AAGL 26

55TH GLOBAL CONGRESS ON MIGS

BOSTON, MASSACHUSETTS
NOVEMBER 13-16, 2026

Syllabus

PG-26061

Isthmoceles, Cervical Cerclage, and
Minimally Invasive Surgery During Pregnancy

HONORARY CHAIR
Charles H. Koh, MD

SCIENTIFIC PROGRAM CHAIR
Nash S. Moawad, MD

PRESIDENT
Michael Hibner, MD, PhD



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PG-26061: Isthmoceles, Cervical Cerclage, and Minimally Invasive Surgery During Pregnancy

Chair: Kathiane Augusto
Co-Chair: Jamal Mourad
Faculty: Kathiane Augusto, Sara Karbage, Jamal Mourad, Resad P. Pasic

Course Description

Isthmoceles, Cervical Cerclage, and Minimally Invasive Surgery During Pregnancy - Indications, timing, surgical strategies, and maternal–fetal safety. Isthmocele management, cervical cerclage, and minimally invasive surgery during pregnancy are complex clinical scenarios requiring precise indications, advanced decision-making, and strict maternal–fetal safety principles. This postgraduate didactic course focuses on evidence-based patient selection, optimal timing, and surgical strategy to translate current evidence into consistent, high-quality professional practice. Faculty will address minimally invasive approaches to symptomatic isthmoceles and cervical insufficiency and will define safety boundaries for selected surgical interventions during pregnancy, emphasizing multidisciplinary decision-making and risk mitigation.

Learning Objectives: *At the end of this course, the participant will be able to:* 1) Identify appropriate indications and contraindications for surgical management of isthmoceles and cervical insufficiency; 2) Determine optimal timing and minimally invasive surgical strategies for isthmocele repair and cervical cerclage across reproductive and pregnancy contexts; and 3) Apply maternal–fetal safety principles to guide decision-making for minimally invasive surgery during pregnancy.

Course Outline

10:30 am	Welcome, Introduction and Course Overview	K. Augusto
10:35 am	Restorative Reproductive Surgery	R.P. Pasic
11:00 am	Isthmocele: Indications, Evidence, and Surgical Decision-Making	K. Augusto
11:25 am	Minimally Invasive Cervical Cerclage: Patient Selection, Timing, and Outcomes	J. Mourad
11:50 am	Maternal–Fetal Safety and Risk Mitigation in Surgical Decision-Making	S. Karbage
12:15 pm	Discussion Questions & Answers	All faculty
12:30 pm	Adjourn	

ADA Statement: In accordance with the Americans with Disabilities Act (ADA), please contact CMEsupport@aagl.org should you require any special assistance.

Disclosure of Relevant Financial Relationships

As an ACCME-accredited provider, AAGL is responsible for ensuring that accredited education is fair, balanced, free of commercial bias, and supports safe, effective patient care. AAGL maintains control over all aspects of educational planning, content, faculty selection, delivery, and evaluation.

All individuals in a position to control educational content are required to disclose financial relationships with ACCME-defined ineligible companies within the past 24 months. AAGL identifies and mitigates all relevant financial relationships before individuals assume their respective roles. Educational content is also subject to independent peer review by individuals without relevant financial relationships.

Disclosure information and acknowledgment of any commercial support are provided to learners before the activity to promote transparency and maintain the independence and integrity of the education.

Asterisk (*) denotes no financial relationships with ACCME-defined ineligible companies to disclose.

PLANNER DISCLOSURES

The following members of AAGL have been involved in the educational planning and/or review of this course (listed in alphabetical order by last name).

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Jamal Mourad, DO – Proctor: Intuitive Surgical
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Nancy Williams, COO, CME Consultants*

SCIENTIFIC PROGRAM COMMITTEE

Nash Moawad, MD, MS, Chairman – Consultant (ended 12/2024): Medtronic, Womed, Integra Life Sciences
Amani Harris, MD*
Ted Lee, MD – Advisory/Consultant: Johnson & Johnson, Regeneron Pharmaceuticals
Nucelio Lemos, MD, PhD – Speakers Bureau: Pfizer, Inc., Medtronic; Advisory Board: Knight Therapeutics, Vecfer Pharma
Mario Malzoni, MD*
Emad Mikhail, MD – Consultant: Johnson & Johnson
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Angela Chaudhari, MD - Consultant: Tag/Dream Medical, Johnson & Johnson; Speakers Bureau: Johnson & Johnson
Linda D. Bradley, MD, Medical Director*
Linda Michels, Executive Director, AAGL*

COURSE CHAIR DISCLOSURE

Kathiane Augusto, MD*

COURSE CO-CHAIR DISCLOSURE

Jamal Mourad, DO – Proctor: Intuitive Surgical

FACULTY DISCLOSURES

The following faculty have agreed to support their presentations and clinical recommendations with the best available evidence from the medical literature (in alphabetical order by last name).

Kathiane Augusto, MD*
Sara Karbage, MD*
Jamal Mourad, DO – Proctor: Intuitive Surgical
Resad Paya Pasic, MD, PhD*

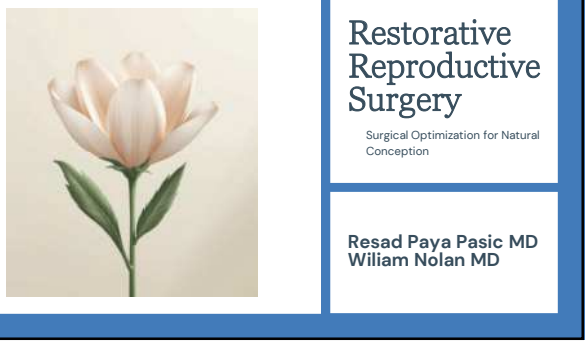
MITIGATION OF RELEVANT FINANCIAL RELATIONSHIPS

All relevant financial relationships have been mitigated.

Drs. Lee, Lemos, Mikhail, and Chaudhari's planning decisions, as part of the Scientific Program Committee (SPC), were peer reviewed by other planners on the SPC who had disclosed no financial relationships with ineligible companies, and found to be fair, balanced, and free of commercial bias. Dr. Moawad's financial relationships ended 12/2024, thus mitigating them. For most of his AAGL Professional Education Committee service, Dr. Mourad had no financial relationships to disclose. He recently disclosed a new relationship as a Proctor for Intuitive Surgical. Since then, he has not participated in activities involving control or influence over accredited educational content; therefore, no additional mitigation was necessary.

Dr. Mourad's role as Course Co-Chair was limited primarily to course oversight and moderation, rather than development of educational content. Any planning decisions or content under her influence were subject to independent peer review by individuals without relevant financial relationships.

The presentation content for course faculty, Dr. Mourad, has been peer reviewed and found to be fair, balanced, and free from commercial bias.



Restorative Reproductive Surgery

Surgical Optimization for Natural Conception

Resad Paya Pasic MD
Wiliam Nolan MD

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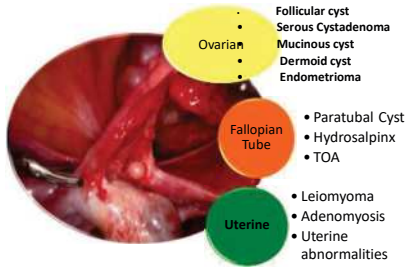
Disclosure

None

I am a MIG Surgeon. Not smart enough to be an REI !

