# AAGL 26

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# Syllabus

## Panel 520

When NOT to Operate: Surgical Decision-Making in Complex Gynecologic Scenarios


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**Panel-520: When NOT to Operate: Surgical Decision-Making in Complex Gynecologic Scenarios**

**Chair:** Andreisa Paiva Monteiro Bilhar
**Co-Chair:** Keith B. Isaacson
**Faculty:** Michel J. Canis, Keith B. Isaacson, Mariana Vieira

**Course Description**

Despite advances in minimally invasive gynecologic surgery, inappropriate or premature surgical intervention remains a major contributor to complications, inconsistent outcomes, and reduced patient autonomy. This panel discussion focuses on surgical decision-making in complex gynecologic scenarios, emphasizing when not to operate. Through real-world clinical cases, panelists will present multiple perspectives on patient selection, timing of intervention, risk stratification, and the balance between surgical and non-surgical management in conditions such as deep endometriosis, chronic pelvic pain, uterine scar defects, infertility, and pregnancy-related scenarios. The discussion aims to translate evidence and experience into practical insights that improve patient-centered outcomes, reduce unnecessary surgery, and support timely access to high-quality care.

**Learning Objectives:** *At the end of this course, the participant will be able to:* 1) Analyze complex gynecologic cases to determine when surgical intervention is not indicated; 2) Apply risk–benefit and outcomes-driven frameworks to guide decision-making in high-risk gynecologic scenarios; and 3) Integrate patient-centered principles into operative and non-operative management strategies.

**Course Outline**

| | | |
|---|---|---|
| 2:00 pm | Welcome, Introduction and Course Overview | A. Paiva Monteiro Bilhar |
| 2:05 pm | Real-World Clinical Decision-Making, Patient Selection, and Outcome Assessment | M. Canis |
| 2:20 pm | Real-World Clinical Decision-Making, Patient Selection, and Outcome Assessment | M. Vieira |
| 2:35 pm | Framing Decision-Making Frameworks, Leadership in Surgical Restraint, and Outcomes-Driven Care | K. Isaacson |
| 2:50 pm | Discussion Questions & Answers | All faculty |
| 3:00 pm | Adjourn | |

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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.

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Andreisa Paiva Monteiro Bilhar, MD, PhD – Speakers Breau: Zambon

**COURSE CO-CHAIR DISCLOSURE**

Keith B. Isaacson, MD*

**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).**

Keith B. Isaacson, MD*
Michel J. Canis, MD, PhD*
Mariana da Cunha Vieira, MD – Speakers Bureau: Las Brasil

**MITIGATION OF RELEVANT FINANCIAL RELATIONSHIPS**

**All relevant financial relationships have been mitigated.**

Drs. Lee, Lemos, Mikhail, and Chaudhari's planning decisions, as part of the Scientific Program Committee (SPC), were peer reviewed by other planners on the SPC who had disclosed no financial relationships with ineligible companies, and found to be fair, balanced, and free of commercial bias. Dr. Moawad's financial relationships ended 12/2024, thus mitigating them. For most of his AAGL Professional Education Committee service, Dr. Mourad had no financial relationships to disclose. He recently disclosed a new relationship as a Proctor for Intuitive Surgical. Since then, he has not participated in activities involving control or influence over accredited educational content; therefore, no additional mitigation was necessary. Dr. Paiva Monteiro Bilhar's role as Course Chair was limited primarily to course oversight and moderation, rather than development of educational content. Any planning decisions or content under her influence were subject to independent peer review by individuals without relevant financial relationships.

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

# When NOT to Operate

Clinical decision-making in high-volume referral settings, multidisciplinary perspectives, and balancing surgical indication with patient-centered outcomes in complex gynecologic care

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## Disclosure

- Las Brasil – Speakers Bureau

Disclosure statement as submitted to AAGL.

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## Objectives

- Distinguish nociceptive, myofascial, and centralized components of pelvic pain before establishing a surgical indication
- Appraise what excisional surgery can and cannot modify, using randomized placebo-controlled and prospective cohort data
- Apply a structured, multidisciplinary five-question framework to surgical decision-making in high-volume referral settings

Reja SN et al. Pain 2020;161(9):1976–1982 · Bafort C et al. Cochrane Database Syst Rev 2020;10:CD011031 · Allaire C et al. Am J Obstet Gynecol 2018;218(1):114.e1–e12

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## Premise

Surgical capability does not constitute surgical indication.

Becker CM et al. ESHRE guideline: endometriosis. Hum Reprod Open 2022;2022(2):hoac009 — surgery is one of several options for endometriosis-associated pain.

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CLINICAL REASONING

## The operation begins before the operating room

| 01 | 02 | 03 | 04 |
|---|---|---|---|
| DIAGNOSIS | MECHANISM | TARGET | VALUE |
| What is present? | What is generating the the problem? | What can surgery plausibly modify? | Does that modification matter to this patient? |

Surgery is an intervention on a mechanism

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## When we can operate, should we?




