AAGL 26

55TH GLOBAL CONGRESS ON MIGS

BOSTON, MASSACHUSETTS
NOVEMBER 13-16, 2026

Syllabus

PG-26086

Safety and Strategy in Endometriosis Surgery: From Mapping to Mastery – Decision-Making for Complex Disease

HONORARY CHAIR
Charles H. Koh, MD

SCIENTIFIC PROGRAM CHAIR
Nash S. Moawad, MD

PRESIDENT
Michael Hibner, MD, PhD



Table of Contents

Course Program: Course Description, Learning Objectives, Course Outline 3

Financial Disclosures 4

Setting the Stage: What Defines Safe Endometriosis Surgery?
H. Ferreira 5

Deep Endometriosis: Choosing the Right Operation | Rectovaginal and Bowel Disease Shaving vs. Disc vs. Segmental Resection | Bladder and Ureteral Endometriosis | When to Stop, When to Stage
M. Malzoni 10

Preoperative Mapping: The Foundation of Safety
A. Di Giovanni 16

Anatomy-Driven Strategy: Retroperitoneal Access and Nerve Preservation
A. Harris 29

Cultural and Linguistic Competency & Implicit Bias 34

PG-26086: Safety and Strategy in Endometriosis Surgery:
From Mapping to Mastery – Decision-Making for Complex Disease

Chair: Helder Ferreira Sr.
Co-Chair: Mario M. Malzoni
Faculty: Alessandra Di Giovanni, Amani Harris, Helder Ferreira, Sr., Mario M. Malzoni

Course Description

This interactive postgraduate course provides a practical, strategy-focused roadmap for safe and effective endometriosis surgery. Using expert surgical videos, real clinical cases, and evidence-based algorithms, four internationally recognized surgeons will teach: how to plan complex procedures how to execute safe dissection, how to decide between conservative and radical approaches, and how to manage intraoperative challenges. The course emphasizes the core philosophy: "Strategy first, technique second."

Learning Objectives: *At the end of this course, the participant will be able to:* 1) Develop a structured algorithm for preoperative evaluation and surgical planning in endometriosis. 2) Identify key anatomic landmarks essential for safe dissection; 3) Apply stepwise strategies for deep infiltrating endometriosis 4) Choose the appropriate surgical extent based on symptoms and functional goals; 5) Recognize high-risk situations requiring multidisciplinary management; and 6) Implement practical methods to prevent and manage complications.

Course Outline

2:00 pm	Welcome, Introduction and Course Overview	H. Ferreira
2:05 pm	Setting the Stage: What Defines Safe Endometriosis Surgery?	H. Ferreira
2:30 pm	Deep Endometriosis: Choosing the Right Operation | Rectovaginal and Bowel Disease Shaving Vs Disc Vs Segmental Resection | Bladder and Ureteral Endometriosis | When to Stop, When to Stage	M. Malzoni
2:55 pm	Preoperative Mapping: The Foundation of Safety	A. Di Giovanni
3:20 pm	Anatomy-Driven Strategy: Retroperitoneal Access and Nerve Preservation	A. Harris
3:45 pm	Discussion Questions & Answers	All faculty
4:00 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

Helder Ferreira Sr., MD, PhD, MBA*

COURSE CO-CHAIR DISCLOSURE

Mario MM Malzoni, MD, PhD*

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).

Helder Ferreira Sr., MD, PhD, MBA*
Alessandra Di Giovanni, MD*
Amani Harris, MD*
Mario MM Malzoni, 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.

AAGL 55TH GLOBAL CONGRESS·PG-26086-BOSTON

Setting the Stage: WhatDefines Safe Endometriosis Surgery?

Safety and Strategy in EndometriosisSurgery-FromMappingtoMastery

Hélder Ferreira,MD,PhD,MBA

FullProfessor,HeadofMinimallyInvasiveSurgeryUnit,CMIN-ULSSantoAntónio,Porto

ICBAS-University ofPorto,Portugal

13November2026·Room312

1

DISCLOSURES

Financial relationships

Nothingtodisclose

2

THEPREMISE

Asafeoperationisnot simplyone without complications.

Itistheright operation,forthe right patient, by the rightteam—j udged bythe outcomethatmatterstoher.

3

WHERE THIS COMESFROM

Frompaintoprecision:15+years of endometriosissurgeryinPorto

CLAIM
Patientsoperated

4,354

EVIDENCE
Minimallyinvasive endometriosis surgerysince2009

IMPLICATION
Deepexperience.Consistentvolume. Provencom

CLAIM
Havedeepdisease

≈20%

EVIDENCE
Rectovaginal,bowel,ureter,bladder-thecasesthatposethereal surgicalproblems

IMPLICATION
Weoperatethemostcomplexcases othercentresrefer.

CLAIM
Integratedtreatment

MDT

EVIDENCE
Surgery,fertility colorectal,urology centre,imaging,a ndresearch

IMPLICATION
Complete,coordinatedcare underoneroof.

4

APATIENTTOKEEPINMIND

Whatis the safeoperationforher?

History

- 34 years-treated thyroiddisease
- Primaryinfertility,**3 failed IVFcycles**
- Catamenialrectalbleeding

Pain(VAS)

Dysmenorrhoea	8/10
Dyspareunia	9/10
Dyschezia	10/10
Dysuria	0

Exam·TVUS·MRI

- Tenderrectovaginal nodule,fixeduterus
- Leftendometrioma**5cm**
- Rectalnodule**3.5×4cm**,8cmfromana lverge, **transmural**,infiltratingvaginal mucosa

5

THEPROBLEM

Safetyinendometriosissurgeryrestson thinevidence

RANDOMIZEDEVIDENCE

14

RCTsintheCochranereview oflaparoscopicsurgery

Adverse-event reporting was toolimited to draw anyconclusiononsafety.

Bafort,Cochrane 2020

EXPERT EVIDENCE

Expert

Basis of the technical recommendations for deep disease

TheESGE/ESHRE/WES workinggroupreliedmostlyonclinicalexpertise.

Keckstein,HumReprodOpen2020

GUIDELINERECOMMENDATIONS

109

ESHRE guideline recommendations

Yetnofirmrecommendationonthemostappropri atetreatmentcouldbemade.

Becker,ESHRE 2022

6

A WORKING DEFINITION

Fourpillarsofsafeendometriosissurgery

1	2	3	4
Indication	**Planning**	**Execution**	**Outcome**
Whyoperate— andfor whichgoal?	Whatwillweface,andis thistherightteam?	Canwedoitsafely— andwhendowestop?	Diditworkforher— andhowdoweknow?

Strategy first,techniquesecond.

7

PILLAR1·INDICATION

Operate for a goal,not for alesion

1. **Symptomsdrivethedecision—** themost troublesomesymptom,nottheimage,definessuccess.
2. **Reproductive plan first**—surgery,ART,or both,decided before theoperation.
3. **Medical therapy discussed**—surgery is one optionamongseveral,notthedefault.
4. **Asymptomatic disease**—routine surgeryisnotrecommended(ESHRE2022).

SHARED DECISION

Whatdoessheexpect togain—andwhat isshewillingtorisk?

Pain·fertility·bowel,bladderandsexual function·qualityoflife

8

PILLAR 2 · PLANNING

Name the disease before you meet it

	#Enzian	AAGL 2021 classification
Purpose	Complete anatomical map: peritoneal, ovarian, deep disease and adhesions	Score of the surgical complexity the disease will demand
When	Imaging (TVUS, MRI) and surgery — same language	Intraoperative findings
Key data	Consensus system built to overcome rASRM limits in deep disease	1,224 patients; discriminates 4 complexity levels, x 0.62 vs 0.32 for rASRM

Mapping turns "deep endometriosis" into a list of structures at risk.
→ Preoperative mapping in depth: A. Di Giovanni, 2:55 PM

Keckstein, Acta Obstet Gynecol Scand 2021
Abrão, J Minim Invasive Gynecol 2021

9

PILLAR 2-PLANNING

Understandtheextension, notjustthemainnodule

Multifocaldisease

Retrocervix,bowel,ureterandbladder oftencoexist.Completeresection needstheappropriatesurgical expertise.
Meuleman,HumReprodUpdate 2011

Appendix

Involvedin 2-4%ofwomenwith endometriosis—check andidentifyit ateveryoperation.
Gustofson,FertilSteril2006

Diaphragm

Catamenialshoulderpainisaclue. Planmultidi sciplimarytreatment,withthoracic surgery whenneeded.
Seidler,JMinimInvasiveGynecol2018

Symptoms mapthe disease: dysmenorrhoea · dyspareunia · dyschezia · haematochezia · dysuria · haematuria · scapulodynia

10

PILLAR 2-PLANNING

Matchthediseasetotheteam

01	Superficialperitonealdisease, **uncomplicated endometrioma**	**TrainedMIGS gynaecologist**
02	**Deep disease without organ infiltratio** n— **uterosacrals,**rectovaginalseptum,	**Advanced endometriosis surgeon,retroperitonealskills**
03	**Bowel,bladder,ureter, sacralnerveroots,**	**Expertcentrewitha multidisciplinaryteam-** colorectal,urology,radiology,pain, **fertility**

The safestreferralis made before the first incision.

11

PILLAR 3·EXECUTION

Knowwherethedangerlies

DANGER·STRUCTURES ATRISK

- Bowel
- Ureter
- Vessels
- Ovarian function

RISKS·WAYSTO FAILHER

- Fistula
- Haemorrhage
- Conversion
- Incompletetreatment

...andpostoperative failure:persistent pain,repeat surgery.

12

PILLAR 3 · EXECUTION

Five rules for a safe dissection

1	Expose first	Retroperitoneal access; ureters identified before any excision.
2	Healthy to diseased	Open avascular spaces and approach the nodule from normal anatomy.
3	Respect the nerves	Hypogastric nerves and splanchnic fibres spared wherever disease allows.
4	Verify integrity	Leak tests, ureteral peristalsis; ICG to see nodule vs bowel wall and perfusion.
5	Pre-set stop rules	Staging or conversion is a safety decision, not a failure.

IN THIS COURSE

Choosing the operation — M. Malzoni

Anatomy and nerves — A. Harris

Adapted from ESGE/ESHRE/WES recommendations for deep endometriosis (2020)

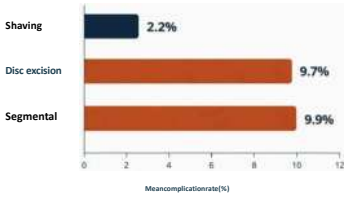
13

13

THE COST OFRADICALITY·BOWEL

Each stepupinradicality adds complications

Meancomplicationratebytechnique,colorectalendometriosis



Rectovaginalfistula

Comparative estimates

Shaving vs disc: **OR 0.19**(0.10-0.36)

Shavingvssegmental:**OR 0.26**(0.15-0.44)

Trade-offs

Disc:less stenosis than segmental (OR0.15),moreearlyvoidingdysfunctionthanshaving.

Bendifallahetal.,JMinimInvasiveGynecol2021;28:453-66·60studies,mostlynon-randomised

14

14

THE COST OFRADICALITY·FUNCTION

Complicationsarenottheonlyharm

Constipation

2.3×

Segmentalresection vsconservativesurgery

RR 2.31(1.21-4.43)

Frequentbowel movements

2.8×

Segmentalresectionvsconservativesurgery

RR2.80(1.17-6.75)

No clear difference

Defecationpain,analincontinence, LARS,Clavien-Dindol-IV

13mostlynon-randomised studies·GRADElow to verylow foreveryoutcome

Quintairosetal.,JMinimInvasiveGynecol2022;29:1231-40

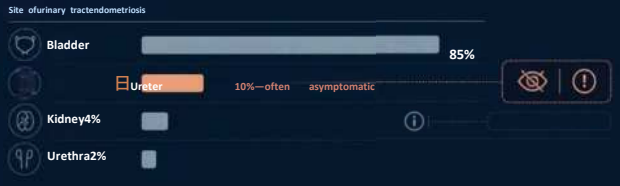
15

15

THE COST OFMISSING IT·URINARY TRACT

No pain.
Silentkidneyloss.

Site ofurinary tractendometriosis



Yohannes,IUrol2003·Kovooretal.,JMinimInvasiveGynecol2010

16

16

THE COST OFRADICALITY· URETER

Ureteral disease:conservative resectwhenneeded first,

Proceduresperformed·22studies,1,337patients

Ureterolysis(aloneorfirst)	69.1%
Resection +ureteroneocystotomy	21%
Resection+end-to-endanastomosis	6%
Double-J stent placed	33.3%

REPORTED HARMS	
Ureteral injury	3.1%
Ureteral fistula	2.8%
Reoperation	3.9%

Cunha et al.,JMinim Invasive Gynecol 2021;28:779-87· *descriptive review,nometa-analysis*

17

17

THE SAFETY BALANCE · OVER-TREAT ⇄ UNDER-TREAT

Completeness	⟷	Function	⟷	Morbidity
Remove the disease that causes her symptoms		Preserve bowel (LARS), bladder, sexual and reproductive function		Avoid injury, leak, fistula and reoperation

The safe operation reaches her goal at the lowest functional cost.

AAGL 2026 · What defines safe endometriosis surgery?

18

18

PILLAR 4 · OUTCOME

Measure safety the way patients live it

Complications

Clavien-Dindo grade, early and late: leak, fistula, stenosis, urinary retention, reoperation.

Evidence: recorded prospectively.

Core outcomes

Overall pain, most troublesome symptom, quality of life — plus adverse events and satisfaction.

Duffy, BJOG 2020

Recovery

ERAS in deep endometriosis: stay 2.9 days shorter, without more readmissions or complications.

Doulgeris, FVV 2025 · 4 studies, 1,662 patients

If you do not audit it prospectively, you do not know how safe you are.

19

PUTTING IT TOGETHER

A safety checklist for complex endometriosis surgery

Before

- Goal and fertility plan documented
- #Enzian map from TVUS / MRI
- Complexity matched to team; MDT booked
- Consent covers function and staging

During

- Understand location and extension; adhesiolysis
- Check and identify: ureters, appendix, diaphragm
- Healthy-to-diseased, nerve-sparing
- Complete haemostasis; integrity tests, ICG
- Re-check before closing; stop rules applied

After

- ERAS pathway
- Clavien-Dindo recorded, early and late
- Pain, symptom and QoL at 6–12 months
- Results audited and fed back

20

BACK TO OUR PATIENT

The four pillars, applied

1 · Indication

Severe pain plus infertility after 3 failed IVF: two goals — pain relief and pregnancy.

2 · Planning

Full map incl. ureters and kidneys; ovarian reserve before endometrioma surgery; colorectal surgeon booked.

3 · Execution

Transmural nodule plus vaginal opening: fistula risk drives the bowel technique; spare ovarian tissue.

4 · Outcome

Pain scores, bowel and sexual function, and live birth — not only "no complications".

