618-ENDO:
Professional Education Information

Target Audience
This educational activity is developed to meet the needs of surgical gynecologists in practice and in training, as well as other healthcare professionals in the field of gynecology.

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Co-Chairs: Charles E. Miller and Tatnai L. Burnett

Faculty: Leila Adamyan, Adrian C. Balica, Marco Antonio Bassi, Alan M. Lam

In the song "The Gambler", singer/songwriter, Kenny Rogers states "You've got to know when to hold 'em", Know when to fold 'em. While there are circumstances, such as unrelenting pelvic pain, when aggressive excision is imperative, there are other situations, such as the patient undergoing fertility treatment, when a less aggressive approach should be considered.

This course is designed not only to provide a comprehensive review of the principles and techniques through extensive use of video for the treatment of the obliterated cul-de-sac, deep infiltrative endometriosis of the rectocervix and genitourinary system, but will also provide an update on neuroanatomy to enhance endometriosis excision outcomes as well as provide techniques to enhance long term ovarian health at time of endometrioma surgery.

In addition, and equally important, this course will review circumstances, relying on prevailing medical literature, when a less radical approach may be considered including discussion on risk/benefit.

Learning Objectives: At the conclusion of this course, the participants will be able to: 1) Describe safe approaches for the treatment of the obliterated cul-de-sac, deep infiltrative endometriosis of the rectocervix and genitourinary system, and the ovarian endometrioma; 2) describe pelvic neuroanatomy and how to avoid injury at time of deep infiltrative endometriosis excision; and 3) describe circumstances when less radical endometriosis surgery should be considered.

COURSE OUTLINE

2:30 pm Welcome, Introduction and Course Overview
2:35 pm Pelvic Neuroanatomy: The Necessary RoadMap to Improving Endometriosis Excision Outcomes A.C. Balica
2:55 pm Deconstructing the Obliterated Posterior Cul-de-sac T.L. Burnett
3:15 pm Laparoscopic/Robotic Management of Genitourinary Endometriosis A.M. Lam
3:35 pm The Endometrioma Decision Tree for Women with Fertility Concerns C.E. Miller
3:55 pm Retrocervical Endometriosis in Women with Infertility L.V. Adamyan
4:15 pm Advances in Techniques for Bowel Resection in Endometriosis M. Bassi
4:35 pm Questions & Answers All Faculty
5:00 pm Adjourn
PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop (listed in alphabetical order by last name).
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FACULTY DISCLOSURE
The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the “best available evidence” from medical literature (in alphabetical order by last name).
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Alan M. Lam, MD, FRACOG, FRANZCOG
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Speakers Bureau: Allergan Pharmaceutical

Content Reviewers have nothing to disclose.

Asterisk (*) denotes no financial relationships to disclose.

All relevant financial relationships noted have been mitigated.
Objectives

- Review pelvic neuroanatomy
- Demonstrate reproducible steps of dissection
- Recognize importance to endometriosis management

Pelvic autonomic nerves and endometriosis

- "Nerve visualization is possible by means of laparoscopic surgery for a high rate of patients"
- Laparoscopic identification of pelvic nerves in patients with deep infiltrating endometriosis
- E. Vagg.  
  Surgical Endoscopy And Other Interventional Techniques (2004)
- "Technique appears to be feasible and offers good results in terms of reduced bladder morbidity"
- "surgery requires uncommon surgical skills and anatomical knowledge"
- Nerve-sparing laparoscopic eradication of deep endometriosis with segmental rectal and parametrial resection: the Negrar method. A single-center, prospective, clinical trial
  Marcello Ceccaroni
  Surgical Endoscopy (2012)
- "Systematic and complete nerve sparing, including pelvic splanchnic nerve dissection, improves immediate postoperative urinary outcomes, reducing the need for self-catheterization without increasing operating time or complication rates"
  Systematic Nerve Sparing during Surgery for Deep-infiltrating Posterior Endometriosis Improves Immediate Postoperative Urinary Outcomes
  Michelle Soares
  Journal of Minimally Invasive Gynecology 2021

Pelvic Somatic Nerves and DIE

- "Sacral radiculopathy or sciatica of unknown genesis, suspicion of endocrine pathology such as nervous system entrapment must be raised"
- Laparoscopic therapy for endometriosis and vascular entrapment of sacral plexus
  Marc Possover
- "perineal pain or pain radiating to the lower limbs, lower urinary tract symptoms, tenesmus, or dyschezia associated with pelvic nerve entrapment"
  Whenever deeply infiltrating lesions are present, specific MRI sequences for the sacral plexus must be taken, so that proper treatment performed
- Recognition and treatment of endometriosis involving the sacral nerve roots
  Lemos
**Peritoneal Incision**

**Step 2**

**Step 3**
- Identify obturator nerve lumberal trunk sciatic nerve

**Step 4**
- Separate the perineural fat at the sciatic notch expose the superior and inferior gluteal nerves

**Step 5**
- Carry the dissection further distally and identify endopelvic fascia arcus tendineus fascia pelvis levator ani muscles, ischial spine sacrospinous ligament pudendal nerve crossing underneath it

**Step 6**
- Dissection at level of the sacral promontory dissect the presacral fascia from the parietal peritoneum identify superior hypogastric plexus hypogastric nerves
Step 7
Incise the presacral fascia laterally to the right hypogastric nerve to develop the presacral space down to the coccyx bilaterally.

Step 8
Incise the hypogastric fascia laterally to the right hypogastric nerve.

Overview of the retroperitoneal pelvic nerve dissection

Acknowledgments
• Thank you to the entire ICAPS faculty

References
• Nerve-sparing laparoscopic eradication of deep endometriosis with segmental rectal and parametrial resection: the Negrar method. A single-center, prospective, clinical trial. CECCARONI, Marcello; CLARIZIA, Roberto; BRUNI, Francesco; D'URSO, Elisabetta; GAGLIARDI, Maria Lucia; ROVIGLIONE, Giovanni; MINELLI, Luca; RUFFO, Giacomo. Surgical endoscopy, 2012, Vol.26 (7), p.2029-2045
• Laparoscopic therapy for endometriosis and vascular entrapment of sacral plexus. Possover, Marc, M.D., Ph.D.; Schneider, Thilo, M.D.; Henle, Klaus-Peter, M.D. Fertility and sterility, 2011, Vol.95 (2), p.756-758
• Recognition and treatment of endometriosis involving the sacral nerve roots. Lemos, Nucelio; D’Amico, Nicolau; Marques, Renato; Kamergorodsky, Gil; Schor, Eduardo; Girão, Manoel J. B. International Urogynecology Journal, 2016, Vol.27 (1), p.147-150
• Neuropelveology: New Groundbreaking Discipline in Medicine. Possover, Marc, MD, PhD; Forman, Axel, MD, PhD; Rabischong, Benoit, MD, PhD; Lemos, Nucelio, MD, PhD; Chiantera, Vito, MD, PhD. Journal of minimally invasive gynecology, 2015, Vol.22 (7), p.1140-1141
• Laparoscopic neuronavigation for deep lateral pelvic endometriosis: clinical and surgical implications. CHIANTERA, Vito; PETRILLO, Marco; ABESEDAZE, Elene; SOZZI, Giulio; DESSOLE, Margherita; DI DONNA, Mariano; SCAMBA, Giovanni; SEHOUILLI, Jalid; MECHSNERN, Sylvia. Journal of minimally invasive gynecology, 2018, Vol.25 (7), p.1217-1223
LEARNING OBJECTIVE

Understand a systematic approach to safely and efficiently normalize the obliterated posterior cul-de-sac.

THE APPROACH

1. Start with the easy stuff
2. Identify the uterosacral ligaments
3. Perform ureterolysis if required
4. Separate uterosacral ligaments from rectum
5. Develop the distal rectovaginal space
6. Separate rectum from main adhesion point

THE EASY STUFF

• Superficial endometriosis
• Physiologic adhesions of the sigmoid colon to left pelvic brim
• Free the ovaries, address endometriomas

DISCLOSURES

• I have no financial relationships to disclose
2

IDENTIFY THE UTEROSACRAL LIGAMENTS

YOUR LANDMARKS FOR SAFETY

- For each uterosacral ligament (USL), determine:
  - Is the USL visible?
  - If no, you must perform ureterolysis on that side
  - Does deep endometriosis involve the lateral USL?
  - If yes, you must perform uterolysis on that side
PERFORM URETEROLYSIS

**MOVE THE URETER TO SAFETY**

- Medial vs lateral approach
  - Medial approach: pelvic side wall relatively preserved
  - Lateral approach
    - Deep endometriosis lateral to uterosacral ligament
    - Planning uterine artery ligation at origin
- Maintain peri-ureteral vasculature
- Ureterolysis past uterine artery
- Aids: stents (plain, lighted), indocyanine green
SEPARATE UTEROSACRAL LIGAMENTS FROM RECTUM
DEVELOP THE UTEROSACRALS

• Start on the easy side
  • Open peritoneum lateral to rectum, starting cranial to the disease
  • Unzip caudally, between uterosacral and rectum
  • Goal: expose the lateral rectovaginal space
  • Complete bilaterally, leaving the main adhesion point for last

• Tips
  • Cranial traction on rectosigmoid from above
  • Rectal probe from below
  • If unable to separate uterosacral from rectum, access rectovaginal space by transecting uterosacral ligament near insertion on cervix
DEVELOP THE DISTAL RECTOVAGINAL SPACE

GET BELOW THE LESION

• Working on either side of the adhesion point, open the rectovaginal space distal to the adhesion point
• Goal: identify distal rectovaginal space to dissect towards
SEPARATE RECTUM FROM THE MAIN ADHESION POINT

- Divide adhesion point in a cranio-caudal fashion, using the developed rectovaginal space and distal rectum as your caudal target
- Goal: complete release of the adhesion point, exposure of the entire rectovaginal space
ADDRESS THE ENDOMETRIOSIS

YOU ARE NOW READY TO REMOVE THE DISEASE

• Anatomy is identified and separated
• Surgery is not complete
  • Excise all adhesion points
  • Address deep endometriosis
  • Remove residual superficial endometriosis

THE APPROACH
DECONSTRUCTING THE OBLITERATED POSTERIOR CUL-DE-SAC

1. Start with the easy stuff
2. Identify the uterosacral ligaments
3. Perform ureterolysis if required
4. Separate uterosacral ligaments from rectum
5. Develop the distal rectovaginal space
6. Separate rectum from main adhesion point
LEARNING OBJECTIVE
Understand a systematic approach to safely and efficiently normalize the obliterated posterior cul-de-sac

QUESTIONS & ANSWERS

Laparoscopic/Robotic Management of Genitourinary Endometriosis

Alan Lam
Associate Professor
Northern Clinical School, University of Sydney
Director, CARE
Past president, AGES
Former Board Member - AAGL, World Endometriosis Society (WES), International Gynaecological Endoscopy Society (ISGE)

Disclosure
• Consultancy: Arthrex
• Fellowship support: Olympus, Baxter, Ethicon Endosurgery

Genitourinary Endometriosis

Prevalence:
• 1-15% of all endometriosis
• 20–50% of women with deep infiltrative endometriosis.