Technical mastery should increase surgical restraint, not reduce it.

Vercellini, Giudice, Evers & Abrão, 2015 — Defining **low-value care** in endometriosis as interventions with defined harms and uncertain benefit.

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## Endometriosis is not (only) anatomy.




*Excision surgery changes exactly one of these directly. It touches all of them.*

Imaging finds the disease.
Our job is to find where the suffering lives.

Fleming endometriosis as a chronic, systemic, multi-axial condition (Lancet 2021; NEJM 2020) causing measurable loss of quality of life driven by pain (Nnoaham 2011).

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## The referral-center paradox

Surgical volume improves the outcome of an operation. It does not establish whether the operation is indicated.

**1.3**
odds ratio for any complication, low- vs high-volume surgeons

**1.6**
intra-operative complications

**1.4**
post-operative complications

14 studies · ~741,000 women · low volume defined as approximately one procedure per month or fewer

*Referral concentrates the most complex anatomy — and the strongest prior expectation of surgery.*

Mowat A, Maher C, Ballard E. Surgical outcomes for low-volume vs high-volume surgeons in gynecology surgery: a systematic review and metaanalysis. Am J Obstet Gynecol 2016;215(1):21–33

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## The lesion is not the pain

In 1,054 consecutive women, the association between rASRM stage and pain severity was "marginal and inconsistent."

**1,054**
consecutive women at surgery, multivariate analysis

**OR 2.64**
posterior cul-de-sac disease → deep dyspareunia; disease extent did not predict pain

*Lesion location is more informative than lesion extent.*

Vercellini P, Fedele L, Aimi G, Pietropaolo G, Consonni D, Crosignani PG. Association between endometriosis stage, lesion type, patient characteristics and severity of pelvic pain symptoms: a multivariate analysis of over 1000 patients. Hum Reprod 2007;22(1):266–271

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## Pain mechanisms

*"An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage."*
International Association for the Study of Pain, revised definition, 2020

nociceptive myofascial centralized (nociplastic)

*Only the nociceptive component has a surgical target.*

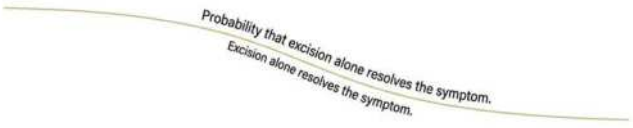
Raja SN et al. Pain 2020;161(9):1976–1982 · Stratton P et al. Obstet Gynecol 2015;125(3):719–728 · Orr NL et al. Pain 2022;163(2):e234–e245

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## Before surgery, define the pain.

| Lesion-driven | Mixed | Centrally amplified |
|---|---|---|
| Dysmenorrhea, Deep dyspareunia | Myofascial, Neuropathic | Non-cyclic, Nociplastic / Central Sensitization |




*Mechanisms coexist. The clinical question is which one dominates today.*

**Nociplastic pain:** Altered nociception without clear tissue damage.
Orr (2023) / As-Sanie (2021): High preoperative centralized-pain scores (CSI ≥ 40) predict persistent pain and worse postoperative outcomes.

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## Suffering and disease

*"Suffering is experienced by persons, not merely by bodies."*

Eric J. Cassell, The New England Journal of Medicine, 1982

*Surgery treats the organ. The indication must address the person.*

Cassell EJ. The nature of suffering and the goals of medicine. N Engl J Med 1982;306(11):639–645

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## What surgery can and cannot modify

Excision is effective. The size and durability of the effect are uncertain.

**80%**
improved after excision (randomized, blinded, n = 39)

**32%**
improved after placebo surgery

**30%**
placebo response, independent of severity

**20%**
no improvement after excision

Cochrane 2020, 14 RCTs, 1,563 women: uncertain whether laparoscopic surgery reduces overall pain versus diagnostic laparoscopy; moderate-certainty evidence of increased viable intrauterine pregnancy.

*A surgical indication has to be made with all of these numbers, not only the first.*

Abbott J et al. Fertil Steril 2004;82(4):878–884 · Bafort C, Beebeejaun Y, Tomassetti C, Bosteels J, Duffy JMN. Laparoscopic surgery for endometriosis. Cochrane Database Syst Rev 2020;10:CD011031



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## Persistent pain after surgery

Persistent pain after adequate surgery is common and is predicted by pain phenotype.