21

TAKE-HOMEMESSAGES

Safesurgeryisdefinedbefore,duringandafter theoperation

1. Safetyismultidimensional:**indication,planning, execution,outcome.**
2. Thepatient'sgoalsetshowradicaltheoperationshouldbe.
3. Mapthediseaseandmatchitscomplexitytotheteam.
4. Measurefunctionandpatient-reportedoutcomes, notonlycomplications.

Strategy first,technique second.

22

REFERENCES

Key sources

Bafort C,etal.Laparoscopicsurgeryforendometriosis. Cochrane DatabaseSystRev2020;10:CD011031.

BeckerCM,etal.ESHREguideline:endometriosis. HumReprodOpen2022;hoac009.

AbrãoMS,etal.AAGL 2021 EndometriosisClassification:ananatomy-basedsurgicalcomplexityscore.J Minim Invasive Gynecol 2021;28:1941-50.

Quintairos RA,et al.Conservative versus radicalsurgery fordeep infiltratingendometriosis:bowelfunction.JMinimInvasive Gynecol2022;29:1231-40.

DuffyJMN,etal.Acoreoutcomesetforfutureendometriosis research.BJOG 2020;127:967-74.

Keckstein J,et al.(ESGE/ESHRE/WES).Recommendations for thesurgical treatmentofendometriosis.Part2:deependometriosis. HumReprodOpen2020;hoaa002.

KecksteinJ,etal.The#Enzianclassification. ActaObstetGynecolScand 2021;100:1165-75.

Bendifallah S,et al.Surgicaloutcomesaftercolorectalsurgeryfor endometriosis.JMinimInvasiveGynecol 2021;28:453-66.

Gunnha FL,et al.Laparoscopictreatmentofureteralendometriosis:a systematicreview.JMinim InvasiveGynecol2021;28:779-87.

DouligerisA,etal.ERASindeepinfiltratingendometriosissurgery: systematic review and meta-analysis.Facts ViewsVisObgyn2025;17:15-29.

23

REFERENCES

Key sources(continued)

1. Meuleman C,etal.Surgicaltreatmentofdeeply infiltrating endometriosiswith colorectal involvement.Hum Reprod Update 2011;17:311-26.

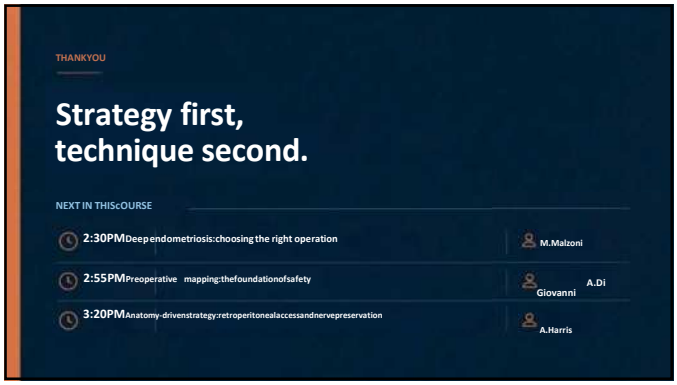
2. Seidler S,et al.Diaphragmatic endometriosis:multidisci-plinary treatment.Minim InvasiveGynecol2018.

3. KovoorE,etal.Endometriosisofbladder:outcomesafter laparoscopic surgery.JMinim Invasive Gynecol2010;17: 600-4.

Gustofson RL,et al.Endometriosisandtheappendix:acase series and comprehensivereviewoftheliterature.Fertil Steril2006;86(2):298.

5. YohannesP.Ureteral endometriosis.JUrol 2003;170:20-5.

24


THANKYOU
Strategy first,
technique second.
NEXT IN THISCOURSE
2:30PM Deep endometriosis: choosing the right operation
M.Malzoni
2:55PM Preoperative mapping: the foundation of safety
A.Di Giovanni
3:20PM Anatomy-driven strategy: retroperitoneal access and nerve preservation
A.Harris

DEEP ENDOMETRIOSIS:
Choosing the right Operation
Rectovaginal and Bowel disease
Bladder and Ureteral Endometriosis

Mario Malzoni, M.D.
Center for Advanced Pelvic Surgery
Endometriosis National Center
Avellino, Italy
MALZONI RESEARCH HOSPITAL

1

DIAGNOSIS

Accurate Preoperative Imaging

Thorough preoperative imaging is a prerequisite for complete surgical excision and the avoidance of underdiagnosis in complex endometriosis.

Improve Surgical Radicality

Detailed preoperative mapping allows the surgeon to anticipate the extent the extent of disease, plan operative strategy, and achieve complete excision complete excision across all affected compartments.

Avoid Missed Disease

Comprehensive imaging reduces the risk of failing to recognize clinically significant lesions, particularly deep infiltrating endometriosis involving retroperitoneal structures.

2

REFERENCE CENTER MANAGEMENT

Correct Management in Reference Centers

Optimal outcomes in severe endometriosis depend on a structured, multidisciplinary approach within specialized referral centers.

01
Anamnesis & Clinical Evaluation
Thorough history-taking and systematic physical examination to characterize symptom burden and functional impairment

02
Skilled Imaging
Expert transvaginal dynamic ultrasound and MRI performed by trained sonographers and radiologists

03
Indications & Counseling
Evidence-based clinical management decisions with decisions with comprehensive informed consent consent covering all treatment options and risks risks

04
Surgical Expertise
Advanced laparoscopic skills with thorough knowledge of pelvic anatomy anatomy including retroperitoneal spaces and neural plexuses

05
Postoperative Surveillance
Structured follow-up protocol with skilled management of postoperative postoperative complications

*Koninckx PR, Ussia A, Porpora MG, **Malzoni M**, Adamyan L, Wattiez A. Surgical management of endometriosis-associated pain. **Minerva Obstet Gynecol. 2021. Gynecol. 2021.***

3

PREOPERATIVE WORK-UP

Preoperative Work-Up: Multimodal Evaluation

US + MRI
First-line imaging for all suspected endometriosis cases; essential for mapping pelvic compartment involvement

Cystoscopy
Indicated when **bladder involvement** is suspected on imaging; defines proximity to to ureteral meata

CT/MRI Urography + Renal Scintigraphy
Assessment of **upper urinary tract damage**; mandatory when ureteral involvement or hydronephrosis is identified

Urodynamic Tests
Evaluation of **lower urinary tract dysfunction** and neural plexus involvement involvement prior to parametrial resection

Colonoscopy / Double-Contrast Enema
Mandatory when bowel endometriosis is suspected; determines degree of luminal compromise and stenosis

4

CLASSIFICATION

Classifications and Detailed Lesion Mapping

A robust classification system provides the clinical team with a shared vocabulary and a reproducible framework for disease staging, surgical planning, and scientific and scientific communication.

Common Language
Enables surgeons, clinicians, radiologists, and sonographers to communicate with precision using using standardized terminology

Detailed Description
Requires structured lesion description with anatomical anatomical localization and quantitative measurements measurements for each affected compartment

Reproducible Staging
Facilitates easier and more reproducible disease staging, reducing inter-observer variability

Surgical Strategy & Follow-Up
Provides comprehensive information for operative planning, patient counseling, and long-term surveillance

Scientific Validity
Reduces selection and classification biases in clinical research; feasible when performed by expert operators

5

DEEP ENDOMETRIOSIS

6

Mario Malzoni, M.D.

Advanced laparoscopic surgical skills/facilities are needed

LOCALIZATION		Surgical skills required for excision
Bladder nodule		Shaving (Nerve sparing if possible) bladder Resection ± ureteral Reimplantation
Paracervical disease **ureteral** involvement	±	(Nerve sparing if possible) ventral/lateral/dorsal Parametrectomy with ureterolysis or ureteral resection (followed by end to end anastomosis or reimplantation)
Bowel endometriosis		Shaving, Discoid or Segmental bowel resection
Vaginal infiltration		Complete resection of the vaginal lesion

7

Mario Malzoni, M.D.

Advanced laparoscopic surgical skills are needed

LOCALIZATION	Surgical skills required for excision
Pelvic side wall: - Inferior hypogastric plexus - Sacral roots - Presacral fascia - Alcock canal/pudendal nerve - Lumbosacral trunk/ischiatic nerve	neurolysis or nerve decompression
Extrapelvic Atypical Sites: - Small Bowel/Caecum/ IC Valve/Appendix - Abdominal wall/Groin/Perineum - Kidney/Liver/Pancreas/Gladbladder - Diaphragm/Pleura/Lung - Others: Vascular/Lymphatic/Central Nervous System	complete resection of the abdominal wall disease

8

MALZONI RESEARCH HOSPITAL

Mario Malzoni, M.D.

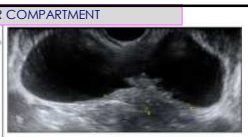
BLADDER ENDOMETRIOSIS



9

ANTERIOR COMPARTMENT

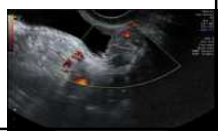




BLADDER

- distance from urethral and ureteral meata/IM segment
- cleavage with anterior adenomyosis
- anterior abdomen wall parietal infiltration





10

MALZONI RESEARCH HOSPITAL

CENTRAL BLADDER NODULE

Mario Malzoni, M.D.



11

MALZONI RESEARCH HOSPITAL

Mario Malzoni, M.D.

PARAMETRIAL ENDOMETRIOSIS
From Ureterolysis to Reimplantation



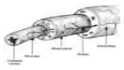
12

MALZONI RESEARCH HOSPITAL Mario Malzoni, M.D.

Ureteral Endometriosis

EXTRINSIC

4:1 RATIO
Stanley et al.



INTRINSIC

Involvement of the overlying peritoneum causing compression of the ureteric wall

Fibrosis and endometriotic proliferation of ureteric muscularis

13

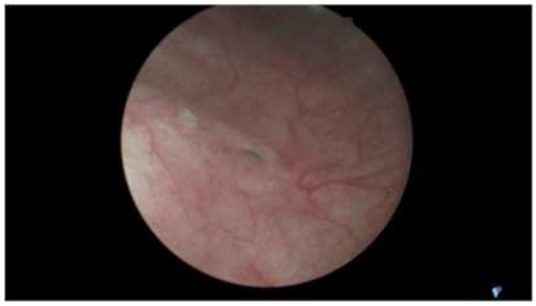
MALZONI RESEARCH HOSPITAL Mario Malzoni, M.D.

PARAMETRIAL ENDOMETRIOSIS
Ureterolysis



14

MALZONI RESEARCH HOSPITAL **URETEROLYSIS using ICG injection** Mario Malzoni, M.D.



15

MALZONI RESEARCH HOSPITAL Mario Malzoni, M.D.

Ureteral Segmental Resection with End to End Anastomosis



16

MALZONI RESEARCH HOSPITAL Mario Malzoni, M.D.

Ureteral Resection with Reimplantation



17

MALZONI RESEARCH HOSPITAL Mario Malzoni, M.D.

BOWEL ENDOMETRIOSIS



18

MALZONI RESEARCH HOSPITAL

M. Malzoni, M

SCIENCE | EXPERIENCE | A BETTER TOMORROW

Indications for Shaving, Discoid and Segmental Resection

Adapted from Malzoni M et al., *J Minim Invasive Gynecol*, 2020

Based on **Maximum Nodule Diameter**

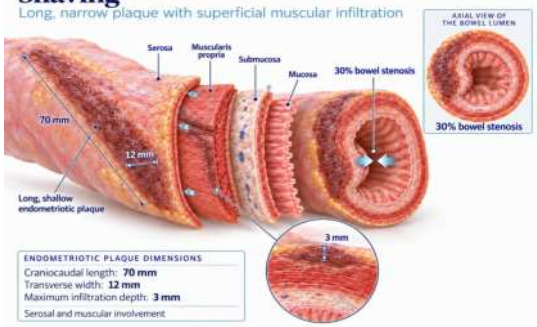
Infiltration of the muscularis layer	< 3 cm	≥ 3 cm
< 7 mm	Shaving	Shaving
≥ 7 mm	Discoid resection	Segmental resection

19

MALZONI RESEARCH HOSPITAL

Shaving

Long, narrow plaque with superficial muscular infiltration



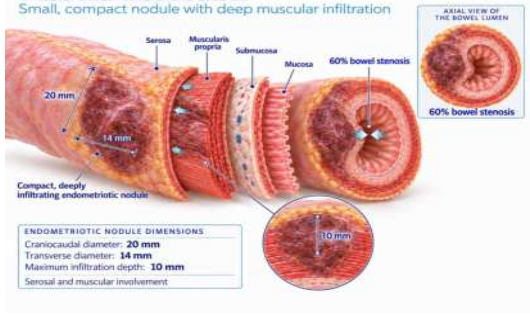
ENDOMETRIOTIC PLAQUE DIMENSIONS
Craniocaudal length: **70 mm**
Transverse width: **12 mm**
Maximum infiltration depth: **3 mm**
Serosal and muscular involvement

20

MALZONI RESEARCH HOSPITAL

Discoid Resection

Small, compact nodule with deep muscular infiltration



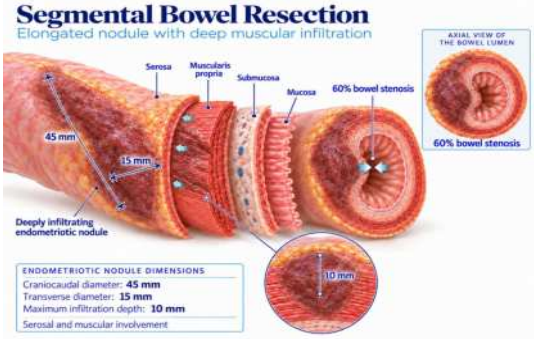
ENDOMETRIOTIC NODULE DIMENSIONS
Craniocaudal diameter: **20 mm**
Transverse diameter: **14 mm**
Maximum infiltration depth: **10 mm**
Serosal and muscular involvement

21

MALZONI RESEARCH HOSPITAL

Segmental Bowel Resection

Elongated nodule with deep muscular infiltration



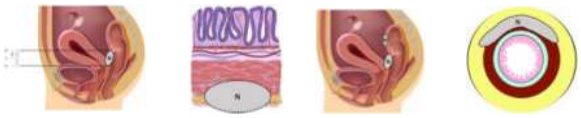
ENDOMETRIOTIC NODULE DIMENSIONS
Craniocaudal diameter: **45 mm**
Transverse diameter: **15 mm**
Maximum infiltration depth: **10 mm**
Serosal and muscular involvement

22

MALZONI RESEARCH HOSPITAL

Segmental Resection with N.O.S.E. (TransRectal) Technique

NO Hysterectomy



LARGEST NODULE DIAMETER	INFILTRATION DEPTH	NUMBER OF LESIONS	• CIRCUMFERENTIAL BOWEL INVOLVEMENT • DISTANCE FROM ANAL VERGE • PERCENTAGE OF STENOSIS
> 3 cm	> 7 mm	ANY	ANY > 5 cm ANY

23

NOSE

What We Know About NOSE in Endometriosis

The majority of published evidence on natural orifice specimen extraction (NOSE) derives from colorectal cancer surgery. Data specific to endometriosis remain limited endometriosis remain limited but are accumulating.