Patho-neurological Mechanisms linking Endometriosis and Pain

- Endometrial implants
  • Secrete E2 and PGE2
  • Activate, proliferate dysfunctions macrophages
  • Release of pro-inflammatory cytokines (PGD2, Interleukins, TNF), angiogenic factors (Interleukins, VEGF)
  • Attract nerve growth factor (NGF), activate pain fibers, promote sprouting of nociceptors, enhance neuronal invasion of lesions


- Patho-immunological Mechanisms linking Endometriosis and Infertility

- Peritoneal inflammatory
  • altered cytokines, growth, angiogenic factors
  • Natural killer cells
  • Affect sperm, egg function and activity, fertilisation

- Functional
  • Affect egg, endometrial, spermal functions
  • injection growth, transport and embryo

- Anatomical
  • Adhesions
  • Tubal blockage
  • Mechanical disruption to conception

- Pain:
  • Pelvic, intercourse
  • Affect normal sexual relationship

- Ovaries:
  • Damage ovarian follicles, oocyte quantity
  • Release neuroendocrine (AMH)
  • Poor response to IVF stimulation drugs

- Uterus:
  • Aberrant gene expression, down-regulation of progesterone receptors
  • Affect ovarian receptivity to embryo implantation

- Bladder Endometriosis

- Partial thickness
- Full-thickness
Clinical presentation of bladder endometriosis

Asymptomatic
Benign endo. symptoms
Subtle
Incidental cystoscopic finding
Differential diagnosis of bladder lesions

Recurrent UTI
Dysuria
Haematuria
Frequency
Urgency

Robotic excision of full-thickness bladder endometriosis

A 39 year-old
- Dysmenorrhea
- Dyspareunia
- Dysuria
- Recurrent UTI
- Failed 4 IVF/ET
- Laparoscopic treatment of endometriosis
- Referred by fertility specialist for second opinion

Ureteric Endometriosis

Extrinsic 60%
Intrinsic 40%

Frober R. Surgical anatomy of the ureter. 2007 BUJ International

Clinical presentation of ureteric endometriosis

> 50% Asymptomatic
Typical Endometriosis symptoms
Vague pelvic or back pain
Subfertility
Flank pain
Haematuria
Dysuria
Pelvis mass
Silent loss of kidney

Imaging modalities to diagnose bladder endometriosis

Transvaginal ultrasound
MRI
Cystoscopy

Imaging modalities to assess ureteric endometriosis

Transvaginal and transabdominal ultrasound
DTPA Renal Scan
MRI
Ureterolysis

Resection of severe endometriotic ureteric obstruction and re-implantation with Psoas hitch

Multi-disciplinary approach to bladder, bowel and pelvic sidewall endometriosis

There is no consensus on the standard surgical technique for Ureteral Endometriosis
Simplified algorithm for management of endometriosis-associated infertility

According to guidelines of ASRM and ESHRE

1. Identifying the presence of endometriosis
2. Assessment of infertility
3. Decision on treatment

- Advanced reproductive age
- Menstrual cycle irregularity
- Pelvic pain
- Depression
- History of prior treatments

Treatment options:
- Medical therapy
- Surgical therapy
- Assisted reproductive technology (ART)

MDT Approach
- Endometriosis MIS
- IVF specialist
- Colorectal surgeon
- Urologist

References

1. Endometriosis. Zondervan K et al. Nat Rev Dis Primers 2018
2. Endometriosis and the Urinary Tract: From Diagnosis to Surgical Treatment. Mathew Leonardi et al. Diagnostics 2020
8. Frank R. Surgical anatomy of the ureter. 2007 BJS International
**Objectives**

- Discuss the impact of endometriomas on infertility
- Discuss the management of endometriomas in the infertile patient
- Discuss the various surgical techniques for the treatment of endometriomas

**The Endometrioma Decision Tree For Women With Fertility Concerns**

**Question 1**

Is the mass malignant?
1066 patients with 1323 persistent adnexal masses evaluated via transvaginal ultrasound – grayscale and doppler

73% benign
27% malignant

Best predictors of malignancy (M-rules)
1. Irregular solid tumor
2. Ascites
3. At least four papillary structures
4. Irregular multilocular solid tumor with a largest diameter of at least 100 mm
5. Very strong vascularization

Best predictors of benign disease (B-rules)
1. Unilocular cyst
2. Presence of solid components where the largest solid component is < 7 mm in largest diameter
3. Acoustic shadows
4. Smooth multilocular tumor less than 100 mm in largest diameter
5. No vascularization on Doppler examination

When prospectively tested the rules were applicable in 76% of the tumors
Sensitivity 95%
Specificity 91%


The Endometrioma Decision Tree For Women With Fertility Concerns

QUESTION 2
Does the endometrioma cause pain?

300 consecutive patients with ovarian endometrioma and pre-operative pain
Multiple logistic analysis
- Uterosacral involvement
  - Greater severity of chronic pelvic pain (OR = 2.1; 95% CI: 1.1-4.3) and deep dyspareunia (OR = 2.0; 95% CI: 1.1-3.5)
- Vaginal involvement
  - Greater intensity of lower urinary symptoms (OR = 13.4; 95% CI: 3.2-55.8)
- Intestinal involvement
  - Greater severity of dysmenorrhea (OR = 5.2; 95% CI: 2.7-10.3) and gastrointestinal symptoms (OR = 7.1; 95% CI: 3.3-15.3)

Severe pelvic pain in women with endometrioma is secondary to deep infiltrating endometriosis

269 endometrioma patients with peritoneal lesions
- Pain – 85.4%

81 endometrioma patients with no peritoneal lesions
- Pain – 38.3%

**QUESTION 3**

Is the endometrioma impacting spontaneous pregnancy or non-ART fertility treatment?

The Endometrioma Decision Tree For Women With Fertility Concerns

- Prospective randomized controlled trials – cystectomy vs. fenestration and coagulation
  - Beretta 1
    - N = 64, cysts > 3cm
    - Symptom recurrence
    - Cystectomy – 19 months
    - Fenestration and coagulation – 9.5 months
  - Alborzi 2
    - N = 100
    - Symptom recurrence at two years
    - Cystectomy – 15.8%
    - Fenestration and coagulation – 56.7%
    - Reoperation
      - Cystectomy – 5.8%
      - Fenestration and coagulation – 22.9%

- Consider egg/embryo freezing prior/after surgery secondary to recurrence.

---

**TABLE**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Observation Time</th>
<th>Cumulative Pregnancy Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystectomy ≥ 3 cm</td>
<td>2 years</td>
<td>66.7%</td>
</tr>
<tr>
<td>Drainage &amp; Coagulation</td>
<td></td>
<td>23.5%</td>
</tr>
<tr>
<td>Cystectomy ≥ 3 cm</td>
<td>1 year</td>
<td>59%</td>
</tr>
<tr>
<td>Drainage &amp; Coagulation</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Cystectomy &gt; 3 cm</td>
<td>3 years</td>
<td>78.3%</td>
</tr>
<tr>
<td>Plasma Energy</td>
<td>5 years</td>
<td>84.4%</td>
</tr>
</tbody>
</table>

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The Endometrioma Decision Tree For Women With Fertility Concerns

**Arguments Against Surgical Excision**

- Many publications including two recent meta-analyses have shown decreased AMH post surgery for up to 9 months.

- Concerns with progressive decline in ovarian reserve
  - Kwon performed a retrospective study on 38 cystectomy specimens in 38 women and found a direct proportional relationship between endometriomas ≥5 cm and ovarian parenchyma removal.
  - Significant decline in AMH was noted in women with endometriomas ≥5 cm compared to those with endometriomas ≤5 cm.
  - The impact of excision of endometriomas on ovarian reserve was assessed using a systematic review. A total of 9 studies were included, 3 of which showed a significant decline in AMH levels post surgery.
  - Of these 3 studies, 2 were prospective and 1 was retrospective.
  - There is a critical endometrioma size associated with reduced ovarian reserve: per ESHRE guidelines in 2014, an endometrioma ≥3cm should be removed prior to IVF.