**11.9%**
persistent pain 6 months after hysterectomy for chronic pelvic pain — the only independent predictor was centralized pain (OR 1.27 per point), not endometriosis

**11.8%**
no improvement after conservative surgery (systematic review, 38 studies)

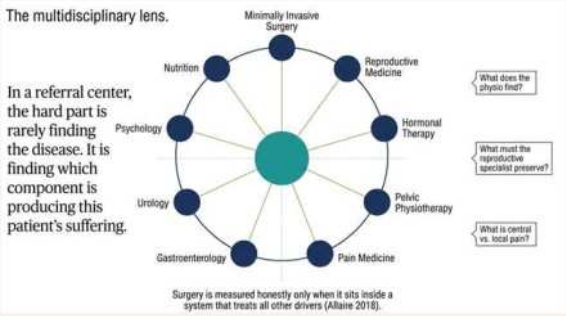
**22.6%**
further surgery after conservative surgery

*Approximately one third re-operated in a long-term deep-endometriosis cohort, at a median of 2.1 years.*

As-Sanie S et al. Am J Obstet Gynecol 2021;225(5):568.e1–e11 · Misal M et al. Obstet Gynecol 2025;146(5):690–699 · Singh SS et al. J Obstet Gynaecol Can 2020;42(7):881–888 · Drechsel-Grau A et al. J Clin Med 2024;13(17):5039



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## Multidisciplinary assessment

Multidisciplinary assessment functions as a diagnostic instrument, not merely as a referral pathway.

surgery · medical therapy · pain education · physiotherapy · psychology

296 women, one-year prospective cohort at an interdisciplinary center: less pain, better quality of life, lower health-care utilization.

Systematic review, 19 studies (2024): gynecologists, physiotherapists and psychologists are the most frequent team members; formal outcome evaluation remains limited.

*Each discipline identifies the component of pain that surgery cannot address.*

Allaire C et al. Chronic pelvic pain in an interdisciplinary setting: 1-year prospective cohort. Am J Obstet Gynecol 2018;218(1):114.e1–e12 · Fang QY et al. Aust N Z J Obstet Gynaecol 2024;64(3):181–192



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## Psychological interventions

Psychological interventions improve quality of life even when pain intensity is unchanged.

quality of life — improved

pain intensity — unchanged

3-arm RCT, 58 women with severe pelvic pain despite standard treatment: mindfulness/ACT or matched non-specific therapy versus wait-list.

Meta-analysis 2024, 7 RCTs, N = 757: dyspareunia SMD −0.54 (95% CI −0.86 to −0.22); dyschezia MD −2.90; mental health SMD 0.70.

*An improvement in a core patient-reported outcome, without any change in the lesion.*

Hansen KE et al. Qual Life Res 2023;32(6):1727–1744 · del Pino-Sedeño T et al. Front Psychol 2024;15:1457842 · Duffy JMN et al. BJOG 2020;127(8):967–974



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## Physiotherapy and rehabilitation

Pelvic-floor hypertonia is part of the clinical lesion map.

**+20%**
levator hiatal area at Valsalva, pelvic-floor physiotherapy

**−0.5%**
control, no intervention (P = 0.02)

RCT, 34 nulliparous women with deep endometriosis and superficial dyspareunia; five sessions. Dyspareunia and chronic pelvic pain improved versus control.

Systematic review 2025, 17 trials: meta-analyses favor rehabilitation for pain (11 trials) and quality of life (5 trials).

*Pelvic-floor dysfunction is not visible on imaging; it is identified on examination.*

Del Forno S et al. Ultrasound Obstet Gynecol 2021;57(5):726–732 · Rodríguez-Ruiz Á et al. J Clin Med 2025;14(23):8284 · Can G et al. Pain Med 2025;27(1):95–103



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## Dietary interventions

Dietary interventions: low-certainty evidence, high patient interest.

**9**
human studies in the systematic review

**2**
randomized; all at moderate–high risk of bias

Possible signal: a Mediterranean dietary pattern and antioxidant supplementation; exclusion diets (gluten-free, low-FODMAP, low-nickel) for gastrointestinal symptoms.

*Not a treatment for the lesion; a potential modifier of symptoms and of the therapeutic relationship.*

Nirgianakis K et al. Effectiveness of dietary interventions in the treatment of endometriosis: a systematic review. Reprod Sci 2022;29(1):26–42 · van Haaps AV et al. Hum Reprod 2023;38(12):2433–2446

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## "Failed medical therapy" is a clinical diagnosis

"Failed medical therapy" requires the same rigor as any other diagnosis.

appropriate agent · appropriate dose · adequate duration · documented adherence

Failure for pain — or discontinuation for adverse effects, cost, or apprehension?

*Deferral is not refusal; it is sequencing.*

Becker CM et al. ESHRE guideline: endometriosis. Hum Reprod Open 2022;2022(2):hoac009 · Vercellini P et al. "Waiting for Godot": a commonsense approach to the medical treatment of endometriosis. Hum Reprod 2011;26(1):3–13

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## When surgery is indicated

ureteral or bowel obstruction
adequate medical therapy that has failed, is not tolerated, or is declined after informed discussion
infertility, when surgery changes the reproductive plan
Extensive endometrioma

| 4,721 | 1.1% | 1.0% | 28% → 16% |
|---|---|---|---|
| planned excisions, 51 accredited centers | bowel complications | urinary complications | opioid use, baseline → 6 months; symptom improvement maintained at 2 years |

*These are the outcomes surgery achieves when the indication is correct — the standard that careful selection protects.*