3

Systematic Differential Dx



- Follicular cyst
- Serous Cystadenoma
- Mucinous cyst
- Dermoid cyst
- Endometrioma

- Paratubal Cyst
- Hydrosalpinx
- TOA

- Leiomyoma
- Adenomyosis
- Uterine abnormalities

4

Diagnosis



- H & P
- Pelvic exam
- Ultrasound/SIS
- HSG
- Hysteroscopy
- Laparoscopy

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Preoperative Ultrasound Mapping

Uterine Evaluation	Adnexal Evaluation	Posterior Compartment	Anterior Compartment
1. Apply MUSA Criteria	1. Characterize Ovaries	1. Assess USLs	1. Assess Bladder
2. Observe for myoma and intracavity lesions	2. Ovarian Mobility	2. Assess RVS	2. Assess Ureters and parametria
3. Assess mobility	3. Observe for fallopian tubes	3. Assess Rectum and Colon	3. Sliding Sign for anterior adhesions
	4. Site specific tenderness	4. Triangle sign and mobility	

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Surgical Evaluation of Endometrium

Infectious and Inflammatory Causes	Anatomic Distortion	Adhesion Prevention
- Infectious – direct testing	- Masses: Polyps and myomas	- Can consider adhesion prevention with history or adhesions or high-risk procedures
- Inflammatory – sampling for chronic endometritis	- Septum	
	- Adhesions: Asherman's Syndrome	
	- Isthmocele (niche)	

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Hysteroscopic Resection



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UNIVERSITY OF LOUISVILLE

Management of Complete Septate Uterus, Duplicated Cervix and Longitudinal Vaginal Septum

Megan Cesta, MD & Resad Pasic, MD PhD

University of Louisville, Department Minimally Invasive Gynecologic Surgery

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Isthmocele

Treatment Paradigm

Residual Myometrium

> 2.5 mm

< 2.5 mm

Hysteroscopic Repair

Laparoscopic Repair

FERTILITY CONSIDERATIONS

1. Trapped menstrual blood cytotoxic for implantation
2. Abnormal uterine bleeding
3. Concern for pregnancy in uterine niche



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Hysteroscopic Isthmocele Repair



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Laparoscopic Isthmocele Repair

In this case, the patient could not complete embryo transfer because the cervical canal led directly into the abdominal cavity

- Essentially a uterine dehiscence
- Fertility provider attempted EUA and cervical dilation to prepare for IVF
- Uterine perforation noted at the hysteroscopy attempt and patient was referred



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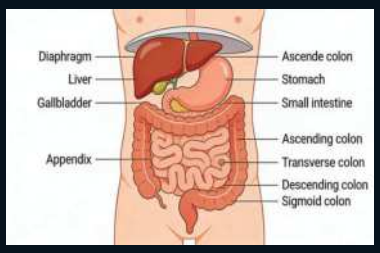


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Systematic Mapping of Abdomen and Pelvis

Upper Abdomen

- Right diaphragm, liver, gallbladder
- Left Diaphragm, liver, stomach
- Small Intestine
- Appendix,
- Colon from Cecum to Sigmoid
- The proceed to the pelvis



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Systematic Mapping of Abdomen and Pelvis

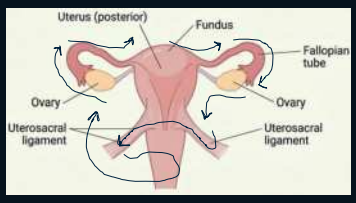


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Systematic Mapping of Abdomen and Pelvis

Pelvis

- General Overview
- Fundus
- Right tube and ovary
- Right ovarian fossa and posterior broad ligament
- Right USL, posterior cervix, left USL
- Posterior cul-de-sac
- Left posterior broad ligament and ovarian fossa
- Left ovary, left tube.
- Bladder



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Systematic Mapping of Abdomen and Pelvis



22

Always Restore anatomy first! Adhesiolysis technique

- Blunt dissection
- Sharp dissection
- Traction - counter traction
- Energy source for vascular adhesions
- Sharp scissors dissection on bowel

23

Dealing with Adherent Ovary



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Fallopian Tubes

- Proximal Occlusion
- Distal Occlusion (Hydrosalpinx)
- Central Occlusion (sterilization)
- Tubal Endometriosis
- Paratubal Cysts
- Accessory Fallopian Tube



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Adhesion Prevention

Adhesion Formation	Adhesion Prevention
Occurs in 60-90% of gyn surgeries	Microsurgical Principles !!
Tissue trauma → Healing process	
Can lead to pain and 2° infertility	

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Tubal Cannulation



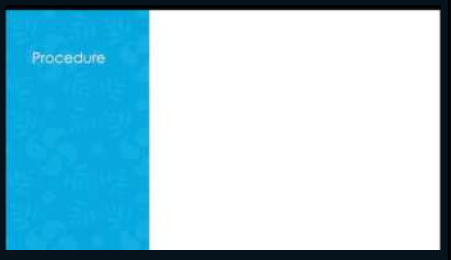
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Distal Tubal Occlusion

Salpingo-ovariolysis:
Live birth rates range from 37% to 57% with lysis of adhesions, with ectopic pregnancy from 5% to 8% [2]

Fimbrioplasty:
Birth rates are as high as 40%–60% when tubal disease is characterized as mild but falls to less than 20% when disease is characterized as severe.

- Ectopic pregnancy 2-8 % [3]
- Reocclusion as low as 13% in unpublished data



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Tubal Endometriosis

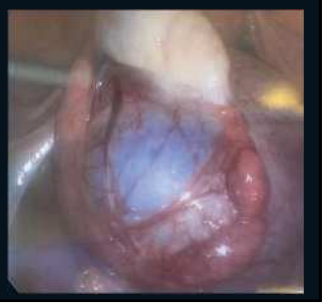
Before During After



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Paratubal Cysts

- Increased prevalence with unexplained infertility
- Increased pregnancy rate when excised compared to controls [4]



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Do intramural myomas effect fertility?

Yes	NO
• Surrey, 2001	• Seoud,1992
• Stovall, 1998	• Farhi, 1995
• Oliveira, 2004	• Ramzy, 1998
• Marchionni, 2004	

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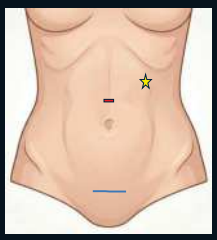
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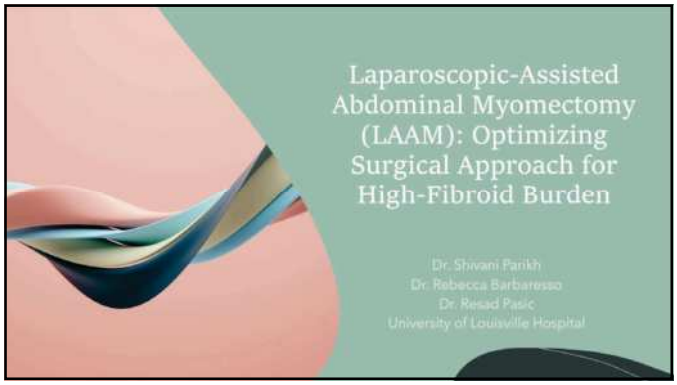
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Laparoscopic Assisted Abdominal Myomectomy

- Begin with Systematic Mapping of Abdomen and Pelvis
- Place midline port superior to the uterus and use 30-degree scope
- When possible, use temporary uterine artery ligation



