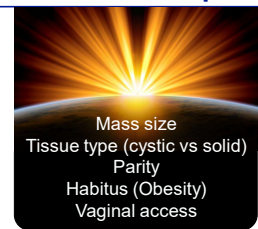
## Objectives

- Discuss how to optimize removal of large specimens during laparoscopy
  - Assess different specimen extraction techniques
  - Review different types of specimen retrieval bags available in U.S.
  - Consider best bag selection & extraction technique for different clinical scenarios
- Review ideal cuff closure techniques
- Address how to minimize cuff complications
  - Cuff dehiscence



## Different Specimen Extraction Techniques

- Vaginal Extraction
  - colpotomy (TLH)
  - posterior cul de sac (MMY)
- Laparoscopic Extraction
  - open power morcellation (extinct)
  - contained power morcellation
- Mini-laparotomy
  - contained cold-cut extraction
- Laparotomy
  - intact removal



➔ Match Extraction Strategy to Pathology & Patient



## Video: Mini-lap Extraction (LSC MMY)

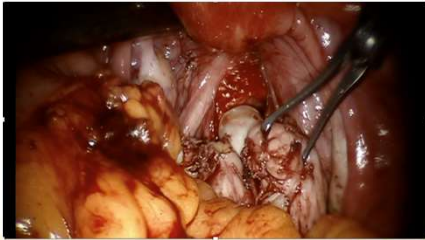


## Tips and Tricks for Minilap Extraction

- Skin should be the rate limiting step (fascia slightly more extended than skin)
- Use self-retracting wound retractor (optimize exposure, retract specimen bag)– even with Alexis CES bag
- Use penetrating instrument to grasp specimen (Lahey clamp)
- Non-dominant hand grabs specimen, dominant hand holds scalpel (10 or 11-blade) for cold cut extraction



### Video: Cul de sac Extraction (ROB MMY)



### Video: Vaginal Extraction (ROB TLH)



### Video: Intact Vaginal Extraction (TLH)



### Video: Vaginal Extraction (Bagged)



### Predictors for Vaginal Extraction

- Selection Factors
  - Parity (mode of delivery)
  - Vaginal access (narrow introitus, android pubic symphysis; h/o radiation)
  - Colpotomizer cup size
- Mass size (total uterine dimensions vs dominant mass)
- Habitus

### Tool Kit: “Cold-cut” Extraction

#### Vaginal Extraction

- Bag selection (Alexis CES)
- Vaginal retractors (breisky, sims)
- Perforating clamp (eg tenaculum, towel clips)
- 10 or 11-blade scalpel
- Long knife handle

#### Minilap Extraction

- Bag selection (mass size)
- Alexis wound retractor (mini)
- Perforating clamp (eg lahey)
- 11 blade scalpel
- regular length knife handle

## Bag Selection

Know Pathology:

- Mass Size
- Tissue type (solid vs cystic)
- Shape

Select Bag

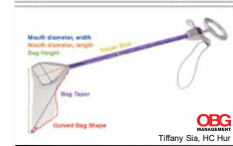
Select Trocar

## Specimen Bags

Bag characteristics

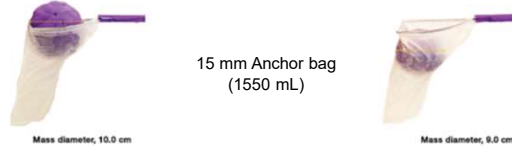
- Trocar size (insertion)
- Bag dimensions (open)
  - Mouth diameter (bag entry)
  - Bag length
- Bag shape, taper (ball fit)
- Bag strength (material)

FIGURE 1 Laparoscopic retrieval device components and terminology



## Ball fit

Bag taper and bag shape determine the "ball fit" of a bag.