**Conservative Management in Women With Ovarian Endometriomas and IVF**

<table>
<thead>
<tr>
<th>Study</th>
<th>No. of cases</th>
<th>Cyst size (mm)</th>
<th>Outcome</th>
<th>AMH decline</th>
<th>Total ovary</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somigliana (2012)</td>
<td>30</td>
<td>17-50</td>
<td>Kwon</td>
<td>13-23</td>
<td>&lt;0.05</td>
<td></td>
</tr>
<tr>
<td>Hirokawa (2011)</td>
<td>39</td>
<td>20-40</td>
<td>Hirokawa</td>
<td>25-35</td>
<td>0.05-0.1</td>
<td></td>
</tr>
<tr>
<td>Celik (2012)</td>
<td>39</td>
<td>25-40</td>
<td>Celik</td>
<td>25-35</td>
<td>0.05-0.1</td>
<td></td>
</tr>
<tr>
<td>Tsolakidis (2010)</td>
<td>30</td>
<td>10-30</td>
<td>Tsolakidis</td>
<td>15-25</td>
<td>0.05-0.1</td>
<td></td>
</tr>
<tr>
<td>Raffi (2012)</td>
<td>30</td>
<td>25-45</td>
<td>Raffi</td>
<td>25-35</td>
<td>0.05-0.1</td>
<td></td>
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<tr>
<td>Uncu (2013)</td>
<td>30</td>
<td>25-45</td>
<td>Uncu</td>
<td>25-35</td>
<td>0.05-0.1</td>
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<tr>
<td>Alborzi (2014)</td>
<td>30</td>
<td>25-45</td>
<td>Alborzi</td>
<td>25-35</td>
<td>0.05-0.1</td>
<td></td>
</tr>
</tbody>
</table>

- Greater decline in AMH if cyst size ≥ 5 cm (Celik, Hirokawa concur)
- More significant AMH decline with bilateral endometriomas
- Significant decline in AMH for up to 9 months
- AMH decline worse with bilateral endometrioma surgery, but not statistically significant

**Proposed mechanism why cystectomy worsens ovarian reserve**

- Thermal damage to ovarian parenchyma
- Removal of healthy ovarian cortex
- Contralateral healthy ovary

**IVF Success**

- Per ESHRE guidelines in 2014, an endometrioma ≥3 cm should be removed prior to IVF.
- Sensitivity 88%
- Specificity 96%
- Predictive value of 0.90
- Positive likelihood ratio of 2.8
- Negative likelihood ratio of 0.15

- No contralateral endometrioma
- Unilateral endometrioma ≤ 10 cm
- Contralateral healthy ovary

**Findings**

<table>
<thead>
<tr>
<th>Endometrioma Size</th>
<th>Number of Oocytes Retrieved</th>
<th>Ultrasound Chemotherapy</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple</td>
<td>26.9 ± 12.9</td>
<td>72.1 ± 17.1</td>
<td>0.001</td>
</tr>
<tr>
<td>Severe</td>
<td>26.1 ± 12.9</td>
<td>72.4 ± 17.1</td>
<td>0.001</td>
</tr>
</tbody>
</table>
### The Endometrioma Decision Tree For Women With Fertility Concerns

**QUESTION 5**

**Is there risk of endometrioma rupture at time of egg retrieval?**

- **Surgery vs expectant management**
  - Similar
    - Live birth rate (OR 0.9; 95% CI 0.63–1.28)
    - Clinical pregnancy (OR 0.97; 95% CI 0.78–1.2)
    - Miscarriage rate (OR 1.32; 95% CI 0.66–2.65)
  - Surgery
    - Decrease in antral follicle count and follicles retrieved
    - Higher doses of gonadotropins

- Similar results have been noted in meta-analyses by Tao in 2017 and Nickkho-Amiry in 2018.

- Small ovarian endometrioma should not be removed prior to IVF.

### References

### QUESTION 6

**Is there low antral follicle count in the ovary with the endometrioma?**
The Endometrioma Decision Tree For Women With Fertility Concerns

QUESTION 7
Is the patient having repetitive implantation failure?

The Endometrioma Decision Tree For Women With Fertility Concerns

Implantation Failure

- Recurrent pregnancy loss and unexplained infertility
  - Endometriosis is a progesterone resistant disease
  - Endometriosis causes defects in decidualization
  - Incidental treatment not recommended except in cases of repeated response or implantation failure

Mitigate risk of compromise to ovarian function at time of endometrioma removal

- Follow the endometrioma decision tree
- Never use bipolar desiccator on the bled of the ovarian cyst to gain hemostasis
- Promising techniques to preserve ovarian function
  - Plasma energy to desiccate bled
  - Tissue arrest techniques
    - Step 1: Desiccation
    - Step 2: Coagulation
    - Step 3: CO2 laser ablation of cyst wall
  - Suture
  - Biocompatible agents on endometrioma bed
  - Sclerotherapy
References


Sanchez AM, et al. The distinguishing cellular and molecular features of the endometriotic ovarian cyst: from pathophysiology to the potential endometrioma-mediated damage to the ovary. Hum Reprod Update.


RE TTCERVICAL ENDOMETRIOSIS IN WOMEN WITH INFERTILITY

Leila V. Adamyan
Professor, Academician of Russian Academy of Sciences

I have no financial relationships to disclose

ENDOMETRIOSIS IS DISEASE INDEPENDENT OF AGE

- Every 10th woman in reproductive age
  - (15-49 years) is affected by endometriosis.
- The prevalence of endometriosis in postmenopausal women is 2-4%
  - According to ACOG data
- 50-60% of women and adolescent with pelvic pain
  - (from menarche to premenopause) have endometriosis

PHENOTYPE OF ADOLESCENT VERSUS ADULT ENDOMETRIOSIS

<table>
<thead>
<tr>
<th>Adolescents endometriosis</th>
<th>Adult endometriosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep infiltrative (retrocervical)</td>
<td>Deep infiltrative</td>
</tr>
<tr>
<td>Adenomyosis</td>
<td>Adenomyosis</td>
</tr>
<tr>
<td>Peritoneal</td>
<td>Peritoneal</td>
</tr>
<tr>
<td>Microendometriomas</td>
<td>Endometriotic cysts</td>
</tr>
<tr>
<td>Rare</td>
<td>Seldom</td>
</tr>
<tr>
<td>Occult endometriomas</td>
<td>Common pathology</td>
</tr>
<tr>
<td>Moderate dysmenorrhea</td>
<td>Black intraperitoneal implants</td>
</tr>
<tr>
<td>Pain, resistant to oral contraception and non-steroidal anti-inflammatory drugs</td>
<td>Minimal fibrosis</td>
</tr>
<tr>
<td>Red, clear, or vesicular implants</td>
<td>Black intraperitoneal implants</td>
</tr>
<tr>
<td>Minimal fibrosis</td>
<td>White, fibrinous</td>
</tr>
<tr>
<td>Cortical, angiogenic adhesions, stigma of inversion with implant invaginated cortex, marble white, thin angiogenic mucosal lining, medulla, stretched</td>
<td>Dense adhesions, stigma of inversion with implant invaginated cortex, dark pigmented, endometrial tufts, encapsulated by fibrosis, medulla, smooth-muscle metaplasia, fibrosis and devascularization</td>
</tr>
<tr>
<td>Seldom</td>
<td>Development of endometriosis from mild to more severe forms is gradual</td>
</tr>
</tbody>
</table>

CLASSIFICATION AND STAGING-BASED STRATEGIES

- Peritoneal / ovarian
- Adenomyosis
- Deep infiltrative (retrocervical)

There is often discrepancy between the stage score and real clinical severity (ASRM, 1996)

Development of endometriosis from mild to more severe forms is gradual
**Diagnosis of Endometriosis: Visualization**

- **MRI**
  - **PET (POSITRON EMISSION TOMOGRAPHY)**
  - **CT, MDCT (Multidetector CT)**
  - **US (2D, 3D, 4D)**

**Bladder Endometriosis: Value of Three-Dimensional Ultrasound**

Performance of three-dimensional (3D) ultrasound with color Doppler in the diagnosis of bladder endometriosis compared with magnetic resonance imaging (MRI) and cystoscopy were investigated.

**New Approach – Three-Dimensional Printed Model for Deep Infiltrating Endometriosis**

Three-dimensional printing of infiltrating endometriosis may be a beneficial adjunct to 2D imaging and can provide further structural relationships to support surgical planning.

**MRI in Endometriosis**

- Dynamic contrast-enhanced MRI- NEW approach
  - DCE-MRI is the technique applied to measure tissue perfusion in congenital anomalies of the uterus.

- Tractography is a diagnostic method based on diffusion-weighted MRI, which allows to visualize the orientation and integrity of the conductive pathways in vivo.
**EFFECT OF ADOLESCENT ENDOMETRIOSIS ON FERTILITY IN FUTURE**

- 72.2% of adolescent patients desiring pregnancy achieved a successful live birth with 69.2% of these pregnancies occurring in patients with minimal or mild disease.
- Long-term follow-up study of 28 women with endometriosis diagnosed in adolescence have shown that fecundability rates strongly correlated with the stage of endometriosis and were 75, 55, 25, and 0% for stages I, II, III, and IV, respectively.

**ENDOMETRIOSIS AND INFERTILITY**

- The incidence of endometriosis diagnosed during laparoscopy is 20-55%.
- Genital endometriosis occurs in 5-10% of women of reproductive age.
- In healthy women, the chance of conception during each menstrual cycle in women with endometriosis without treatment is 2-10%.

**ENDOMETRIOSIS-ASSOCIATED INFERTILITY- THE QUALITY OF OOCYTES AND OVARIAN RESERVE ASSESSMENT**

- Reduction in the quantity and quality of mitochondria
- Decentralization of chromatin

**THE EFFECT OF ENDOMETRIOMAS ON OVARIAN Reserve**

- DNA mutations
- Altered angiogenesis
- Changes in gene expression profile
- Hormone receptivity
- Hormone biosynthesis
- Oxidative stress

**TUBAL FACTOR OF INFERTILITY IN ENDOMETRIOSIS**

- Genital endometriosis never leads to fallopian tubes occlusion.
- Endometriosis stage (DIE, endometriotic cyst) does not correlate with the fallopian tubes patency decreasing.
Endometrial receptivity decreased in endometriosis
There is decreasing of progesterone receptors expression in eutopic endometrium in women with endometriosis

THE FOLLICULAR FLUID OF PATIENTS WITH ENDOMETRIOSIS GENERATES LIPID PEROXIDATION AND DNA DAMAGE IN OOCYTES

There are frequent errors in meiosis during in vitro maturation of oocytes in the culture medium with peritoneal fluid (1% and 10%) obtained from women with and without endometriosis.