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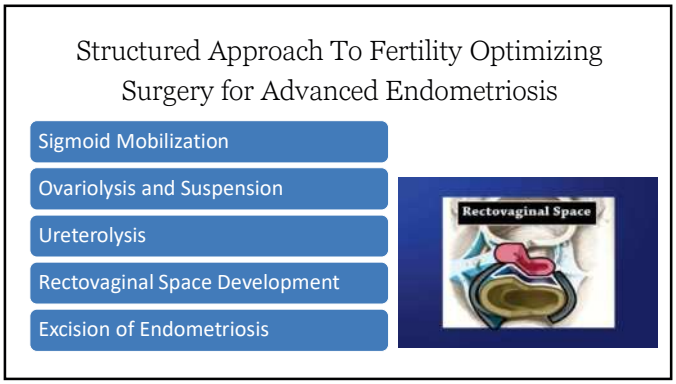
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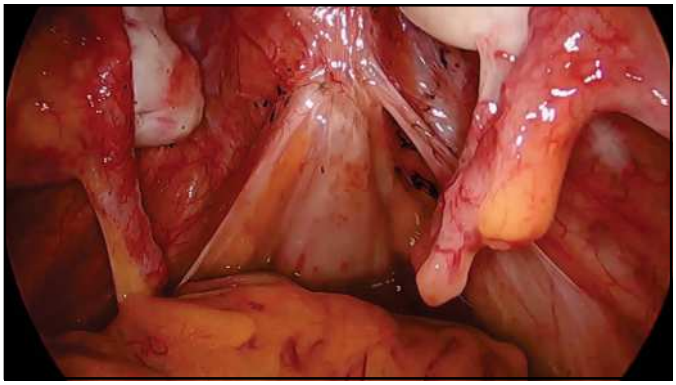
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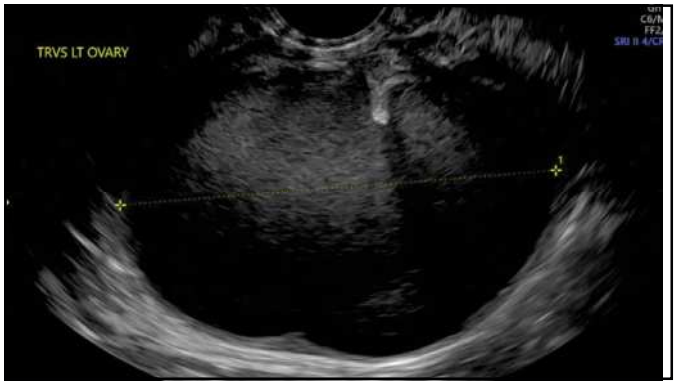
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Laparoscopic Abdominal Cerclage



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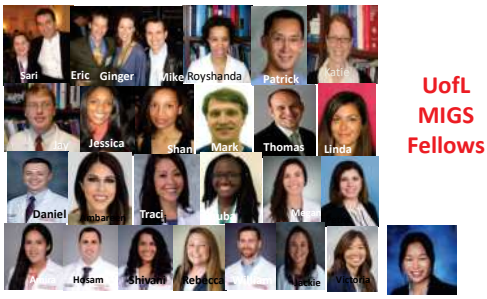
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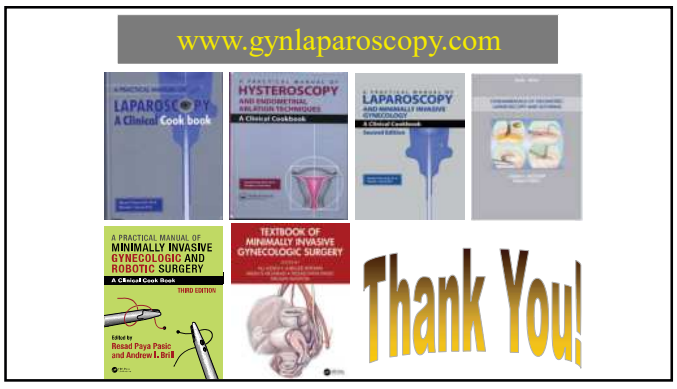
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Isthmocele: indications, evidence and surgical decision-making

Presenting Kathiane Lustosa, MD · Instituto Salvata Brazil

NOVEMBER 13-16, 2026 · BOSTON · #AAGL26

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Disclosure

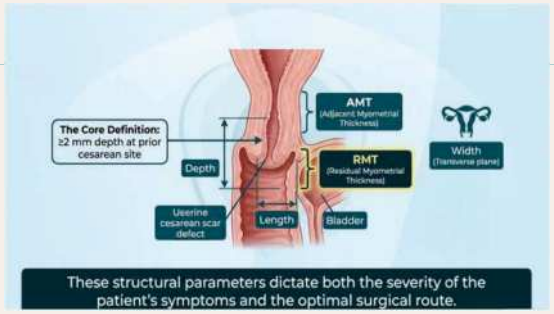
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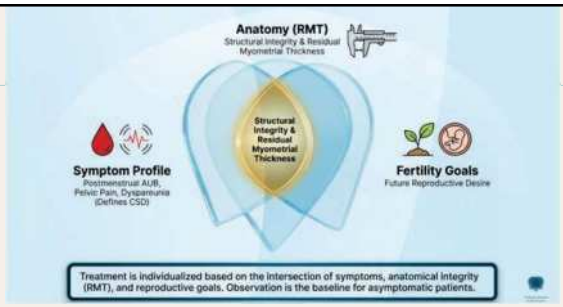
Objectives