Mouth diameter can fit 10 cm mass, but bag shape and taper hinders bag closure (poor "ball fit")

15 mm Anchor bag (1550 mL)

Entire 9 cm mass fits, so bag can close (complete "ball fit")

**A Bag taper.** Two examples of masses with different mass diameters within the same Anchor TRS175SB2 bag (ConMed). Left: The mass diameter of the specimen is just able to be accommodated by the mouth diameter of the bag, but the degree of bag taper hinders closure. The ball fit for the bag is smaller than the mouth diameters. Right: Although the specimen's mass diameter is smaller

## Bag Shape (15 mm Bags)



Steep taper

Anchor 15mm Bag (1550 mL)

Gradual Taper

Inzli 15mm Bag (1600 mL)

Gradual Taper

Anchor 15 mm Bag (1850 mL)

Laparoscopic Retrieval Bags Available in the United States

Trocar size	Product name (Manufacturer)	Mouth diameter (width x height, cm)	Bag height, cm	Volume, mL	Bag taper	Material	Clinical application	Bag shape
5 mm	Tricurling Premium Stone (A.M.C.)	4.0 x 6.0	17.0	150	Minimal taper	Polyurethane	Subgynecology	
8 mm	Anchor TRS175SB2 (ConMed)	4.0 x 6.0	12.5	Gradual taper	Ripstop nylon	Small (Solid, solid adhesion mass)		
	Indi 37 (Applied Medical)	4.0 x 6.0	10.0	180	Gradual taper	Polyurethane	Subgynecology	
10 mm	Tricurling Premium Stone (A.M.C.)	4.0 x 6.0	16.5	210	Gradual taper	Polyurethane	Obstetrics, simple cysts	
	Indi Girth (G.U. Cooney/Medtronic)	4.0 x 7.1	10.0	210	Gradual taper	Polyurethane	Obstetrics, simple cysts	
	Indipouch Reserve (B.Braun)	5.4 x 5.8	21.4	210	Gradual taper	Polyurethane	Obstetrics, simple cysts	
	Indi 30 (Applied Medical)	5.2 x 7.8	11.5	215	Gradual taper	Polyurethane	Obstetrics, simple cysts	
	Anchor TRS175SB2 (ConMed)	4.0 x 6.0	14.0	215	Gradual taper	Ripstop nylon	Obstetrics, fibroids	
	Indi Girth 10 mm (Cooney/Medtronic)	4.0 x 7.7	16.4	215	Gradual taper	Ripstop nylon	Obstetrics, fibroids	
12 mm	Anchor TRS175SB2 (ConMed)	6.7 x 7.6	14.0	310	Steep taper	Ripstop nylon	Obstetrics, fibroids	
15 mm	Indi Girth 11 (Cooney/Medtronic)	12.7 x 9.7	21.4	1,500	Gradual taper	Polyurethane	Large (solid masses)	
	Anchor TRS175V15 (ConMed)	10.0 x 10.0	21.4	1,500	Steep taper	Ripstop nylon	Fibroid cysts	
	Anchor TRS175SB2 (ConMed)	10.2 x 10.0	21.4	1,500	Gradual taper	Ripstop nylon	Fibroid cysts	
	Indi 12" (Applied Medical)	10.7 x 10.0	21.4	1,600	Gradual taper	Polyurethane	Large (solid masses)	
	Anchor TRS175SB2 (ConMed)	10.3 x 10.0	21.4	1,600	Steep taper	Ripstop nylon	Fibroid cysts	
25 mm	Anchor TRS175V25 (ConMed)	14.8 x 14.0	30.5	3,400	Steep taper	Polyurethane	Fibroid cysts, large cysts	
	Anchor TRS175V25 (ConMed)	10.3 x 14.5	30.4	4,000	Steep taper	Ripstop nylon	Fibroid cysts, large cysts	
	Anchor TRS175V25 (ConMed)	17.0 x 13.0	30.0	6,500	Steep taper	Polyurethane	Fibroid cysts, large cysts	

Laparoscopic Retrieval Bags Available in the United States

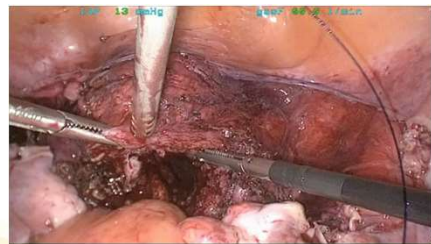
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## Recommendations (Specimen Extraction)

