MIGS 26

55TH GLOBAL CONGRESS ON MIGS

BOSTON, MASSACHUSETTS
NOVEMBER 13-16, 2026

Syllabus

Surgical Tutorial 458

Beyond Boundaries: Advanced Surgical Management of Extrapelvic and Complex Endometriosis by the MIGS Surgeon

HONORARY CHAIR
Charles H. Koh, MD

SCIENTIFIC PROGRAM CHAIR
Nash S. Moawad, MD

PRESIDENT
Michael Hibner, MD, PhD



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Surgical Tutorial 458
Beyond Boundaries: Advanced Surgical Management of Extrapelvic and Complex Endometriosis by the MIGS Surgeon

Chair: Nucelio Lemos
Faculty: Shanda Blackmon, Marcello Ceccaroni, William Kondo, Nucelio Lemos, Ricardo M.A. Pereira

Course Description

The surgical management of advanced endometriosis requires disease-specific expertise, advanced technical skills, and sound judgment regarding the appropriate scope of gynecologic surgery. Highly specialized MIGS surgeons increasingly serve as the primary operative specialists for complex disease involving the diaphragm, pericardium, bowel, urinary tract, and lumbosacral plexus, applying advanced excisional, nerve-sparing, and reconstructive techniques within gynecologic practice. Developing this expertise allows gynecologic surgeons to provide more comprehensive, disease-oriented care while improving patient selection, surgical planning, complication prevention, and continuity of treatment.

This Surgical Tutorial brings together internationally recognized experts with extensive experience in complex endometriosis surgery. Dr. Ricardo Pereira will discuss the diagnosis and gynecologic surgical management of diaphragmatic and pericardial endometriosis, including relevant anatomy, operative techniques, and potential pitfalls. Dr. Marcello Ceccaroni will review surgical strategies for sacral plexus and lumbosacral endometriosis, including nerve-sparing approaches and decision-making in deeply infiltrative neural disease. Dr. William Kondo will present contemporary techniques for bowel endometriosis excision, including shaving, discoid excision, segmental resection, and natural orifice specimen extraction (NOSE), with particular attention to anastomotic leak prevention. Dr. Nucelio Lemos will discuss advanced urinary tract endometriosis surgery, including bladder reconstruction, ureterolysis, ureteric reanastomosis, ureteral reimplantation, and bladder reconstruction.

A central theme of the session will be how MIGS surgeons can safely expand their operative scope and develop the excisional and reconstructive capabilities required to manage complex endometriosis independently. Faculty will discuss practical strategies for acquiring these skills, selecting appropriate patients, preventing and managing complications, and building collaborative networks that remain available for support when needed.

Rare extra-abdominal manifestations, including endometriosis involving the central nervous system, nasopharyngeal region, joints, and other distant sites, represent important exceptions to this concept of gynecologic surgical independence. These uncommon presentations illustrate the boundaries of gynecologic practice and the continuing importance of collaboration with other surgical specialties. To provide the perspective of a collaborating specialty, Dr. Shanda Blackmon will present the thoracic surgical approach to supradiaphragmatic disease and introduce a proposed classification of diaphragmatic and thoracic endometriosis. This framework will help define disease distribution, guide operative planning, and clarify when management by the gynecologic surgeon or collaboration with a thoracic surgeon is most appropriate.

Learning Objectives: *At the end of this course, the participant will be able to:* 1) Describe contemporary surgical approaches for diaphragmatic, bowel, urinary tract, and lumbosacral plexus endometriosis, including key technical considerations and anatomical landmarks; 2) Compare the indications, advantages, limitations, and complication profiles of shaving, discoid excision, segmental bowel resection, and NOSE techniques for rectosigmoid endometriosis; 3) Apply surgical strategies to minimize major complications in advanced endometriosis surgery, including anastomotic leak, ureteral injury, fistula formation, and neurologic dysfunction; 4) Discuss reconstructive options for advanced urinary tract endometriosis, including ureterolysis, ureteric reanastomosis, ureteral reimplantation, and bladder reconstruction; and 5) Evaluate how advanced MIGS surgeons can safely expand their surgical scope in complex endometriosis

while building effective multidisciplinary collaboration with colorectal surgery, thoracic surgery, urology, and neurosurgery teams.

Course Outline

11:00 am	Welcome, Introduction and Course Overview	N. Lemos
11:05 am	Diaphragmatic and Pericardial Endometriosis: Surgical Anatomy, Techniques, and Pitfalls	R. Pereira
11:15 am	Sacral Plexus and Lumbosacral Endometriosis: Nerve-Sparing Strategies and Surgical Decision-Making	M. Ceccaroni
11:25 am	Bowel Endometriosis: Shaving, Discoid, Segmental and Nose Techniques with Leak Prevention Strategies	W. Kondo
11:35 am	Advanced Urinary Tract Endometriosis: Bladder Reconstruction, Ureteric Anastomosis and Reimplantation	N. Lemos
11:45 am	Thoracic Endometriosis: Complex Care, Standards and Outcomes	S. Blackmon
11:55 am	Discussion Questions & Answers	All faculty
12:00 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).

PROFESSIONAL EDUCATION COMMITTEE

Harold Wu, MD* - Chairman
Adrian Balica, MD*
Jamal Mourad, DO – Proctor: Intuitive Surgical
Jude Okohue, MD*
Steven Radtke, MD*
Anna Reinert, MD*
Jean Uy-Kroh, MD*
Linda Bradley, MD, AAGL Medical Director*
Linda Michels, AAGL Executive Director*
Linda Bell, AAGL Admin Support*
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
Hannah Palin, MD*
Megan Wasson, DO*
Michael Hibner, MD, PhD*
Jose "Tony" Carugno, MD*
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

Nucelio Lemos, MD, PhD – Advisory Board: Vecfer Pharma; Speakers Bureau: Knight Therapeutics, Pfizer

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).

Shanda H Blackmon, MD MPH – Advisory Committee: Intuitive Surgical, Medtronic; Consultant: AstraZeneca, Medtronic; Contracted Research: Medtronic, Natera, Steris; Royalty: Scanlan; Speakers Bureau: AstraZeneca
Marcello Ceccaroni, MD, PhD*
William Kondo, MD*
Nucelio Lemos, MD, PhD – Advisory Board: Vecfer Pharma; Speakers Bureau: Knight Therapeutics, Pfizer
Ricardo M A Pereira, MD*

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

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

Diaphragmatic and Pericardial Endometriosis: Surgical Anatomy, Techniques, and Pitfalls





Ricardo M A Pereira

Center for Endometriosis, Neuropelveology and MIGS
Santa Joana Hospital and Maternity, Sao Paulo, Brazil
Associate Professor, Faculty of Medical Science, Belo Horizonte, Brazil

1

FINANCIAL DISCLOSURE

Ricardo M. A. Pereira, MD

Inventor and patent holder of the **Life Surgery Box**,
a system for synchronized capture and storage of clinical-surgical data.

U.S. Patent No. 12,211,605 B2

The technology is currently being developed for potential commercial use.

2

How Does a MIGS Surgeon View Diaphragmatic Endometriosis?

A Rarely Diagnosed Condition



(0.19% of ASRM stage IV endometriosis cases

Scioscia M, Bruni F, Ceccaroni M, Steinkasserer M, Stepniewska A, Minelli L. Distribution of endometriotic lesions in endometriosis stage IV supports the menstrual reflux theory and requires spe- cific preoperative assessment and therapy. *Acta Obstet Gynecol Scand* 2011;90:136–139.

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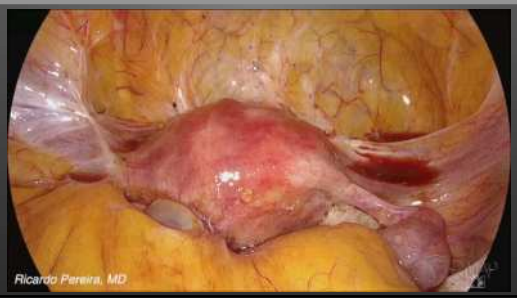
How Should a MIGS Surgeon View Diaphragmatic Endometriosis?

Ceccaroni M, Roviglione G, Farulla A, Bertoglio P, Clarizia R, Viti A, Mautone D, Ceccarello M, Stepniewska A, Terzi AC. Minimally invasive treatment of diaphragmatic endometriosis: a 15-year single referral center's experience on 215 patients. *Surg Endosc* 2021; 35:6807–6817.

Prevalence of diaphragmatic lesions among patients treated for endometriosis 215/9178 (2.34%)

4

How Should a MIGS Surgeon View Diaphragmatic Endometriosis?



5

How Does a Thoracic Surgeon View Diaphragmatic Endometriosis?

Thoracic Endometriosis Syndrome

- Catamenial Pneumothorax.....73%-(89.4%) (2) (1)
- Catamenial Hemothorax.....(14%) (2)
- Catamenial Hemoptysis.....(7%) (2)
- Pulmonary Nodules.....(6%) (2)

1.Amin A. Thoracic Endometriosis Syndrome: A Systematic Review and Meta-Analysis of Surgical Outcomes Among 1182 Patients Over 25 Years. Journal of Minimally Invasive Gynecology. Volume 27, Issue 1, P48-53 January 2020

2.Joseph J, Sahn S. Thoracic endometriosis syndrome: new observations from an analysis of 110 cases. Am J Med1996;100:164–9

3.Soriano D,Thoracic Endometriosis Syndrome is Strongly Associated with Severe Pelvic Endometriosis and Infertility. Journal of Minimally Invasive Gynecology (2012) 19, 742–748

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How Does a Thoracic Surgeon View Diaphragmatic Endometriosis?

Table 1 The characteristics of the study population

	Patients with TERP $n = 150$	Patients with catamenial TERP $n = 55$	Patients with non-catamenial TERP $n = 95$	P-value
Age (years old) (range)	38.3 ± 5.2 (24–50)	38.4 ± 4.8 (29–47)	38.3 ± 5.6 (24–50)	0.91
Side of pneumothorax				
Right	149 (99.3%)	55 (100%)	94 (98.9%)	0.45
Left	1 (0.7%)	0	1 (1.1%)	0.45
Height (cm)	159.3 ± 5.3	159.3 ± 5.4	159.3 ± 5.2	0.96
Weight (kg)	49.5 ± 5.8	50.6 ± 5.3	49.0 ± 6.0	0.10
Smoking habit				
Current/former smoker	13 (8.7%)	7 (12.7%)	6 (6.3%)	0.18
Non-smoker	137 (91.3%)	48 (87.3%)	89 (93.7%)	0.18
The number of patient with a history of pelvic endometriosis	83 (55.3%)	31 (56.4%)	52 (54.7%)	0.85
The value of serum CA125 (U/mL)	31.1 ± 34.8	29.0 ± 30.6	33.1 ± 37.8	0.51
The number of preoperative pneumothorax episodes	3.7 ± 2.4	3.4 ± 2.3	4.0 ± 2.4	0.13
Postoperative follow-up period (months)	28.4 ± 20.9	26.0 ± 18.1	29.4 ± 22.0	0.33
The number of patients with recurrence after surgery	51 (34.0%)	20 (36.4%)	31 (32.6%)	0.84

Fukuoka M, Kurihara M, Haga T, Ebana H, Kataoka H, Mizobuchi T, et al. Clinical characteristics of catamenial and non-catamenial thoracic endometriosis-related pneumothorax. Respirology 2015;20:1272–6. doi: 10.1111/resp.12610.

7

How Does a Thoracic Surgeon View Diaphragmatic Endometriosis?

Table 2 The ectopic sites of thoracic endometriosis in patients with catamenial and non-catamenial TERP

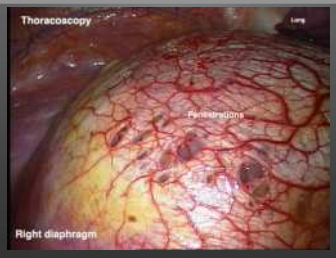
	Patients with catamenial TERP $n = 55$	Patients with non-catamenial TERP $n = 95$	P-value
Thoracic endometriosis in the diaphragm	21 (38.2%)	53 (55.8%)	<0.05
Thoracic endometriosis in the diaphragm and pleura	34 (61.8%)	42 (44.2%)	<0.05
Thoracic endometriosis in the diaphragm and visceral pleura	16 (29.1%)	18 (18.9%)	0.15
Thoracic endometriosis in the diaphragm and parietal pleura	12 (21.8%)	12 (12.8%)	0.14
Thoracic endometriosis in the diaphragm, visceral and parietal pleura	6 (10.9%)	12 (12.6%)	0.75

All of the patients had thoracic endometriosis in the diaphragm, while some of them also had endometriosis in the pleura (visceral, parietal or both). The P-values were calculated by comparing the patients with catamenial and non-catamenial TERP.