NOSE for Colorectal Cancer: Established Evidence

- Less postoperative pain
- Lower wound infection rates
- Faster return of bowel function
- Shorter hospital stay
- Better cosmetic outcomes
- Lower incisional hernia rates

NOSE for Endometriosis: Emerging Evidence

- Limited but promising preliminary studies
- Efficacy and safety appear similar to conventional technique
- Specimen extraction via anus or vagina

NOSE: Natural Orifice Specimen Extraction

24

BOWEL ENDOMETRIOSIS

Modified N.O.S.E. Technique: Published Procedure

Malzoni M, Rasile M, Coppola M, Iuzzolino D, Casarella L, Di Giovanni A, Falcone F.
Totally laparoscopic resection with transanal natural orifice specimen extraction for deep endometriosis infiltrating the rectum.
J Minim Invasive Gynecol. 2021 Jul.

JMIG The Journal of Minimally Invasive Gynecology

This modified technique achieves complete laparoscopic rectosigmoid resection for deep endometriosis with specimen extraction through the anal canal, maintaining anastomotic integrity and avoiding laparotomy. The approach is optimized for patients not undergoing concurrent hysterectomy.

25

TREND TRIAL

TrEnd Trial: Surgical Treatment of Treatment of Sigmoid and Rectal Rectal Deep Endometriosis

TrEnd Study – 2024 - Surgical treatment of women with deep endometriosis infiltrating the sigmoid colon and/or the rectum. A prospective study evaluating functional outcomes, complication rates, and quality of life following bowel surgery for deep infiltrating endometriosis at a specialized referral center.

JMIG The Journal of Minimally Invasive Gynecology

Journal of Minimally Invasive Gynecology

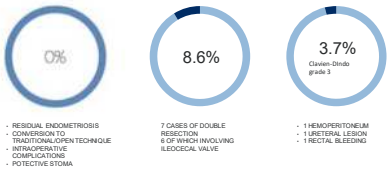
Total laparoscopic segmental resection with transanal natural orifice specimen extraction for treatment of colorectal endometriosis: Descriptive analysis from the TrEnd study database

Mario Malzoni M.D., Alessandra Di Giovanni M.D., Marina Coppola M.D., Domenico Iuzzolino M.D., Lucia Casarella M.D., Marianna Rasile M.D., Francesca Falcone M.D.

26

Results
Surgical Outcomes

81 patients



- RESIDUAL ENDOMETRIOSIS
- CONVERSION TO TRADITIONAL/OPEN TECHNIQUE
- INTRAOPERATIVE COMPLICATIONS
- POTECTIVE STOMA

7 CASES OF DOUBLE RESECTION
6 OF WHICH INVOLVING ILEOCECAL VALVE

- 1 HEMOPERITONEUM
- 1 URETERAL LESION
- 1 RECTAL BLEEDING

JMIG

27

Results
Surgical Outcomes

Surgical Outcomes	N =81
Blood loss (mL), median [IQR]	20 [20 – 30]
Gastrointestinal function recovery (days), median [IQR] Time to first passage of flatus Time to first defecation	 1 [1 – 1] 4 [3 – 5]
Hospital length of stay (days), median [IQR]	3 [3 – 4.5]
Patients receiving maintenance hormone therapy for at least 3 months after surgery, n (%) Yes No	 68 (84) 13 (16)
Duration of hormone therapy after surgery, median [IQR]	15 [6 – 27]
Patients experiencing relapse, n (%)	1 (1.2)
Follow-up (months), median [IQR]	21 [12 – 29]

JMIG

28

MALZONI RESEARCH HOSPITAL

M. Malzoni, MD

Simultaneous total laparoscopic double segmental resection with transanal natural orifice specimen extraction for deep endometriosis infiltrating the ileocaecal valve and rectum–A video vignette

Mario Malzoni et al. Colorectal Dis. 2024.

Hide details

> Colorectal Dis. 2024 Jul 25.
doi: 10.1111/codi.17112. Online ahead of print.

Authors

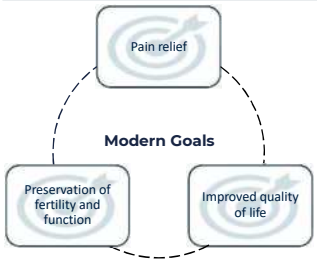
Mario Malzoni [1], Marina Coppola [1], Alessandra Di Giovanni [1], Francesca Falcone [1]



29

MALZONI RESEARCH HOSPITAL

Redefining "*success*"



Success is no longer measured in centimeters of resection, but in ***years of well-being.***

«Sometime less may be more»

30


De-escalation in Endometriosis Surgery
Patient-centered when possible. Radical when necessary.
When de-escalation is appropriate
Deep knowledge of the disease
Expert diagnosis and mapping
Shared decision-making with the patient
Symptoms, quality of life, fertility goals, and age must guide the choice
When radical surgery is required
Complete excision when truly indicated
The right surgical strategy
Multidisciplinary expertise
High-volume centers to avoid repeated and incomplete surgery
De-escalation is the right direction only when supported by expertise.
When complete radical excision is necessary, it must be done correctly.
Right evaluation • Right surgery • Right radicality
DE-ESCALATION
RADICAL SURGERY

31


MALZONI
RESEARCH HOSPITAL
Thank You

32


GYNITALY27
Where Style, Science and Surgery Converge
Milan • May 25-28 2027
www.gynitaly27.com

33

SAFETY AND STRATEGY IN ENDOMETRIOSIS SURGERY

From Mapping to Mastery – Decision-Making for Complex Disease

Alessandra Di Giovanni, MD
Malzoni Research Hospital, Avellino, Italy

NOVEMBER 13-16, 2026 · BOSTON · #AAGL26

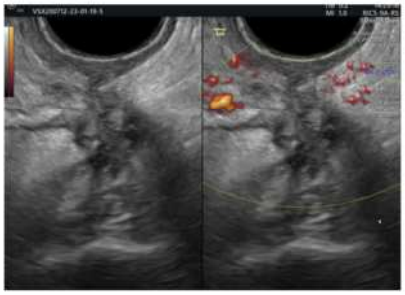
1

Disclosure

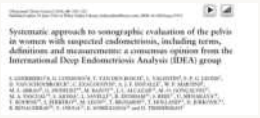
I have no financial relationships to disclose.

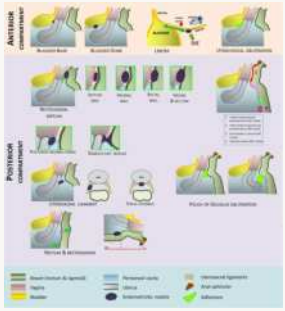
2

Transvaginal sonography (TVS) is now recognized as the primary imaging modality for accurate mapping of endometriosis, providing crucial insights for surgical planning.



3





4

HISTORICAL CONTEXT

Diagnosis of Endometriosis: A Paradigm Shift



The diagnosis of endometriosis is proven by histological examination of specimens collected during laparoscopy

Laparoscopy is no longer the diagnostic gold standard

5

MALZONI RESEARCH HOSPITAL

Non-invasive imaging techniques for diagnosis of pelvic deep endometriosis and endometriosis classification systems: An International Consensus Statement

G Condous et al. Eur J Radiol. 2024 Jul.

Hide details

Eur J Radiol. 2024 Jul:176:111450.
doi: 10.1016/j.ejrad.2024.111450.
Epub 2024 May 29.

Authors

G Condous [1], B Gerges [2], I Thomassin-Naggara [3], C Becker [4], C Tomassetti [5], H Krentel [6], B J van Herendael [7], M Malzoni [8], M S Abrao [9], E Saridogan [10], J Keckstein [11], G Hudelist [12]; Collaborators



6

- Location of DE lesions
- Uterosacral ligaments, including whether ureters are infiltrated
- Rectovaginal septum, including involvement of vaginal wall/mucosa
- Bowel, including involvement of muscularis layer
- Bladder, including involvement of muscularis and ureteral ostia
- Other sides in the pelvis
- Extrapelvic locations
- Involvement of the ovaries
- The sizes of the lesions
- The number of lesions
- The degree of involvement of adjacent organs and structures



7

THE CENTRAL QUESTION

The Question Has Changed

Not This

"Is endometriosis present?"

A binary diagnostic conclusion — present or absent — that communicates almost nothing of surgical nothing of surgical relevance.

But This

"What does the surgeon need to know before entering the operating room?"

A question that reframes the entire purpose of the preoperative ultrasound examination.

1 **Detection**
Identifying the presence and distribution of endometriotic disease

2 **Mapping**
Defining anatomical location, extent and structural relationships

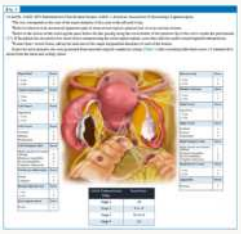
3 **Prediction**
Anticipating surgical complexity and intraoperative challenges

4 **Surgical Planning**
Informing team composition, consent and operative strategy

The aim is not simply to describe disease. The aim is to anticipate surgery.

8





9

SCANNING PROTOCOL

How to Scan: Stepwise Combined TA/TV Approach

- **BLADDER** (TA/TV)
- **FORNIX AND RVS** (TV and/or TR)
- **RETROCERVICAL and PARAMETRIAL AREA** (TV and/or TR)
- **BOWEL** (combined TA and TV/TR for rectosigmoid, descending colon, right fossa)
- **DIAPHRAGM, KIDNEYS and ABDOMINAL WALL** (TA)

measurement of lesions (3 orthogonal diameters) in any compartment is required

10

POSTERIOR COMPARTMENT

Posterior Compartment: From "DIE Present" to Anatomical Mapping

Structures Requiring Systematic Assessment

01 **Torus uterinus**
Origin of uterosacral ligaments; early or subtle disease

02 **Uterosacral ligaments/Lateral and dorsal parametria**
Unilateral vs bilateral; degree of thickening; ureteral-neural involvement/pelvic sidewall extent

03 **Posterior vaginal fornix**
Depth of infiltration; relationship with vaginal mucosa

04 **Rectovaginal space**
Disease occupying or obliterating this surgical plane

05 **Rectum and rectosigmoid junction**
Site, size, depth, circumferential involvement

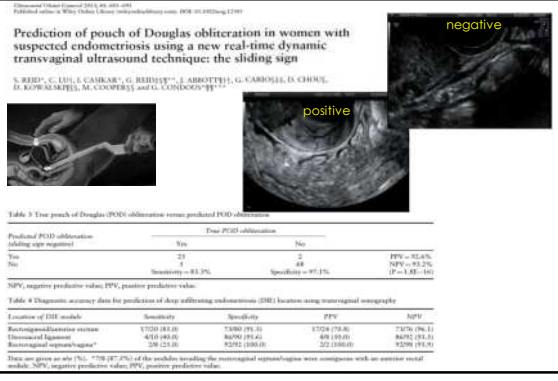
06 **Sigmoid colon/small bowel/caecum/appendix**
Upper extent of disease; multifocal involvement

SITE + SIZE + EXTENSION + DEPTH + RELATIONSHIPS

Each of these five parameters independently influences operative planning. A report that documents only "posterior deep endometriosis present" conveys insufficient information for the operating surgeon.

Generic reporting of "posterior deep endometriosis" is insufficient for surgical planning.

11

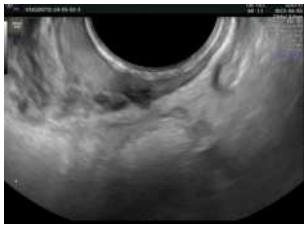


12

MALZONI RESEARCH HOSPITAL

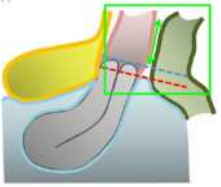
POSITIVE SLIDING SIGN DOESN'T MEAN ABSENCE OF DIE





13





14

POSTERIOR COMPARTMENT

Fornix & Rectovaginal Septum (RVS)





Key assessment points for the fornix and RVS:

- Superficial or deep infiltration — isolated (rare) or part of a larger a larger retrocervical nodule
- Concomitant infiltration of bowel wall and/or paravaginal–pararectal spaces
- Grade of extent must be documented

15

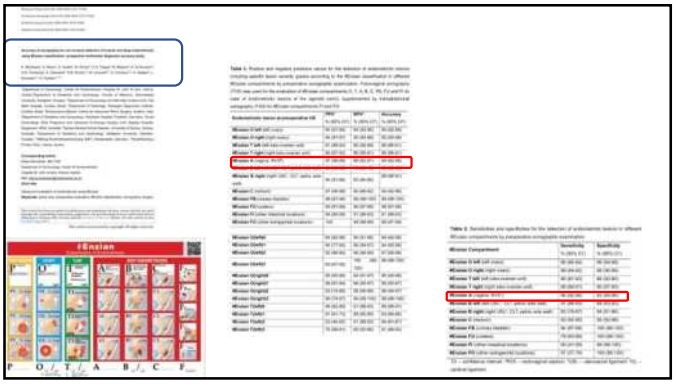
Comparison between sonography-based and surgical evaluation
of endometriotic lesions using the #Enzian classification – a retrospective data analysis

#Enzian Compartment	Sensitivity (95% CI*)	Specificity (95% CI*)
#Enzian FB (urinary bladder)	86% (42%-100%)	100% (96%-100%)
#Enzian FI (other intestinal locations)	100% (80%-100%)	100% (95%-100%)
#Enzian FU (ureters)	100% (75%-100%)	100% (95%-100%)
#Enzian FO (other localization)	100% (48%-100%)	98% (92%-100%)
#Enzian A (vagina, retrocervical area, RVS*)	97% (90%-100%)	88% (94%-97%)
#Enzian B left (left USL's*, left parametria)	97% (90%-100%)	70% (47%-87%)
#Enzian B right (right USL's*, right parametria)	100% (85%-100%)	90% (70%-99%)
#Enzian C (rectum)	100% (92%-100%)	96% (86%-100%)
#Enzian O left (left ovary)	100% (91%-100%)	96% (87%-100%)
#Enzian O right (right ovary)	100% (81%-100%)	100% (94%-100%)



Di Giovanni et al, 2021
EUROPEAN J of ULTRASOUND

16



17



JMIG

Original Article

Preoperative Ultrasound Scoring of Endometriosis by AAGL 2021 Endometriosis Classification Is Concordant with Laparoscopic Surgical Findings and Distinguishes Early from Advanced Stages

Mauricio S. Abrao, MD, Marina Paula Andrew, MD, Julian A. Gingold, MD, PhD, Marlona Rius, MD, Joao Sieli Neto, MD, Manoel Orlando Goncalves, MD, Alessandra Di Giovanni, MD, Mario Malzoni, MD, and Francisco Carmona, MD

Conclusion: Sonographic estimation of the 2021 AAGL Endometriosis Staging is greatest in AAGL-LPS stages 1 and 4 and among patients with no endometriosis. US best identifies endometriosis of the ovaries, bladder, and bowel but is more limited for the tubes and superficial peritoneum. Journal of Minimally Invasive Gynecology (2022) 00, 1–11. © 2022 AAGL. All rights reserved.