Byrne D et al.; BSGE Endometriosis Centres. Laparoscopic excision of deep rectovaginal endometriosis in BSGE endometriosis centres: a multicentre prospective cohort study. BMJ Open 2018;8(4):e018924 · Becker CM et al. Hum Reprod Open 2022;2022(2):hoac009

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## Individualization: one image, four decisions

| | | |
|---|---|---|
| 28 | desires pregnancy now; low ovarian reserve | no surgery — assisted reproduction first |
| 34 | two prior excisions; allodynia; high central-sensitization score | no surgery — pain management and physiotherapy first |
| 41 | 3-cm nodule with hydronephrosis | surgery — without delay |
| 30 | incidental finding; asymptomatic | no surgery — counseling and surveillance |

*Individualization is not imprecision; it is the recognition of four different diagnoses behind one image.*

Illustrative composites, not real patients · Vercellini P et al. Hum Reprod 2007 · As-Sanie S et al. Am J Obstet Gynecol 2021 · Raffi F et al. J Clin Endocrinol Metab 2012 · Becker CM et al. (ESHRE) Hum Reprod Open 2022

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## Patient-centered outcomes

overall pain
the most troublesome symptom
quality of life
adverse events
satisfaction with treatment

Core outcome set for endometriosis
116 clinicians · 31 researchers · 206 patients

None selected "complete excision" or "no residual disease."

*The patient's outcome, defined before consent.*

Duffy JMN et al. A core outcome set for future endometriosis research: an international consensus development study. BJOG 2020;127(8):967–974 · Elwyn G et al. Shared decision making: a model for clinical practice. J Gen Intern Med 2012;27(10):1361–1367

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## Fertility

Ovarian reserve is the most irreversible outcome of endometrioma surgery.

**−1.13 ng/mL**
serum AMH after endometrioma excision — meta-analysis, 237 women

After surgery, the operated ovary retains fewer antral follicles than the contralateral ovary.

*Surgery may preserve reproductive options or consume them; the direction depends on the indication.*

Raffi F, Metwally M, Amer S. The impact of excision of ovarian endometrioma on ovarian reserve: a systematic review and meta-analysis. J Clin Endocrinol Metab 2012;97(9):3146–3154 · Muzii L et al. Hum Reprod 2014 (antral follicle count)

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## Responsibilities of the high-volume center

A high-volume center owes its patients a deliberate decision.

multidisciplinary review before every complex indication
pain and pelvic-floor assessment as routine, not as referral
patient-reported outcomes at 6 and 12 months
audit of persistent pain after surgery

*Volume without governance yields excellent operations for the wrong indications.*

Allaire C et al. Am J Obstet Gynecol 2018;218(1):114.e1–e12 · Byrne D et al. BMJ Open 2018;8(4):e018924 · Mowat A et al. Am J Obstet Gynecol 2016;215(1):21–33 · Starzec-Proserpio M et al. Am J Obstet Gynecol 2025;232(1):42–71



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## A five-question framework

Which pain mechanism — nociceptive, myofascial, or centralized?
What did medical therapy achieve, and why was it discontinued?
What will this operation change, and what will it not?
What outcome does the patient define as improvement?
Which other disciplines have assessed her?

*If these five questions cannot be answered, the surgical indication is not yet established.*

Synthesis — Raja SN et al. Pain 2020 · Becker CM et al. (ESHRE) Hum Reprod Open 2022 · Abbott J et al. Fertil Steril 2004 · Bafort C et al. Cochrane 2020 · Duffy JMN et al. BJOG 2020 · Allaire C et al. Am J Obstet Gynecol 2018



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## Conclusions

Surgical capability does not constitute surgical indication.

Deferral is not refusal; it is sequencing.

The object of surgical care is the person, not the image.

Sometimes the most advanced surgical decision
is not to operate.

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Cassell EJ. The nature of suffering and the goals of medicine. N Engl J Med 1982;306(11):639–645



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Every reference cited in the presentation, in AAGL format (authors, title, journal, year, volume, pages).



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# The art of presurgical decisions: when is it beneficial to operate on patients with endometriosis or adenomyosis undergoing embryo transfer?

Keith Isaacson, MD
Harvard Medical School and MIT
Audubon Fertility
New Orleans, LA USA

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Dear Dr., Issacson,
I am seeking your urgent guidance following a recent pelvic MRI and in the context of an upcoming embryo transfer.

I am 45 with a history of robotic endometriosis excision and myomectomy (2019) and hysteroscopic myomectomy (2022). My February 2026 MRI shows multifocal deep infiltrating endometriosis involving the rectovaginal septum, uterosacral ligaments, and posterior uterus (no transmural bowel involvement), along with interval growth of multiple intramural fibroids, including a 6.4 cm anterior fundal fibroid.

Fertility remains a priority, and I currently have an embryo available for transfer. Given the findings, I would appreciate your opinion on whether fertility-preserving excision of deep endometriosis, with or without concurrent myomectomy, should be pursued prior to embryo transfer.