Fukuoka M, Kurihara M, Haga T, Ebana H, Kataoka H, Mizobuchi T, et al. Clinical characteristics of catamenial and non-catamenial thoracic endometriosis-related pneumothorax. Respirology 2015;20:1272–6. doi: 10.1111/resp.12610.

8

How Does a Thoracic Surgeon View Diaphragmatic Endometriosis?



S Korom, H Canyurt, A Missbach, D Schneiter, MO Kurrer, U Haller, PJ Keller, M Furrer, W Weder.
The Journal of Thoracic and Cardiovascular Surgery 128 (4), 502-508, 2004

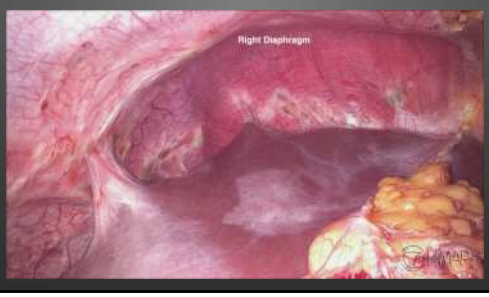
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How Does a Thoracic Surgeon View Diaphragmatic Endometriosis?



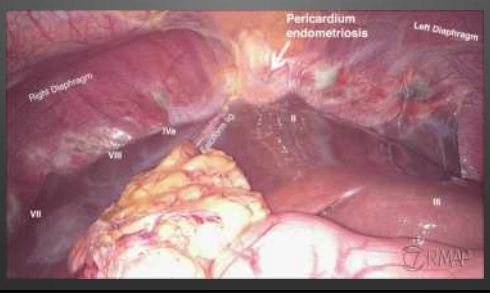
10

How Should a Thoracic Surgeon View Diaphragmatic Endometriosis?



11

How Should a Thoracic Surgeon View Diaphragmatic Endometriosis?



12

Surgical Treatment Modalities in TES

Approach	Studies (%)	No. of Studies (n)
Video-Assisted Thoracoscopic Surgery (VATS)	92.9%	26
Thoracotomy	28.6%	8
Mini-thoracotomy	7.1%	2

Amin A. Thoracic Endometriosis Syndrome: A Systematic Review and Meta-Analysis of Surgical Outcomes Among 1182 Patients Over 25 Years. Journal of Minimally Invasive Gynecology. *Volume 27, Issue 1, P48-53 January 2020*

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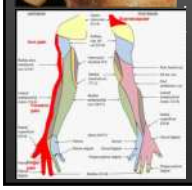
Systematic Diagnostic Assessment

- Clinical History
- Imaging
- Intraoperative Findings

14

Clinical History





- Neck *****
- Suprascapular region ******
- Arm **
- Forearm *
- Fingers *



Neuropathic pain during menstruation and ovulation

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How Should a Thoracic Surgeon View Diaphragmatic Endometriosis?

- Pain associated with breathing
- Chest pain
- Pain in the supine position
- Epigastric pain
- Right upper quadrant pain

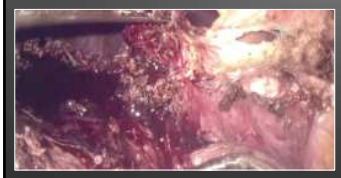
Pain relief: heating pads, ice packs, massage, analgesics, and sleeping in a sitting or antalgic position

Redwine DB. Surgical Management of Endometriosis. - Tottenham Court , London 2004

Redwine DB. Diaphragmatic endometriosis: diagnosis, surgical management, and long-term results of treatment. Fert Steril - 2002

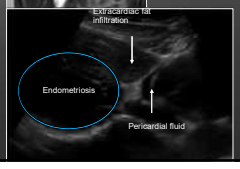
16

Imaging Assessment: Systematic MRI and Ultrasound Evaluation









17

Types of Diaphragmatic Lesions

- **Diaphragmatic implants (thickening)**
- **Diaphragmatic defects (fenestrations, holes, pores)**

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:* https://doi.org/10.1201/9781003531159

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Diaphragmatic Endometriotic Implants

1 - **Peritoneal (superficial implant)**:
Limited to the diaphragmatic peritoneum

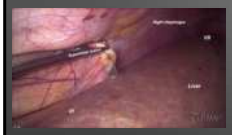
2 - **Muscular (partial-thickness infiltrating nodule):**
Involves the diaphragmatic peritoneum and muscle

3 - **Full-thickness**:
Involves the full thickness of the diaphragm, reaching or penetrating the parietal pleura

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:*

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Diaphragmatic Endometriotic Implants



Peritoneal



Partial-thickness muscle infiltration

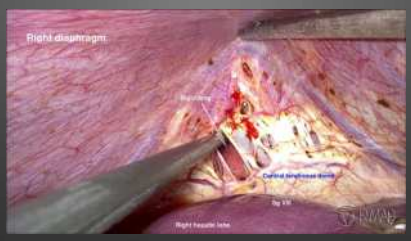


Full-thickness

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:*

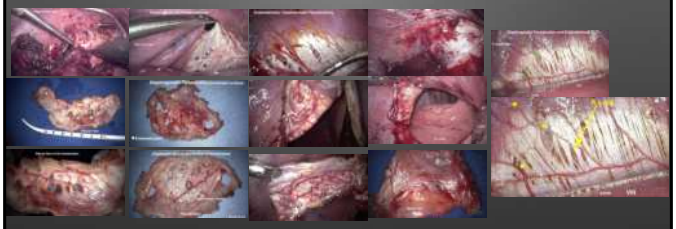
20

Diaphragm Defects (Fenestrations, Holes, Pores)



21

Diaphragm Defects (Fenestrations, Holes, Pores)



22

Diaphragm Defects (Fenestrations, Holes, Pores)



23

Diaphragmatic Defect: Hernia



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DIAPHRAGMATIC ENDOMETRIOSIS

Diaphragmatic Endometriosis in Relation to the Parietal Pericardium

Type I - Peritoneal (superficial implant):
Limited to the diaphragmatic peritoneum

Type II - Juxtaposed (Muscle/Central Tendon)
- Involves the peritoneum and muscle or central tendon

Type III - Full-thickness with Pericardial Involvement
- Involves the parietal pericardium

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:* (Modified)

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Diaphragmatic Endometriosis in Relation to the Parietal Pericardium

Type I | Type II | Type III



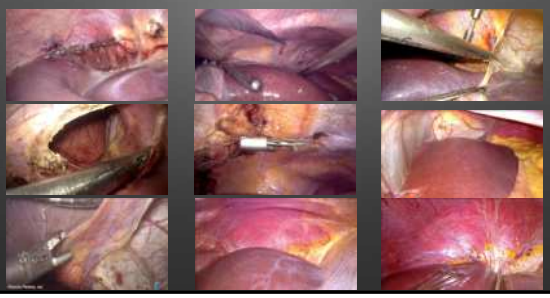
Peritoneal (superficial implant) | Juxtaposed (Muscle/Central Tendon) | Full-thickness (Pericardial Involvement)

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:*

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DIAPHRAGMATIC ENDOMETRIOSIS

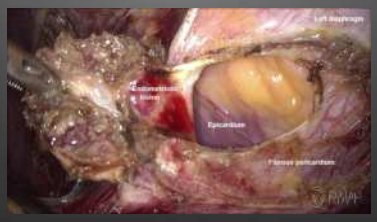
Diaphragmatic Endometriosis in Relation to the Parietal Pericardium
Type II - Juxtaposed (Muscle/Central Tendon)



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DIAPHRAGMATIC ENDOMETRIOSIS

Diaphragmatic Endometriosis in Relation to the Parietal Pericardium
Type III - Full-thickness with Pericardial Involvement

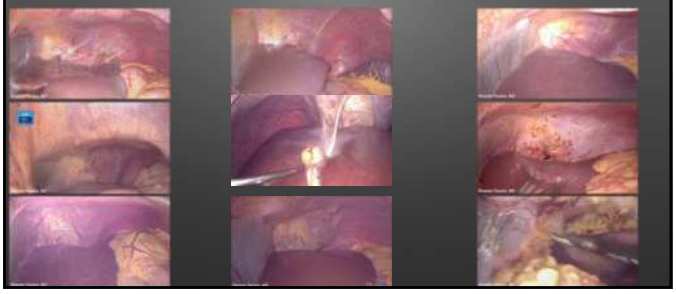


Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:*

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DIAPHRAGMATIC ENDOMETRIOSIS

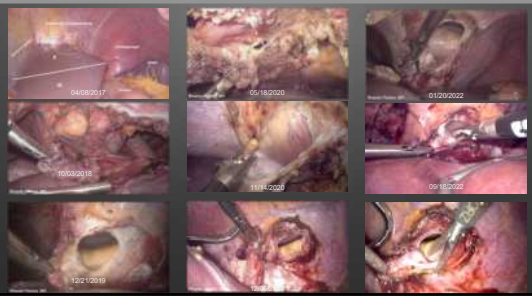
Diaphragmatic Endometriosis in Relation to the Parietal Pericardium
Type III - Full-thickness with Pericardial Involvement



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DIAPHRAGMATIC ENDOMETRIOSIS

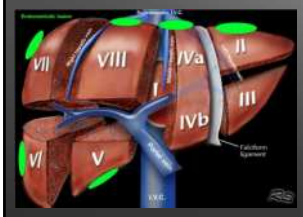
Diaphragmatic Endometriosis in Relation to the Parietal Pericardium
Type III - Full-thickness with Pericardial Involvement



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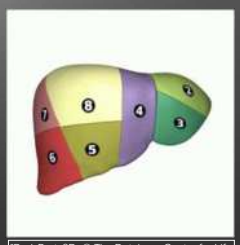
DIAPHRAGMATIC ENDOMETRIOSIS

Hepatic Segmentation and Lesion Correlation



The Hepatic Segmentation

Pereira R et al. Right Diaphragm Endometriosis: Resection Technique. Global Congress. JMIG, Nov. 2018

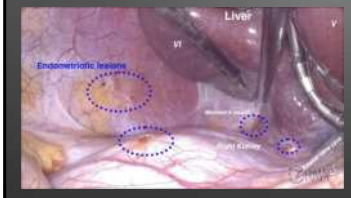


"BodyParts3D, © The Database Center for Life Science licensed under CC Attribution-Share Alike 2.1 Japan

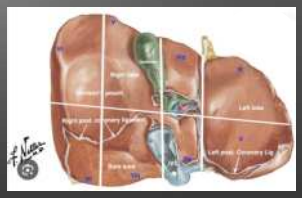
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DIAPHRAGMATIC ENDOMETRIOSIS