18

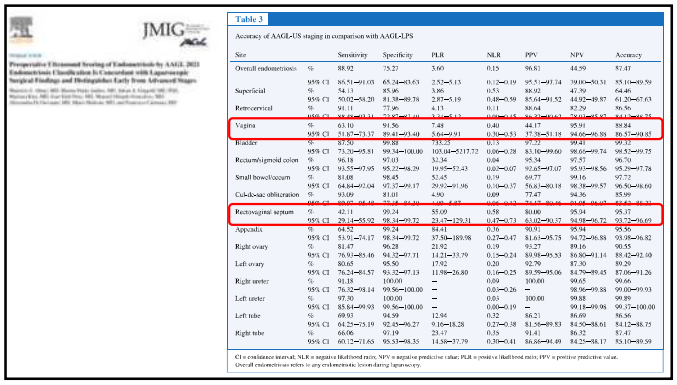


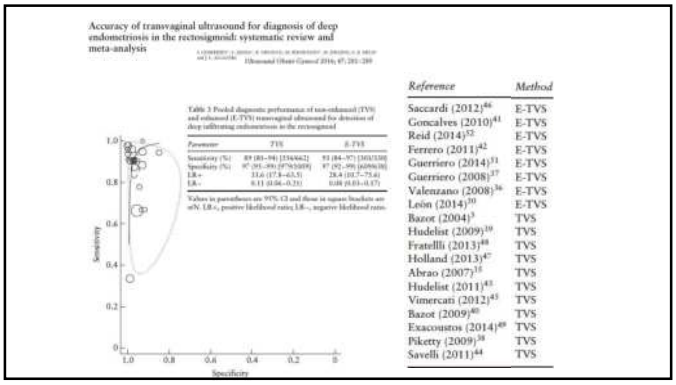
Table 3

Accuracy of AAGL-US staging in comparison with AAGL-LPS

Site		Sensitivity	Specificity	PLR	NLR	PPV	NPV	Accuracy
Overall endometriosis	%	88.92	75.27	3.60	0.15	96.81	44.59	87.47
	95% CI	85.51–91.03	65.24–83.63	2.52–5.13	0.12–0.19	95.51–97.74	39.00–50.31	85.10–89.59
Superficial	%	54.13	85.96	3.86	0.53	88.92	47.39	64.46
	95% CI	50.02–58.20	81.39–89.78	2.97–5.19	0.49–0.59	85.61–91.52	44.92–49.87	61.29–67.63
Retrocervical	%	91.11	77.96	4.13	0.11	80.64	87.29	86.56
	95% CI	88.48–93.31	73.57–81.90	3.31–5.13	0.08–0.15	76.37–84.63	83.01–90.87	84.13–88.75
Vagina	%	63.10	91.56	7.48	0.40	44.17	95.91	89.84
	95% CI	51.87–73.37	89.41–93.40	5.61–9.91	0.30–0.53	37.78–51.18	94.66–96.88	86.57–90.85
Bladder	%	87.50	99.88	733.25	0.13	97.22	99.41	99.32
	95% CI	73.20–95.81	99.34–100.00	103.04–5217.72	0.06–0.28	83.30–99.60	98.69–99.74	98.92–99.75
Rectum/sigmoid colon	%	96.18	97.03	32.34	0.04	95.34	97.57	96.70
	95% CI	91.55–97.95	95.22–98.29	19.95–52.43	0.02–0.07	92.65–97.07	95.91–98.56	95.29–97.78
Small bowel/cecum	%	81.08	98.45	52.45	0.19	69.77	99.16	97.72
	95% CI	64.84–92.04	97.37–99.17	29.92–91.96	0.10–0.37	56.81–80.18	98.39–99.57	96.50–98.60
Cul-de-sac obliteration	%	93.09	81.01	4.90	0.09	77.47	94.36	85.99
	95% CI	89.92–95.48	77.34–84.30	4.05–5.92	0.06–0.13	74.17–80.46	91.98–96.05	83.63–88.20
Rectovaginal septum	%	42.11	99.24	55.09	0.58	80.00	95.34	95.37
	95% CI	29.11–55.92	98.21–99.72	23.67–129.31	0.47–0.73	63.02–90.27	94.98–96.72	93.72–96.69
Appendix	%	64.52	99.24	84.61	0.36	90.91	95.94	95.56
	95% CI	51.91–75.17	98.34–99.72	37.58–189.98	0.27–0.47	81.63–95.75	94.72–96.88	93.98–96.82
Right ovary	%	81.47	96.28	21.92	0.19	93.27	89.16	90.55
	95% CI	76.93–85.46	94.32–97.71	14.21–33.79	0.15–0.24	89.98–95.53	86.80–91.14	88.42–92.10
Left ovary	%	80.65	95.50	17.92	0.20	92.79	87.30	89.29
	95% CI	76.24–84.57	93.32–97.13	11.98–26.80	0.16–0.25	89.59–95.06	84.79–89.45	87.06–91.26
Right ureter	%	91.38	100.01	–	0.09	100.00	99.65	99.66
	95% CI	76.72–98.14	99.56–100.00	–	0.03–0.26	–	98.99–99.88	99.10–99.93
Left ureter	%	97.30	100.00	–	0.03	100.00	99.88	99.89
	95% CI	85.84–99.93	99.56–100.00	–	0.00–0.19	–	99.18–99.98	99.37–100.00
Left tube	%	69.93	94.59	12.94	0.32	86.21	86.69	86.36
	95% CI	64.25–75.19	92.43–96.27	9.16–18.28	0.27–0.38	81.36–89.83	84.50–88.61	84.12–88.75
Right tube	%	66.06	97.19	23.17	0.35	91.81	86.32	87.47
	95% CI	60.12–71.65	95.53–98.35	14.50–37.79	0.30–0.41	86.66–94.49	84.25–88.17	85.10–89.59

CI = confidence interval; NLR = negative likelihood ratio; NPV = negative predictive value; PLR = positive likelihood ratio; PPV = positive predictive value.
Overall endometriosis refers to any endometriotic lesion during laparoscopy.

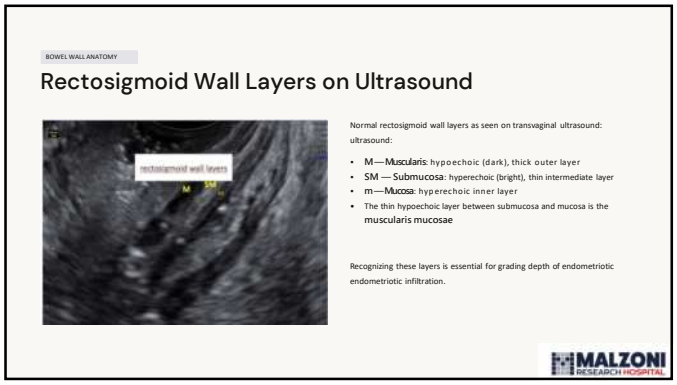
19



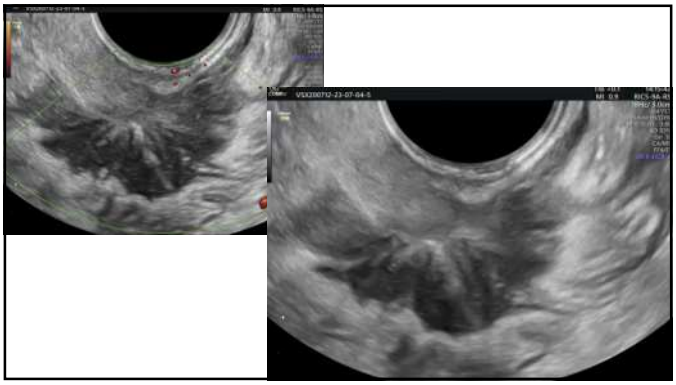
Accuracy of transvaginal ultrasound for diagnosis of deep endometriosis in the rectosigmoid: systematic review and meta-analysis

Reference	Method
Saccardi (2012)[46]	E-TVS
Goncalves (2010)[41]	E-TVS
Reid (2014)[52]	E-TVS
Ferrero (2011)[42]	E-TVS
Guerriero (2014)[51]	E-TVS
Guerriero (2008)[37]	E-TVS
Valenzano (2008)[36]	E-TVS
León (2014)[70]	E-TVS
Bazot (2004)[3]	TVS
Hudelist (2009)[19]	TVS
Fratelli (2013)[48]	TVS
Holland (2013)[47]	TVS
Abrao (2007)[18]	TVS
Hudelist (2011)[43]	TVS
Vimercati (2012)[45]	TVS
Bazot (2009)[40]	TVS
Exacoustos (2014)[49]	TVS
Piketty (2009)[38]	TVS
Savelli (2011)[44]	TVS

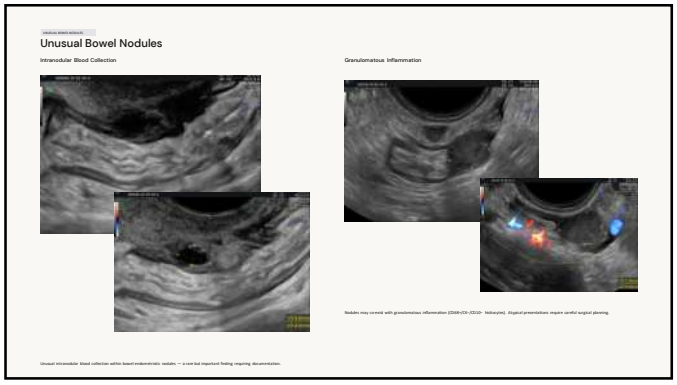
20



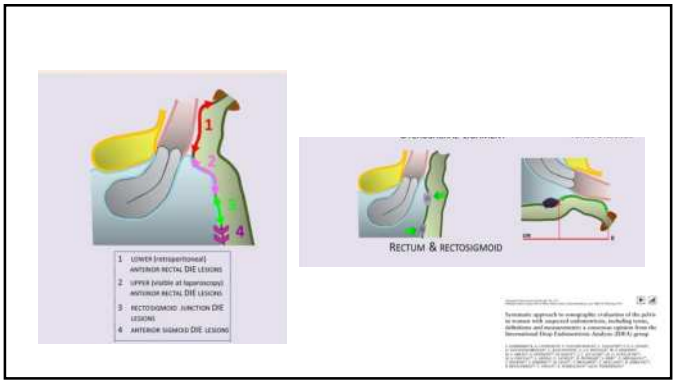
21



22



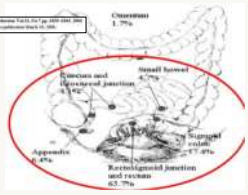
23



24

COMBINED TA/TV APPROACH

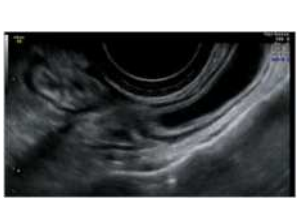
Bowel–Rectosigmoid: Distribution of Lesions



- Rectosigmoid junction & rectum — 65.7%
- Sigmoid colon — 17.4%
- Appendix — 6.4%
- Small bowel — 4.7%
- Caecum & ileocaecal junction — 4.1%
- Omentum — 1.7%

Consider **MRI** for multicentric/multifocal nodules and RIF. Consider **colonoscopy** in case of rectal bleeding.

25





26



JMIG

Original Article

Bowel Preparation Improves the Accuracy of Transvaginal Ultrasound in the Diagnosis of Rectosigmoid Deep Infiltrating Endometriosis: A Prospective Study

Cristina Bau, MD, PhD, Maria José Martínez-Serrano, MD, Mariona Ros, MD, Mauricio Simoes Abreu, MD, PhD, Jordina Maneiro, MD, Ma Ángeles Martínez-Zamora, MD, PhD, Meritxell Gracia, MD, and Francisco Carmona, MD, PhD

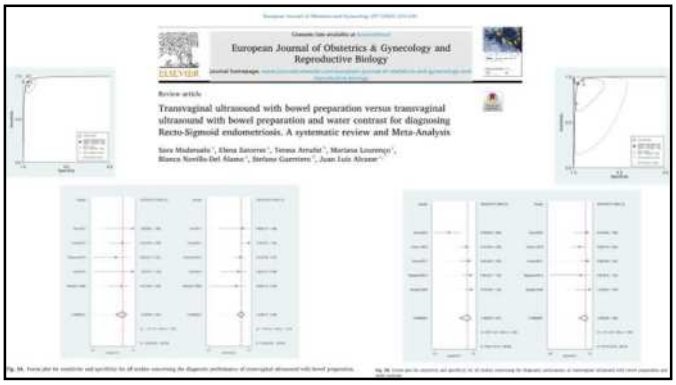
© 2017 AAGL. All rights reserved.

Table 2

Sensitivity, Specificity, Predictive Values, Likelihood Ratio, and Kappa Correlation of Transvaginal Ultrasound (TVUS) with and without Bowel Preparation (BP) Using the Laparoscopic Findings Histologically Confirmed as a Reference

	TVUS without BP (n = 40)	TVUS with BP (n = 40)
Sensitivity, n (%)	11/15 (73)	15/15 (100)
Specificity, n (%)	22/25 (88)	24/25 (96)
Positive predictive value (precision), n (%)	11/14 (79)	15/16 (94)
Negative predictive value, n (%)	22/26 (85)	24/24 (100)
Positive likelihood ratio	6.08	23
Negative likelihood ratio	0.31	0
Accuracy, n (%)	33/40 (82)	39/40 (98)
Cohen kappa	0.61	0.95

27



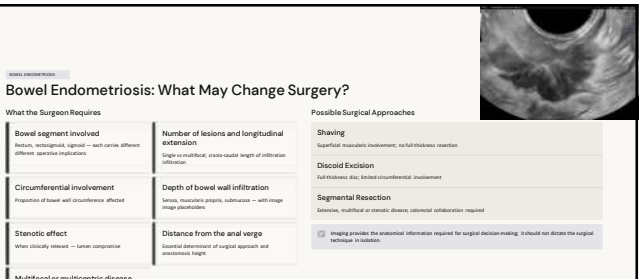
European Journal of Obstetrics & Gynecology and Reproductive Biology

Review article

Transvaginal ultrasound with bowel preparation versus transvaginal ultrasound with bowel preparation and water contrast for diagnosing Recto-Sigmoid endometriosis. A systematic review and Meta-Analysis

Sara Madueñoa, Elena Zatorres, Teresa Arnaltes, Mariana Lourenço, Blanca Novillo-Del Alamo, Stefano Guerriero, Juan Luis Alcazar

28



BOWEL ENDOMETRIOSIS

Bowel Endometriosis: What May Change Surgery?