Specifically, I am hoping to understand:

Whether surgical optimization before transfer is recommended

Your approach to fertility-sparing excision of rectovaginal disease

Expected recovery and timing to proceed with embryo transfer

Given time sensitivity, I would greatly appreciate the opportunity to schedule a consultation soon. I have forwarded my imaging and reports in advance.

Thank you for your consideration.

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## Case Presentation
## Live Birth Rate - LBR



35 y/o G1P1 with 5 remaining euploid embryos and two failed frozen embryo transfers.

- No complaints of pain or dysmenorrhea
- Normal uterine cavity
- Thickened posterior myometrial wall
- Receptiva endometrial biopsy positive
  - Identifies BCL6: a zinc-finger oncogene, B cell proliferation regulation.
  - (beta 3 integrin data of limited use and not in Receptiva)

3

## Receptiva Data

- Medical or surgical treatment before embryo transfer improves outcomes in women with abnormal endometrial BCL6 expression. Likes CE, Cooper LJ, Efird J, Forstein DA, Miller PB, Savaris R, et al. J Assist Reprod Genet. 2019;36(3):483-90
  - Improved implantation, not live birth rate and all treated by GnRHa if BCL6 positive (adenomyosis not evaluated by US or MRI)
- B-cell lymphoma 6 expression is not associated with live birth in a normal responder in vitro fertilization population. Klimczak AM, Herlihy NS, Scott CS, Hanson BM, Kim JG, Titus S, et al. Fertil Steril. 2022;117(2):351–8
  - 23 patients - live birth; 8/23 with positive Receptiva
  - 27 patients – no live birth; 7/27 Receptiva positive
  - No association with live birth

4

## 35 y/o G1P1 with 5 remaining euploid embryos and two failed frozen embryo transfers

- Thickend posterior myometrium – Adenomyosis?
- Unlike endometriosis
  - diagnosis is not made by histology
    - US
    - MRI
  - More likely to impact implantation than endometriosis
    - Uterine contractility studies
  - Surgery
    - Hysteroscopic, laparoscopic, laparotomy

5

## 35 y/o G1P1 with 5 remaining euploid embryos and two failed frozen embryo transfers.

- Diagnosing endometriosis without histology
  - Endometrial biopsy – Receptiva.
  - Biomarkers – No serum test
  - Laparoscopic visualization without excision. Diagnosis by visualization only
    - ESHRE clinical guideline – approved 2013
    - ASRM clinical guideline – approved 2014
    - Laparoscopic appearance of endometriosis - Martin DC et al, Fertil Steril 1989

**Table 3** Histologic Confirmation of Observed Lesion Types in 76 Endometriosis Patients

| | Scarred | | | Red | | | Vesicles | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Black | Brown | White | Polypoid | Flat | Raised | Black | Brown | Clear | White | Pockets | Yellow | Yellow-brown | Grain-like | Carbon |
| Patients observed | 35 | 45 | 20 | 15 | 15 | 6 | 5 | 18 | 23 | 10 | 26 | 9 | 18 | 10 | 6 |
| Positive | 33 (94%) | 36 (80%) | 16 (80%) | 9 (75%) | 4 (33%) | 2 (33%) | 4 (80%) | 13 (72%) | 10 (43%) | 11 (58%) | 14 (39%) | 5 (56%) | 4 (22%) | 2 (20%) | 1 (16%) |

6

## Does endometriosis impact endometrial receptivity?

- No difference in receptivity gene expression
  Garcia-Velasco et al Is endometrial receptivity transcriptomics affected in women with endometriosis? A pilot study. 2015
- No difference (Implantation and LBR) from single donor oocytes into women with (33)and without severe endometriosis (25)
  Díaz, I et al. Impact of stage iii–iv endometriosis on recipients of sibling oocytes: Matched case-control study. Fertil. Steril. 2000
- No difference in implantation rate or LBR with euploid embryo transfer 459 euploid frozen embryo transfer cycles comparing women with surgically diagnosed endometriosis to women undergoing IVF for isolated male factor infertility.
  Bishop, L.; Gunn, J.; Jahandideh, S.; Devine, K.; Decherney, A.H.; Hill, M.J. Endometriosis does not impact live birth rates in frozen embryo transfers of euploid blastocysts. Fertil. Steril. 2021, 115, 416–422.

7

## 35 y/o G1P1 with 5 remaining euploid embryos and two failed frozen embryo transfers.

- Does excision of biopsy proven superficial endometriosis improve embryo implantation and live birth rates?



8

## Does excision of biopsy proven superficial endometriosis improve embryo implantation and live birth rates?

- Complete surgical removal of minimal and mild endometriosis improves outcome of subsequent IVF/ICSI treatment HK Opøien, P Fedorcsak, T Tanbo, Reproductive BioMedicine Online (2011) 23, 389–395
  - All patients with visual stage I or II endometriosis
  - Retrospective cohort study: 399 with diathermy: 262 no endometriosis treatment
    - 1995 – 2009
    - Lesions not confirmed by biopsy
    - time to IVF 12 months treated, 18 months in non treated group
  - Exclusion included uterine pathology - adenomyosis not evaluated
  - No PGT-A or PGT-M
- LBR/retrieval - diathermy 27%
- LBR/retrieval – observation 20.6% P<0.05

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## 35 y/o G1P1 with 5 remaining euploid embryos and two failed frozen embryo transfers

- Does resection of deep infiltrating endometriosis improve embryo implantation and clinical pregnancy rates?