Right Diaphragm Surgery: Key Anatomical Landmarks



Diaphragmatic Lesions



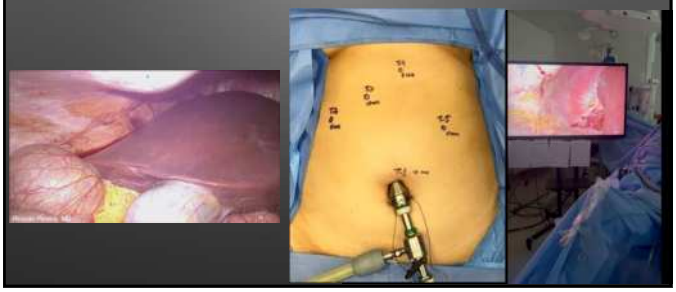
The Liver Segmentation System

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:*

32

DIAPHRAGMATIC ENDOMETRIOSIS

Patient Positioning and Trocar Placement
Surgical Ergonomics

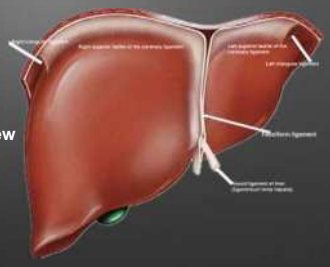


33

DIAPHRAGMATIC ENDOMETRIOSIS

Hepatic Ligament Anatomy

Hepatic Ligaments – Anterior View

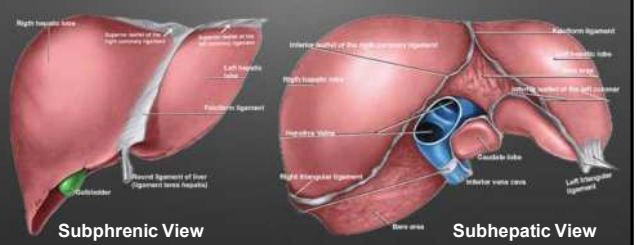


Sherif R. Z. Abdel-Misih. *Surg Clin North Am. 2010*

34

DIAPHRAGMATIC ENDOMETRIOSIS

Hepatic Ligament Anatomy



Subphrenic View

Subhepatic View

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DIAPHRAGMATIC ENDOMETRIOSIS

Liver Mobilization: Two Surgical Strategies



Medial Liver Displacement

Segments V, VI, VII, VIII, Morison's Pouch



Caudal Liver Displacement

Segments II, IVa, VIII

Pereira RMA. Extrapelvic Endometriosis. *In: Azadi A et al., eds. Textbook of Minimally Invasive Gynecologic Surgery. CRC Press; 2026. DOI:*

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DIAPHRAGMATIC ENDOMETRIOSIS

Liver Mobilization

Diaphragmatic lesions corresponding to hepatic segments VI, VII, VIII, and Morison's Pouch

Medial Liver Displacement



Pereira R et al. *Right Diaphragm Endometriosis: Resection Technique.* Global Congress. JMIG, Nov. 2018

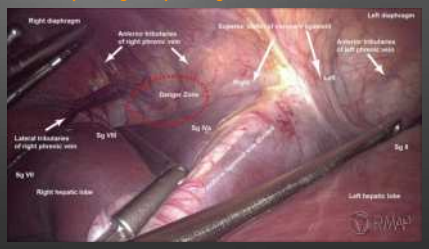
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DIAPHRAGMATIC ENDOMETRIOSIS

Liver Mobilization

Diaphragmatic lesions corresponding to hepatic segments II, IVa, and VIII

Caudal Liver Displacement



Pereira R et al. *Right Diaphragm Endometriosis: Resection Technique.* Global Congress. JMIG, Nov. 2018

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DIAPHRAGMATIC ENDOMETRIOSIS

Liver Mobilization

Diaphragmatic lesions corresponding to hepatic segments II, IVa, and VIII

Caudal Liver Displacement



Pereira R et al. *Right Diaphragm Endometriosis: Resection Technique.* Global Congress. JMIG, Nov. 2018

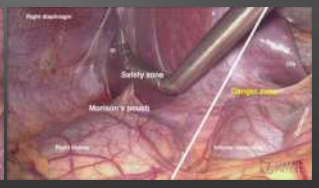
39

DIAPHRAGMATIC ENDOMETRIOSIS

Surgical Anatomy: Safe and Danger Zones



Right Subphrenic Space

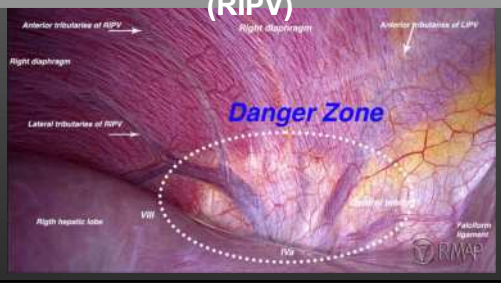


Right Subhepatic Space

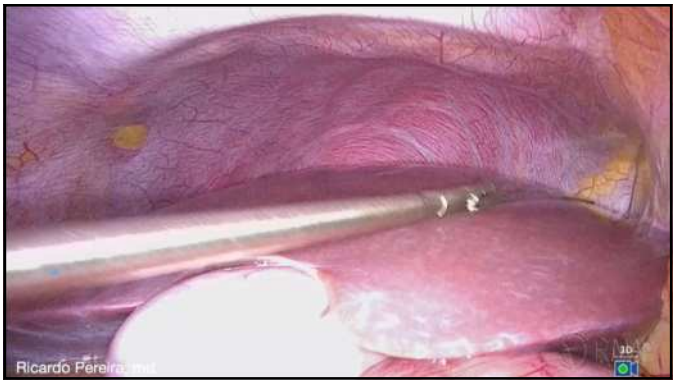
40

DIAPHRAGMATIC ENDOMETRIOSIS

Regional Venous Anatomy
Right Inferior Phrenic Vein Tributaries (RIPV)



41

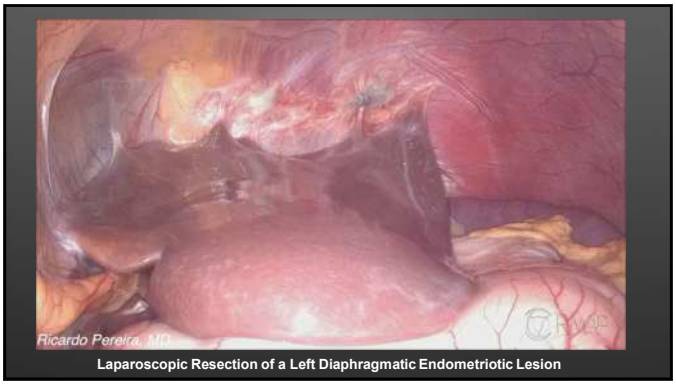


42



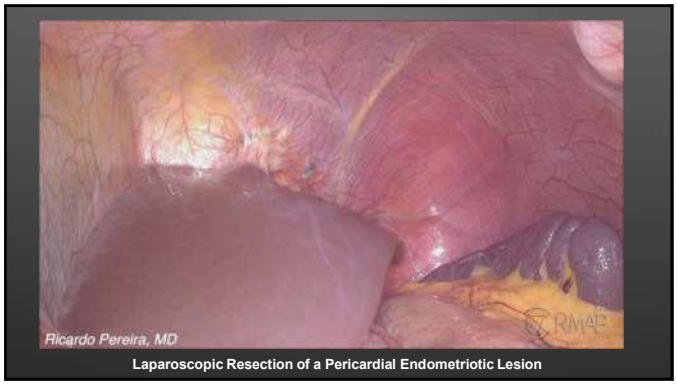
Laparoscopic Resection of Multiple Right Diaphragmatic Endometriotic Lesions

43



Laparoscopic Resection of a Left Diaphragmatic Endometriotic Lesion

44

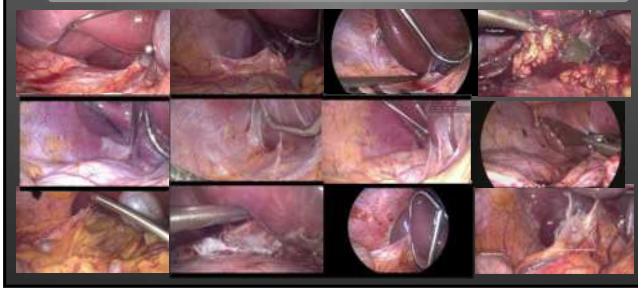


Laparoscopic Resection of a Pericardial Endometriotic Lesion

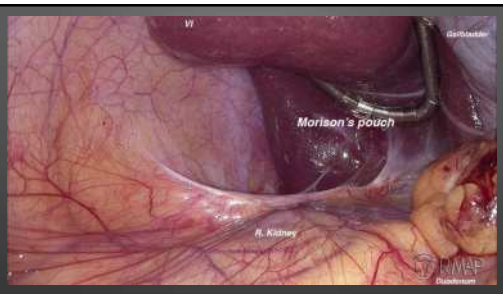
45

DIAPHRAGMATIC ENDOMETRIOSIS

Morison's Pouch Endometriosis (Hepatorenal Recess)



46



Morison's Pouch Endometriosis

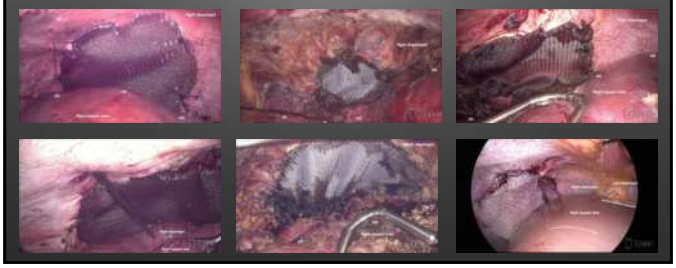
Laparoscopic Approach: Video

47

DIAPHRAGMATIC ENDOMETRIOSIS

Diaphragmatic Endometriosis: Mesh Repair

6 Patients – 100% Right-Sided Hemidiaphragm



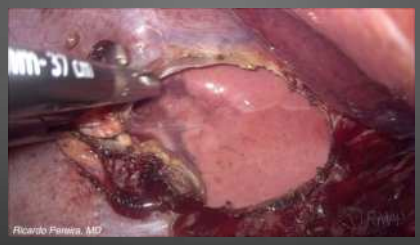
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DIAPHRAGMATIC ENDOMETRIOSIS

Transdiaphragmatic Laparoscopic Thoracic Surgery for Endometriosis (TLTS-E)

- Management of Visceral Pleural Lesions
- Management of Pulmonary Lesions

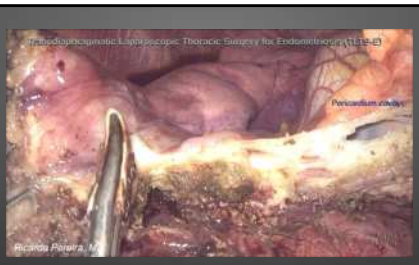
49



Visceral Pleural Lesions:
Type I – Simple Adhesiolysis

Transdiaphragmatic Laparoscopic Thoracic Surgery for Endometriosis (TLTS-E)
(Original technique; manuscript in preparation)

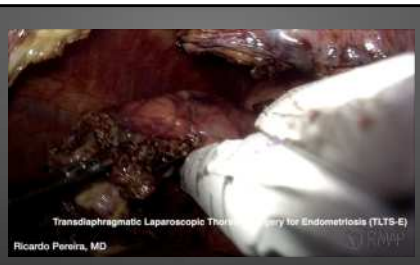
50



Visceral Pleural Lesions:
Type II – Stapled Marginal Pleural Resection

Transdiaphragmatic Laparoscopic Thoracic Surgery for Endometriosis (TLTS-E)
(Original technique; manuscript in preparation)

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Visceral Pleural Lesions:
Type III – Stapled Pleural Lesion Resection

Transdiaphragmatic Laparoscopic Thoracic Surgery for Endometriosis (TLTS-E)
(Original technique; manuscript in preparation)

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DIAPHRAGMATIC ENDOMETRIOSIS

Final Message

Endometriosis may cross anatomical boundaries.
The patient remains one patient, and endometriosis remains one disease.

Perhaps it is time to stop defining the surgeon by the organ being operated on and start defining the surgeon by the disease being treated.

Perhaps the time has come for a new subspecialty: the endometriosis surgeon.

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INTERNATIONAL SCHOOL OF SURGICAL ANATOMY

"Sacral plexus and Lumbo-Sacral Endometriosis: Nerve-Sparing Strategies and Surgical Decision Making."



Marcello Ceccaroni, M.D., Ph.D.