1. Identify appropriate indications and contraindications for surgical management of isthmoceles
2. Determine optimal timing and minimally invasive surgical strategies for isthmocele repair reproductive and pregnancy contexts
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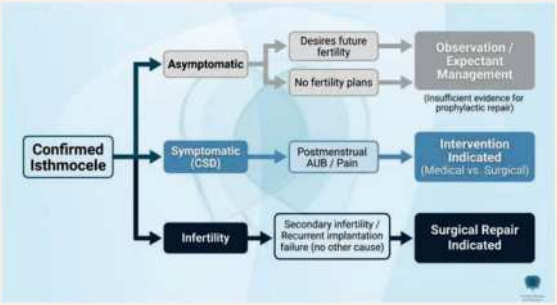
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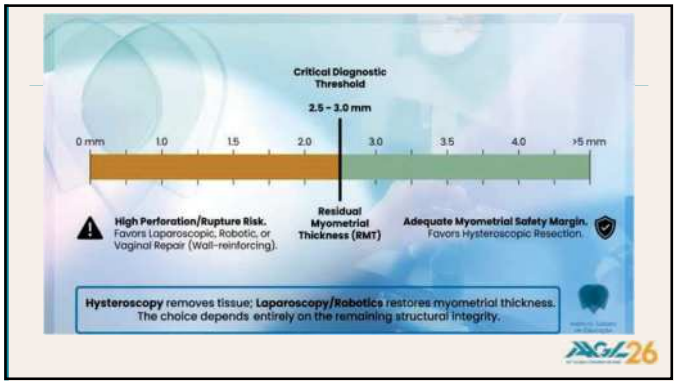
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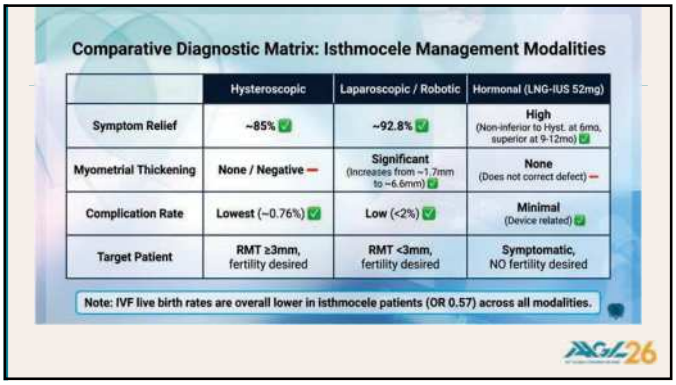
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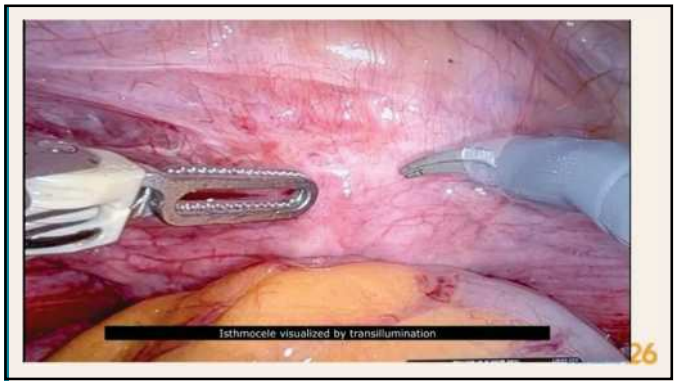
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Critical Diagnostic Threshold
2.5 – 3.0 mm
0 mm
1.0
1.5
2.0
3.0
3.5
4.0
>5 mm
High Perforation/Rupture Risk.
Favors Laparoscopic, Robotic, or Vaginal Repair (Wall-reinforcing).
Residual Myometrial Thickness (RMT)
Adequate Myometrial Safety Margin.
Favors Hysteroscopic Resection.
Hysteroscopy removes tissue; Laparoscopy/Robotics restores myometrial thickness.
The choice depends entirely on the remaining structural integrity.
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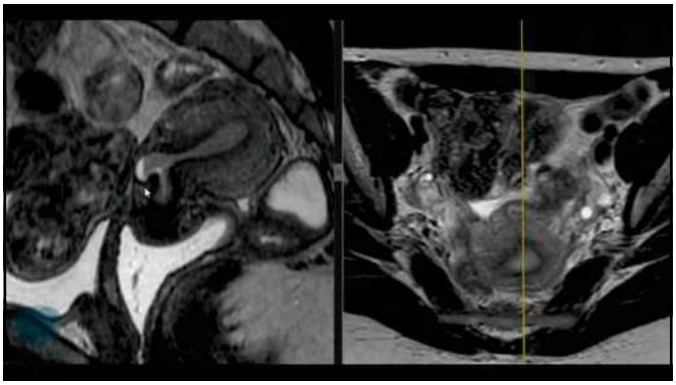
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Comparative Diagnostic Matrix: Isthmocele Management Modalities
Hysteroscopic
Laparoscopic / Robotic
Hormonal (LNG-IUS 52mg)
Symptom Relief
~85%
~92.8%
High (Non-inferior to Hyst. at 6mo, superior at 9-12mo)
Myometrial Thickening
None / Negative
Significant (Increases from ~1.7mm to ~6.6mm)
None (Does not correct defect)
Complication Rate
Lowest (~0.76%)
Low (<2%)
Minimal (Device related)
Target Patient
RMT ≥3mm, fertility desired
RMT <3mm, fertility desired
Symptomatic, NO fertility desired
Note: IVF live birth rates are overall lower in isthmocele patients (OR 0.57) across all modalities.
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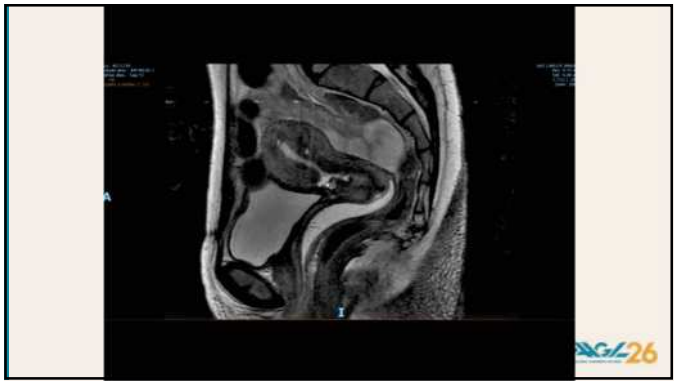
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Isthmocele visualized by transillumination
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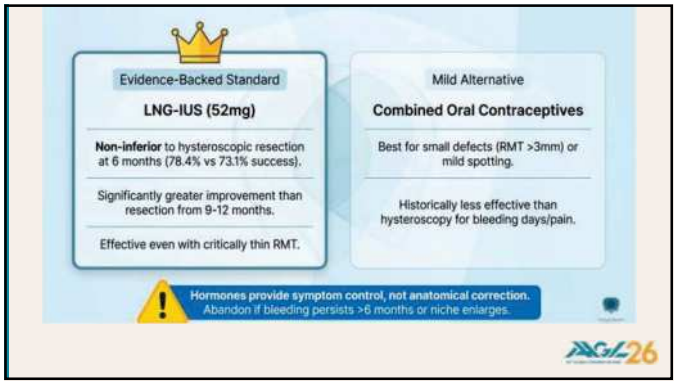
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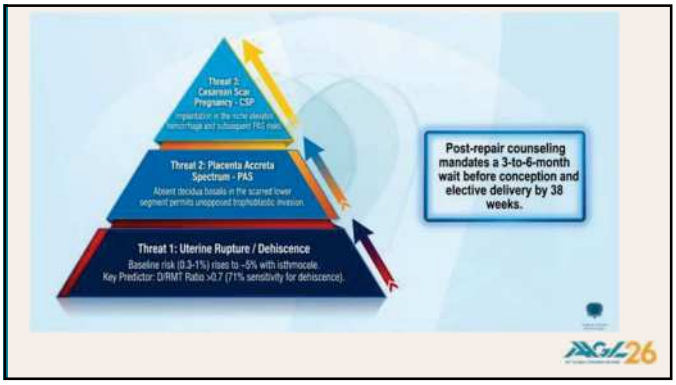
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Technical Precision
Obstetric Restoration
3D Visualization
(Enhanced bladder mobilization/safety)
Wristed Articulation
(Precise multilayer, full-thickness suturing)
Real-time Localization
(Compatible with combined hysteroscopic transillumination)
Restores RMT: 1.55 mm → 4.26 mm (Mean)
This mechanical wall reinforcement provides vital protection for patients presenting with a high future risk of uterine rupture.
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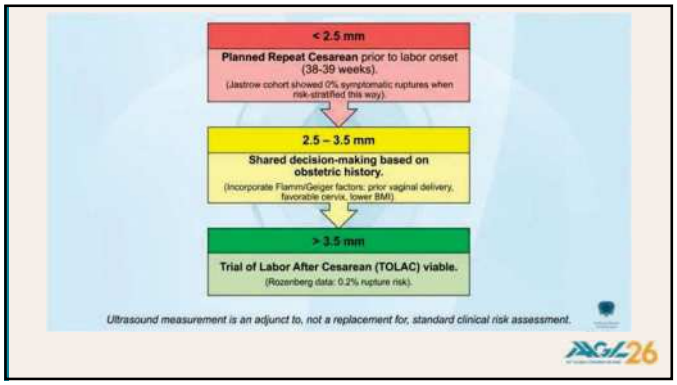
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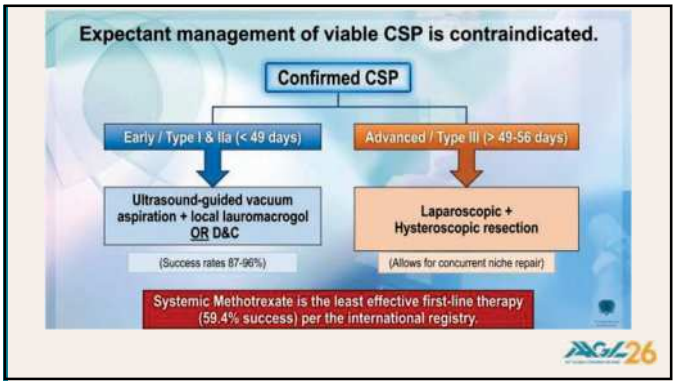
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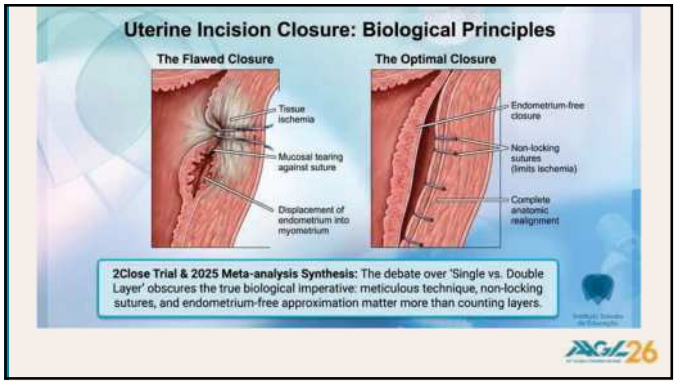
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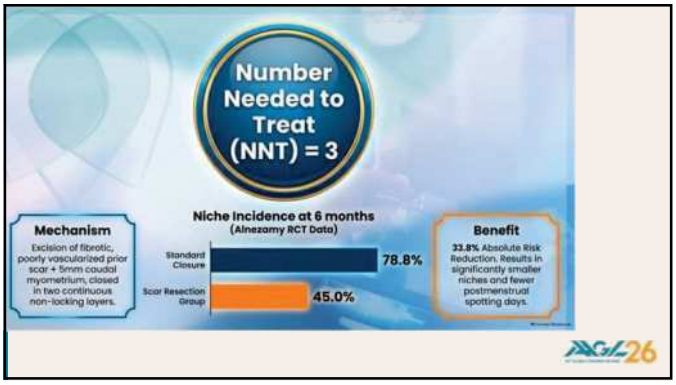
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21