What the Surgeon Requires

- **Bowel segment involved** — Rectum, rectosigmoid, sigmoid — each carries different different operative implications
- **Number of lesions and longitudinal extension** — Single vs multifocal; cranio-caudal length of infiltration infiltration
- **Circumferential involvement** — Proportion of bowel wall circumference affected
- **Depth of bowel wall infiltration** — Serosa, muscularis propria, submucosa — with image image placeholders
- **Stenotic effect** — When clinically relevant — lumen compromise
- **Distance from the anal verge** — Essential determinant of surgical approach and anastomosis height
- **Multifocal or multicentric disease** — Multiple separate bowel lesions may preclude conservative shaving

Possible Surgical Approaches

- **Shaving** — Superficial muscularis involvement; no full-thickness resection
- **Discoid Excision** — Full-thickness disc; limited circumferential involvement
- **Segmental Resection** — Extensive, multifocal or stenotic disease; colorectal collaboration required

Imaging provides the anatomical information required for surgical decision-making. It should not dictate the surgical technique in isolation.

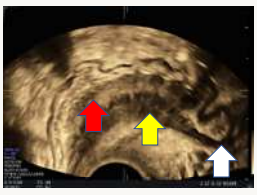
29

Bowel Wall Infiltration: Ultrasound Layers

Ultrasound identification of bowel wall layer involvement:

- **White arrow:** Normal muscularis
- **Yellow arrow:** Endometriotic infiltration with resulting thickened muscular layer
- **Red arrow:** Hyperechoic submucosal layer with signs of infiltration (hypoechoic spots)





30

SURGICAL DECISION MAKING

Indications for Shaving, Discoid & Segmental Resection

The decision-making process regarding surgical choice should take into consideration four key parameters:



1. Largest Nodule Diameter

Sagittal measurement of maximum nodule size



2. Infiltration Depth

Depth of tumor infiltration into bowel wall layers



3. Number of Lesions

Single vs. multifocal/multicentric disease



4. Circumferential Involvement

% circumferential involvement, distance from anal verge, % stenosis

MALZONI RESEARCH HOSPITAL

31

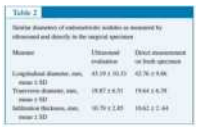
MALZONI RESEARCH HOSPITAL





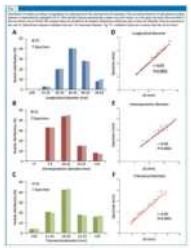
32





JMIG

Combined Trans-vaginal/Transabdominal Pelvic Ultrasonography Accurately Predicts the 3 Dimensions of Deep Infiltrating Bowel Endometriosis Measured after Surgery: A Prospective Study in a Specialized Center



MALZONI RESEARCH HOSPITAL

33



BOWEL LOCALISATION

Bowel Lesion Height: Use the Right Landmark

The Critical Distinction

DISTANCE FROM THE ANAL VERGE MATTERS

Fibrosis and adhesions may retract the rectosigmoid junction or sigmoid colon caudally, displacing them from their expected anatomical position.

Position relative to the uterus ≠ true anatomical bowel height

Clinical Reasoning

When the rectosigmoid is retracted caudally by periuterine fibrosis, the apparent pelvic position of the bowel lesion may significantly underestimate its true distance from the anal verge — or vice versa.

The distinction between a lesion at 6 cm from the anal verge and one at 12 cm has direct implications for:

- Anastomotic technique and height
- Defunctioning stoma requirement
- Colorectal surgical planning
- Functional outcomes and informed consent

Whenever technically feasible, report the distance from the anal verge.
The surgeon needs the true bowel location, not simply its apparent pelvic position.

34



PRECISION TERMINOLOGY

Retraction Is Not Infiltration

Extrinsic Retraction / Adhesion

Peritoneal or retrocervical disease producing traction and bowel deformation without penetration of the muscularis propria. The bowel wall layers remain intact on ultrasound.

True Bowel Wall Infiltration

Disruption of the muscularis propria architecture. Hypoechoic nodule penetrating the bowel wall layers — a fundamentally different operative finding requiring different surgical strategy.

Retrocervical or peritoneal disease may produce marked traction and deformation of the bowel without infiltration of the muscularis propria. These two entities have overlapping appearances and require systematic evaluation of bowel wall layer integrity.

Infiltrated

Muscularis propria involved — changes surgical approach

Adherent

Fixed to adjacent structures — may be separable

Displaced

Abnormal position due to traction — anatomy altered

Retracted

Serosal traction — not necessarily deep infiltration

Do not automatically classify serosal retraction as deep bowel endometriosis.

35

Deep Infiltrating Endometriosis of the Bowel Wall

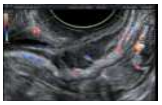
The Comet Sign

J Ultrasound Med 2015; 34:537–542

35 PATIENTS, ONLY 10 WITH SURGICAL CONFIRMATION

Table 1. Sonographic Findings of Deep Bowel Endometriosis

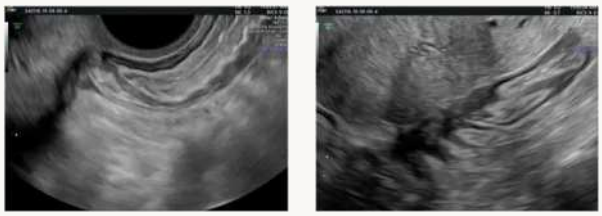
Focal unilateral nodular thickening of the bowel wall
Fusiform shape of thickening
Spiculated at the ends or sides of the thickened area, resembling a comet
Shaggy lateral borders on the edges of the thickened area
Solid but with limited blood flow on Doppler imaging
Frequently painful during the scan
Thickening is typically adherent to surrounding structures
Typically involving the anterior wall of the rectosigmoid, making it adherent to the back of the cervix





36

Retraction Is Not Infiltration



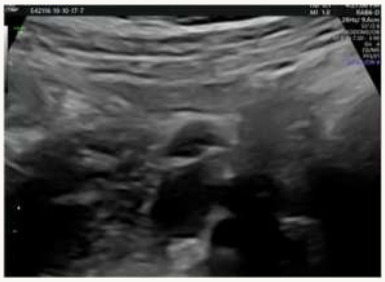
37

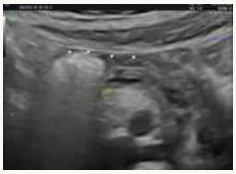


38



39



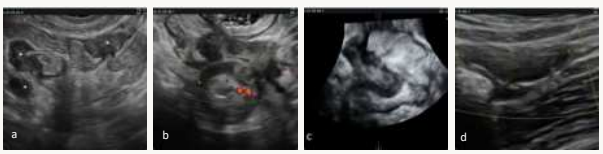


40

RIGHT ILIAC FOSSA

Right Iliac Fossa Bowel DIE

RIF bowel DIE is not detectable at clinical examination; correlation with symptoms (e.g., bowel occlusion) is essential.
Ultrasound can identify small bowel multiple nodules (a), caecum nodules (b-2D and c-3D), and appendix involvement (d).



41

DIAGNOSTIC ACCURACY

US Presurgical Evaluation Accuracy: 4,983 Patients

M. Malzoni et al, JMIG 2020 — Preoperative ultrasound indications determine excision technique for bowel surgery for DIE (single, high-volume center).

Lesion Site	Surgical Prevalence	Sensitivity %	Specificity %
Right uterosacral ligament	2940 (59%)	97.33	98.22
Left uterosacral ligament	3787 (76%)	98.28	100
Torus	3637 (73%)	98.33	98.81
Vaginal fornix	1943 (39%)	97.35	98.42
Rectovaginal septum	548 (11%)	98.45	96.41
Rectum/Rectosigmoid junction	**1046 (21%)**	**100**	**100**
Sigmoid	**448 (9%)**	**100**	**100**
Ileum/Cecum	**49 (1%)**	**82.35**	**98.31**
Bladder	298 (6%)	98.36	100

42

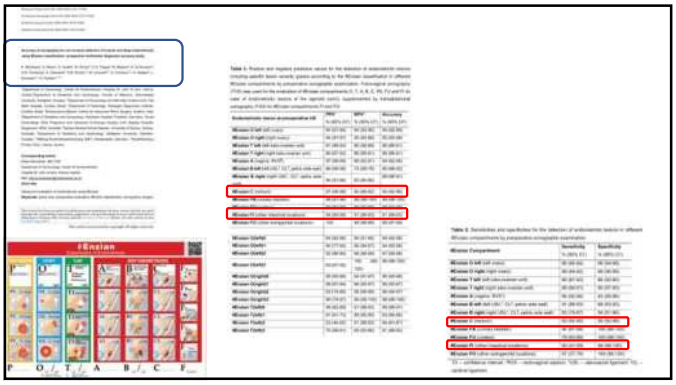
Comparison between sonography-based and surgical evaluation
of endometriotic lesions using the #Enzian classification – a retrospective data analysis

#Enzian Compartment	Sensitivity (95% CI*)	Specificity (95% CI*)
#Enzian FB (urinary bladder)	66% (42%-100%)	100% (86%-100%)
#Enzian FI (other intestinal locations)	100% (80%-100%)	100% (95%-100%)
#Enzian FU (ureteric)	100% (75%-100%)	100% (95%-100%)
#Enzian FO (other localization)	100% (48%-100%)	98% (92%-100%)
#Enzian A (vagina, retrocervical area, RVS*)	97% (90%-100%)	86% (94%-97%)
#Enzian B left (left USLs*, left parametria)	97% (90%-100%)	70% (47%-87%)
#Enzian B right (right USLs*, right parametria)	100% (85%-100%)	90% (70%-99%)
#Enzian C (rectum)	100% (92%-100%)	96% (89%-100%)
#Enzian O left (left ovary)	100% (91%-100%)	96% (87%-100%)
#Enzian O right (right ovary)	100% (87%-100%)	100% (94%-100%)



Di Giovanni et al, 2021
EUROPEAN J of ULTRASOUND

43



44



JMIG

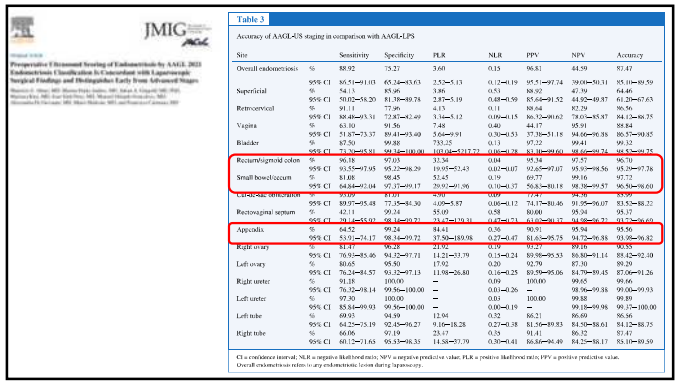
Original Article

Preoperative Ultrasound Scoring of Endometriosis by AAGL 2021 Endometriosis Classification Is Concordant with Laparoscopic Surgical Findings and Distinguishes Early from Advanced Stages

Mauricio S. Abrao, MD, Marina Paula Andrez, MD, Julian A. Gingold, MD, PhD, Marlena Rius, MD, Joao Sseli Neto, MD, Manoel Orlando Goncalves, MD, Alessandra Di Giovanni, MD, Mario Malzoni, MD, and Francisco Carmona, MD

Conclusion: Sonographic estimation of the 2021 AAGL Endometriosis Staging is greatest in AAGL-LPS stages 1 and 4 and among patients with no endometriosis. US best identifies endometriosis of the ovaries, bladder, and bowel but is more limited for the tubes and superficial peritoneum. Journal of Minimally Invasive Gynecology (2022) 00, 1–11. © 2022 AAGL. All rights reserved.

45



JMIG

Preoperative Ultrasound Scoring of Endometriosis by AAGL 2021 Endometriosis Classification Is Concordant with Laparoscopic Surgical Findings and Distinguishes Early from Advanced Stages

Table 3
Accuracy of AAGL-US staging in comparison with AAGL-LPS

Site		Sensitivity	Specificity	PLR	NLR	PPV	NPV	Accuracy
Overall endometriosis	%	88.92	73.27	3.60	0.15	96.81	44.59	87.47
	95% CI	86.51–91.03	65.24–80.03	2.52–5.13	0.12–0.19	95.5–97.74	39.08–50.31	85.10–89.59
Superficial	%	54.13	85.96	3.86	0.53	88.92	47.39	64.46
	95% CI	50.02–58.20	81.39–89.78	2.87–5.19	0.48–0.58	85.68–91.52	44.92–49.87	61.20–67.63
Retrocervical	%	91.11	77.99	4.13	0.11	88.64	82.29	86.56
	95% CI	88.49–93.31	72.87–82.49	3.34–5.12	0.09–0.15	86.32–90.62	78.03–85.87	84.13–88.75
Vagina	%	63.30	91.56	7.48	0.40	44.17	95.91	88.84
	95% CI	51.87–73.37	89.41–93.49	5.64–9.91	0.30–0.53	37.38–51.18	94.66–96.88	86.57–90.85
Bladder	%	87.50	99.80	733.25	0.13	97.22	99.41	99.32
	95% CI	73.20–95.81	99.34–100.00	103.08–5217.72	0.06–0.28	83.38–99.60	98.66–99.74	98.57–99.75
Rectum/sigmoid colon	%	96.18	97.03	32.34	0.04	95.34	97.57	96.70
	95% CI	93.55–97.95	95.12–98.29	19.95–52.43	0.02–0.07	92.65–97.07	95.97–98.56	95.20–97.78
Small bowel/ileum	%	81.08	98.45	52.45	0.19	69.77	99.16	97.72
	95% CI	64.84–92.04	97.17–99.17	29.91–91.96	0.10–0.37	56.83–80.18	98.38–99.57	96.50–98.60
Cul-de-sac obliteration	%	93.69	87.01	7.20	0.07	57.47	98.70	85.90
	95% CI	89.97–95.48	77.35–84.30	4.09–5.87	0.06–0.12	54.17–80.46	91.95–99.07	83.57–88.22
Rectovaginal septum	%	42.13	99.24	55.69	0.58	80.00	95.34	95.37
	95% CI	29.14–55.92	98.14–99.71	23.67–129.31	0.47–0.71	61.02–90.37	94.56–96.21	93.75–96.69
Appendix	%	64.52	99.24	84.41	0.36	90.91	95.94	95.56
	95% CI	53.07–74.17	98.14–99.72	37.50–189.98	0.27–0.47	81.63–95.75	94.72–96.88	93.98–96.82
Right ovary	%	81.47	98.28	47.02	0.19	93.27	89.16	90.85
	95% CI	70.93–85.46	94.12–99.71	14.23–73.79	0.13–0.24	89.98–95.53	86.80–91.14	88.42–92.10
Left ovary	%	80.65	95.50	17.92	0.20	92.79	87.30	89.29
	95% CI	76.24–84.57	93.32–97.13	11.98–26.80	0.16–0.25	89.59–95.06	84.79–89.45	87.06–91.26
Right ureter	%	91.25	100.00	–	0.09	100.00	99.65	99.66
	95% CI	76.32–98.14	99.56–100.00	–	0.03–0.26	–	98.96–99.88	99.00–99.93
Left ureter	%	97.30	100.00	–	0.03	100.00	99.88	99.89
	95% CI	85.84–99.93	99.56–100.00	–	0.00–0.19	–	99.18–99.98	99.37–100.00
Left tube	%	69.93	94.59	12.94	0.32	86.21	86.69	86.66
	95% CI	64.72–75.19	92.19–96.27	9.16–18.28	0.27–0.38	81.59–89.83	84.59–88.61	84.12–88.75
Right tube	%	66.06	97.19	23.47	0.35	91.41	86.32	87.47
	95% CI	60.12–71.65	95.53–98.35	14.50–37.79	0.30–0.41	86.86–94.49	84.22–88.17	85.10–89.59

CI = confidence interval; NLR = negative likelihood ratio; NPV = negative predictive value; PLR = positive likelihood ratio; PPV = positive predictive value.
Overall endometriosis refers to any endometriotic lesion during laparoscopy.