10

## Conflicting Data

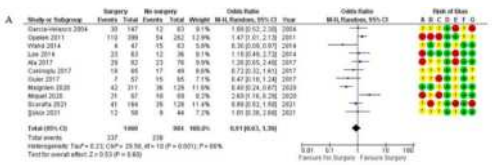
- DIE surgery increases "cumulative" live birth rates (CLBR) from ART
  Bendifallah S et al; Colorectal endometriosis-associated infertility: should surgery precede ART? Fertil Steril Sept 2017
  - 54/110 with prior endometriosis surgery - CLBR 49%
  - 39/110 without prior endometriosis surgery - CLBR 35%
  - This difference was only seen without adenomyosis, <35 y/o and AMH >2
- DIE surgery decreases live birth rates from ART
  Maignien, C., Santulli, P., Bourdon, M. *et al.* Deep Infiltrating Endometriosis: a Previous History of Surgery for Endometriosis May Negatively Affect Assisted Reproductive Technology Outcomes. *Reprod. Sci.* **27**, 545–554 (2020).
  - 222 DIE patients underwent a total of 440 ART cycles.
    - 155 with prior DIE surgery – CLBR 26% after 4 cycles
    - 67 without DIE surgery - CLBR 51% after 4 cycles.

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## Live birthrate per cycle

Impact of Endometriosis Surgery on In Vitro Fertilization/ Intracytoplasmic Sperm Injection Outcomes: a Systematic Review and Meta-analysis.
Bourdon M et al: Reproductive Sciences 2024

- 11 studies reported LBR per cycle
  - 1460/2444 with surgery before ART: 984/2444 without surgery before ART
  - No benefit to surgery (O.R. 0.91, 95% CI 0.63 -1.30)



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## LBR per cycle excluding studies with high risk of bias (no RCTs have been done)

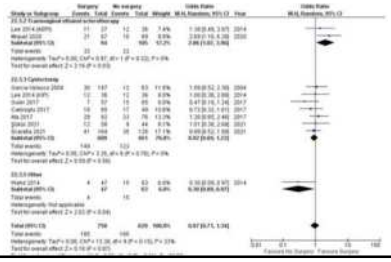
- Excluding studies with high risk of bias
  - LBR/cycle reduced with surgery prior to IVF
    - OR 0.53 (CI 0.33-0.86)



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## Sub-analysis

- Laparotomy = Laparoscopy
- Endometrioma
  - Improved PR not LBR per cycle with sclerotherapy vs no surgery (OR 2.06, CI 1.07-3.96)



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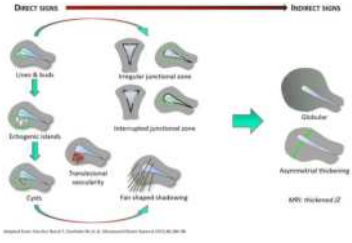
## Complete evaluation of anatomy and morphology of the infertile patient in a single visit; the modern infertility pelvic ultrasound examination

Yvette Grozmann, M.D., M.F.H. and Beryl R. Benacerraf, M.D.




15

## Morphological Uterus Sonographic Assessment (MUSA) protocol - Changes c/w adenomyosis





Keith Isaacson, MD - Pathophysiology of Endometriosis and Adenomyosis

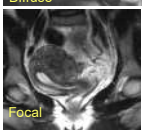
16

16

## MRI for adenomyosis

- Sensitivity 70-86%, specificity 86-93%
- Particularly helpful if co-existing fibroids (50%)
- Combined approach of TVUS and MRI may result in highest diagnostic accuracy



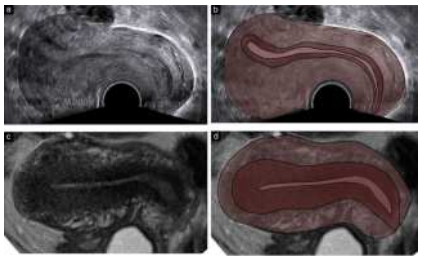




Ascher, SM et al Radiology 1994; 190:803
Dueholm, M et al Fertility and Sterility 2001; 76:588
Bazot, M et al Human Reproduction 2001; 16: 2427
Novellas, S et al AJR 2011; 196:1206

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## Imaging for Adenomyosis

Uterine junctional zone and adenomyosis: comparison of MRI, transvaginal ultrasound and histology



Ultrasound in Obstet & Gyne, Volume: 62, Issue: 1, Pages: 42-50, First published: 12 November 2022, DOI: (10.1002/uog.26117)

Keith Isaacson, MD - Pathophysiology of Endometriosis and Adenomyosis

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## Does the measurement of the JZ make sense?