Immediate past AAGL Board of Directors
Director, *Dept. of Obstetrics and Gynecology, Gynecologic Oncology and Minimally-Invasive Pelvic Surgery*
Sacred Heart Hospital – Negrar (Verona), Italy
International School of Surgical Anatomy
mceccaroni@libero.it *www.issaschool.com*

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I have no financial relationships to disclose

2

Objectives

to explain concepts of endometriosis as a neurologiocal inflammatory disease

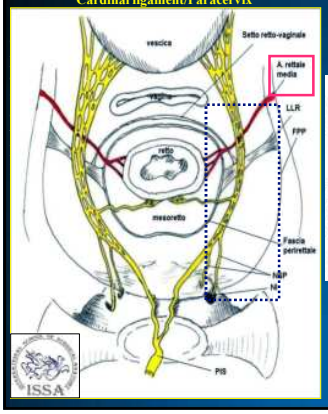
to highlight surgical anatomy of the somatic innervation of the female pelvis

to show how to avoid damages to these structures during radical pelvic surgery

to describe tips and tricks and surgical steps for a minimally-invasive nerve-sparing and nerve-preserving radical pelvic surgery in endometriosis affecting the somatic nerves

3

Postero-lateral parametrium:
Recto-vaginal ligaments, Lateral Rectal Ligaments, Cardinal ligament/Paracervix



TECHNIQUE

Neuro-anatomy of the posterior parametrium and surgical considerations for a nerve-sparing approach in radical pelvic surgery

Marcello Ceccaroni · Roberto Clarizia · Giovanni Roviglione · Giacomo Ruffo

4

Endometriosis and somatic nerves

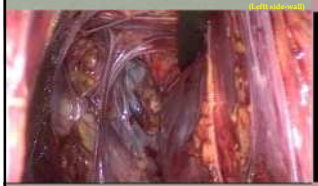


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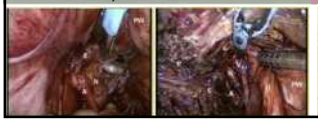
Endometriosis and somatic nerves

Laparoscopic Surgical Approaches

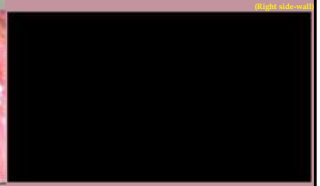
Medial Approach
PARARECTAL AND RETRORECTAL SPACES



Ceccaroni M., 2016



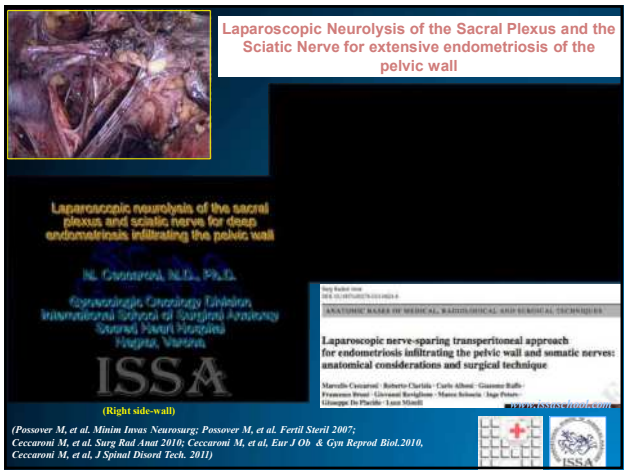
Lateral approach
ILEOLUMBAR SPACE



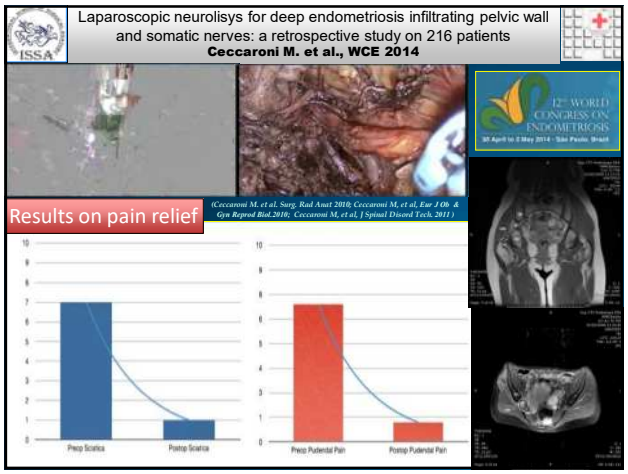
Ceccaroni M., 2011



6


Laparoscopic Neurolysis of the Sacral Plexus and the Sciatic Nerve for extensive endometriosis of the pelvic wall
Laparoscopic neurolysis of the sacral plexus and sciatic nerve for deep endometriosis infiltrating the pelvic wall
ISSA
(Right side-wall)
Laparoscopic nerve-sparing transperitoneal approach for endometriosis infiltrating the pelvic wall and somatic nerves: anatomical considerations and surgical technique
(Possover M, et al. Minim Invas Neurosurg; Possover M, et al. Fertil Steril 2007; Ceccaroni M, et al. Surg Rad Anat 2010; Ceccaroni M, et al, Eur J Ob & Gyn Reprod Biol.2010, Ceccaroni M, et al, J Spinal Disord Tech. 2011)

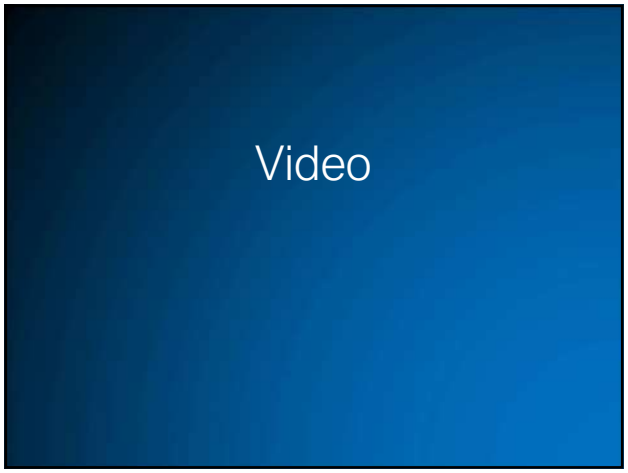
7


Laparoscopic neurolisys for deep endometriosis infiltrating pelvic wall and somatic nerves: a retrospective study on 216 patients
Ceccaroni M. et al., WCE 2014
Results on pain relief
(Ceccaroni M. et al. Surg. Rad Anat 2010; Ceccaroni M, et al, Eur J Ob & Gyn Reprod Biol.2010; Ceccaroni M, et al, J Spinal Disord Tech. 2011)
Preop Sciatica
Postop Sciatica
Preop Pudendal Pain
Postop Pudendal Pain

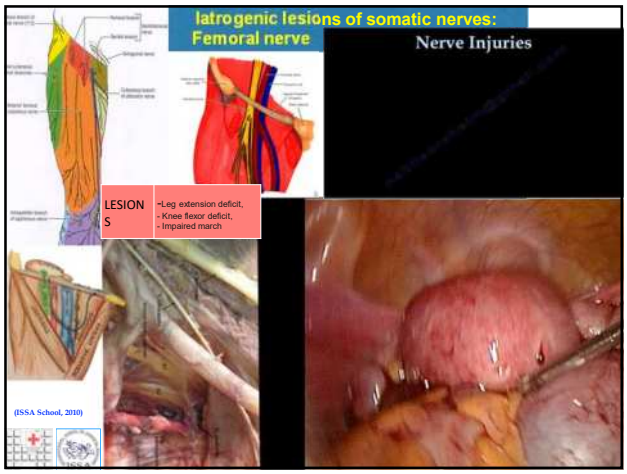
8


VIDEO

9


Video

10


Iatrogenic lesions of somatic nerves:
Femoral nerve
Nerve Injuries
LESIONS
-Leg extension deficit,
- Knee flexor deficit,
- Impaired march
(ISSA School, 2010)

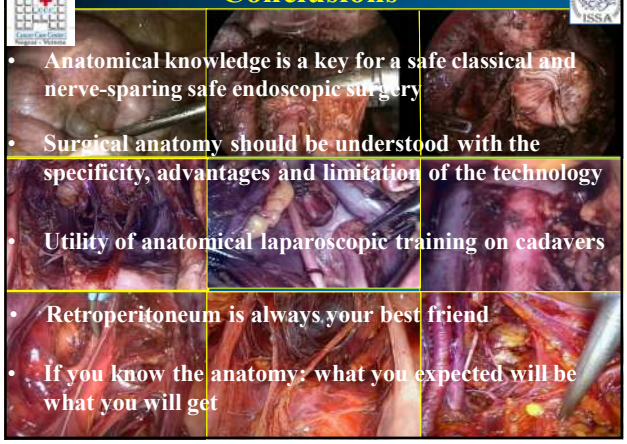
11


Conclusions
1) Neurological damage during laparoscopic pelvic surgery may lead to unrecoverable motoric/sensorial or functional impairment in young women treated also for benign conditions (i.e. DIE)
2) Anatomical knowledge is a key for a better know-how and for a safe endoscopic surgery, minimizing the risks of neurological complications
3) Even if Endometriosis is a disease directly affecting the nerves, Nerve-Sparing procedures (completely different, philosophically, from the Oncological procedures), successfully treat the disease with an adequate radicality, offering good results in terms of pain relief and neurological bladder/bowel and sexual dysfunctions, with morbidity reductions and Quality of Life improvement.
4) Laparoscopic approach is the less invasive and the more accurate and effective treatment offering pain relief, recovery of motoric impaired functions and complete eradication of the disease
5) Repair of some neurological damages is feasible by laparoscopy if promptly recognised
6) Involvement of somatic nerves in DIE is not an uncommon condition, undiagnosed or misdiagnosed in the majority of cases
7) Gynecologist is supposed to be the most indicated and expert specialist do diagnose/treat this condition and to offer the adequate care to these "orphan" patients
8) Considering that this kind of surgery requires uncommon surgical skills and anatomical knowledge, it should be performed only in selected reference centres

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Conclusions

- Anatomical knowledge is a key for a safe classical and nerve-sparing safe endoscopic surgery
- Surgical anatomy should be understood with the specificity, advantages and limitation of the technology
- Utility of anatomical laparoscopic training on cadavers
- Retroperitoneum is always your best friend
- If you know the anatomy: what you expected will be what you will get



13

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15

BOWEL ENDOMETRIOSIS: shaving, discoid, segmental and NOSE techniques with leak prevention strategies

William Kondo, MD · Nações Hospital, Curitiba, Brazil

NOVEMBER 13-16, 2026 · BOSTON · #AAGL26

1

Disclosure

"I have no financial relationships to disclose."

2

PREOPERATIVE WORK-UP

3

TRANSVAGINAL ULTRASOUND

Findings of Pelvic Endometriosis at Transvaginal US, MR Imaging, and Laparoscopy

Accuracy of sonography for non-invasive detection of ovarian and deep endometriosis using #Enzian classification: prospective multicenter diagnostic accuracy study

Deep infiltrating endometriosis: imaging features and laparoscopic correlation

Comparison of #Enzian classification and revised American Society for Reproductive Medicine stages for the description of disease extent in women with deep endometriosis

Indirect and atypical imaging signals of endometriosis: A wide range of manifestations

4

IMAGING

THE ACCURACY IN THE DIAGNOSIS WITH THE IMAGING TECHNIQUES IS COMPLETELY OPERATOR DEPENDENT

5

PREOPERATIVE MAPPING CHANGES THE OPERATION

Imaging must answer surgical questions, not merely confirm endometriosis

HEIGHT	distance from the anal verge and relation to the peritoneal reflection
DEPTH	serosa, muscularis, submucosa or mucosa
GEOMETRY	length, thickness and circumferential involvement
DISTRIBUTION	single, multifocal or multicentric lesions
SYSTEMS	ureters, bladder, vagina, parametria and pelvic nerves

Plan the colorectal team, consent, bowel preparation and stoma strategy before the patient enters the OR.

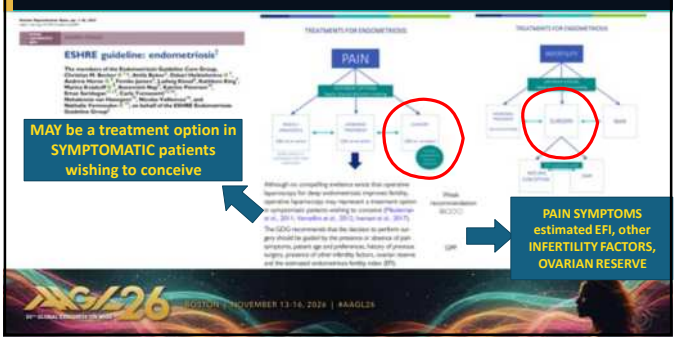
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TRANSVAGINAL ULTRASOUND

INDICATION FOR SURGERY IS BASED ON CLINICAL ASPECTS!