46

Bowel DIE: Ultrasound Summary

Appearance
Solid hypoechoic lesion with poor vascularity; muscularis infiltration

Distribution
Single or multifocal/multicentric; most common in rectosigmoid

Accuracy
High sensitivity/specificity for all sites; lower sensitivity for small bowel and appendix

Measurements
Length, depth, transversal diameter, % circumferential involvement, distance distance from anal verge



47

Postero-Lateral Compartment:
Where Preoperative Mapping Becomes Critical

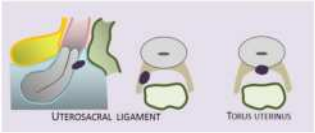
Systematic Assessment Required

- Uterosacral ligament and parametria
- Ureter and uterine vessels
- Pelvic sidewall
- Major vascular landmarks

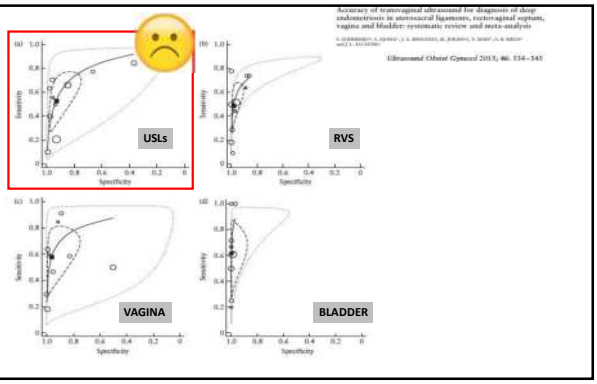
Does the disease remain medial, or does it extend laterally beyond the uterosacral ligament?

This single question determines whether the operation is a standard posterior dissection or a complex retroperitoneal procedure requiring ureterolysis, neurovascular identification and lateral pelvic dissection.

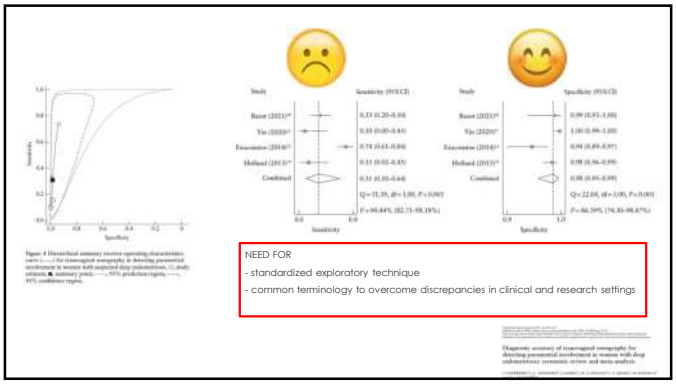
Lateral extension may transform standard posterior dissection into complex complex retroperitoneal surgery.



48



49



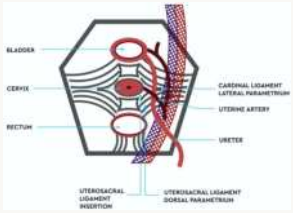
50

Systematic approach to sonographic evaluation of the pelvis in women with suspected endometriosis, including terms, definitions and measurements: a consensus opinion from the International Deep Endometriosis Analysis (IDEA) group

PARAMETRIUM

51

Parametrial Extension



Key anatomical relationships for parametrial DIE assessment:

- Vesico-vaginal /vesico-uterine ligament
- Uterosacral ligament (dorsal parametrium) — extends posteriorly to sacrum
- Uterine artery & ureter — cross the cardinal ligament; critical surgical landmarks

52

Ventral Parametrial Extension



Anatomical Landmarks

- **Vesicouterine ligament** — connects the bladder to the to the uterus; anterior parametrial boundary
- **Vesicovaginal ligament** — connects the vagina; lies inferior to the vesicouterine
- **Distal ureter** — runs between the vesicouterine and and vesicovaginal ligaments; critical structure at risk at risk during anterior parametrial dissection

53

JMIG

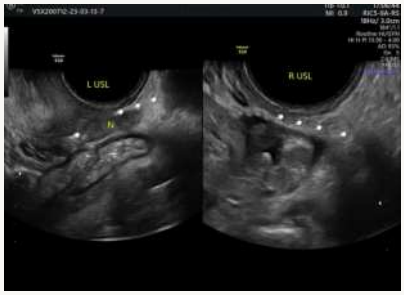
Ultrasound Evaluation of Retrocervical and Parametrial Deep Endometriosis on the Basis of Surgical Anatomic Landmarks





MALZONI RESEARCH HOSPITAL

54



DIE nodule (N) affecting left uterosacral ligament (L USL, arrows)
Normal right uterosacral ligament destro (R USL, arrows)

MALZONI RESEARCH HOSPITAL

55

JMIG

Original Article

Ultrasound Evaluation of Retrocervical and Parametrial Deep Endometriosis on the Basis of Surgical Anatomic Landmarks

Alessandra Di Giovanni, MD, Lucia Casarella, MD, Marina Coppola, MD, Francesca Falcone, MD, Domenico Iazzolino, MD, Marianna Raside, MD, and Mario Malzoni, MD

Table 1

Ultrasound evaluation diagnostic accuracy for endometriotic lesions by site

SITE	Surgical prevalence, n (%) (N = 4983)	Sensitivity, % (95% CI)	Specificity, % (95% CI)
Right uterosacral ligament retrocervical insertion	2940 (59)	97.33 (96.63–97.81)	98.22 (97.91–98.97)
Left uterosacral ligament retrocervical insertion	3787 (76)	98.28 (98.26–99.00)	100 (99.53–99.99)
Torus	3637 (73)	98.33 (97.82–98.67)	98.81 (98.09–99.27)
Right parametrium	1694 (34)	97.91 (97.21–98.56)	98.48 (98.04–98.87)
Left parametrium	2043 (41)	98.30 (97.74–98.85)	99.21 (98.75–99.42)

CI = confidence interval.

56

Addendum to the consensus opinion from the International Deep Endometriosis Analysis (IDEA) group: sonographic evaluation of the parametrium

S. Guerriero[1,2], G. Condous[3], M. Rolla[4], G. Hudelist[5,6], S. Ferrero[7,8], J. L. Alcazar[9], S. Ajossa[10], C. Bafort[11,12], D. Van Schoubroeck[11], T. Bourne[13], T. Van den Bosch[14], S. S. Singh[15], M. S. Abrao[16,17], G. Szabó[18], A. C. Testa[19,20], A. Di Giovanni[21], D. Fischerova[22], C. Tomassetti[11,12] and D. Timmerman[11,12]

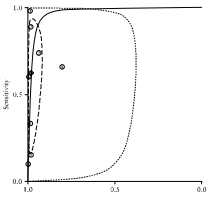
CONCLUSION

In summary, ultrasound assessment of the parametrium should be performed in women with suspected pelvic endometriosis in order to detect the involvement of this structure. Herein, we describe how this assessment should be performed and how abnormal findings should be described. We hope that this consensus could help the researchers to obtain more reproducible results in the evaluation of diagnostic accuracy of ultrasonography in this compartment but also help the clinician in the daily practice.

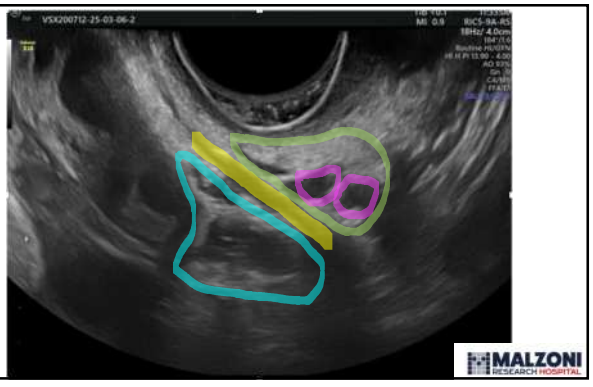
57

Transvaginal ultrasound for detecting parametrial involvement in suspected deep pelvic endometriosis: updated meta-analysis

J. L. ALCÁZAR[1,2], C. MONTOYA[3], C. CANDAU[3], C. CATALAN[4], R. OROZCO[1,2], M. Á. PASCUAL[5,6], S. AJOSSA[5,6] and S. GUERRIERO[5,6]

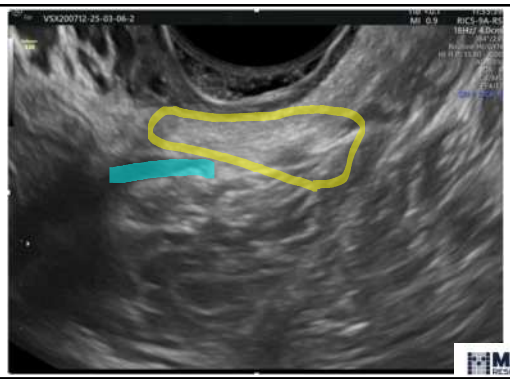


58



MALZONI RESEARCH HOSPITAL

59



MALZONI RESEARCH HOSPITAL

60

URINARY TRACT

The Ureter: A Surgical Priority

1 **Free**
Normal course, no adjacent disease

2 **Displaced/Adherent**
Fixed to endometriotic tissue
Abnormal course without compression

3 **Extrinsic involvement**
Surrounded by disease
External pressure with possible obstruction

4 **Intrinsic involvement**
Direct invasion of ureteric wall — highest complexity





MALZONI RESEARCH HOSPITAL

61

URINARY TRACT

The Ureter: A Surgical Priority



a) Distance
Ureter (U) at safe distance from small R-USL/lateral parametrial nodule



b) Retracted
Left ureter (LU) retracted by DIE lateral lateral parametrial nodule



c) In Contact
Right ureter (RU) in touch with lateral lateral parametrial nodule — no stenosis



d) Enveloped
Left ureter (U) enveloped by nodule (N) — stenosis

Systematic Assessment

- Ureteric course and relationship with endometriotic lesions at each level
- Displacement, compression, encasement and direct infiltration — each must be distinguished
- Upstream dilatation and potential obstruction
- Renal assessment when hydronephrosis is suspected or when ureteric disease is identified

HYDRONEPHROSIS MAY BE CLINICALLY SILENT

The absence of urinary symptoms does not exclude significant ureteric compromise.
Preoperative identification of hydroureteronephrosis directly influences the need for urological collaboration and preoperative ureteric stenting.

What matters is identifying disease-related alteration of the urinary urinary tract, not routine measurement of a normal ureter.

MALZONI RESEARCH HOSPITAL

62

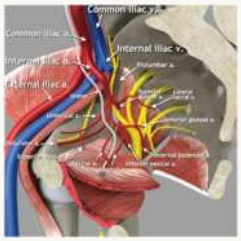


MALZONI RESEARCH HOSPITAL

63

PARAMETRIAL DISEASE

Parametrial Endometriosis: Tell the Surgeon Where the Disease Goes



extension to dorsal parametrium



Parametrial involvement may substantially modify the extent and complexity of retroperitoneal dissection.

Indirect predictors — such as uterine immobility or hydronephrosis — should not replace direct assessment of the parametrium in expert hands. Direct sonographic characterisation is achievable with systematic technique.

64

Comparison between sonography-based and surgical evaluation of endometriotic lesions using the #Enzian classification – a retrospective data analysis

#Enzian Compartment	Sensitivity (95% CI*)	Specificity (95% CI*)
#Enzian FB (urinary bladder)	86% (42%-100%)	100% (96%-100%)
#Enzian FI (other intestinal locations)	100% (80%-100%)	100% (95%-100%)
#Enzian FU (ureters)	100% (75%-100%)	100% (95%-100%)
#Enzian FO (other localization)	100% (48%-100%)	98% (92%-100%)
#Enzian A (vagina, retrocervical area, RVS*)	97% (90%-100%)	86% (94%-97%)
#Enzian B left (left USL§, left parametria)	97% (90%-100%)	70% (47%-87%)
#Enzian B right (right USLs§, right parametria)	100% (85%-100%)	90% (70%-99%)
#Enzian C (rectum)	100% (92%-100%)	96% (86%-100%)
#Enzian O left (left ovary)	100% (81%-100%)	96% (87%-100%)
#Enzian O right (right ovary)	100% (87%-100%)	100% (94%-100%)



Di Giovanni et al, 2021
EUROPEAN J of ULTRASOUND

65



66



JMIG

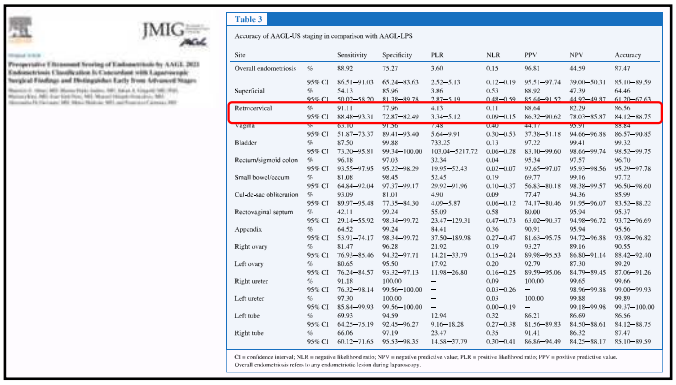
Original Article

Preoperative Ultrasound Scoring of Endometriosis by AAGL 2021 Endometriosis Classification Is Concordant with Laparoscopic Surgical Findings and Distinguishes Early from Advanced Stages

Mauricio S. Abrao, MD, Marina Paula Andres, MD, Julian A. Gingold, MD, PhD, Mariona Rius, MD, Joao Sisti Neto, MD, Manoel Orlando Goncalves, MD, Alessandra Di Giovanni, MD, Mario Malzoni, MD, and Francisco Carmona, MD

Conclusion: Sonographic estimation of the 2021 AAGL Endometriosis Staging is greatest in AAGL-LPS stages 1 and 4 and among patients with no endometriosis. US best identifies endometriosis of the ovaries, bladder, and bowel but is more limited for the tubes and superficial peritoneum. Journal of Minimally Invasive Gynecology (2022) 00, 1–11. © 2022 AAGL. All rights reserved.