- Best route of delivery depends on "fit."
- Nulliparous patients with tight introitus, narrow vagina, and android pubic arch → mini-laparotomy
- Multiparous patients with favorable pelvic exam → consider colpotomy delivery (up to 16 wks)
- Obesity (best to avoid minilap, but vaginal access may be a challenge) → vaginal extraction when possible (parity & mode of del)
- Limited or no vaginal access (G0, narrow introitus, radiation patients, android pelvis) → mini-laparotomy extraction

## Cuff Closure Techniques

## Video: Cuff Closure (IC Knots)



## Cuff Closure: Key Points

- Full thickness bites (include vaginal mucosa & pubocervical fascia)
- Place suture  $\geq 1$  cm deep
- Travel 1 cm for each suture placement
- Reapproximate, don't strangulate
- Some cuff bleeding is healthy

## Minimizing Cuff Complications





MOI	TLH Risk Ratio	Incidence	(Range)
TVH	17.2	0.12%	(0.05 - 0.32%)
TAH	9.1	0.3%	(0.02 - 0.60%)
TLH		0.7%	(0.64 - 1.35%)
RA-TLH		2.3%	(0.4 - 4.1%)

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Patient Characteristics		
• Obese	X	Thin
• Postmenopausal	X	Younger, premenopausal
• African American	X	Caucasian
• Smoker	✓	Smoker

- | Patient Characteristics |   |                        |
|-------------------------|---|------------------------|
| • Obese                 | ✗ | Thin                   |
| • Postmenopausal        | ✗ | Younger, premenopausal |
| • African American      | ✗ | Caucasian              |
| • Smoker                | ✓ | Smoker                 |





## Non-modifiable Risk Factors

- Demographics: Thin, smoker, Caucasian, young age
- Infection (diabetic, immunocompromised)
- Pathology (extensive LOA, eg endometriosis, adhesions)
- Poor tissue quality (connective tissue disease)

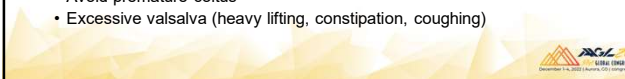
## Modifiable RF's:

- BV, cuff infection
- Avoid premature coitus
- Excessive valsalva (heavy lifting, constipation, coughing)



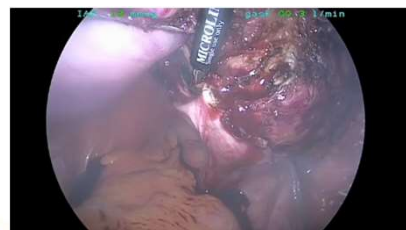
ASG  
December 14, 2022 | Austin, TX | 10am

- Non-modifiable Risk Factors**
- Demographics: Thin, smoker, Caucasian, young age
  - Infection (diabetic, immunocompromised)
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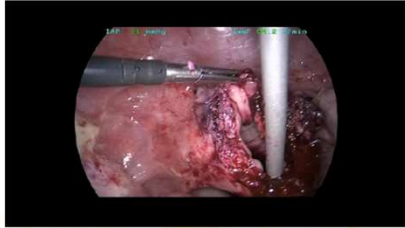
- Mode of incision for closure (LSC vs vag)
- Colpotomy (cut vs coagulation waveform)
- Suture selection
  - polyfilament vs monofilament
  - faster vs delayed absorbable
  - absorbable vs permanent
  - traditional vs barbed suture
- Closure method
  - Vaginal closure vs LSC closure
  - interrupted vs figure of eight vs continuous running
  - 1 vs 2-layer closure

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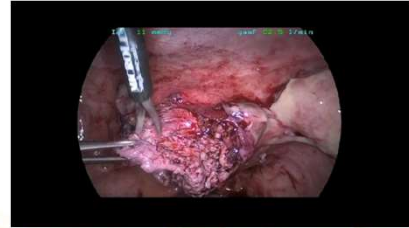




### Cuff Dehiscence Repair



### Excise Old Cuff (healthy edges)



### Vaginal Dehiscence Repair

1. Identify & normalize anatomy (expose cuff)
2. Find defect, open & mobilize cuff (dissect bladder off)
3. **Excise cuff edges (healthy tissue)**
4. Close new cuff incision (full thickness, >1 cm deep)
5. Antibiotics (pre-op, intra-op)

### Mitigating Risks

- Treat BV (preop and postop)
- Intra-op
  - Antibiotic prophylaxis
  - Good surgical technique (colpotomy, cuff closure)
  - Vag exam
- Postop
  - Stool softeners
  - Cuff exam 2wk POV (suture check, BV check)
  - Timely eval if pt calls with cuff complaints (pain with sitting, back pain, pain with urination)

### Take Home Points (Cuff Dehiscence)

An ounce of prevention is worth a pound of cure.