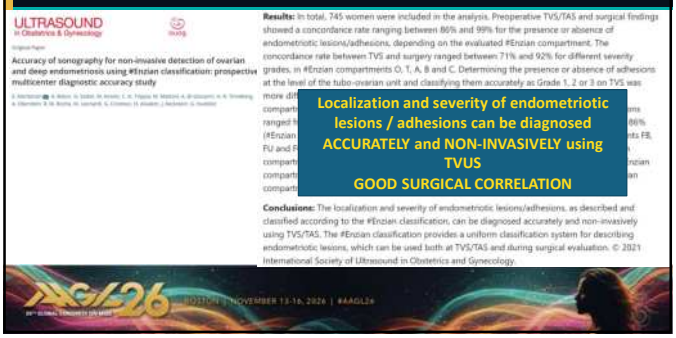
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WHEN SHOULD WE OPERATE PATIENTS WITH BOWEL ENDOMETRIOSIS?



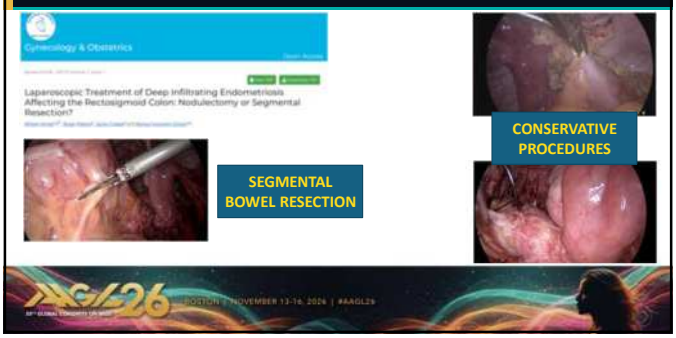
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SHOULD THE TYPE OF SURGICAL INTERVENTION BE DECIDED BEFORE OR DURING SURGERY?



9

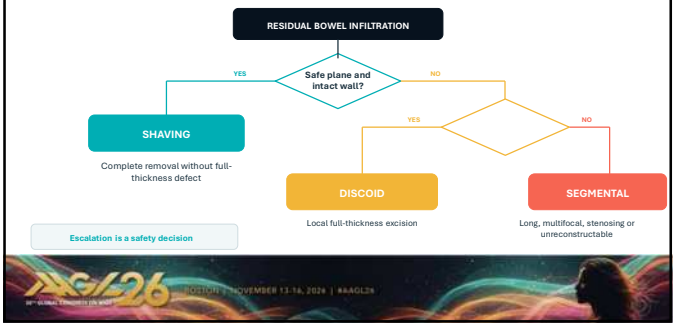
SHOULD THE TYPE OF SURGICAL INTERVENTION BE DECIDED BEFORE OR DURING SURGERY?



10

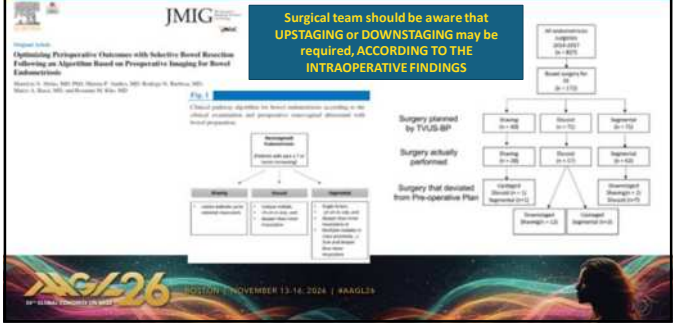
A PRACTICAL ESCALATION ALGORITHM

After mobilization, reassess the true bowel defect



11

SHOULD THE TYPE OF SURGICAL INTERVENTION BE DECIDED BEFORE OR DURING SURGERY?

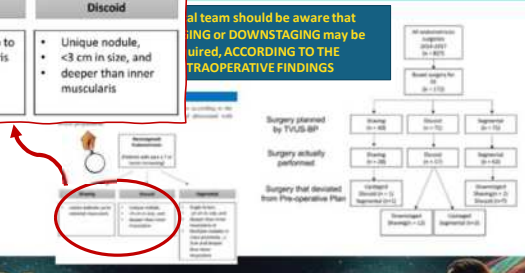


12

SHOULD THE TYPE OF SURGICAL INTERVENTION BE DECIDED BEFORE OR DURING SURGERY?

Shaving	Discoid
• Lesion extends up to external muscularis	• Unique nodule, • <3 cm in size, and • deeper than inner muscularis

al team should be aware that
ING or DOWNSTAGING may be
uired, ACCORDING TO THE
TRAOPERATIVE FINDINGS



13

SURGERY IS PLANNED BASED ON IMAGING EXAMS!





14



SURGERY IS PLANNED BASED ON IMAGING EXAMS!

+ INTRAOPERATIVE FINDINGS



+ SURGEON EXPERIENCE

15

SURGICAL STEPS

PATIENT POSITIONING





Kondo et al. Surgical Treatment of deep endometriosis by laparoscopy. In: Laparoscopy: New developments, procedures and risks (ISBN 978-1-61470-747-9).

16

SYSTEMATIC APPROACH

ADHESIOLYSIS
EXPOSURE
SIGMOID COLON DETACHMENT
ACCESS TO THE LEFT URETER
- URETERAL IDENTIFICATION

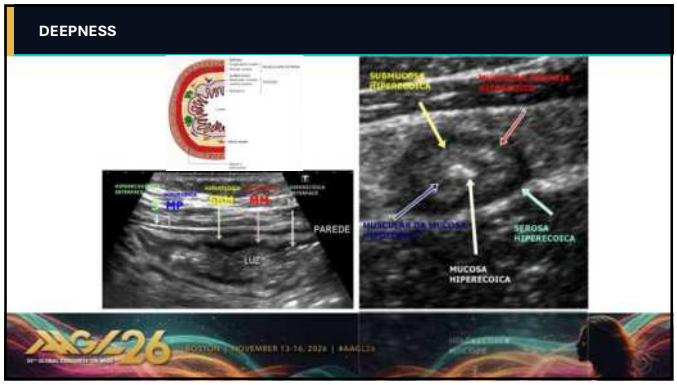
ACCESS TO THE PARARECTAL FOSSA
- HYPOGASTRIC NERVE

NODULE DETACHMENT
BOWEL TREATMENT
SAFETY TESTS

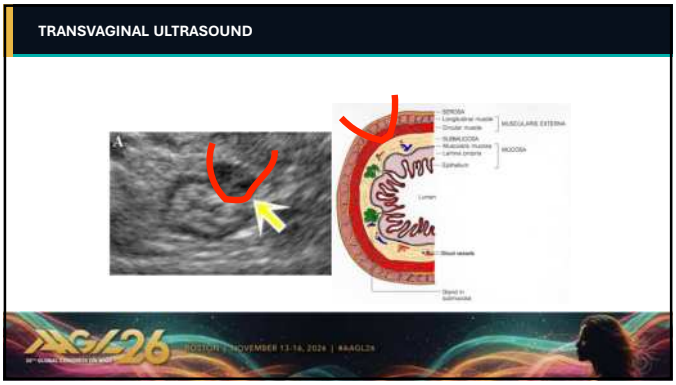
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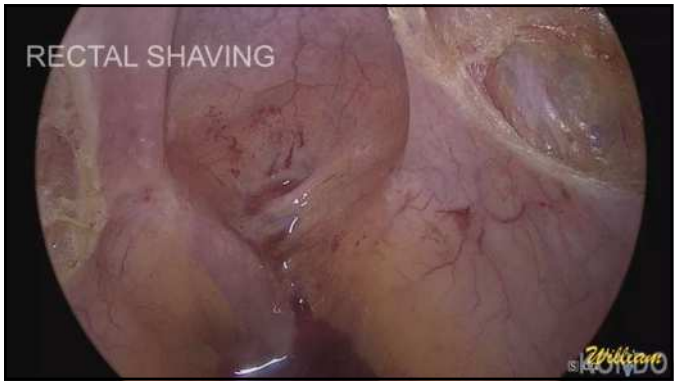
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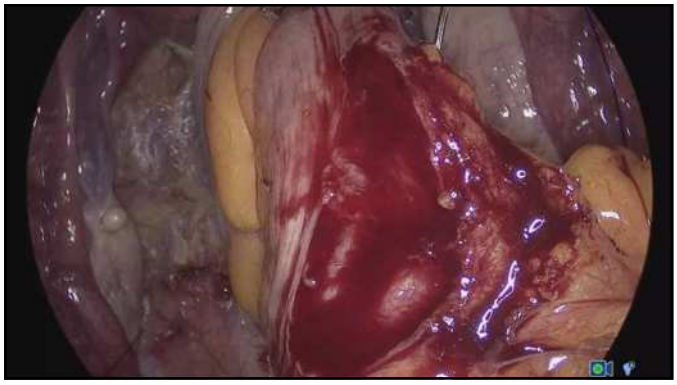
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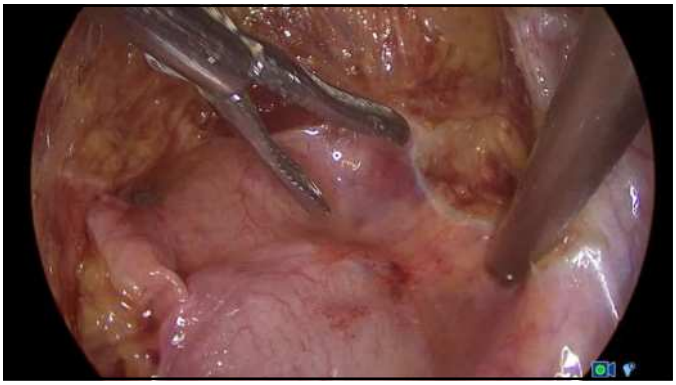