Minimally Invasive Cervical Cerclage

Patient Selection, Timing, and Outcomes

Jamal Mourad, DO

Founder and President, Lumina Surgical Gynecology
Associate Professor, University of Arizona College of Medicine–Phoenix

Focus: transabdominal cerclage during pregnancy

Postgraduate Course: Isthmocelic, Cervical, Cerclage, and Minimally Invasive Surgery During Pregnancy

NOVEMBER 13–16, 2026 · BOSTON · #AAGL26

01

1

Disclosure

Jamal Mourad, DO

Proctor for Intuitive Surgical

02

2

Objectives

After this presentation, participants will be able to:

- **Identify** indications and contraindications for transabdominal cerclage, distinguishing failed vaginal cerclage from anatomic limitations.
- **Determine** optimal timing and select a surgical approach based on gestational age, anatomy, available resources, and expertise.
- **Apply** operative and maternal–fetal safety principles to minimally invasive transabdominal cerclage during pregnancy.
- **Interpret** outcome evidence to counsel patients and plan pregnancy surveillance, delivery, and contingency management after cerclage.

03

3

At 11 weeks: TAC—or another vaginal cerclage?

ILLUSTRATIVE CASE • NOT A PATIENT RECORD

Prior history-indicated transvaginal cerclage.

Subsequent spontaneous singleton delivery at 23 weeks.

Now 11 weeks with a viable singleton pregnancy and no acute symptoms.

What changes your recommendation?

Three decisions to master

1 SELECT
Identify who benefits—and who should not undergo TAC.

2 TIME & PLAN
Choose timing and route that fit gestation, anatomy, and expertise.

3 PROTECT
Apply operative and maternal–fetal safety principles.

TAC = transabdominal cerclage; TVC = transvaginal cerclage. Criteria: SMFM Consult #65 [1].

04

4

Select the patient—not simply the short cervix

OFFER TAC • SMFM GRADE 1B

Prior history- or ultrasound-indicated TVC + subsequent spontaneous singleton delivery before 28 weeks.

Consider for anatomic limitations

Insufficient accessible cervix for a vaginal cerclage, e.g., extensive excision or trachelectomy.

Individualized indication; evidence is less robust.

Do not place with acute exclusions

Active labor, clinical intra-amniotic infection, current PPROM, or ongoing bleeding.

Fetal demise, lethal anomaly, or fetal compromise also require a different plan.

Not a routine indication: isolated short cervix, prior cone/LEEP alone, or failure of an emergency/rescue TVC.

Confirm the prior cerclage indication and delivery mechanism; obtain MFM consultation.

SMFM #65 [1]. MAVRIC excluded prior examination-indicated failures [2]. Cerclage exclusions: RCOG #75, §9.2 [6].
Prior PPROM despite TVC may meet the history criterion; current PPROM excludes placement. MFM = maternal–fetal medicine.

05

5

Earlier planning preserves safer options

Timing is indication-specific—not a generic "second-trimester rule."

Preconception	First trimester	Before 22 weeks	22 weeks or later
Technical opportunity	**Established option**	**Selected later presenters**	**Outside SMFM's suggested window**
Smaller uterus; easier access.	Confirm viability and indication.	Can still be considered.	Not routine "rescue TAC" for advanced dilation or prolapsed membranes.
No fetal exposure to the placement procedure.	SMFM: fetal outcomes similar to preconception placement.	Assess exposure, vascularity, gestation, and local expertise.	

The guideline window is not proof that every gestational age has equal technical risk.

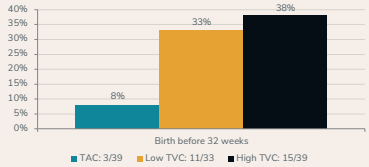
SMFM #65: timing GRADE 2C [1]. Preconception technical advantages do not establish superior fetal outcomes.

06

6

MAVRIC: benefit after a failed vaginal cerclage

Randomized trial • 111 analyzed pregnancies • primary outcome: birth before 32 weeks



RR 0.23

TAC vs low TVC
95% CI 0.07–0.76

NNT 3.9

To prevent one birth before 32 weeks in this selected population. High TVC did not improve on low TVC.

Proof of TAC benefit—not proof of laparoscopic or robotic superiority.

Shennan et al. AJOG 2020 [2]. TAC was open, before conception or early pregnancy. Chart uses reported rounded percentages.

07

7

Choose the safest route—not the newest platform

Laparoscopic and open TAC are both acceptable. SMFM GRADE 2B

Approach	Clinical decision—not a ranking
Laparoscopic	Appropriate exposure + pregnancy-specific expertise; recovery advantages in observational series.
Robotic-assisted	Favorable outcomes in retrospective cohorts [10] [11]; not proof of superior fetal outcomes.
Open	Appropriate when gestation, anatomy, access, or resources favor laparotomy.

Evidence calibration: 83 studies / 3,398 patients; overall fetal survival 91.2%.
Indirect, heterogeneous comparisons. Similar reported outcomes ≠ proven equivalence.

Decide by gestation, feasibility, expertise, and conversion capability.

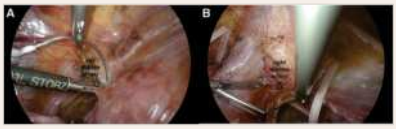
SMFM #65 [1]; Hulshoff et al. 2023 [3]. Meta-analysis includes interval and in-pregnancy procedures.
Tyan P, Mourad J, et al. 2019 [10]; Smith RB, et al., Mourad J. 2020 [11]. Retrospective, not randomized.

08

8

The target: internal os, medial to uterine vessels

Controlled passage—not blind encirclement



A: left, anterior → posterior. B: right, posterior → anterior.
Illustrative technique; direction of passage and knot location vary.

1 LEVEL
Cervicoisthmic junction at the internal os.

2 RELATIONSHIP
Tape medial to uterine vessels; preserve blood flow.

3 PROTECTION
Identify bladder and relevant ureteral anatomy; control each passage.

Typically a nonabsorbable 5-mm tape; anterior or posterior knot.
No single technical variant has established superior obstetric outcomes.