Endometriosis and aneuploidy rates

Endometriosis doesn’t cause genetic disorders.

THE ROLE OF MITOCHONDRIAL DYSFUNCTION IN ENDOMETRIOSIS-ASSOCIATED INFERTILITY
Endometriosis may be associated with mitochondrial dysfunction in cumulus cells.

There is a significant correlation between ATP levels in the cumulus cells and the number of mature oocytes, as well as pregnancy rates.

In patients with endometriosis, significantly reduced ATP levels in the cumulus cells were observed.

THE ROLE OF CUMULUS CELLS IN THE ASSESSMENT OF EMBRYOS IMPLANTATION POTENTIAL

Identification of embryos with the largest implantation potential is made by assessment of transcription activity in cumulus cells.

The PTGS2 gene expression is significantly lower in cumulus cells in women with external genital endometriosis, leading to a decreasing quality of the oocyte.
FACTORs DETERMINING STRATEGY OF ENDOmETrIosIS MANAGEMENT

- Etiopathogenetic factors
- Quality of life
- Anatomo-morphological forms
- Demographic characteristics
- Clinical signs
  - Genetic
  - Immune
  - Endocrine
  - Infection
  - Reproductive function
- Age
- Pelvic organs disorders

PAIN CAN BE TREATED WITHOUT CONFIRMATION OF DIAGNOSIS USING INVASIVE APPROACHES

ESHRE ENDOMETRIOSIS TREATMENT PATHWAY

- Pain
- Non-invasive investigations
- Laparoscopy
- Diagnosis confirmed
- Pain can be treated without confirmation of diagnosis using invasive approaches

PATIENT PRESENTS WITH SUSPECTED ENDOMETRIOSIS

- Empirical treatment
- Hormonal therapy
- NSAIDs
- Surgery
- Surgery
- Non-invasive investigations
- Laparoscopy
- Intravenous pyelography
- Pelvic ultrasound
- Hysteroscopy
- Identification of endometriotic lesions
- endometriosis and pelvic pain
- endometriosis and infertility
- pelvic organ disorders

RECOMMENDATIONS FOR SURGICAL TREATMENT

- Asymptomatic peritoneal superficial endometriosis does not require any treatment, even if occasionally found at laparoscopy (SOGC 2010), or may be gently eliminated without trauma to pelvic structures (Russian guidelines, 2012)
- Removal of endometriotic lesions provides pain relief (RCOG 2006; ASRM 2008; ACOG 2010; SOGC 2010; ESGE 2008/2013/2014; Russian Guidelines 2012) but is often followed by recurrence (28% after endometrioma, 32% after DIE, persistent symptoms after surgery for adenomyosis).

SURGICAL TREATMENT OF DEEP INFILTRATIVE ENDOMETRIOSIS

- The surgeon’s skills
- Recurrence
- Quality of life
- Location and volume of the lesion
- Depth of infiltration
- Bowel symptoms
- There is no strong evidence of whether radical bowel resection for endometriosis is more effective than less aggressive techniques.
- The results seem to vary individually depending on:

ENDOSCOPY IN TREATMENT AND DIAGNOSIS OF ENDOMETRIOSIS

- Excision of cystic adenomyosis
- Biopsy + immunohistochemical investigation
- Excision of cystic adenomyosis
- Visualization of endometriotic lesion
- Clinical signs
- Demographic characteristics
- Pelvic organs disorders
- Pain

SURGICAL TREATMENT OF ENDOmETrIosIS CYSTS

- Adequate surgery leads to temporary negative impact on the ovarian reserve (no more than 6 months) and depends on severity of endometriosis, surgical skills and energy used
- Large endometrioma (≥ 5 CM) significantly decreases the number of oocytes (more than 2 times)
- Endometrioma and ovarian reserve

ENDOCRINE MANAGEMENT OF ENDOmETrIosIS

- Clinical signs
- Demographic characteristics
- Pelvic organs disorders
- Pain
- Clinical signs
- Hormonal therapy
- NSAIDs
- Surgery
- Surgery
- Non-invasive investigations
- Laparoscopy
- Intravenous pyelography
- Pelvic ultrasound
- Hysteroscopy
- Identification of endometriotic lesions
- endometriosis and pelvic pain
- endometriosis and infertility
- pelvic organ disorders

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- Location and volume of the lesion
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- Bowel symptoms
- There is no strong evidence of whether radical bowel resection for endometriosis is more effective than less aggressive techniques.
- The results seem to vary individually depending on:
**GnRHa ARE USEFUL IN THE TREATMENT OF ENDOMETRIOSIS-ASSOCIATED PAIN AND INFERTILITY**

2005 and 2014 guidelines broadly similar
- Main difference is the structured methodology adopted
- "...a substantial part of the recommendations is..." similar...

- Clinicians are recommended to prescribe a GnRHa to reduce endometriosis-associated pain
  - triptorelin, nafarelin, leuprolide, buserelin, goserelin
- Hormonal add-back therapy is recommended to prevent bone loss and hypoestrogenic symptoms during GnRHa therapy
- Careful consideration is needed before giving GnRHa to young women and adolescents

**LONG-TERM MANAGEMENT OF ENDOMETRIOSIS**

Long-term prevention of endometriosis recurrence after surgical treatment (more than 6 months after surgery) includes a GnRHa + add-back therapy during 3-6 months and progestins use during 6 months or more

---

**PROGNOSIS OF MALIGNANCY**

According to histology, tumors originating from genital endometriosis correspond to:
- Clear cell carcinomas (14.8%)
- Endometrioid carcinomas (66.7%)

**PROGNOSIS OF PREGNANCY RATE IN WOMEN WITH ENDOMETRIOSIS BY FERTILITY INDEX**

PR-α

**PROGNOSIS OF RECURRENCE**

- No recurrence
- Recurrence

**PROGNOSIS OF MALIGNANCY**

According to histology, tumors originating from genital endometriosis correspond to:
- Clear cell carcinomas (14.8%)
- Endometrioid carcinomas (66.7%)

**ENDOMETRIOSIS SURGERY IN NATIONAL MEDICAL RESEARCH CENTER**

SURGERY (1991-2021 гг.) > 10000 OPERATIONS

- 4230 op – endometriotic cyst
- 2640 op – external genital endometriosis & adenomyosis
- 3370 OP – RETROCEVICAL ENDOMETRIOSIS

**RISK FACTORS OF MALIGNANT TRANSFORMATION OF ENDOMETRIOSIS**

- Not regressing foci of endometriosis in postmenopausal women, average AGE 51 YEARS
- Recurrent endometriosis with a history of more than 15 years
- Prolonged exposure to the pure estrogen in postmenopausal women (MHT)
- Repaired surgery for endometriosis
- Family history of ovarian endometriosis, obesity
- Expressed clinical symptoms of hormonal dysfunction

**MALIGNANT TRANSFORMATION OF ENDOMETRIOSIS**

Malignant transformation of endometriosis occurs generally in 1-3.6% of cases

Ovarian cancer develops in 1-5% of cases with ovarian endometriosis and in a lower percentage of cases with extra-ovarian endometriosis.

Endometriosis is present in 10 to 15% of patients with ovarian cancer.
ENDOMETRIOSIS AND COMBINED PATHOLOGY

- Endometrial hyperplasia
- Polyps
- Synechia
- Ovarian cyst
- Hydro/hematosalpinx
- Myoma
- Tubal infertility
- Adhesions
- Genital endometriosis

ENDOMETRIOSIS OF UTERO-SACRAL LIGAMENTS 38%
ENDOMETRIOIC CYST 6%
FALLOPIAN TUBES 4%
ADENOMYSIS 12%

EXTERNAL GENITAL ENDOMETRIOSIS – 56%
ENDOMETRIOSIS OF PERITONEUM 56%
ENDOMETRIOSIS OF UTERO-SACRAL LIGAMENTS 38%
ENDOMETRIOTIC CYSTS 6%
FALLOPIAN TUBES 4%
ADENOMYSIS 12%

• ENDOMETRIOSIS WITH INFLTRATIVE GROWTH- 23%
• RECURRENCE OF ENDOMETRIOSIS AFTER SURGERY- 7%

MAYER-ROKITANSKY-KÜSTER-HAUSER SYNDROME???

FUNCTIONAL RUDIMENTARY HORN

NONFUNCTIONAL RUDIMENTARY HORN WITHOUT CAVITY with ADENOMYSIS

PATHWAYS OF INVESTIGATIONS IN ENDOMETRIOSIS

IMMUNOBIOLOGICAL ASPECTS

Mass-spectrometry

GENETIC ASPECTS IN THE ENDOMETRIOSIS PATHOGENESIS

HYPERMETILATION

HYPMETILATION

BUT THE EXPRESSION OF MOST OF THEM IS DISRUPTED IN OTHER GYNECOLOGICAL DISORDERS: ESR, WNT4,IGF2, VEGF, TNFΑ, GM-CSF, PDGF, EGF, B-CATHENIN, K-RAS, TGFΒ,FGFR

GENETIC DISTRBANCES IN THE PATHOGENESIS OF ENDOMETRIOSIS HAVE A COMMON CHARACTER IN ANY LOCALIZATION OF THE PROCESS

V. S. Baranov, T. E. Ivaschenko,
T.Liehr,2015

FAMILY FORMS!