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TECHNIQUES

- Cold scissors
- Bipolar + scissors
- Monopolar
- Ultrasonic energy

25



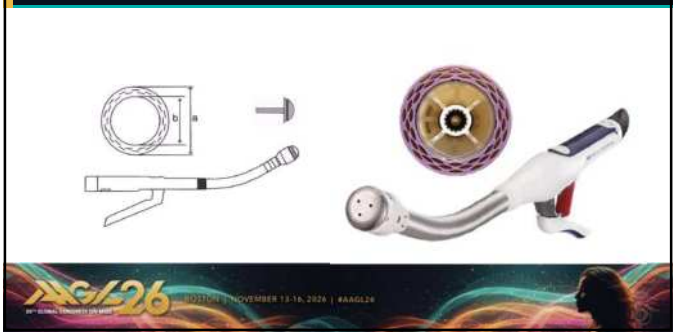
26

SHAVING VS. DISCOID



27

STAPLERS AND STAPLE LINES



28

STAPLERS AND STAPLE LINES



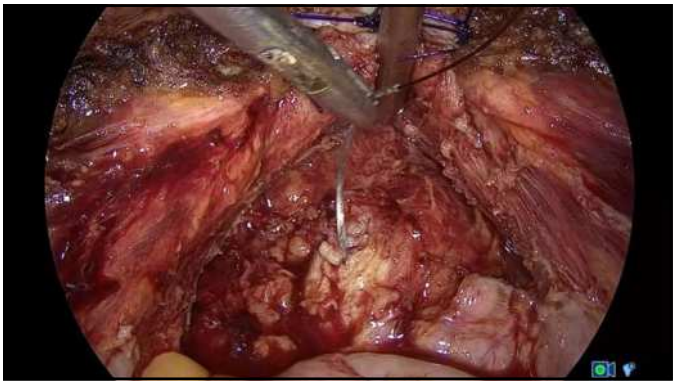
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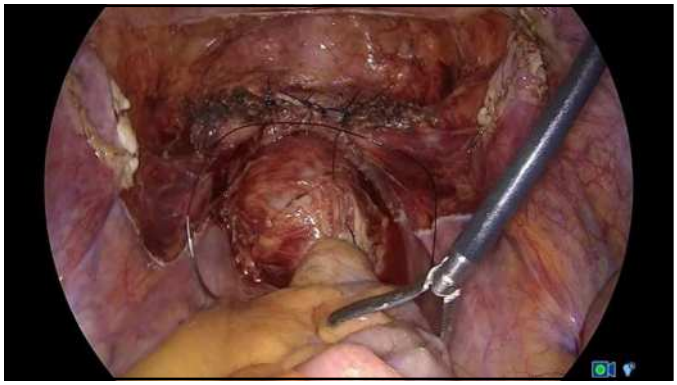
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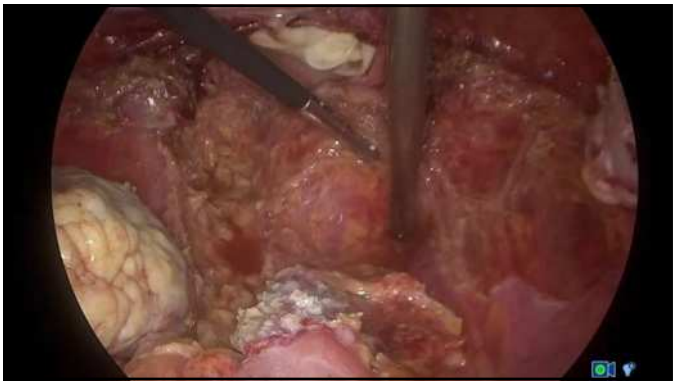
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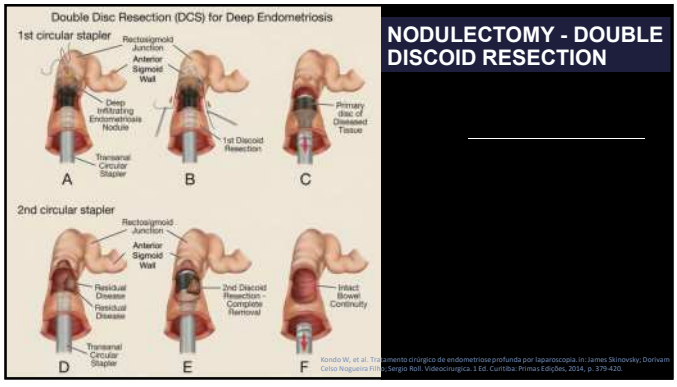
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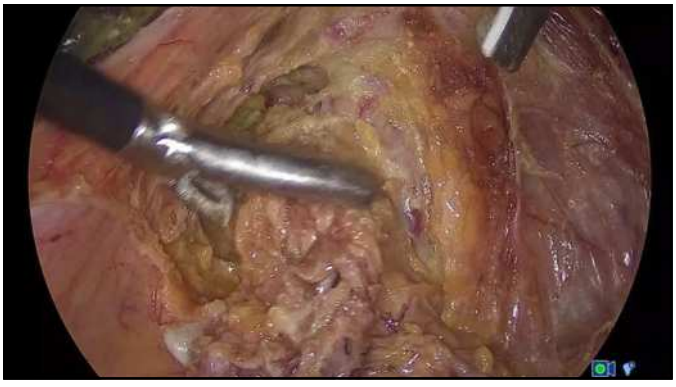
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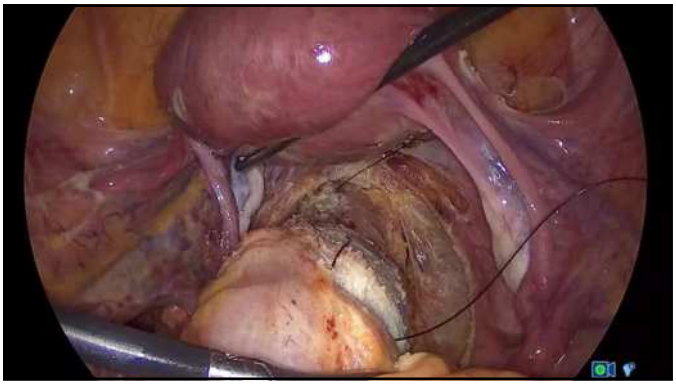
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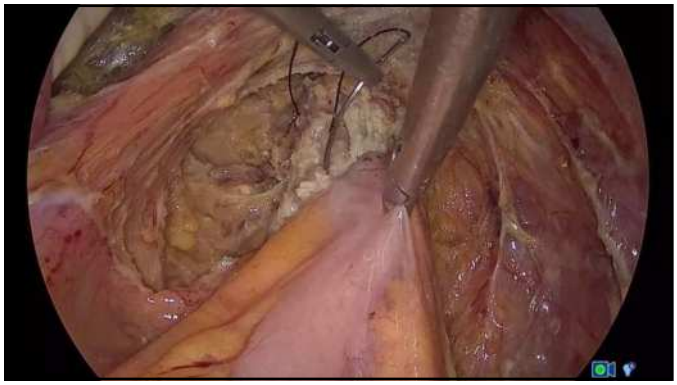
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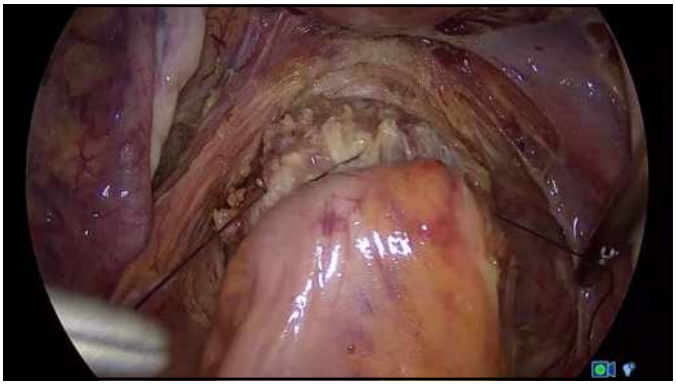
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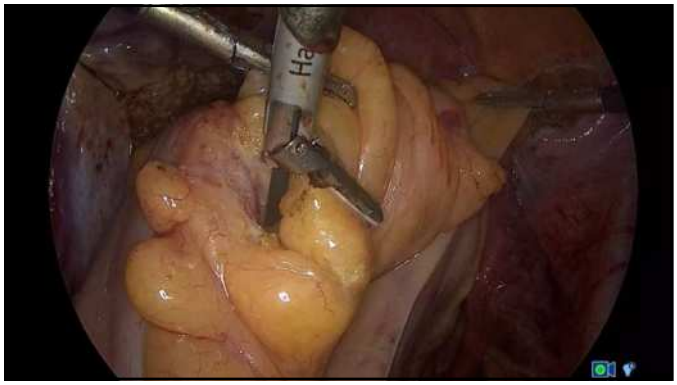
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TME vs. transmesorectal

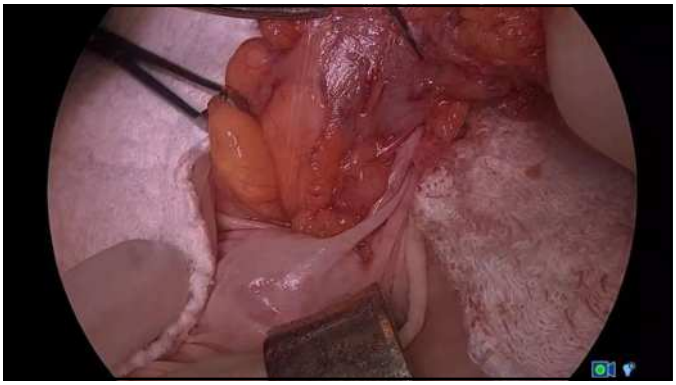
Total mesorectal excision (TME)

Surgical technique for rectal cancer, involving the complete removal of the rectum and its surrounding mesorectum, including all associated lymph nodes and fatty tissue. The "holy plane" refers to the specific surgical plane of dissection used during TME, described by Professor Bill Heald as the avascular plane between the visceral and parietal fascia, facilitating a complete and precise removal of the mesorectum

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NOSE REMOVES THE SPECIMEN WITHOUT AN ABDOMINAL EXTRACTION INCISION

Natural orifice specimen extraction

transvaginal or transanal

contained extraction

Potential benefits

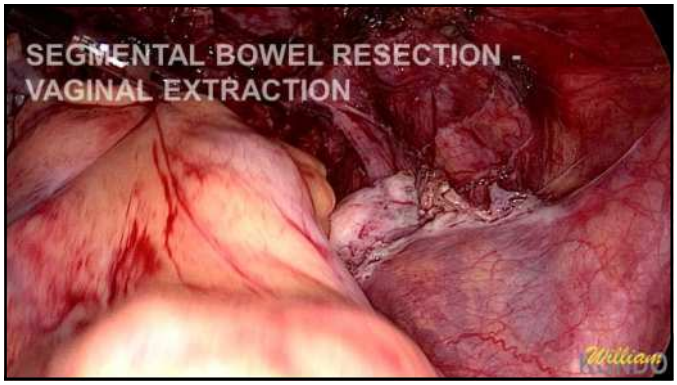
- avoids mini-laparotomy
- may reduce extraction-site pain and wound morbidity
- aligns with minimally invasive reconstruction

Guardrails

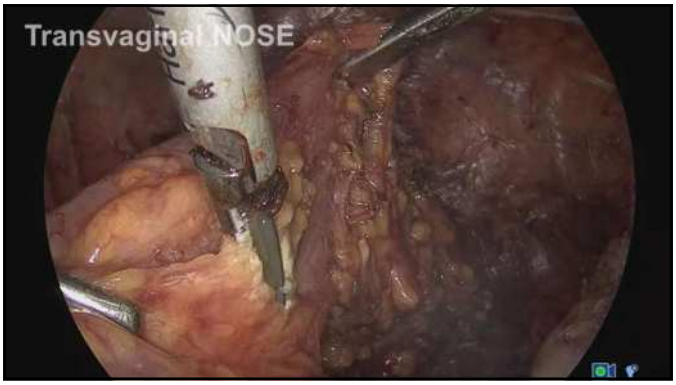
- protected route and strict contamination control
- specimen size compatible with the orifice
- secure closure of the access site
- avoid tissue trauma from forced extraction

NOSE changes extraction, not the standards of resection or anastomotic safety.

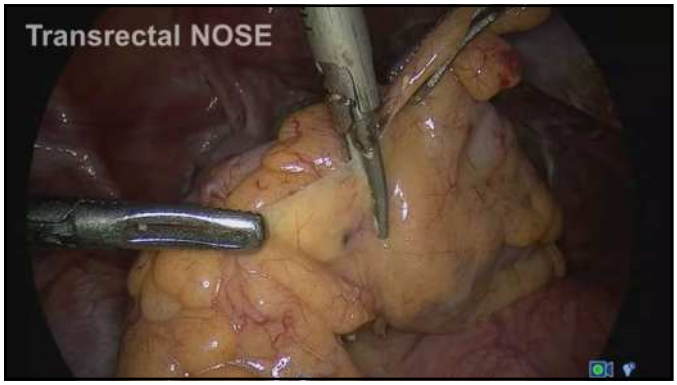
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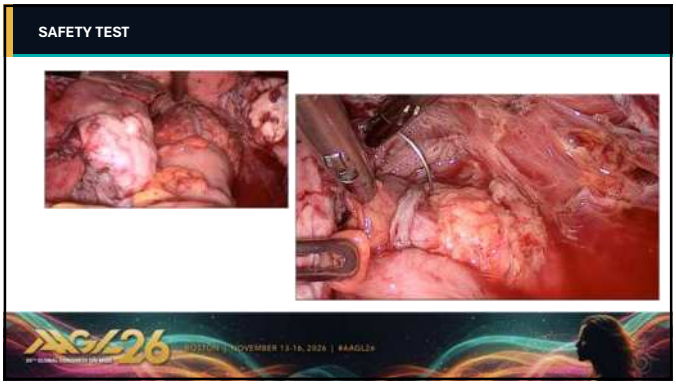
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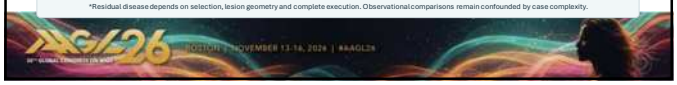
54

COMPARATIVE EVIDENCE SUPPORTS TAILORED SURGERY

Each technique has a different risk–benefit fingerprint

	SHAVING	DISCOID	SEGMENTAL
BOWEL SACRIFICE	lowest	intermediate	highest
LEAK / FISTULA EXPOSURE	lowest	intermediate	highest
FUNCTIONAL BURDEN	lowest	intermediate	highest
RESIDUAL DISEASE CONCERN	highest*	intermediate	lowest*

*Residual disease depends on selection, lesion geometry and complete execution. Observational comparisons remain confounded by case complexity.