Figure 3, unaltered: Nii M et al. AJOG. 2026;234:1273-1276. doi:10.1016/j.ajog.2025.11.022. CC BY 4.0 [7].
Small-series technique, not proof of superiority. General operative principles: SMFM #65 [1].

09

9

Pregnancy changes the operation

A larger, more vascular uterus demands less manipulation and better exposure.

01 Confirm before incision

Viable pregnancy, correct gestational age, indication, and absence of acute exclusions.

Counsel about loss, hemorrhage, organ injury, conversion, and cesarean delivery.

02 Adapt access and exposure

Map fundal height; tailor primary and accessory ports.

Establish a visible, controlled path to the cervicoisthmic junction.

03 Protect the gravid uterus

No intracavitary uterine manipulator.

Minimize uterine contact and traction; preserve vascular anatomy.

04 Place, inspect, reassess

Controlled needle or needleless tape passage; verify level, orientation, and hemostasis.

Confirm fetal status after the procedure.

Unsafe exposure or uncontrolled bleeding? Pause, reassess, and convert when needed.

SMFM #65 [1]; SAGES [5]; Nii et al. [7]. Technique requires procedural training.
Needleless technique: Mourad J, Burke YZ. JMIG. 2016;23:298–299. doi:10.1016/j.jmig.2015.12.010 [9].

10

10

Maternal physiology is fetal protection

Team & contingency	MFM/obstetrics, experienced surgeon, anesthesia; hemorrhage and conversion plan.
Oxygenation & flow	Maintain maternal oxygenation and perfusion; avoid hypotension. Use continuous capnography.
Pneumoperitoneum	Lowest adequate working pressure. SAGES: 10–15 mmHg, adjusted to maternal physiology—not a fixed target.
Position & VTE	Left tilt beyond first trimester; pneumatic compression, early ambulation, individualized VTE assessment.
Fetal assessment	Previable: Doppler before/after. Viable: FHR and contractions before/after; intraoperative monitoring only if feasible and actionable with delivery capability.
Tocolysis	No routine prophylaxis; treat signs of preterm labor with obstetric guidance.

ACOG/ASA CO 775, reaffirmed 2025 [4]. SAGES technical pregnancy-laparoscopy guidance [5]; SMFM #65 [1].

11

11

The operation ends with a pregnancy plan

Decision	SMFM guidance with TAC in situ
Cervical length	No routine transvaginal cervical-length screening. GRADE 1C
Vaginal progesterone	Discuss risks, benefits, and uncertainty; shared decision-making. GRADE 2C
Planned delivery	Cesarean at 37+0 to 39+0 weeks with TAC in situ. GRADE 2C
Labor / PPROM	Urgent obstetric assessment; individualized management. Do not allow labor to progress unassessed against an intact TAC.
Pregnancy loss	D&C/D&E in situ, or removal then obstetric management—depending on gestation and available expertise. GRADE 2C

Counsel before placement: delivery, loss management, and future pregnancies.

SMFM #65 [1]. TAC may remain for future pregnancies. D&C = dilation and curettage; D&E = dilation and evacuation.
PPROM = preterm prelabor rupture of membranes. Labor may risk uterine/cervical injury with an intact TAC.

12

12

Right patient. Early plan. Safe anatomy.

For the illustrative patient: verify the failed prophylactic TVC and spontaneous 23-week delivery; **offer TAC counseling now** with MFM and an experienced surgeon.

01

Select precisely

Strongest evidence: prior failed history-/ultrasound-indicated TVC with spontaneous singleton birth before 28 weeks.

02

Plan early

Preconception or first trimester when possible. Selected later cases before 22 weeks; route follows safety and expertise.

03

Protect both patients

Respect internal-os anatomy, preserve maternal physiology, and agree on delivery and contingency plans before surgery.

The indication is stronger than the platform preference.

SMFM #65 [1], MAVRIC [2], ACOG/ASA [4]. Jamal Mourad, DO • Lumina Surgical Gynecology

13

13

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Needleless Robotic-Assisted Abdominal Cerclage in Pregnant and Nonpregnant Patients.
J Minim Invasive Gynecol. 2016;23(3):298–299. doi:10.1016/j.jmig.2015.12.010.
Technique/video report; needleless avascular-tunnel placement; not comparative evidence.

[10] Tyan P, Mourad J, Wright B, Winter M, Garza D, Smith R, Brink J, Wei C, Moawad G.
Robot-assisted transabdominal cerclage for the prevention of preterm birth: A multicenter experience.
Eur J Obstet Gynecol Reprod Biol. 2019;232:70–74. doi:10.1016/j.ejogrb.2018.11.013.
Multicenter retrospective cohort; favorable outcomes; no randomized platform comparison.

[11] Smith RB, Brink J, Hu C, Gerkin R, Perlow JH, Mourad J.
Robotic Transabdominal Cerclage vs Laparotomy: A Comparison of Obstetric and Surgical Outcomes.
J Minim Invasive Gynecol. 2020;27(5):1095–1102. doi:10.1016/j.jmig.2019.08.014.
Retrospective comparison with historical open controls; not proof of robotic superiority.

Verified PubMed/publisher citations. Faculty contributions inform technique and feasibility—not guideline replacement.

14

14

References (2/2): Evidence and Guidance

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Am J Obstet Gynecol. 2023;228:B2–B10. Reaffirmed 2025; endorsed by AAGL/ACOG.

[2] **Shennan A, et al. MAVRIC: a multicenter randomized controlled trial of transabdominal vs transvaginal cervical cerclage.**
Am J Obstet Gynecol. 2020;222:261.e1–e9.
doi:10.1016/j.ajog.2019.09.040.

[3] **Hulshoff CC, et al. The effectiveness of transabdominal cerclage placement via laparoscopy or laparotomy: a systematic review and meta-analysis.**
Am J Obstet Gynecol MFM. 2023;5:100757.
doi:10.1016/j.ajogmf.2022.100757.

[4] **ACOG/ASA. Committee Opinion No. 775: Nonobstetric surgery during pregnancy.**
Obstet Gynecol. 2019;133:e285–e286. Reaffirmed 2025.
doi:10.1097/AOG.0000000000003174.

[5] **SAGES. Guidelines for diagnosis, treatment, and use of laparoscopy for surgical problems during pregnancy.**
Online technical guidance: positioning, access, pressure, capnography, VTE, fetal monitoring, and tocolysis.

[6] **RCOG. Cervical cerclage. Green-top Guideline No. 75.**
2022. General cerclage-placement exclusions, §9.2. Online guideline.

[7] **Nii M, Yoshida K, Kondo E, Ikeda T. Laparoscopic trans-broad-ligament abdominal cerclage with round ligament suspension to create a space in the pouch of Douglas (LAC-D) during pregnancy.**
Am J Obstet Gynecol. 2026;234(4):1273–1276. doi:10.1016/j.ajog.2025.11.022. Figure 3, CC BY 4.0.

[8] **Rao S, et al. Transabdominal Cerclage: Who, When, How.**
Am J Obstet Gynecol MFM. Published online 16 Oct 2026;102161.
Expert review, not a guideline.

References [9]–[11] are on the preceding page. All cited sources are included. Evidence reviewed 23 October 2026.

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Isthmoceles, Cervical Cerclage, and Minimally Invasive Surgery During Pregnancy

Sara Arcanjo Lino Karbage, MD · Instituto Salvata de Educação

NOVEMBER 13-16, 2026 · BOSTON · #AAGL26

1

Maternal–Fetal Safety and Risk Mitigation In Surgical Decision-Making

Sara Arcanjo Lino Karbage

2

Disclosure

I have no financial relationships to disclose.