GENETIC ASPECTS IN THE ENDOMETRIOSIS PATHOGENESIS


GnRHa, anti-gestagens, mifepristone, aromatase inhibitors

GnRH- antagonists

Dienogest 2 mg

Castration

Progestins

norethisterone acetate

1970-1980

Laparotomy

Clinical and anamnestic data

Gynecological examination

1980-1990

Ultrasonography

Laparoscopy, hysteroscopy

XX cen...

1990-2000

Biochemical markers: CA 125

Mass spectrometry, microRNA, signaling pathways

2000-2010

2010-2021

1972

Increased of nerve growth factor (NGF) content in the peritoneal fluid

2011

Increased nerve growth factor (NGF) content in the peritoneal fluid

SP (substance of sensitizing the nerve fibers)

1978

1st successful IVF cycle in the world

1986

1990

Verlinsky, Chicago

13-day embryo blastocentesys in PGD

2013

NGS,

Surgical energy: thermal, electro, cryo, radio wave, ultrasound, laser

Polymers, suture materials

Real-time virtual sonography, 3D MRI, transvaginal elastography

2016

2017

Thank you!
Advances In Techniques For Bowel Resection In Endometriosis

Marco Antonio Bassi, PhD
Fellow American College of Surgeons
Professor of Surgery in Uniao University
Chief of the Surgery Departure in Ipiranga Hospital SP
marcobassi@me.com
Disclosure

I have no financial relationships to disclose
Challenge

Radicalism

Risk
shaving

nodule resection

segmental resection

Surgeries
Clinical exam and TVUS showing endometriosis compromising the rectum

With pain VAS > 7

Involvement of inner layer / muscularis or deeper > 3 cm

multiples nodules

large nodule > 3cm

segmental resection

Involvement of inner layer or outer layer muscularis

unique nodule

small nodule < 3 cm

nodule resection

Clinical exam and TVUS showing endometriosis compromising the rectum
Algorithm for surgical management of rectovaginal DE.

Original Article

Optimizing Perioperative Outcomes with Selective Bowel Resection Following an Algorithm Based on Preoperative Imaging for Bowel Endometriosis

Mauricio S. Abrão, MD, PhD, Marina P. Andres, MD, Rodrigo N. Barbosa, MD, Marco A. Bassi, MD, and Rosanne M. Kho, MD

From the Endometriosis Section, Gynecologic Division, Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo, São Paulo, Brazil (Drs. Abrão, Andres, and Barbosa), Gynecologic Division, BF – A Beneficência Portuguesa de São Paulo, São Paulo, Brazil (Drs. Abrão, Andres, and Bassi), and Benign Gynecology Surgery Section, Department of Obstetrics and Gynecology, Cleveland Clinic, Cleveland, Ohio (Dr. Kho).

![Diagram of bowel endometriosis with classification and surgical decision tree]

Shaving
- Lesion extends up to external muscularis

Discoid
- Unique nodule
- 

Segmental
- Single lesion
- 

All endometriosis surgeries, 2014–2017 (n = 827)

Bowel surgery for DE (n = 132)

Surgery planned by TVUS-BP

Surgery actually performed

Surgery that deviated from Pre-operative Plan

Abrao MA. et al., JMIG, 2019

Page 40
Shaving
Shaving
Rectal shaving for deep endometriosis infiltrating the rectum: a 5-year continuous retrospective series

Horacio Roncar, M.D., M.B., M.S.,* Susana Reina Montelongo Iriarte, M.D.,* Ines Nero, M.D.,* Martelina Miller, M.D.,* Lucio A. Vizzioli, M.D.,* Fabio Scerpella, M.D.,* Lorenzo Caprioglio, M.D.,* Susana Mancuso, M.D.,* Giuliana Bican, M.D.,* Paolo Carareo Ato, M.D.,* Antonio Gennari, M.D.,* Alfredo Kado, M.D.,* and Paola Engesæter, M.D.*

Department of Obstetrics and Gynecology, University of Padua, Italy; Department of Obstetrics and Gynecology, University of Genoa, Italy; Department of Obstetrics and Gynecology, University of Padua, Italy; Department of Obstetrics and Gynecology, University of Padua, Italy; Department of Obstetrics and Gynecology, University of Padua, Italy; and Department of Obstetrics and Gynecology, University of Padua, Italy.

Objective: To describe the results of a 5-year retrospective study of rectal shaving for deep endometriosis infiltrating the rectum in a single-center experience.

Methods: A retrospective multicenter study was conducted from January 2011 to December 2015, including a total of 122 cases. The mean age was 33.5 years, and the median duration of symptoms was 12 months. The preoperative comorbidity score was 0 in 109 cases (89.3%). The mean size of the rectal nodules was 1.3 cm, with a range of 0.5-9 cm. The mean operative time was 90 minutes, with a range of 40-240 minutes. The median hospital stay was 3 days. The mean length of catheterization was 1 day, with a range of 0-7 days. The discharge from hospital was on the 2nd day in 46 cases (38%). The postoperative complications included rectal fistula (10 cases, 8.2%), bladder atony requiring daily catheterization after discharge from hospital (8 cases, 6.6%), ureteral anastomosis fistulae (10 cases, 8.2%), pelvic hematoma/abscess (7 cases, 5.7%), and Clavien-Dindo classification of complications 1, 2, 3a, 3b, 4a, 4b.

Conclusion: Our data suggest that rectal shaving is a valuable treatment for deep endometriosis infiltrating the rectum, providing a low rate of postoperative complications, good improvement in digestive function, and satisfactory fertility outcomes.

Roman H. et al., Fertility and Sterility, 2016

### Table: Intraoperative findings and immediate postoperative complications.

<table>
<thead>
<tr>
<th>Findings</th>
<th>Whole sample N = 122 (%)</th>
<th>N = 14 (11.5%)</th>
<th>N = 90 (73.7%)</th>
<th>N = 18 (14.8%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height of rectal nodule</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5 cm (low)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.80</td>
</tr>
<tr>
<td>5–10 cm (middle)</td>
<td>60 (49.2)</td>
<td>8 (57.1)</td>
<td>44 (48.9)</td>
<td>8 (44.4)</td>
<td>.80</td>
</tr>
<tr>
<td>&gt;10 cm (upper)</td>
<td>62 (50.8)</td>
<td>6 (42.9)</td>
<td>46 (51.1)</td>
<td>10 (55.6)</td>
<td>.80</td>
</tr>
<tr>
<td>Operative time (min)</td>
<td>162 ± 72</td>
<td>86.4 ± 32.5</td>
<td>165.7 ± 66.5</td>
<td>204.7 ± 78.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Postoperative complications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectovaginal fistulae</td>
<td>1 (0.8)</td>
<td>0</td>
<td>1 (1.1)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rectal fistulae</td>
<td>1 (0.8)</td>
<td>0</td>
<td>1 (1.1)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bladder atony requiring daily catheterization after discharge from hospital</td>
<td>8 (6.6)</td>
<td>1 (7.1)</td>
<td>6 (6.7)</td>
<td>1 (5.6)</td>
<td></td>
</tr>
<tr>
<td>Ureteral anastomosis fistulae</td>
<td>1 (0.8)</td>
<td>0</td>
<td>1 (1.1)</td>
<td>0</td>
<td>.33</td>
</tr>
<tr>
<td>Pelvic hematoma/abscess</td>
<td>7 (5.7)</td>
<td>1 (7.1)</td>
<td>4 (4.4)</td>
<td>2 (11.1)</td>
<td>.86</td>
</tr>
<tr>
<td>Clavien-Dindo classification of complications</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>10 (8.2)</td>
<td></td>
<td>7 (7.8)</td>
<td>2 (11.1)</td>
<td>.49</td>
</tr>
<tr>
<td>2a</td>
<td>16 (13.1)</td>
<td>3 (21.4)</td>
<td>12 (13.3)</td>
<td>1 (5.6)</td>
<td></td>
</tr>
<tr>
<td>3a</td>
<td>1 (0.8)</td>
<td>1 (1.1)</td>
<td>1 (1.1)</td>
<td>1</td>
<td>.46</td>
</tr>
<tr>
<td>3b</td>
<td>7 (5.7)</td>
<td>0</td>
<td>6 (6.7)</td>
<td>1 (5.6)</td>
<td></td>
</tr>
<tr>
<td>4a</td>
<td>2 (1.6)</td>
<td>0</td>
<td>1 (1.1)</td>
<td>1 (5.6)</td>
<td></td>
</tr>
<tr>
<td>4b</td>
<td>1 (0.8)</td>
<td>0</td>
<td>1 (1.1)</td>
<td>1 (5.6)</td>
<td></td>
</tr>
</tbody>
</table>
VIDEO ARTICLE

Surgical Principles for Disc Resection of Deep Bowel Endometriosis

Luiz Flávio Fernandes, MD, Marco Antônio Bassi, MD, and Maurício Simões Abrão, MD, PhD

From the Endometriosis Section, Gynecologic Division (Dr. Fernandes and Abrão), Hospital das Clínicas HCFMUSP, Faculdade de Medicina, Universidade de São Paulo, São Paulo, Brazil, and Gynecologic Division (all authors), Beneficência Portuguesa de São Paulo, São Paulo, Brazil.

ABSTRACT  Objective: Colorectal involvement represents a serious complication in patients with endometriosis. When conservative treatment fails to provide relief, resection is required. In this article, we describe the surgical principles for disc resection performed in tertiary centers. Setting: Tertiary care center. Intervention: A mechanical bowel preparation is carried out. Additional 3-mm auxiliary ports are placed in the abdominal wall, and a 5-mm port is placed in the suprapubic area. The disc resection is performed by first passing a 5-mm endoscopic laparoscopic stapler through the colonic segment. The stapler is then passed through the rectum, and the anvil is opened. The colorectal disc is then passed through the staple line and closed by using an endoscopic stapler. Conclusion: Disc resection is the technique of choice for the management of colorectal lesions with less than 3 centimeters of longitudinal diameter. Invasive Gynecology (2019) 00, 1–1. © 2019.