55

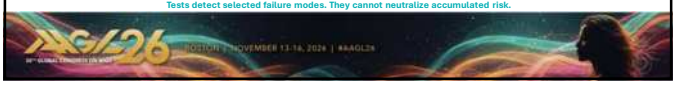
LEAK RISK ACCUMULATES BEFORE THE STAPLER FIRES

Leak emerges when several vulnerabilities converge

1 PATIENT	2 DISEASE	3 TECHNIQUE	4 SYSTEM
malnutrition anemia smoking / steroids	low lesion fibrosis combined resections	ischemia tension weak geometry	experience surveillance rescue delay

ANASTOMOTIC LEAK RISK

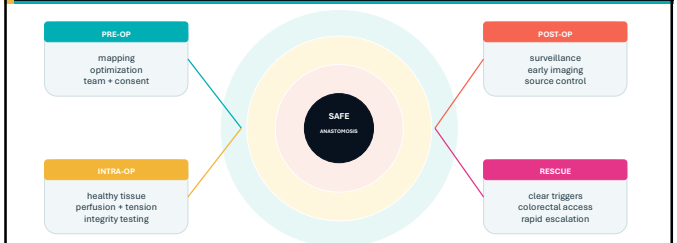
Tests detect selected failure modes. They cannot neutralize accumulated risk.



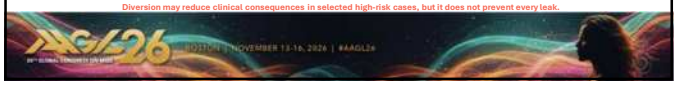
56

A LEAK-PREVENTION BUNDLE IS STRONGER THAN ANY SINGLE MANEUVER

Leak prevention is a layered defense



Diversion may reduce clinical consequences in selected high-risk cases, but it does not prevent every leak.



57

TEST INTEGRITY, PERFUSION AND GEOMETRY

AIR / ENDOSCOPY	detects a mechanical defect now
DONUT + STAPLE LINE	reveals incomplete tissue capture
ICG PERFUSION	adds perfusion information but requires interpretation
TENSION + ORIENTATION	checks causes that devices cannot measure

IntAct 2025: clinical leak 10% with ICG vs 15% with standard care; adjusted OR 0.667, p=0.087.



58

EARLY RECOGNITION PROTECTS THE PATIENT WHEN PREVENTION FAILS

Trigger concern

- persistent tachycardia or fever
- disproportionate pain / ileus
- rising inflammatory markers
- pelvic collection, gas or enteric drain output

Rescue pathway

1. recognize
2. image / assess
3. antibiotics + source control
4. reoperate when unstable or uncontrolled

A protocol shortens the interval between the first abnormal sign and effective source control.



59

FIVE DECISIONS THAT MAKE BOWEL SURGERY SAFER

01	**Map before operating**	height, depth, geometry and multifocality
02	**Escalate deliberately**	shaving to discoid to segmental according to anatomy
03	**Protect function**	limit low rectal and autonomic nerve injury
04	**Bundle leak prevention**	patient, perfusion, tension, integrity and surveillance
05	**Use NOSE selectively**	contained extraction without compromising reconstruction

The safest operation is the least radical procedure that completely treats the lesion and leaves reliable tissue behind.



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Personal Experience in a Private Center

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Perioperative Management

Preoperative

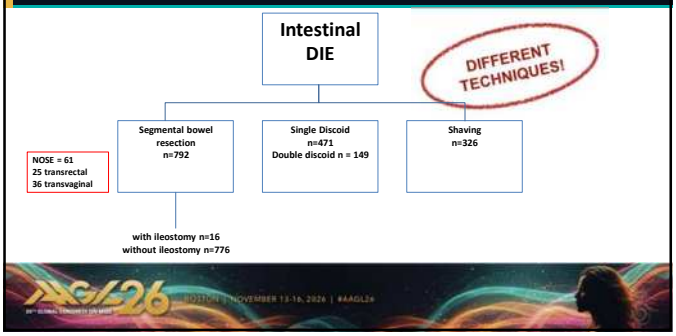
- Liquid diet 24 h before the surgical procedure
- Between 8 and 4 h before surgery: Gatorade
- Fasting 4 h before the surgical procedure
- Rectal enema 4 h before surgery

Intraoperative

- General anesthesia
- Bladder catheter and orogastric tube (retrieved at the end of the procedure)
- No drain

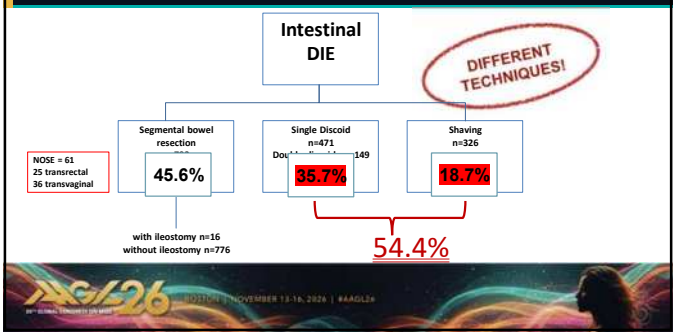
62

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)



63

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)



64

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)

	Segmental (n=792)	Disc resection (n=471)	Double discoid (n=149)	Shaving (n=326)
Age (yrs)	35.13	35.41	36.4	35.94
Ca-125	53.01	36.76	53.19	36.69
Surgical time (min)	***154.58***	***108.62***	***124.80***	***126.35***
Hysterectomy	174 (21.96%)	85 (18.04%)	24 (16.1%)	69 (21.16%)
Vaginal resection	221 (27.9%)	1031 (21.86%)	45 (30.2%)	84 (25.76%)
Number of intestinal implants	2.32	1.35	1.38	1.13
Intraoperative bleeding (cc)	58,14	44.39	37.99	53.04

65

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)

	Segmental (n=792)	Disc resection (n=471)	Double discoid (n=149)	Shaving (n=326)
Age (yrs)	35.13	35.41	36.4	35.94
Ca-125	53.01	36.76	53.19	36.69
Surgical time (min)	***154.58***	***108.62***	***124.80***	***126.35***
Hysterectomy				
Vaginal resection	49.9%	39.9%	46.3%	46.9%
Number of intestinal implants	2.32	1.35	1.38	1.13
Intraoperative bleeding (cc)	58,14	44.39	37.99	53.04

66

ERAS PROTOCOL



67



68

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)

	Segmental (n=792)	Disc resection (n=471)	Double discoid (n=149)	Shaving (n=326)
Hospitalization (hours)	22.33	19.25	17.83	17.32

69

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)

	Segmental (n=792)	Disc resection (n=471)	Double discoid (n=149)	Shaving (n=326)
Conversion	0.13% (1)	0	0	0
Urinary retention	0.88% [7 (<7d)] 2.1% [17 (30d)] 1.1% [9 (>30d)]	0.63% [3 (<7d)] 0.84% [4 (30d)]	1.3% [2 (<7d)] 1.3% [2 (30d)] 1.3% [2 (>30d)]	0.92% [3 (<7d)] 0.30% [1 (30d)] 0.3% [1 (>30d)]
Rectal bleeding	1.0% [8 (small)] 0.75% [6 moderate / massive (2 transfusion)]	6.36% [30 (small)] 1.9% [9 massive (4 transfusions)]	1.3% [2 (small)]	0
Anastomotic fistula	1.6% [13 (10 reoperations)]	0	1.3% [2 (1 reoperation)]	0
Reoperations	2.39% [19 (4x subocclusion – 3x vaginal vault bleeding – 10x fistula - 1X bleeding – 1x vesicovaginal fistula)]	0.21% [1 (pelviperitonitis)]	1.3% [2 (1x pelviperitonitis – 1x anastomotic fistula)]	0.61% [2 (1x pelviperitonitis – 1x white)]
Stenosis	0.88% (7)	0	0	0

70

Jan 2010 – Jun 2026 (1738 rectosigmoid DIE)

	Segmental (n=792)	Disc resection (n=471)	Double discoid (n=149)	Shaving (n=326)
Conversion	0.13% (1)	0	0	0
Urinary retention	4.1%	1.5%	3.9%	1.5%
Rectal bleeding	0.7%	1.9%		0
Anastomotic fistula	1.6%	0	1.3%	0
Reoperations	2.4%	0.2%	1.3%	0.61%
Stenosis	0.88% (7)	0	0	0

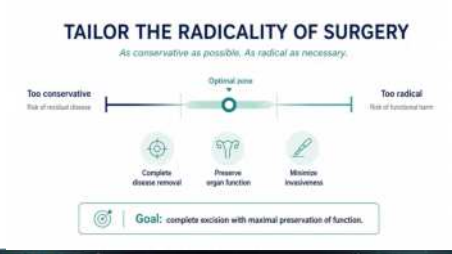
71

FINAL CONSIDERATIONS



72

FINAL CONSIDERATIONS



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2. Roman H, et al. Conservative surgery versus colorectal resection in deep endometriosis infiltrating the rectum: a randomized trial. Hum Reprod. 2018;33:47–57.
3. O'Brien L, et al. Conservative surgery versus colorectal resection for endometrial deposits: systematic review and meta-analysis. Int J Colorectal Dis. 2023;38:72.
4. Guan X, et al. International consensus on natural orifice specimen extraction surgery for colorectal cancer. Gastroenterol Rep (Oxf). 2019;7:24–31.
5. Jayne D, et al. Intraoperative fluorescence angiography with indocyanine green to prevent anastomotic leak in rectal cancer surgery: IntAct RCT. Lancet Gastroenterol Hepatol. 2025;10:806–817.
6. Wolthuis AM, et al. Randomized clinical trial of laparoscopic colectomy with or without natural-orifice specimen extraction. Br J Surg. 2015;102:630–637.

TRANSVAGINAL ULTRASOUND

ENDO CWB

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Saúde da Mulher

THANKS FOR YOUR ATTENTION!



Endo LATAM

EduCareHub

Advanced Urinary Tract Endometriosis

Bladder Reconstruction, Ureteric Anastomosis and Reimplantation

Nucelio Lemos, MD, PhD

Professor of Obstetrics and Gynecology, Friedrichsen-Cooper Chair of Endometriosis and Chronic Pelvic Pain, University of Toronto

Head of the Pelvic Neurodysfunction Division, Dept. of Gynecology, Federal University of São Paulo, Brazil

Chief of the Dept. of Gynecology and Neuropelveology of the Increasing, São Paulo, Brazil

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Financial Disclosures

- Speaker for Pfizer Inc.
- Speaker for Knight Therapeutics
- Advisory Board for Vecfer Pharma

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2



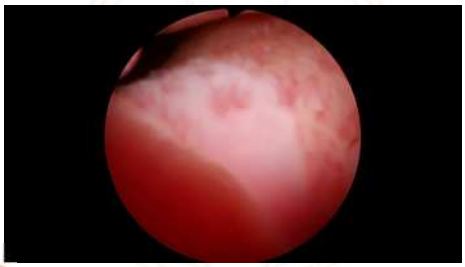
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Objectives

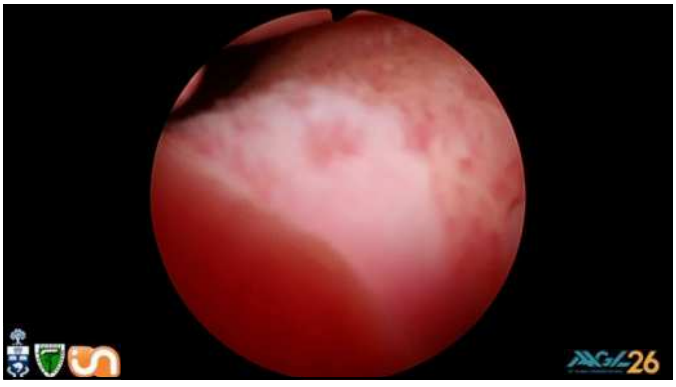
- Review the technique for excision of bladder nodules, ureteric anastomosis and ureteric reimplantation
- Discuss strategies to reduce the rates of ureteric reimplantation in favour of anastomosis
- Develop further independence for performing advanced urinary tract reconstruction in endometriosis surgery