67



JMIG

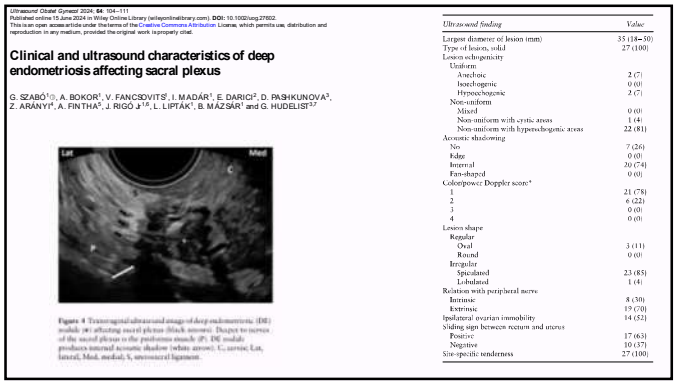
Table 3

Accuracy of AAGL-US staging in comparison with AAGL-LPS

Site		Sensitivity	Specificity	PLR	NLR	PPV	NPV	Accuracy
Overall endometriosis	%	88.92	73.27	3.60	0.15	96.81	44.59	87.47
	95% CI	86.51–91.03	65.24–79.63	2.52–5.13	0.12–0.19	95.51–97.74	39.00–50.31	85.10–89.59
Superficial	%	54.13	85.96	3.86	0.53	88.92	47.39	64.46
	95% CI	50.07–58.20	81.39–89.74	2.87–5.19	0.48–0.58	85.56–91.57	44.07–50.87	61.79–67.03
Retrocervical	%	91.11	77.96	4.13	0.11	89.64	82.29	86.56
	95% CI	88.40–93.31	72.87–82.49	3.34–5.12	0.09–0.15	86.32–90.62	78.07–85.87	84.12–88.75
Vagina	%	83.80	97.20	29.82	0.17	94.40	93.97	95.84
	95% CI	51.87–73.37	89.41–93.40	5.64–9.91	0.30–0.53	37.38–51.18	94.66–96.38	86.57–90.85
Bladder	%	87.50	99.80	733.25	0.13	97.22	99.41	99.32
	95% CI	73.20–95.81	99.34–100.00	103.00–5217.72	0.06–0.28	83.38–99.60	98.66–99.74	98.52–99.75
Rectum/sigmoid colon	%	96.18	97.03	32.34	0.04	95.34	97.57	96.70
	95% CI	91.55–97.95	95.32–98.29	19.95–52.43	0.02–0.07	92.65–97.07	95.93–98.56	95.29–97.76
Small bowel/cecum	%	81.08	98.45	52.45	0.19	69.77	99.16	97.72
	95% CI	64.84–92.04	97.17–99.17	29.97–91.98	0.10–0.37	56.83–80.18	98.38–99.57	96.50–98.60
Cul-de-sac obliteration	%	93.09	81.01	4.91	0.09	77.47	94.36	85.99
	95% CI	89.97–95.48	77.35–84.30	4.09–5.87	0.06–0.12	74.17–80.46	91.95–96.07	83.83–88.22
Rectovaginal septum	%	42.11	99.24	55.09	0.58	80.00	95.94	95.32
	95% CI	29.14–55.92	98.14–99.72	23.47–129.31	0.47–0.73	63.02–90.37	94.98–96.72	93.72–96.69
Appendix	%	64.52	99.24	84.41	0.36	90.91	95.94	95.56
	95% CI	51.91–74.17	98.14–99.72	37.50–189.98	0.27–0.47	81.65–95.75	94.72–96.88	93.98–96.82
Right ovary	%	81.47	96.28	21.92	0.19	91.27	89.16	90.55
	95% CI	76.91–85.46	94.32–97.71	14.21–33.79	0.15–0.24	89.98–93.53	86.80–91.14	88.42–92.10
Left ovary	%	80.65	95.80	17.92	0.20	92.79	87.30	89.29
	95% CI	76.24–84.57	93.32–97.13	11.98–26.80	0.16–0.25	89.98–95.06	84.78–89.45	87.06–91.26
Right ureter	%	91.18	100.00	–	0.09	100.00	99.65	99.66
	95% CI	76.32–98.14	99.96–100.00	–	0.03–0.26	–	98.96–99.88	99.00–99.93
Left ureter	%	97.30	100.00	–	0.03	100.00	99.88	99.89
	95% CI	85.84–99.93	99.96–100.00	–	0.00–0.19	–	99.18–99.98	99.17–100.00
Left tube	%	69.93	94.99	12.94	0.32	86.21	86.69	86.66
	95% CI	64.25–75.19	92.45–96.27	9.16–18.28	0.27–0.38	81.56–89.83	84.50–88.61	84.12–88.75
Right tube	%	66.06	97.19	23.43	0.35	91.41	86.52	87.47
	95% CI	60.12–71.65	95.53–98.35	14.58–37.79	0.30–0.41	86.86–94.49	84.25–88.17	85.10–89.59

CI = confidence interval; NLR = negative likelihood ratio; NPV = negative predictive value; PLR = positive likelihood ratio; PPV = positive predictive value.
Overall endometriosis refers to any endometriotic lesion during laparoscopy.

68



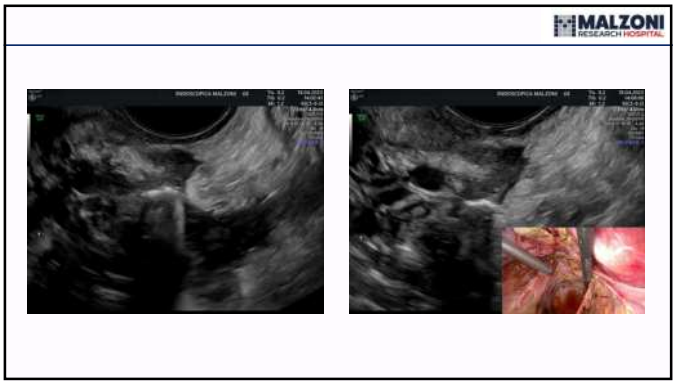
Ultrasound Obstet Gynecol 2024; **64**: 104–111
Published online 15 June 2024 in Wiley Online Library (wileyonlinelibrary.com). **DOI:** 10.1002/uog.27602.
This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

Clinical and ultrasound characteristics of deep endometriosis affecting sacral plexus

G. SZABÓ[1]*, A. BOKOR[1], V. FANCSOVITS[1], I. MADÁR[1], E. DARICI[2], D. PASHKUNOVA[3], Z. ARÁNYI[4], A. FINTHA[5], J. RIGÓ Jr[1,6], L. LIPTÁK[1], B. MÁZSÁR[1] and G. HUDELIST[3,7]

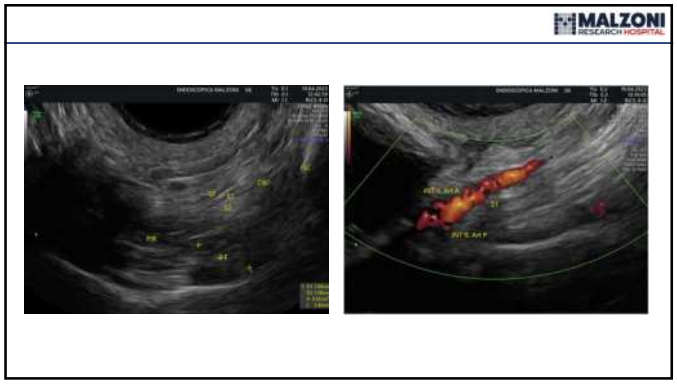
Ultrasound finding	*Value*
Largest diameter of lesion (mm)	35 (18–50)
Type of lesion, solid	27 (100)
Lesion echogenicity	
Uniform	
Anechoic	2 (7)
Isoechogenic	0 (0)
Hyperechogenic	2 (7)
Non-uniform	
Mixed	0 (0)
Non-uniform with cystic areas	1 (4)
Non-uniform with hyperechogenic areas	22 (81)
Acoustic shadowing	
No	7 (26)
Edge	0 (0)
Internal	20 (74)
Fan-shaped	0 (0)
Colorpower Doppler score*	
1	21 (78)
2	6 (22)
3	0 (0)
4	0 (0)
Lesion shape	
Regular	
Oval	3 (11)
Round	0 (0)
Irregular	
Spiculated	23 (85)
Lobulated	1 (4)
Relation with peripheral nerve	
Intrinsic	8 (30)
Extrinsic	19 (70)
Ipsilateral ovarian immobility	14 (52)
Sliding sign between rectum and uterus	
Positive	17 (63)
Negative	10 (37)
Site-specific tenderness	27 (100)

69



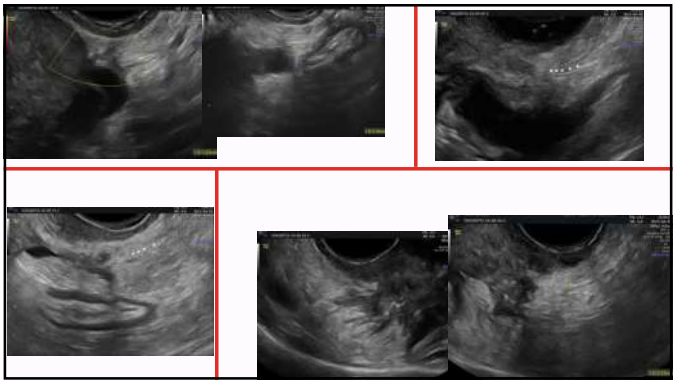
MALZONI RESEARCH HOSPITAL

70

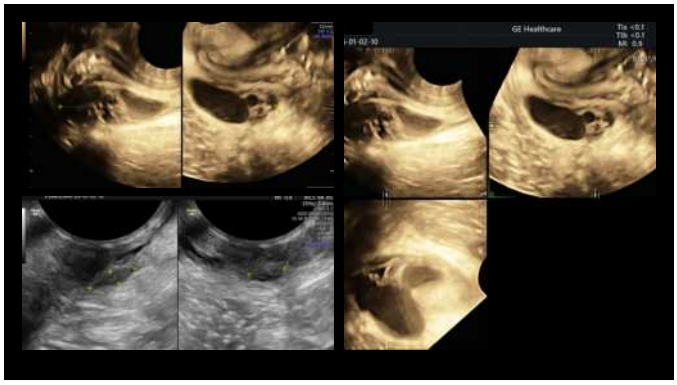


MALZONI RESEARCH HOSPITAL

71



72



73

Retrocervical/Parametrial DIE: Key Ultrasound Features

Echogenicity
Solid hypoechoic lesion with poor vascularity on Doppler

Location Distinction
Differentiate USL retrocervical insertion from parametrial nodules (anterior/lateral/dorsal)

Ureteral Assessment
Always document ureteral course, displacement, and any stenosis or pyelectasis

Nerve Involvement
Consider pelvic nerve infiltration — sacral plexus, hypogastric nerve nerve

Lateral extension may transform standard posterior dissection into complex retroperitoneal surgery requiring ureterolysis and neurovascular neurovascular identification.

MALZONI RESEARCH HOSPITAL

74

THE SYNTHESIS

From Ultrasound Report to Surgical Roadmap

Diagnostic Imaging
Identifies and characterizes lesions by site, size, and size, and depth

Surgical Intelligence
Anticipates operative complexity, team needs, and and anatomical hazards

Integral Strategy
Expert DIE ultrasound is an integral component of component of preoperative surgical planning — not — not merely a diagnostic step

Ultrasound Report
Systematic, anatomical, structured — Site, size, extension, depth, relationships, architecture of disease disease

Surgical Roadmap
Anticipating the operation — team composition, multidisciplinary requirements, sequence of steps, critical steps, critical anatomical corridors

Mental Rehearsal of the surgical strategy
The surgical team enters the operating room having already visualised the procedure — anatomy, hazards, decision points and contingencies

DO NOT SIMPLY DESCRIBE ENDOMETRIOSIS.
DESCRIBE THE SURGICAL STRATEGY THAT THE ENDOMETRIOSIS IS LIKELY TO REQUIRE.

MALZONI RESEARCH HOSPITAL

75

Expert Ultrasound for DIE Is Not Merely Diagnostic Imaging.

It Is an Integral Component of Preoperative Surgical Strategy and Clinical Patient Management.

76



Safety and Strategy in Endometriosis Surgery

Thanks!



MALZONI RESEARCH HOSPITAL

Dr. Alessandra Di Giovanni

77

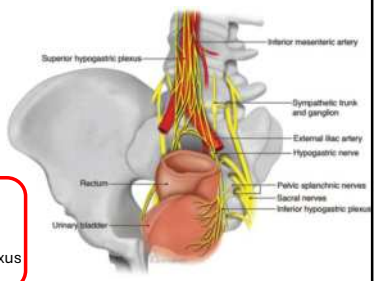
Anatomy-Driven Strategy: Retroperitoneal Access and Nerve Preservation

Dr Amani Harris

1

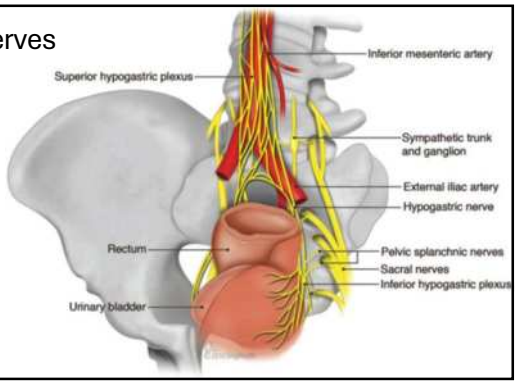
Pelvic Nerves?

- Pelvic Somatic nerves
  - Genito-femoral
  - Obturator
  - Sciatic
  - Pudendal
- Pelvic Autonomic nerves
  - Hypogastric
  - Splanchnic
  - Superior/Inferior hypogastric plexus
  - Visceral branches



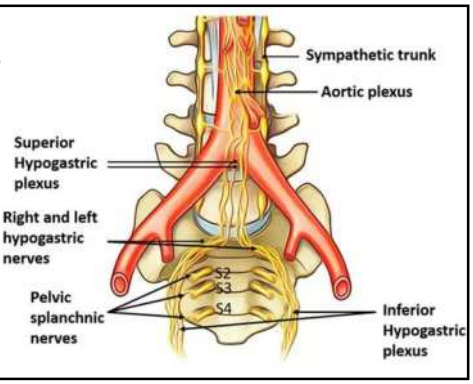
2

Pelvic Nerves

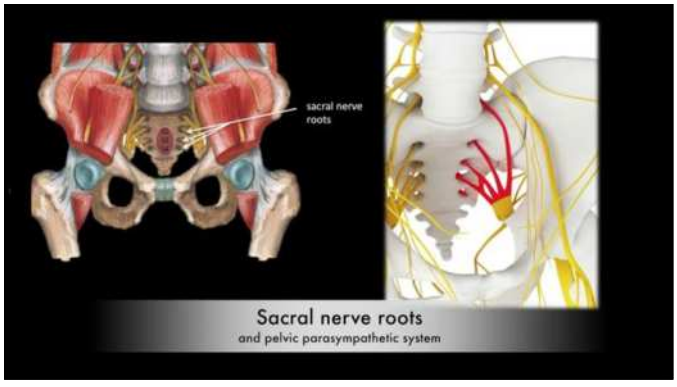


3

Pelvic Nerves



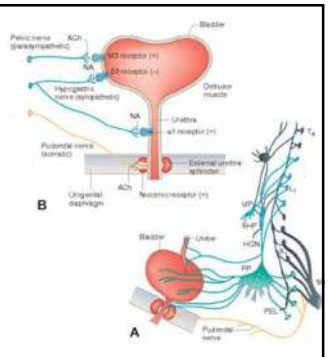
4



5

Pelvic Nerve Damage?