Supplementary material associated with this article can be found in the online version at https://doi.org/10.1016/j.jmig.2019.07.021.

References

Shaving and Discoid
# Functional outcomes after disc excision in deep endometriosis of the rectum using transanal staplers: a series of 111 consecutive patients

Horace Roman, M.D., Ph.D., Basma Darwish, M.D., Valérie Bridoux, M.D., Ph.D., Rachid Chati, M.D., Sabrina Kermiche, M.D., Julien Coget, M.D., Emmanuel Huet, M.D., and Jean-Jacques Tuch, M.D., Ph.D.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Whole sample (n = 111)</th>
<th>Disc excision using the Rouen technique (n = 42)</th>
<th>Disc excision using the EEA stapler (n = 69)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up (mo), mean ± SD</td>
<td>22 ± 20</td>
<td>24 ± 22</td>
<td>21 ± 19</td>
<td>.45</td>
</tr>
<tr>
<td>Clavien 3 postoperative complications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectovaginal fistulae</td>
<td>8 (7.2)</td>
<td>5 (11.9)</td>
<td>3 (4.4)</td>
<td>.15</td>
</tr>
<tr>
<td>Pelvic abscess requiring second laparoscopy</td>
<td>3 (2.7)</td>
<td>2 (4.8)</td>
<td>1 (1.5)</td>
<td>.56</td>
</tr>
<tr>
<td>Pelvic abscess managed only by antibiotics</td>
<td>3 (2.7)</td>
<td>2 (4.8)</td>
<td>1 (1.5)</td>
<td>.56</td>
</tr>
<tr>
<td>Rectorrhage requiring endoscopy</td>
<td>3 (2.7)</td>
<td>0</td>
<td>3 (4.4)</td>
<td>.29</td>
</tr>
<tr>
<td>Transitory bladder atony requiring 3 wk to 6 mo auto-catheterization</td>
<td>10 (9)</td>
<td>6 (14.3)</td>
<td>4 (5.8)</td>
<td>.29</td>
</tr>
<tr>
<td>Stoma related complications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe abdominal hemorrhage requiring open surgery in emergency</td>
<td>3 (2.7)</td>
<td>0</td>
<td>3 (4.4)</td>
<td>.29</td>
</tr>
<tr>
<td>Peritonitis after stoma closure</td>
<td>1 (0.9)</td>
<td>0</td>
<td>1 (1.5)</td>
<td>1</td>
</tr>
<tr>
<td>Occlusion due to small bowel strangulation through mesocolon</td>
<td>1 (0.9)</td>
<td>0</td>
<td>1 (1.5)</td>
<td>1</td>
</tr>
<tr>
<td>Stenosis of colorectal anastomosis</td>
<td>1 (0.9)</td>
<td>0</td>
<td>1 (1.5)</td>
<td>1</td>
</tr>
<tr>
<td>Recurrences located on stapled line</td>
<td>2 (1.8)</td>
<td>1 (2.4)</td>
<td>1 (1.5)</td>
<td>1</td>
</tr>
</tbody>
</table>
Instruments and Techniques

Feasibility, Complications, and Recurrence after Discoid Resection for Colorectal Endometriosis: A Series of 93 Cases

Aude Jayot, MD, Sofiane Bendifallah, MD, PhD, Carole Abo, MD, Alexandra Arfi, MD, Clémence Owen, MD, and Emilie Durai, MD, PhD

From the Department of Gynecology and Obstetrics, Trousseau University Hospital, Assistance Publique des Hôpitaux de Paris, University Pierre and Marie Curie, Paris, France (Drs. Jayot, Bendifallah, Abo, Arfi, Owen, and Durai). INSERM UMR_S_707, Epidemiology, Information Systems, Modeling, University Pierre and Marie Curie, Paris, France (Drs. Bendifallah). Groupe de Recherche Clinique-6 (CRC-6-UMR1136): Centre d'Expertise en Endométriose (C3E), Paris, France (Dr. Durai), and UMR 9245, Université Pierre et Marie Curie, Paris, France (Dr. Durai).

Table 5

<table>
<thead>
<tr>
<th>Variables</th>
<th>Discoid Resection (N = 93)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of follow-up (months), median (range)</td>
<td>20 (1–40)</td>
</tr>
<tr>
<td>Duration of hospitalization (day), median (range)</td>
<td>7 (3–18)</td>
</tr>
<tr>
<td>Postoperative complications according to Clavien-Dindo classification, n (%)</td>
<td>Overall 26 (26)</td>
</tr>
<tr>
<td>No complication</td>
<td>68 (63)</td>
</tr>
<tr>
<td>Grade I</td>
<td>15 (14)</td>
</tr>
<tr>
<td>Grade II</td>
<td>16 (14)</td>
</tr>
<tr>
<td>Grade IIIA</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Grade IIIB</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Grade IV</td>
<td>0</td>
</tr>
<tr>
<td>Postoperative complications, n (%)</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>0</td>
</tr>
<tr>
<td>Rectal bleeding</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Colorectal anastomotic leakage</td>
<td>0</td>
</tr>
<tr>
<td>Rectovaginal fistula</td>
<td>0</td>
</tr>
<tr>
<td>Vesicovaginal fistula</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Wound infection</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Urinary infection</td>
<td>14 (15)</td>
</tr>
<tr>
<td>Pelvic abscess</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Ureretal injury</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Vaginal dehiscence</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Reperfusion</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Postoperative voiding dysfunction, requiring bladder intermittent self-catheterization, n (%)</td>
<td>15 (16)</td>
</tr>
<tr>
<td>Duration of postoperative self-catheterization, (day)</td>
<td>Mean (range) 30 (15–90)</td>
</tr>
<tr>
<td>Immediate (≤ 30 days), n (%)</td>
<td>11 (11)</td>
</tr>
<tr>
<td>Persistent (&gt; 30 days), n (%)</td>
<td>4 (4)</td>
</tr>
</tbody>
</table>

Table 4

<table>
<thead>
<tr>
<th>Intraoperative characteristics and complications</th>
<th>Discoid Resection (N = 93)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating time (min), median (range)</td>
<td>150 (60–350)</td>
</tr>
<tr>
<td>Conversion to open from laparoscopy, n (%)</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Conversion from discoid resection to segmental resection, n (%)</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Double discoid resection, n (%)</td>
<td>6 (6)</td>
</tr>
<tr>
<td>Additional lesions resected, n (%)</td>
<td>19 (20)</td>
</tr>
<tr>
<td>Vagina</td>
<td>91 (98)</td>
</tr>
<tr>
<td>Uterosacral ligaments</td>
<td>26 (28)</td>
</tr>
<tr>
<td>Parameters</td>
<td>27 (29)</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>10 (11)</td>
</tr>
<tr>
<td>Epiploplasty, n (%)</td>
<td>7 (7)</td>
</tr>
<tr>
<td>Prevesical peritoneum interposition, n (%)</td>
<td>27 (29)</td>
</tr>
<tr>
<td>Intraoperative complications, n (%)</td>
<td>0</td>
</tr>
<tr>
<td>Bladder injury</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Pneumothorax</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>1 (0.9)</td>
</tr>
</tbody>
</table>
## Disc resection

### Disc bowel resection - 561 cases

**Complications**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder atony</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Rectovaginal fistula</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Intestinal fistula</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Ureteral fistula</td>
<td>0</td>
<td>0.00 %</td>
</tr>
<tr>
<td>Anastomosis bleeding</td>
<td>5</td>
<td>1.15 %</td>
</tr>
<tr>
<td>Anastomosis Stenosis</td>
<td>2</td>
<td>0.45 %</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>7</td>
<td><strong>1.60 %</strong></td>
</tr>
</tbody>
</table>

*Marco Bassi, 2021*
Conclusion: The linear nodulectomy is a safe option in smaller lesions and both techniques are safe with low complications rates.
### Double Circular Stapler Technique for Bowel Resection in Rectosigmoid Endometriosis

Marco Aurelio Pinho Oliveira, PhD, Claudio P. Crispi, MD, Flavio M. Oliveira, MD, Paulo S. Junior, MD, Thiers S. Raymundo, MD, and Thiago D. Pereira, MD, MSc

From the Department of Gynecology and Obstetrics, State University of Rio de Janeiro, Rio de Janeiro, Brazil (Dr. Pinho Oliveira, Junior, and Pereira), and the Serra dos Orgãos University Center, UNIFEDO, Rio de Janeiro, Brazil (all authors).

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Number of Patients</th>
<th>Lesion Location</th>
<th>Lesion Size</th>
<th>Border Distance</th>
<th>Temporary Stoma</th>
<th>Fistula</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 / 2019</td>
<td>20</td>
<td>Retossigmoidal</td>
<td>53 ± 19 mm</td>
<td>50 mm</td>
<td>8 patients</td>
<td>0</td>
<td>Calvien-Dindo 3 (15%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Median 50 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Laparoscopic Double Discoid Resection With a Circular Stapler for Bowel Endometriosis

William Kondo, MD, MHSs*, Reitan Ribeiro, MD, Monica Tessmann Zomer, MD, and Renata Hayashi, MD

From the Department of Gynecology, Via Raíz Institute, Curitiba, Paraná, Brazil (all authors).