Novellas S, Chassang M, Delotte J, Toullalan O, Chevallier A, Bouaziz J & Chevallier P 2011 MRI characteristics of the uterine junctional zone: from normal to the diagnosis of adenomyosis. American Journal of Roentgenology 196 1206–1213.

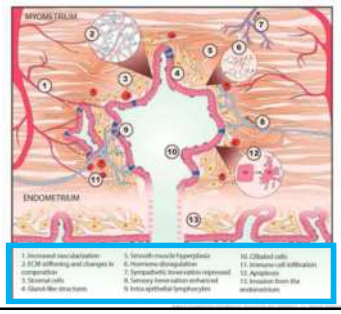
- The JZ on MRI is often not anatomically definable in 20% of patients
- How the JZ relates to adenomyosis is unclear.

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## Endometrium-associated pathologies are highly prevalent yet understudied: The family of endometriotic disease

H&E of peritoneal endometriosis



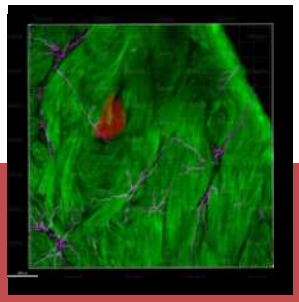



Documented changes in adenomyotic tissue

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**Endometriosis and adenomyosis are self perpetuating diseases.**

- Stiff matrix
- Neovascularity
- Neo-innervation

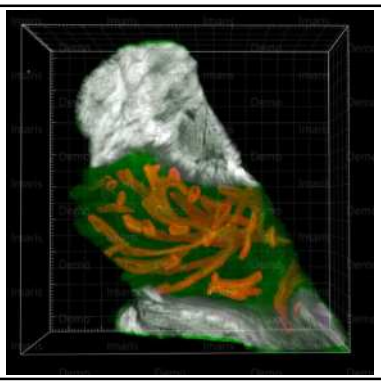


**Deposition of chaotic smooth muscle to provide a stiff environment that promotes epithelial cell migration**

- Disruption of normal peristalsis in the uterus and bowel.

Keith Isaacson, MD - Pathophysiology of Endometriosis and Adenomyosis 21

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22

## Reduced Fertility

- Thicker myometrium resulted in reduced implantation rates In vitro fertilization and embryo transfer outcomes in relation to myometrial thickness. Youm HS.et al Journal of Assisted Reproduction & Genetics. 28(11):1135-40,2011 Nov.
  - 413 patients , 551 cycles
    - < 2 cm
    - 2-2.5 cm
    - >2.5 cm – lower implantation, clinical pregnancy and live birth rates.
    - Even with mild thickening (2.00-2.49 cm), the presence of sonographic findings suggestive of adenomyosis is associated with adverse outcomes of IVF-ET.

23

Human Reproduction, Vol.29, No.5 pp. 964–977, 2014
Advanced Access publication on March 12, 2014 doi:10.1093/humrep/deu041

human reproduction META-ANALYSIS Gynaecology

### Uterine adenomyosis and *in vitro* fertilization outcome: a systematic review and meta-analysis

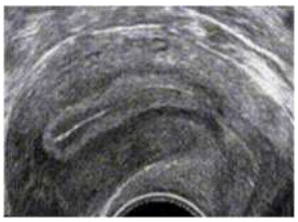
Paolo Vercellini[1,2,*], Dario Consonni[3], Dhouha Dridi[1], Benedetta Bracco[1], Maria Pina Frattaruolo[1,2], and Edgardo Somigliana[3,4]

9 articles, 1865 patients included, 665 prospective and 1200 retrospective

| Parameters | Adenomyosis (%) | Controls (%) |
|---|---|---|
| Implantation per ET | 18.1-31 | >30 |
| Clin Preg Rate RR.72 (.55-.95) | 40.5 (123/304) | 49.8 (628/1262) |
| Miscarriage rate | 32 (77/241) | 14 (97687) |
| Live Birth rate | 26.8 (88/328) | 37 (123/331) |

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## Previous uterine peristalsis research



Transvaginal ultrasound (TVUS) in late follicular phase (played 10x faster)
*(VISUAL INSPECTION without quantification)*

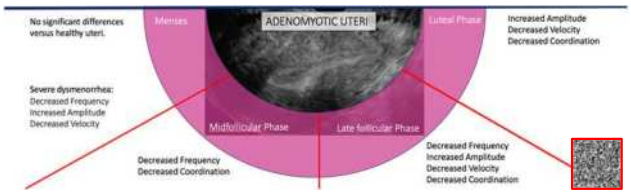
- Definition of waves frequency
  Hoogland / Ijland 1990
- Fertility: sperm transport
  DeZiegler 1993-2003
- Dysrupted contraction activity
  Kido et al. 2001