4

Bladder Nodulectomy



5

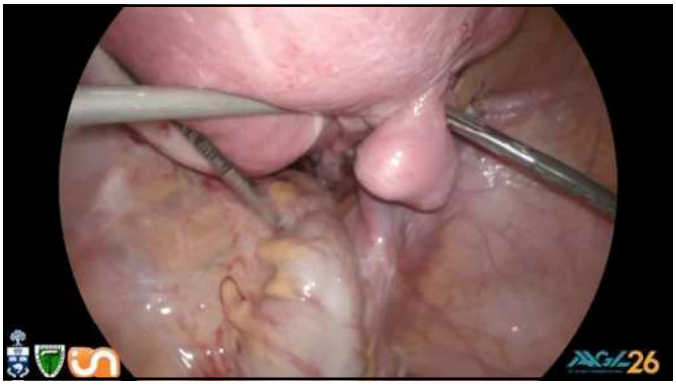


6

Ureteric Anastomosis

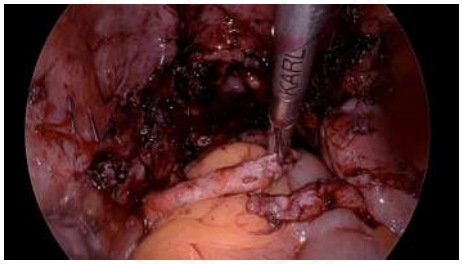


7

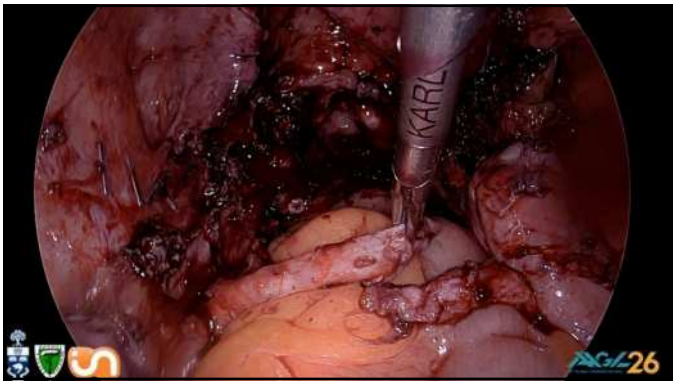


8

Ureteric Reimplantation



9



10

In Conclusion...

11

In Conclusion...

With proper training, gynecologists can perform complex reconstruction of the urinary tract.

Familiarity with the anterior parametric makes gynaecologists less more likely to perform ureteric anastomoses, avoiding reimplantation.

12

Thank You!

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Beyond Boundaries:

Advanced Surgical Management of Extra Pelvic and Complex Endometriosis

The thoracic surgeon's perspective

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Tenured Professor of Surgery

Boston • November 13–16, 2026

01

1

The non-gynecologist's point of view

- Chest symptoms deserve a thoracic history, even when pelvic disease dominates the encounter.
- The diaphragm has abdominal and thoracic surfaces. One view can miss disease in the other compartment.
- Surgical planning should address visible disease and the patient's pain phenotype.

Thoracic perspective

02

2

How intrathoracic endometriosis presents

- Cyclic chest, shoulder or scapular pain, sometimes without imaging abnormalities
- Catamenial pneumothorax, hemothorax or pleural effusion
- Catamenial hemoptysis, pulmonary nodules or airway disease
- Noncatamenial symptoms and persistent symptoms after hysterectomy also occur.

Sources: supplied manuscript; Nezhat et al., 2019

03

3

A thoracic history changes the differential

- Record relation to menses, prior hormonal therapy and symptom laterality.
- Ask about recurrent "spontaneous" pneumothorax, chest drains and prior pleurodesis.
- Review pelvic surgery, hysterectomy, ovarian status and previous diaphragm treatment.
- Exclude alternative cardiopulmonary causes before attributing symptoms to TES.

TES = thoracic endometriosis syndrome

04

4

STS 2026 abstract: study design

Component	Approach
Cohort	45 VATS/RATS explorations for suspected TES
Age	Mean 37 years, range 18–52
Setting / interval	Two institutions, 2015–2026
Development	Literature review and structured patient interviews
Framework	Structural and clinical axes, expert Delphi review

Source: presenter-supplied STS 2026 abstract

05

5

Chest pain dominated our surgical cohort

Presentation	Patients, n (%)
Catamenial chest pain	41 / 45 (91.1%)
Catamenial pneumothorax	6 / 45 (13.3%)
Catamenial hemoptysis	1 / 45 (2.2%)
Noncatamenial chest pain	4 / 45 (8.9%)
Pleural effusion	1 / 45 (2.2%)

Source: supplied manuscript, Table 1. Symptoms overlap.

06

6

The diaphragm was the most frequent operative site

Operative finding	Patients, n (%)
Diaphragm	36 / 45 (80.0%)
Pleura	23 / 45 (51.1%)
Lung	3 / 45 (6.7%)
No visible disease	4 / 45 (8.9%)
Right-sided disease	36 / 45 (80.0%)

Source: supplied manuscript, Table 1. Anatomic sites overlap.

7

Bottom versus top of the diaphragm

Surface explored	Histology-positive findings
Bottom: abdominal diaphragm	29 / 45 explorations (64.4%)
Top: thoracic diaphragm	9 / 20 operated cases (45.0%)

Selected surgical series, different denominators.
These percentages do not form a 100% split.

Barton-Smith et al. Acta Obstet Gynecol Scand. 2026;105:1614–1622.

8

A normal abdominal view can miss thoracic disease

- In a separate selected series, 3 patients with a macroscopically negative underside had positive thoracic findings.
- Only 3 of 10 patients with a negative underside underwent thoracic exploration.
- The practical implication is complementary visualization when symptoms justify it.

Barton-Smith et al., 2026. Macroscopic findings ≠ confirmed histology.

9

Thoracic exploration: selection in our practice

- Abdominal endometriosis with catamenial chest or shoulder symptoms warrants thoracic surgical evaluation.
- A negative MRI does not exclude subtle pleural or diaphragmatic disease.
- Persistent symptoms, prior diaphragm disease or recurrent thoracic events can justify exploration after shared decision-making.
- Balance surgical benefit against neuropathic pain, operative risk and competing causes.

Institutional approach, not a validated universal indication

10

Imaging detects only part of the disease

Preoperative study	Suggestive findings in our cohort
MRI	18 / 32 (56.3%)
CT	3 / 21 (14.3%)

Small fenestrations and superficial implants can remain occult.

Source: supplied manuscript, Table 1

11

Dedicated thoracic MRI: preparation

- Our protocol favors active menstruation, preferably cycle days 1–3.
- Image off hormonal suppression when clinically appropriate and coordinated with the treating team.
- Tell radiology the symptom timing, laterality and prior operative findings.
- Complete all pre-contrast chest and pelvic sequences before gadolinium.

Sources: prior institutional MRI protocol v3; Xiao et al., 2025

12

Dedicated thoracic MRI: acquisition

Sequence	Purpose / coverage
Coronal balanced SSFP	Anatomic overview
Multiplanar fat-suppressed T2	Chest and upper abdomen, motion control
DWI with ADC	b = 100 and 800 s/mm^2, optional 400
Pre-contrast T1 Dixon	Multiplanar hemorrhagic implant assessment
Post-contrast T1 subtraction	Dynamic and delayed imaging

Source: Thoracic Endometriosis MRI Protocol v3; Xiao et al., 2025

Characteristic MRI imaging 1

Characteristic MRI imaging 2

Intraoperative findings

Diaphragm excision and reconstruction

Minimally invasive surgical technique

Minimally invasive thoracic approaches

Approach	Role and tradeoffs
Multiport or uniportal VATS	Pleural / diaphragm inspection, excision, wedge resection
Multiport robotic thoracoscopy	Articulated dissection and diaphragm suturing
Selected subcostal / subxiphoid access	May avoid intercostal ports, center-specific experience
Combined laparoscopy + thoracoscopy	Complementary views of both diaphragm surfaces

Choice depends on disease extent, prior surgery and team experience

19

Thoracic exploration and excision

- When feasible, our team explores during menses and off hormonal suppression to improve lesion recognition.
- Inspect the entire diaphragm, pleural surfaces and lung. Document distribution and defects.
- Favor complete visible lesion excision with tissue preservation and safe reconstruction.
- Add wedge resection for localized parenchymal disease and selected pleural procedures for pneumothorax.

Institutional technique and multidisciplinary planning

20

Pearls: diaphragm fenestrations

- MRI often fails to show small diaphragm fenestrations.
- Our team recommends excision of involved fenestration margins because endometriosis can line the defect.
- Simple closure can leave disease behind and permit reopening as implants proliferate.
- Reconstruct the defect with durable suture or a patch when required by size and tension.

Presenter's operative recommendations

21

Pearls: excision, thermal injury and liver herniation

- Our practice favors complete excision over ablation when safely feasible.
- Early recurrence, pain and diaphragm herniation have followed ablation in reported experience.
- A dime- or quarter-sized "lesion" may be liver protruding through a diaphragm fenestration.
- Confirm anatomy before biopsy, energy application or resection.

Presenter experience; Nezhat et al., 2019

22

Histology and the limits of confirmation

Pathology in the cohort	Patients, n (%)
Endometriosis confirmed	19 / 45 (42.2%)
No confirmation	24 / 45 (53.3%)
No specimen	2 / 45 (4.4%)

Source: supplied manuscript, Table 1

23

Pearls: specimen handling and expert pathology

- Map specimens to diaphragm, pleura, lung or airway and record treatment exposure.
- Request review by a pathologist experienced in endometriosis.
- Use immunohistochemistry when morphology is limited, particularly in suppressed or dormant lesions.
- CD10 and ER/PR can support interpretation within an appropriate panel.

Expert interpretation remains essential

24

Pearls: catamenial hemoptysis

- Assess bleeding severity and airway safety first. Major hemoptysis needs urgent stabilization.
- Use chest imaging and bronchoscopy to localize bleeding and evaluate other causes.
- Thoracic MRI can help characterize suspected endometriotic disease.
- A tagged red blood cell scan is a selective adjunct when bleeding remains difficult to localize.

MRI / bronchoscopy timing depends on clinical stability

Pearls: catamenial pneumothorax

- Stabilize and re-expand the lung. A small-bore pigtail drain is appropriate when drainage is indicated.
- Tension physiology requires immediate emergency decompression.
- Arrange prompt expert-center consultation and transfer once clinically safe.
- After stabilization, consider MRI, selective bronchoscopy and expert thoracoscopic evaluation.

Acute treatment precedes elective imaging and cycle timing

Pearls: pain and hysterectomy

- Connect patients with pain specialists early when pain persists after surgery.
- Post-thoracotomy and post-thoracoscopy neuropathic pain require dedicated management.
- Centralized pain can limit symptom improvement after anatomically complete excision.
- Hysterectomy does not exclude persistent thoracic endometriosis.

Counseling should separate disease control from expected pain relief

Why a thoracic classification is needed

- Pelvic scores do not capture diaphragm defects, lung lesions or thoracic event severity.
- Our proposed framework combines structural grade S0–S4 with clinical grade C0–C3.
- Overall classes I–IV aim to standardize operative reports, registries and research.
- Expert consensus supports development. Prospective multicenter validation remains necessary.

Source: STS 2026 abstract and submitted manuscript

Thoracic endometriosis classification system

Discussion: structure and symptoms can diverge

- Disease frequently spans more than one thoracic compartment.
- Pain burden may exceed the visible lesion burden.
- Imaging can underestimate surgical extent and pathology may remain nondiagnostic.
- A shared thoracic dataset can connect anatomy, event severity and longitudinal outcomes.

Source: supplied manuscript, Discussion

Conclusions and future validation

- Combine gynecologic and thoracic expertise for symptoms extending beyond the pelvis.
- Treat diaphragm defects and visible implants while supporting long-term pain care.
- Use the proposed dual-axis classification as a research and documentation framework.
- Prospective registries should test reproducibility, recurrence prediction and treatment response.

Source: supplied manuscript, Conclusion and limitations

Selected references

- Carrasco Barcenas et al. A Proposed Classification System for TES. Submitted manuscript, 2026.
- Xiao et al. Thoracic endometriosis imaging and dedicated MRI. Abdom Radiol. 2025;50:4423–4436.
- Barton-Smith et al. Robot-assisted diaphragmatic and thoracic surgery. Acta Obstet Gynecol Scand. 2026;105:1614–1622.
- Nezhat et al. Diagnosis and management of TES. JSLS. 2019;23:e2019.00029.

Full citations and source links appear in speaker notes

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/