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Number of Patients</th>
<th>Lesion Location</th>
<th>Lesion Size</th>
<th>Border Distance</th>
<th>Minor Complications</th>
<th>Major Complications</th>
<th>Fistula</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 / 2015</td>
<td>16</td>
<td>Intestinal</td>
<td>30 to 60 mm</td>
<td>50 to 150 mm</td>
<td>12.5%</td>
<td>6.2%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Median 35 mm</td>
<td>Median 105 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Double Disk Excision of Large Deep Endometriosis Nodules Infiltrating the Low and Mid Rectum: A Pilot Study of 20 Cases

Ahmet Namazov, MD - Shamitha Kathurughe, MBBS - Jarit Marinha, MD - Celilde Hennelev, MD - Jean-Jacques Touch, MD, PhD - Horace Roman, MD, PhD

Original Article | Articles in Press

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Number of Patients</th>
<th>Lesion Location</th>
<th>Lesion Size</th>
<th>Border Distance</th>
<th>Minor Complications</th>
<th>Major Complications</th>
<th>Fistula</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 / 2019</td>
<td>20</td>
<td>Retossigmoidal</td>
<td>53 ± 19 mm</td>
<td>50 mm</td>
<td>40%</td>
<td>15%</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Median 50 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Futuros estudos devem ser realizados para avaliar alt. funcionais.
2016 / 2019 → 20 pacientes
Lesão retossigmoideo (53 ± 19 mm) - média de 50 mm
Menor distância borda anal 66 mm
Stomia transitória em 8 pac - 40%
Não houve nenhuma fistula
Complicações Calvien-Dindo 3 - 15%
Futuros estudos devem ser realizados para avaliar alt. funcionais

2016 / 2015 → 16 pacientes
Lesão intestinal (30 a 60 mm) = média de 35 mm
distância borda anal (50 a 150 mm) - média 105 mm
Complicações menores - 12.5% e Maiores com reintervenção - 6.2%
Não houve nenhuma fistula
Colorectal resection combining laparoscopic deep rectal shaving and transanal disc excision using a semi-circular stapler.

- 29 women with large deep endometriosis of the mid and lower rectum.
- Nodules located up to 10 cm above the anus
- Infiltrating the rectum on up to 6 cm length
- Rectovaginal fistula was recorded in two patients (7.2 %) and transitory bladder dysfunction in seven patients (25 %).

Conclusion. Based on our experience, we believe that our conservative technique is feasible and reproducible in large mid and lower rectal endometriosis and might avoid the risk of...
Conclusions:

Advanced laparoscopic surgical skills are needed to properly perform segmental rectosigmoid resection. Subspecialization and adequate pre treatment evaluation are crucial to ensure the correct decision making process within a complex algorithm for surgical management of bowel endometriosis.
Segmental resection
Postoperative complications after bowel endometriosis surgery by shaving, disc excision, or segmental resection: a three-arm comparative analysis of 364 consecutive cases

Shaving, Discoid and segmental

<table>
<thead>
<tr>
<th>TABLE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Postoperative complications.</strong></td>
</tr>
<tr>
<td><strong>Characteristics</strong></td>
</tr>
<tr>
<td>Follow-up (mo)</td>
</tr>
<tr>
<td>Clavien 3 postoperative complications</td>
</tr>
<tr>
<td>Clavien 3a postoperative complications</td>
</tr>
<tr>
<td>Rectovaginal fistula</td>
</tr>
<tr>
<td>Pelvic abscess requiring second laparoscopy</td>
</tr>
<tr>
<td>Pelvic abscess treated with only antibiotics</td>
</tr>
<tr>
<td>Serosal related early complications</td>
</tr>
<tr>
<td>Severe abdominal hemorrhage requiring open surgery in emergency</td>
</tr>
<tr>
<td>Peritonitis after stoma closure</td>
</tr>
<tr>
<td>Cutaneous abscess</td>
</tr>
</tbody>
</table>

Carole Abo et al., *Fertility*, 2018
Post-operative complications and recurrence rate after treatment of bowel endometriosis: Comparison of three techniques

Alicia Hernández Gutiérrez\textsuperscript{a,b,}, Emanuela Spagnolo\textsuperscript{b}, Ignazio Zapparoli\textsuperscript{b,}, Rubén García-Abadillo Seivane\textsuperscript{a}, Ana López Carrasco\textsuperscript{a}, Patricia Salas Bolívar\textsuperscript{b}, Isabel Pascual Miguel\textsuperscript{c,}.
\textsuperscript{a}Department of Obstetrics and Gynecology, ‘La Fe’ University Hospital, Valencia, Spain
\textsuperscript{b}Department of Obstetrics, ‘La Fe’ University Hospital, Alicante, Spain
\textsuperscript{c}Department of General Surgery, ‘La Fe’ University Hospital, Valencia, Spain

Table 3

<table>
<thead>
<tr>
<th>Complication Type</th>
<th>Group I (n=76)</th>
<th>Group II (n=20)</th>
<th>Group III (n=47)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-operative complications, n (%)</td>
<td>10.8 (6.5)</td>
<td>6.3 (2.4)</td>
<td>10.5 (4.2)</td>
<td>0.6</td>
</tr>
<tr>
<td>Dindo-Clavien Grade I</td>
<td>1 (13.8)</td>
<td>1 (5%)</td>
<td>2 (4.2%)</td>
<td>0.005</td>
</tr>
<tr>
<td>Dindo-Clavien Grade II</td>
<td>5 (6.5%)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Dindo-Clavien Grade IIIb</td>
<td>1 (15.7%)</td>
<td>1 (5%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Recurrence</td>
<td>1 (13.5)</td>
<td>1 (5%)</td>
<td>4 (17.7%)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Fig. 1: Kaplan-Meier analysis of recurrence in the three groups. The recurrence rate was significantly higher in the shaving group compared with discoid and segmental resection groups (12.7% vs 3.9% vs 1.8%) (p = 0.001).
Conclusions:

Laparoscopic segmental rectal resection for the treatment of deep infiltrating endometriosis including the rectal wall is associated with good results in endometriotic related symptoms, although patients should be informed about possible postoperative impairments in evacuation and incontinence. However, its clinical impact does not outweigh the benefit that can be achieved through this approach.

TABLE 1. Patient, surgical, and postoperative information

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Patients treated, n (%)</th>
<th>Patients with long-term follow-up, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>66 (100)</td>
<td>51 (100)</td>
</tr>
<tr>
<td>Median age, y (range)</td>
<td>33 (24–46)</td>
<td>32 (24–46)</td>
</tr>
<tr>
<td>Previous surgery for endometriosis</td>
<td>46 (70)</td>
<td>38 (75)</td>
</tr>
<tr>
<td>Previous medical treatment for endometriosis</td>
<td>41 (62)</td>
<td>32 (63)</td>
</tr>
<tr>
<td>Gestation</td>
<td>11 (17)</td>
<td>10 (20)</td>
</tr>
<tr>
<td>Parity</td>
<td>7 (11)</td>
<td>6 (12)</td>
</tr>
<tr>
<td>rAFS score* Na</td>
<td>55 (83)</td>
<td>43 (84)</td>
</tr>
<tr>
<td>Technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laparoscopy</td>
<td>63 (95)</td>
<td>48 (94)</td>
</tr>
<tr>
<td>Conversion</td>
<td>2 (3)</td>
<td>2 (4)</td>
</tr>
<tr>
<td>Primary laparotomy</td>
<td>1 (2)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Level of anastomosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At or below 2 cm from anal verge</td>
<td>40 (61)</td>
<td>29 (57)</td>
</tr>
<tr>
<td>Above 7 cm from anal verge</td>
<td>26 (39)</td>
<td>22 (43)</td>
</tr>
<tr>
<td>Median distance from anus, cm (range)</td>
<td>7 (3–18)</td>
<td>7 (3–18)</td>
</tr>
<tr>
<td>End–end anastomosis</td>
<td>56 (85)</td>
<td>42 (82)</td>
</tr>
<tr>
<td>Side–end anastomosis</td>
<td>9 (14)</td>
<td>9 (18)</td>
</tr>
<tr>
<td>Operation time, min, median (range)</td>
<td>309 (160–480)</td>
<td>300 (180–480)</td>
</tr>
<tr>
<td>Median estimated blood loss, ml (range)</td>
<td>280 (50–1500)</td>
<td>200 (50–1000)</td>
</tr>
</tbody>
</table>

Complications

- Anastomotic insufficiency: 2
- Anastomotic stenosis*: 1
- Rectovaginal fistula: 1
- Transient urinary retention: 2
- Ureter lesion: 1
- Superficial wound infection: 1
- Abscess in the urogenital tract: 1
- Mortality: 0

Additional surgery

- Salpingo-ooophorectomy: 11
- Ureterolysis: 26
- Ureteroneocystostomy: 1
- Peritoneal excision of endometriotic implants: 45
- Resection of dorsal part of the vagina: 6
- Protective ileostomy: 7
- Median follow-up, n (range): N/A 86 (26–168)

*Eleven patients total had endometriosis stage rAFS score III.
*Trusted by single endoscopic dilation.
### Segmental bowel resection - 1106 cases

**Major Complications**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder atony (transient)</td>
<td>4</td>
<td>0.40%</td>
</tr>
<tr>
<td>Rectovaginal fistula (derivation)</td>
<td>3</td>
<td>0.30%</td>
</tr>
<tr>
<td>Intestinal fistula (derivation)</td>
<td>4</td>
<td>0.50%</td>
</tr>
<tr>
<td>Intestinal fistula (conservative)</td>
<td>4</td>
<td>0.50%</td>
</tr>
<tr>
<td>Ureteral fistula</td>
<td>2</td>
<td>0.20%</td>
</tr>
<tr>
<td>Anastomosis bleeding</td>
<td>4</td>
<td>0.40%</td>
</tr>
<tr>
<td>Anastomosis Stenosis</td>
<td>5</td>
<td>0.50%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>26</td>
<td>2.58%</td>
</tr>
</tbody>
</table>
Results of Surgical Treatment

Conclusion: In conclusion, our experience showed that patient complaints on bowel and urinary alterations after segmental resection are transient, lasting for no more than 2 months. The bowel and urinary symptoms were not associated with the size of the bowel segment resected, whereas rectal bleeding at 2 months was significantly associated with the distance from anal verge. Segmental resection was also associated with a great improvement in constipation at 12 months postoperative.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical and morphologic characteristics of the 413 patients submitted to segmental resection of the rectosigmoid for bowel endometriosis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>33.6 ± 5.1</td>
<td>(21–44)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.8 ± 3.6</td>
<td>(17.5–33.3)</td>
</tr>
<tr>
<td>Rectosigmoid lesion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>1.3 ± 0.6</td>
<td>(1–4)</td>
</tr>
<tr>
<td>Size (mm)</td>
<td>30.9 ± 10.2</td>
<td>(5.0–83.0)</td>
</tr>
<tr>
<td>Diameter (mm)</td>
<td>20.1 ± 6.9</td>
<td>(0.6–45.0)</td>
</tr>
<tr>
<td>Circumference (%)</td>
<td>34.2 ± 12.1</td>
<td>(9.0–90.0)</td>
</tr>
</tbody>
</table>

Bassi, MA. JMIG, 2019

**Fig. 3**
Frequency of stooling distribution in accordance with distance of anal verge at 3 (PO3), 6 (PO6), and 12 (PO12) months postoperatively.
Twenty-one patients managed for multiple colorectal deep endometriosis infiltrating nodules.