*Subjective visual inspection*



25

## Uterine contractility in women with adenomyosis differs significantly from healthy control women - the waves study -



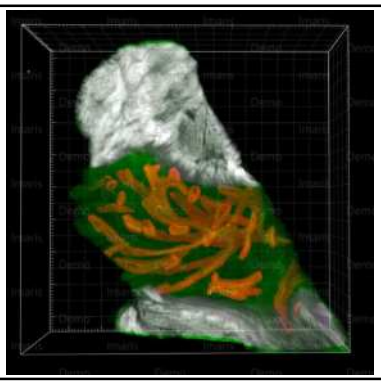

C. Rees, B. Zizolfi , A. di Spiezio di Sardo, N. Christoforidis, M. Mischi , B. C. Schoot (waves Group) (Fertil Steril 2023)



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## Fertility Enhancing Therapies

- GnRHa alone
- ART
  +/- pretreatment with GnRHa
- Surgical resection
  - Complete
  - Partial
  - Hysteroscopic
- Ablative therapy
  - RF
  - HIFU

30

## Uterus-sparing operative treatment for adenomyosis

Grigoris F. Grimbizis, M.D., Ph.D., Themistoklis Mikos, M.D., M.Sc., Ph.D., and Basil Tarlatzis, M.D., Ph.D.

- Complete excision
  - 9 studies, 469 patients
    - 89/147 with primary indication of fertility conceived (60% PR)
    - 83% of conceived delivered
- Incomplete resection
  - 3 studies, 83 patients
    - 15/32 conceived 47% PR, 73% delivered.
- Cystic adenomyosis (Juvenile Mean age 23)
  - 2 studies, 13 patients
    - 3/3 conceived
- Non excisional techniques
  - 9 patients, 5/9 conceived, 1 delivery

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## Current status of Adenomyomectomy

- 2,365 cases have been reported since 1990
  - 2,123 (89.8%) in Japan.
- 397 post-procedural pregnancies reported
  - 337 (84.89%) resulting in live births. (Pregnancy rates, not LBR)
  - 23 instances of ruptured uterus (6%)
    - Osada F&S 2018

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## Outcome of Adenomyomectomy Younes et al., JMIG 2017

- In this systematic review:
  - 27 studies:
    - 10 prospective
    - 17 retrospective studies
  - including a total of 1398 patients.
- Excision of adenomyosis is effective for:
  - 75% showed symptom-control such as menorrhagia and dysmenorrhea,
  - 75% conceived after surgery with/out ART
- These results are based on PR and not LBR after Euploid embryo transfer!

33

## Who will benefit from uterus-sparing surgery in adenomyosis-associated subfertility?

Yohei Kishi, M.D., Maki Yabuta, M.D., and Fumiaki Taniguchi, M.D.

- 102 women desiring fertility laparoscopic adenomyomecomy
  - MRI diagnosis pre op
- Clinical pregnancy rates
  - <39 y/o 41.3% (60% after prior IVF failure)
  - >40 y/o 3.7% (7% after prior IVF failure)
- All delivered by c/s, no ruptures, no multiples
  - 2 accreta, 2 preterm birth 35 and 36 weeks

F&S 2014

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## Case Presentation



35 y/o G1P1 with 5 remaining euploid embryos and two failed frozen embryo transfers.

No complaints of pain or dysmenorrhea

Normal uterine cavity

Thickened posterior myometrial wall

Receptiva endometrial biopsy positive

Identifies BCL6: a zinc-finger oncogene, B cell proliferation regulation.

(beta 3 integrin data of limited use and not in Receptiva)

35

## The role of hysteroscopy in patients with adenomyosis and infertility: bringing out the submerged

Attilio Di Spiezio Sardo, M.D., Ph.D.,[a] Giuseppe Gabriele Ianis, M.D.,[a] Serena Guerra, M.D.,[a] Keith Isaacson, M.D.,[b] Dimitrios Kafetsis, M.D.,[a] Alessandro Conforti, M.D., PhD,[a] Maria Chiara De Angelis, M.D., Ph.D.,[a] Brunella Zizolfi, M.D., Ph.D.,[a] and Carlo Alviggi, M.D., Ph.D.[a]

- Three patients with cystic lesions which did not respond to GnRHa
- All with recurrent implantation failure
- 3/3 successful pregnancy

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VIDEO

## Stepwise approach of hysteroscopic cytoreductive surgery for adenomyosis in patients with recurrent implantation failure

Ruth Campo, M.D.,* Evy Gilles, M.D.,*† Stephan Gordts, M.D.,* Marion Valkenburg, M.D.,* Helena Van Kerrebroeck, M.D.,* Alessa Sugihara, M.D.,* Istvan Argay, M.D.,* and Panayiotis Tanos, M.D.*‡

* Department of Obstetrics and Gynecology, Life Expert Centre, Leuven, Belgium; † Department of Obstetrics and Gynecology, Brugmann University Hospital, Brussels, Belgium

- 15 patients with failed implantation of euploid embryo post GnRHa suppression for two weeks
- 12/15 pregnant
- 1/12 SAB
- 11/12 ongoing or delivered

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At the end of the journey .....



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# 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/