- Ben Franklin

### Questions?

## References (Deh)

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## CULTURAL AND LINGUISTIC COMPETENCY & IMPLICIT BIAS

The California Medical Association (CMA) announced new standards for Cultural Linguistic Competency and Implicit Bias in CME. The goal of the standards is to support the role of accredited CME in advancing diversity, health equity, and inclusion in healthcare. These standards are relevant to ACCME-accredited, CMA-accredited, and jointly accredited providers located in California. AAGL is ACCME-accredited and headquartered in California.

CMA developed the standards in response to California legislation ([Business and Professions \(B&P\) Code Section 2190.1](#)), which directs CMA to draft a set of standards for the inclusion of cultural and linguistic competency (CLC) and implicit bias (IB) in accredited CME.

The standards are intended to support CME providers in meeting the expectations of the legislation. CME provider organizations physically located in California and accredited by CMA CME or ACCME, as well as jointly accredited providers whose target audience includes physicians, are expected to meet these expectations beginning January 1, 2022. AAGL has been proactively adopting processes that meet and often exceed the required expectations of the legislation.

CMA CME offers a variety of resources and tools to help providers meet the standards and successfully incorporate CLC & IB into their CME activities, including FAQ, definitions, a planning worksheet, and best practices. These resources are available on the [CLC and IB standards page](#) on the CMA website.

### **Important Definitions:**

**Cultural and Linguistic Competency (CLC)** – The ability and readiness of health care providers and organizations to humbly and respectfully demonstrate, effectively communicate, and tailor delivery of care to patients with diverse values, beliefs, identities and behaviors, in order to meet social, cultural and linguistic needs as they relate to patient health.

**Implicit Bias (IB)** – The attitudes, stereotypes and feelings, either positive or negative, that affect our understanding, actions and decisions without conscious knowledge or control. Implicit bias is a universal phenomenon. When negative, implicit bias often contributes to unequal treatment and disparities in diagnosis, treatment decisions, levels of care and health care outcomes of people based on race, ethnicity, gender identity, sexual orientation, age, disability and other characteristics.

**Diversity** – Having many different forms, types or ideas; showing variety. Demographic diversity can mean a group composed of people of different genders, races/ethnicities, cultures, religions, physical abilities, sexual orientations or preferences, ages, etc.

### **Direct links to AB1195 (CLC), AB241 (IB), and the B&P Code 2190.1:**

[Bill Text – AB-1195 Continuing education: cultural and linguistic competency.](#)

[Bill Text – AB-241 Implicit bias: continuing education: requirements.](#)

[Business and Professions \(B&P\) Code Section 2190.1](#)

### **CLC & IB Online Resources:**

[Diversity-Wheel-as-used-at-Johns-Hopkins-University-12.png \(850×839\) \(researchgate.net\)](#)

[Cultural Competence In Health and Human Services | NPIN \(cdc.gov\)](#)

[Cultural Competency – The Office of Minority Health \(hhs.gov\)](#)

[Implicit Bias, Microaggressions, and Stereotypes Resources | NEA](#)

[Unconscious Bias Resources | diversity.ucsf.edu](#)

[Act, Communicating, Implicit Bias \(racialequitytools.org\)](#)

<https://kirwaninstitute.osu.edu/implicit-bias-training>

<https://www.uptodate.com/contents/racial-and-ethnic-disparities-in-obstetric-and-gynecologic-care-and-role-of-implicitbiases>

<https://www.contemporaryobgyn.net/view/overcoming-racism-and-unconscious-bias-in-ob-gyn>

<https://pubmed.ncbi.nlm.nih.gov/34016820/>