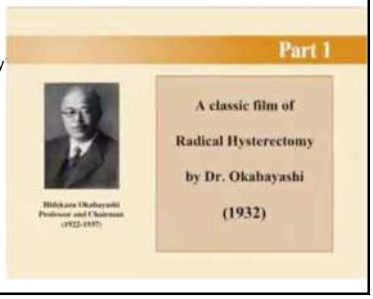
- Urination
  - Retention (atonia)
  - Incontinence (urge/stress)
- Defecation
  - Constipation
  - Flatal/faecal incontinence
- Sexual Organs
  - Anorgasmia
  - Dys/apareunia
  - Ectopic pregnancy



6

What's the Evidence?

- Literature search
  - "nerve sparing" AND "gynaecology
  - Radical hysterectomy (++++)
  - Prolapse (++)
  - DIE (+)
- Okabayashi (1921)
  - Kyoto Imperial University



7

Evidence for DIE?

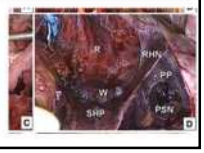
- ~~Randomised control trials~~
- Prospective cohort studies
  - Volpi (2004)
  - Ceccaroni (2011)
  - Kavallaris (2011)
  - Che (2014)



8

Nerve-sparing laparoscopic eradication of deep endometriosis with segmental rectal and parametrial resection: the Negrar method. A single-center, prospective, clinical trial

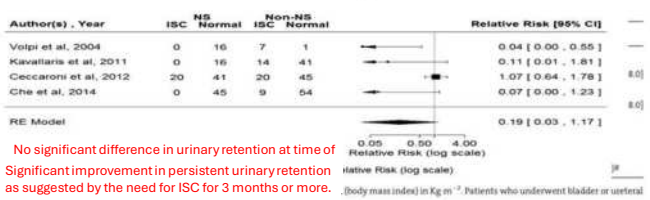
	Group A (n = 65)	Group B (n = 61)	p value
Days of self catheterization[a]	121.1 (67.9)	39.8 (29.5)	<0.001
Severe neurologic pelvic dysfunctions	56 (86.2%)	1 (1.6%)	<0.001
Candidate to neuromodulation	10 (15.4%)	1 (1.6%)	<0.05
Pacemaker	4 (6.1%)	0	NS
Air incontinence between 1 and 6 months	NS	NS	
Air incontinence between 6 and 12 months	NS	NS	
Fecal incontinence within 1 month	NS	NS	
Fecal incontinence between 1 and 6 months	NS	NS	
Fecal incontinence between 6 and 12 months	NS	NS	
Constipation within 1 month	NS	NS	
Constipation between 1 and 6 months	NS	NS	
Constipation between 6 and 12 months	NS	NS	



9

Neurourology and Urodynamics 36:57–61 (2017)

Risk of Urinary Retention After Nerve-Sparing Surgery for Deep Infiltrating Endometriosis: A Systematic Review and Meta-Analysis



No significant difference in urinary retention at time of Significant improvement in persistent urinary retention as suggested by the need for ISC for 3 months or more.

10

Nerve Sparing in DIE – is it feasible?



11

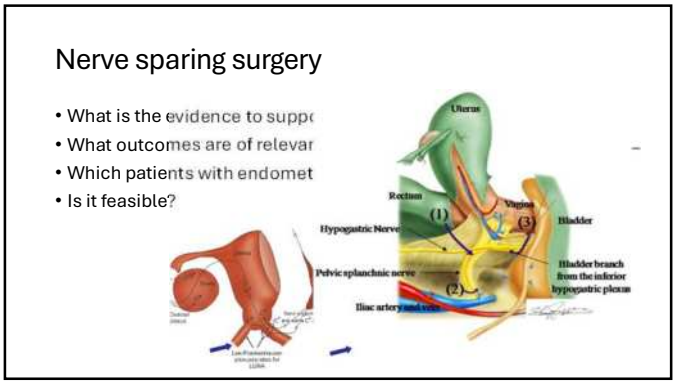
Nerve sparing for DIE – is it effective?



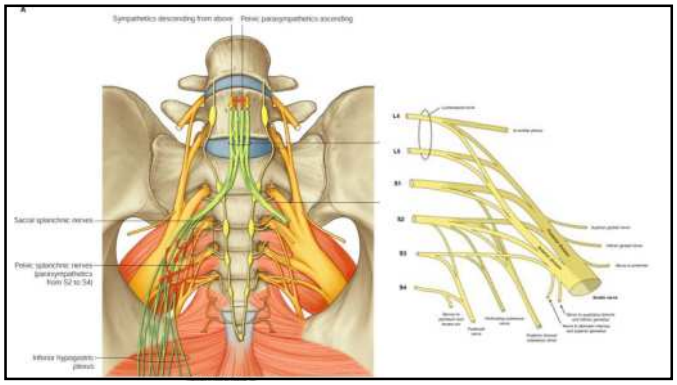
12



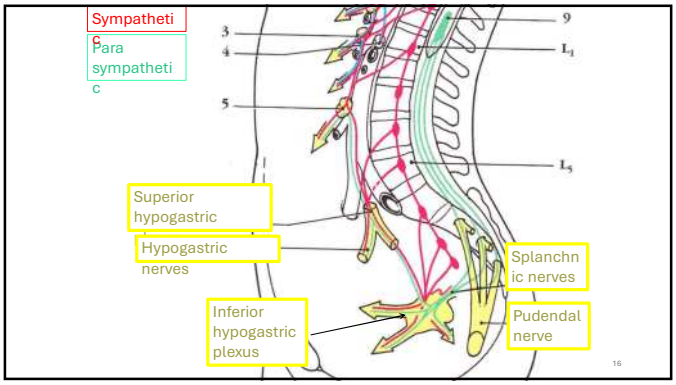
13



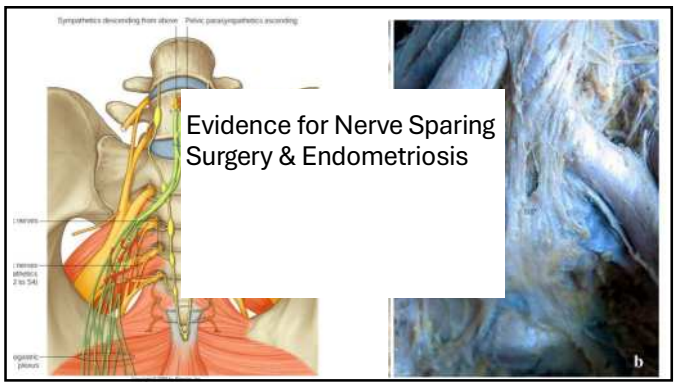
14



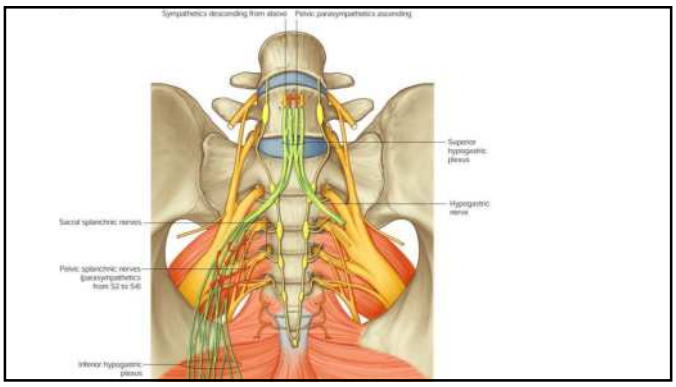
15



16

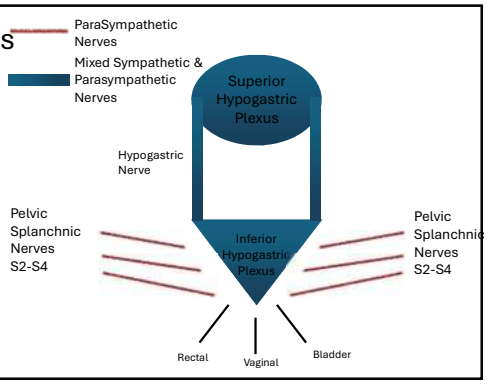


17



18

Pelvic Nerves



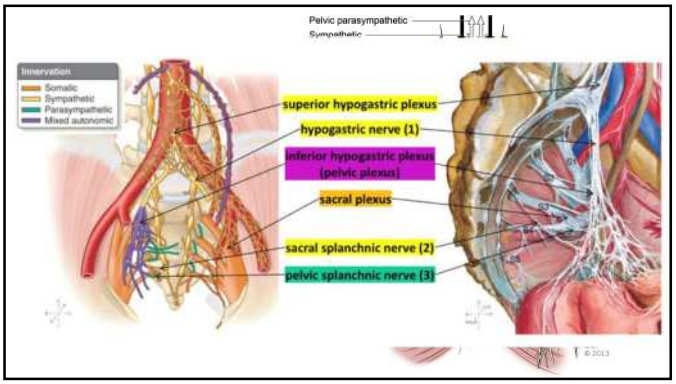
19

Pelvic Nerve Function

- Urination
  - Retention/atonia
  - Incontinence/urgency
- Defecation
  - Constipation
  - Flatal/faecal incontinence
- Sexual Organs
  - Anorgasmia
  - Dys/apareunia
  - Ectopic pregnancy



20

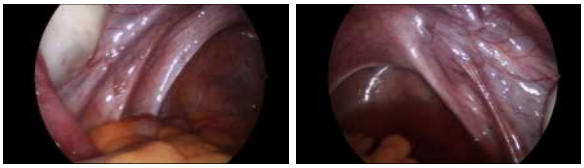


21

Hypogastric nerve

Left Hypogastric nerve

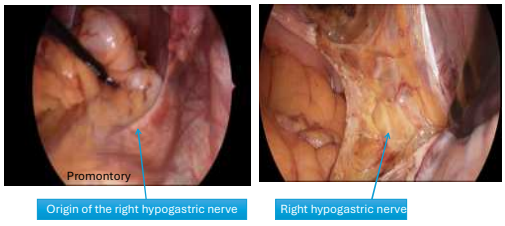
Right hypogastric nerve



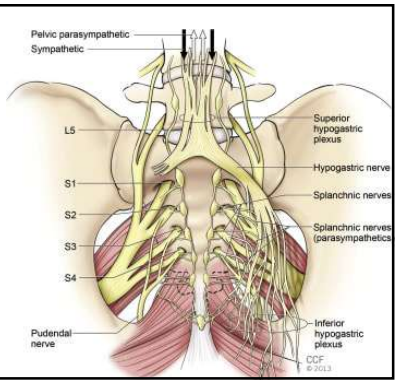
22

Right hypogastric nerve

RIGHT

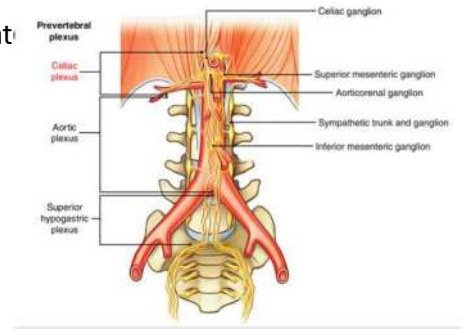


23



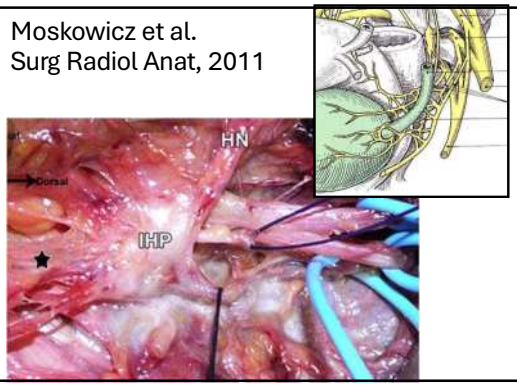
24

Anat



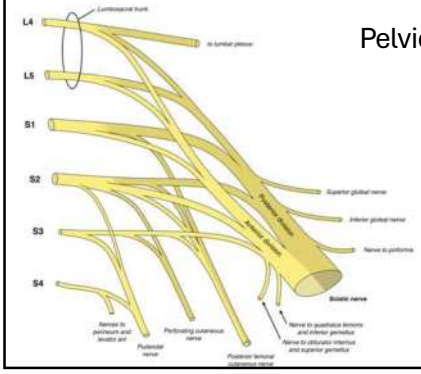
25

Moskowicz et al.
Surg Radiol Anat, 2011

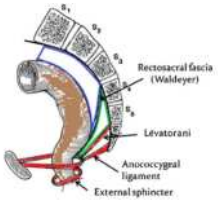


26

Pelvic Splanchnic Nerves



27



28

References

- Ceccaroni M, Clarizia R, Roviglione G, Ruffo G. Neuro-anatomy of the posterior parametrium and surgical considerations for a nerve-sparing approach in radical pelvic surgery. *Surg Endosc*. 2013;27–XXX. doi:10.1007/s00464-013-3043-z.
- Ceccaroni M, Clarizia R, Bruni F, D'Urso E, Gagliardi ML, Roviglione G, Minelli L, Ruffo G. Nerve-sparing laparoscopic eradication of deep endometriosis with segmental rectal and parametrial resection: the Negrar method. A single-center, prospective, clinical trial. *Surg Endosc*. 2012;26:2029–2045.
- Barra F, Ferrero S, Zorzi C, Evangelisti G, Perrone U, Valente I, Capezzuoli T, D'Ancona G, Bogliolo S, Roviglione G, Ceccaroni M. "From the tip to the deep of the iceberg": parametrial involvement in endometriosis. *Best Pract Res Clin Obstet Gynaecol*. 2024;94:102493.
- Choi S, Roviglione G, Chou D, D'Ancona G, Ceccaroni M. Nerve-sparing surgery in deep endometriosis: has its time come? *Best Pract Res Clin Obstet Gynaecol*. 2024.

29

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/