3

Maternal–Fetal Safety in Surgical Decision-Making

Moving beyond the myths: a multidisciplinary system for preserving maternal physiology and fetal viability.

4

Anaesthesia for non-obstetric surgery during pregnancy

B.D. Brakke and H.P. Sviggum

SAGES Guidelines for the Use of Laparoscopy During Pregnancy

BJS

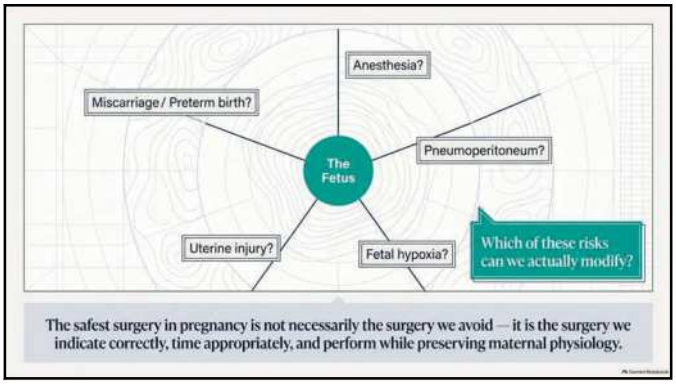
Trimester-specific safety of laparoscopic versus open abdominal surgery during pregnancy: systematic review and meta-analysis

INTERIM UPDATE

ACOG COMMITTEE OPINION

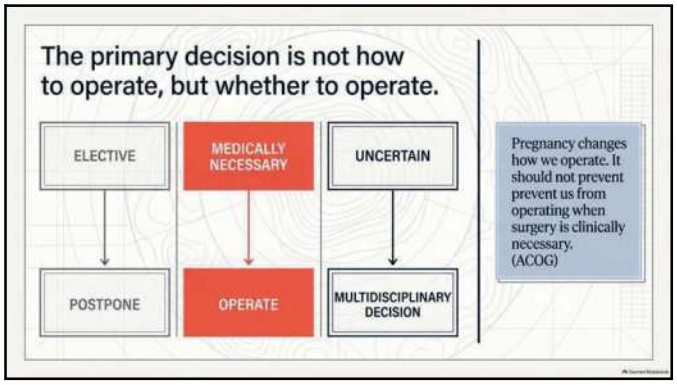
Nonobstetric Surgery During Pregnancy

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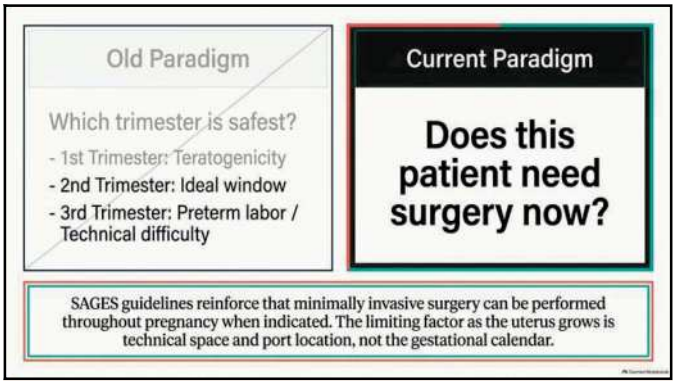


The safest surgery in pregnancy is not necessarily the surgery we avoid — it is the surgery we indicate correctly, time appropriately, and perform while preserving maternal physiology.

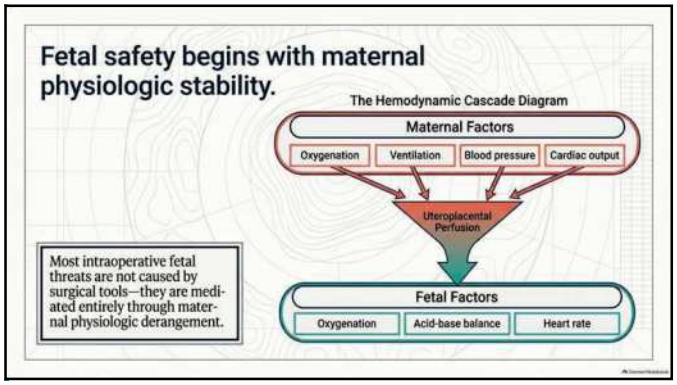
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The primary decision is not how to operate, but whether to operate.
ELECTIVE
MEDICALLY NECESSARY
UNCERTAIN
POSTPONE
OPERATE
MULTIDISCIPLINARY DECISION
Pregnancy changes how we operate. It should not prevent prevent us from operating when surgery is clinically necessary. (ACOG)

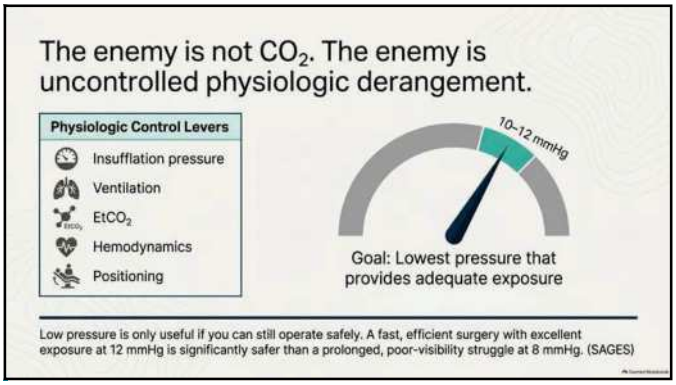
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Old Paradigm
Which trimester is safest?
- 1st Trimester: Teratogenicity
- 2nd Trimester: Ideal window
- 3rd Trimester: Preterm labor / Technical difficulty
Current Paradigm
Does this patient need surgery now?
SAGES guidelines reinforce that minimally invasive surgery can be performed throughout pregnancy when indicated. The limiting factor as the uterus grows is technical space and port location, not the gestational calendar.

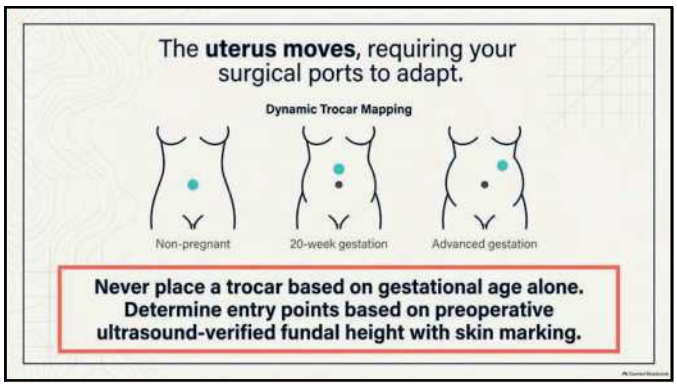
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Fetal safety begins with maternal physiologic stability.
The Hemodynamic Cascade Diagram
Maternal Factors
Oxygenation
Ventilation
Blood pressure
Cardiac output
Uteroplacental Perfusion
Fetal Factors
Oxygenation
Acid-base balance
Heart rate
Most intraoperative fetal threats are not caused by surgical tools—they are mediated entirely through maternal physiologic derangement.

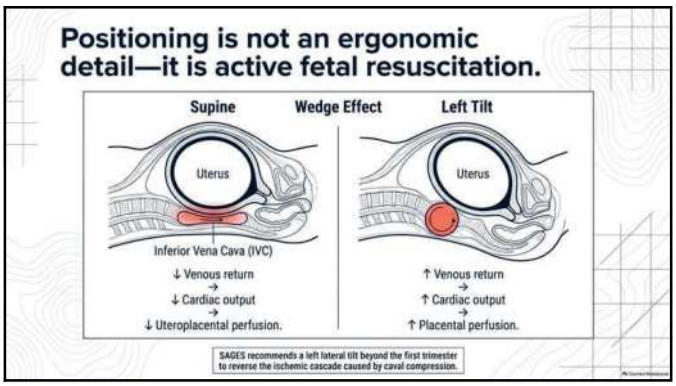
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The enemy is not CO_2. The enemy is uncontrolled physiologic derangement.
Physiologic Control Levers
Insufflation pressure
Ventilation
$EtCO_2$
Hemodynamics
Positioning
10–12 mmHg
Goal: Lowest pressure that provides adequate exposure
Low pressure is only useful if you can still operate safely. A fast, efficient surgery with excellent exposure at 12 mmHg is significantly safer than a prolonged, poor-visibility struggle at 8 mmHg. (SAGES)

10


The uterus moves, requiring your surgical ports to adapt.
Dynamic Trocar Mapping
Non-pregnant
20-week gestation
Advanced gestation
Never place a trocar based on gestational age alone. Determine entry points based on preoperative ultrasound-verified fundal height with skin marking.

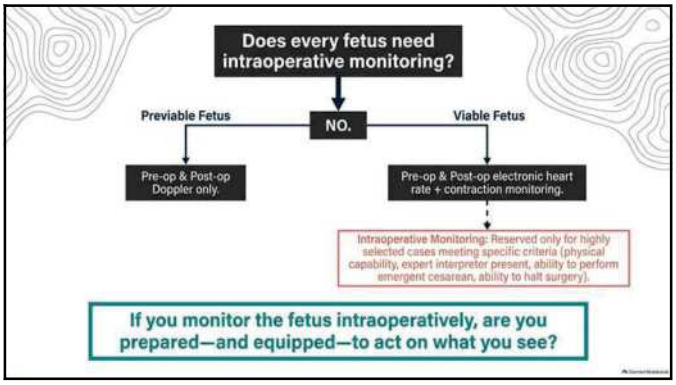
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Positioning is not an ergonomic detail—it is active fetal resuscitation.
Supine
Wedge Effect
Left Tilt
Uterus
Uterus
Inferior Vena Cava (IVC)
↓ Venous return
↓ Cardiac output
↓ Uteroplacental perfusion.
↑ Venous return
↑ Cardiac output
↑ Placental perfusion.
SAGES recommends a left lateral tilt beyond the first trimester to reverse the ischemic cascade caused by caval compression.

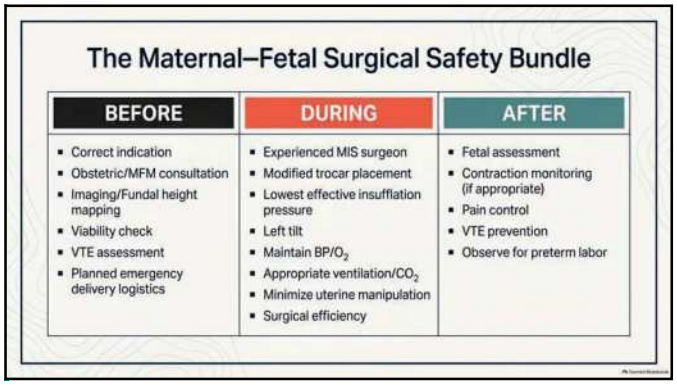
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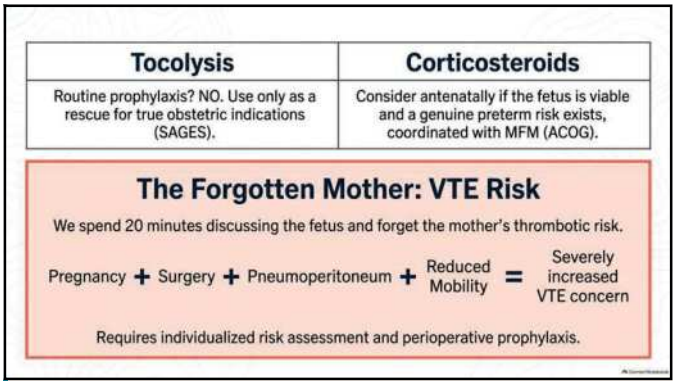
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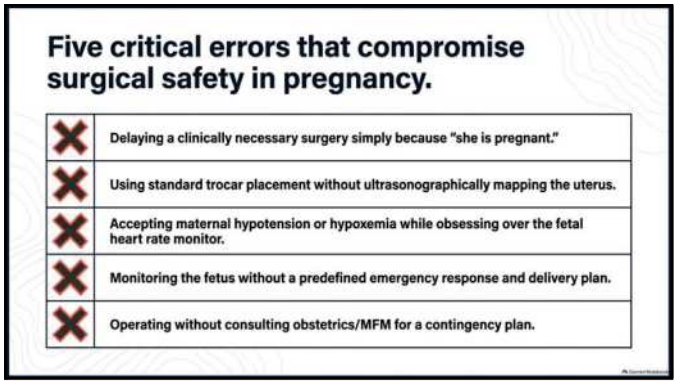
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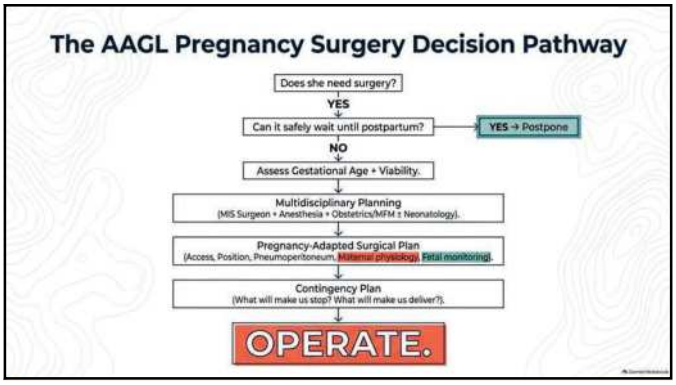
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17



18

Take-Home Messages

1. Do not delay necessary surgery because of pregnancy.
2. Fetal safety begins with maternal physiologic stability.
3. Safe minimally invasive surgery in pregnancy is not a single technique — it is a multidisciplinary system.

We are not operating around a pregnancy. We are caring for two interconnected patients — by protecting maternal physiology, choosing the right timing, and having a plan before the first incision.

19

Objectives

- Please start each objective with a bullet point and a behavioral verb. *Refer to the Bloom's Taxonomy Verb List on the right.*

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Define	Describe	Apply	Analyze	Arrange	Appraise
List	Explain	Demonstrate	Compare	Compose	Critique
Recall	Summarize	Illustrate	Contrast	Design	Justify
State	Discuss	Use	Examine	Develop	Evaluate
Identify	Interpret	Operate	Question	Formulate	Recommend
Label	Translate	Schedule	Test	Construct	Defend

BLOOM'S TAXONOMY VERB LIST - COGNITIVE DOMAIN

20



21

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22

CULTURAL AND LINGUISTIC COMPETENCY & IMPLICIT BIAS

The California Medical Association (CMA) outlines 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 which began on 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)
Implicit Bias, Microaggressions, and Stereotypes Resources | NEA
Act, Communicating, Implicit Bias (racialequitytools.org)
https://www.contemporaryobgyn.net/view/overcoming-racism-and-unconscious-bias-in-ob-gyn
https://pubmed.ncbi.nlm.nih.gov/34016820/
https://hr.ucdavis.edu/departments/learning/certificate/implicit-bias
https://pmc.ncbi.nlm.nih.gov/articles/PMC7011228/