Interventions. Concomitant disc excision and segmental resection of both the rectum and sigmoid colon.

Results. Rectal nodules were managed by disc excision and by segmental resection in 20 patients and 1 patient respectively. Sigmoid colon nodules were removed by short segmental resection and disc excision in 15 and 6 patients respectively. Rectal nodule diameter was between 1-3 cm and over 3 cm in 33% and 67% of patients respectively. Associated vaginal infiltration requiring vaginal excision was recorded in 76.2% of patients. Until three (3) complications occurred in 28% of patients, including four with rectal fistulae (19%).

Conclusion. Our data suggest that combining disc excision and segmental resection to remove multiple deep endometriosis nodules infiltrating the rectum and the sigmoid colon can preserve the healthy bowel located between two consecutive nodules. However, the rate of postoperative complication is high, particularly in patients with large low rectal nodules.
Rectal endometriosis treated with Transanal Endoscopic Microsurgery - a video vignette

M.A. Javed; PhD, FRCS – Colorectal registrar

Mr G. Botros; MBCh, MSc, FRCOG – Consultant gynaecologist

Transanal endoscopic microsurgery (TEMS) is a recognized technique for treating benign rectal polyps and early rectal cancer. We report that TEMS is a treatment option for rectal endometriosis [1,2].

A 35-year-old otherwise healthy nulliparous lady presented with cyclical dyschezia, chronic pelvic pain, severe dysmenorrhea and rectal bleeding. A diagnosis of complex endometriosis was made and she underwent laparoscopic surgery in 2015. Her symptoms did not resolve and she was re-referred to our unit in 2017. A pelvic MRI revealed a focus of deep infiltrating endometriosis in the rectal wall with obliteration of the rectovaginal septum and thickening of the right uterosacral ligament. Flexible sigmoidoscopy confirmed an endometriotic nodule at nine o’clock, seven cm from the anal verge and with extrinsic compression. Her case was reviewed at the regional endometriosis MDT which recommended that this might be resectable by TEM with the default option of anterior resection + temporary ileostomy. Informed consent was obtained.

TEMS was performed under general anaesthetic with the patient in the left lateral position and nodule was completely excised. The defect was closed with vicryl V lock stitch. A laparoscopy was performed at the end to ensure that there was no peritoneal breach or contamination. There were no complications in the post-operative period and the patient had a good functional outcome at six week follow up. Histology confirmed the rectal endometriosis to be completely excised.
Results of Surgical Treatment

Quality of Life after Segmental Resection of the Rectosigmoid by Laparoscopy in Patients with Deep Infiltrating Endometriosis with Bowel Involvement

Marco Antonio Bassi, MD*, Sergio Podgaec, MD, João Antonio Dias, Jr, MD, Nicolau D’Amico Filho, MD, Carlos Alberto Petta, MD, and Mauricio S. Abrao, MD

From the Department of Obstetrics and Gynecology, University of São Paulo Medical School (Drs. Bassi, Podgaec, Dias, and Abrao), Samorâmos Hospital (Drs. Bassi and Filho), and Department of Obstetrics and Gynecology, University of Campinas Medical School (Dr. Petta), São Paulo, Brazil.

151 patients (0/2/6 months / 1 year)
There was a statistically significant improvement (p<.001) of the patients in all pain-related symptoms, as well as significant increases (p<.001) in the scores of all SF-36 domains and in the sum of the components involving physical and mental health

2011

Original Article

Assessment of Long-Term Bowel Symptoms After Segmental Resection of Deeply Infiltrating Endometriosis: A Matched Cohort Study

Enrique Soto, MD, MSc, Michelle Catenacci, MD, Carrie Bodenste, MD, J. Eric Jelovsek, MD, MMEd, and Tommaso Falcone, MD*

From the Obstetrics, Gynecology, and Women’s Health Institute, Cleveland Clinic, Cleveland, OH (all authors); South Florida Institute for Reproductive Medicine, Miami, FL (Dr. Soto); Department of Obstetrics and Gynecology, Herbert Wertheim College of Medicine at Florida International University, Miami, FL (Dr. Soto); Advanced Fertility Center of Chicago, Chicago, IL (Dr. Catenacci); Fertility Center of Las Vegas, Las Vegas, NV (Dr. Bodenste), and Department of Obstetrics and Gynecology, University of Nevada School of Medicine, Las Vegas, NV (Dr. Bodenste).

71 patients (T0/T48 months)
Significant improvement of pre-existing bowel symptoms and maintained during the assessed period

2016
Recurrence of deep endometriosis and pain remain the major problems in the treatment of the disease. The greatest cause of recurrence seems to be incomplete surgical removal ...

Administration of GnRHα is followed by a temporary improvement of pain in patients with incomplete surgical treatment. It seems that it has no role in post-surgical pain when the surgeon is capable of complete removal of endometriosis implants ...

Probabilistic sensitivity analysis indicated that 6-month GnRH-a therapy is cost-effective in most cases at a threshold of $7,400 / QALY, regardless of the type of endometriosis.
Conclusion

"... Whilst less aggressive surgery is associated with higher recurrence rates and reduced fertility rates, surgery, for DIE is complex and prone to complications. As such surgical management of bowel endometriosis should be performed in specialized centres by experienced surgeons with the appropriate skill set. ... "

Int Journal of Women’s Health, 2020
Conclusion: In conclusion, we were unable to demonstrate that conservative surgery for the management of deep rectal endometriosis improves digestive and urinary functional outcomes, when compared to radical colorectal resection. However, colorectal resection is responsible for a higher rate of bowel stenosis requiring complementary procedures under general anaesthesia. Patients should be informed that there is a risk of abnormal bowel movements in 40% of cases regardless of surgical management. The findings of our trial may be the support for sample size estimations for further randomized trials and may be included in future meta-analyses focusing on functional outcomes after colorectal surgery for endometriosis.
Complications

Bowel complications in endometriosis surgery

<table>
<thead>
<tr>
<th>Before surgery</th>
<th>At surgery</th>
<th>After surgery</th>
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<tbody>
<tr>
<td>• Clinical and nutritional evaluation and correction of comorbidities</td>
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<td>• Bowel preparation</td>
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<td>• Avoid segmental resection</td>
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<td>• Attention to anastomosis perfusion and tension</td>
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<td>• Good anastomosis techniques</td>
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<td>• Inferior mesenteric artery ligation</td>
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<td>• Omental flap</td>
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<td>• Fibrin glue</td>
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<td>• The use of drain</td>
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<td>• Leakage tests</td>
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<td>• Protection ostomy</td>
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<td>• Adhesion barriers</td>
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<td>• Supplemental oxygen</td>
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<td>• Fast track</td>
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<td>• Early recognition of complications</td>
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</table>
Conclusions

- Good preoperative evaluation
- Anatomy review
- Multidisciplinary team
- Individualize treatment
- Radicalism > risks - “complete surgery”
Obrigado !!
CULTURAL AND LINGUISTIC COMPETENCY

Assembly Bill 1195 was signed into law on July 1, 2006 requiring local CME providers, such as the AAGL, to assist in enhancing the cultural and linguistic competency of California’s physicians (researchers and doctors without patient contact are exempt). This mandate follows the federal Civil Rights Act of 1964, Executive Order 13166 (2000) and the Dymally-Alatorre Bilingual Services Act (1973), all of which recognize, as confirmed by the US Census Bureau, that substantial numbers of patients possess limited English proficiency (LEP). It is the intent of the Legislature to encourage physicians and surgeons, continuing medical education providers located in California, and the Accreditation Council for Continuing Medical Education to meet the cultural and linguistic concerns of a diverse patient population through appropriate professional development.

Linguistic Competence: Providing readily available, culturally appropriate oral and written language services to limited English proficiency (LEP) members through such means as bilingual/bicultural staff, trained medical interpreters, and qualified translators.

Cultural Competence: A set of congruent behaviors, attitudes, and policies that come together in a system or agency or among professionals that enables effective interactions in a cross-cultural framework.¹

Cultural and Linguistic Competence: The ability of health care providers and health care organizations to understand and respond effectively to the cultural and linguistic needs brought by the patient to the health care encounter.

Cultural competence requires organizations and their personnel to:

- Value diversity.
- Assess themselves.
- Manage the dynamics of difference.
- Acquire and institutionalize cultural knowledge.
- Adapt to diversity and the cultural contexts of individuals and communities served.

California Business & Professions Code §2190.1(c)(3) states that associations that accredit continuing medical education courses shall develop standards before July 1, 2006, for compliance with the cultural competency requirements. The associations may update these standards, as needed, in conjunction with an advisory group that has expertise in cultural and linguistic competency issues. Cultural competency means a set of integrated attitudes, knowledge, and skills that enables a health care professional or organization to care effectively for patients from diverse cultures, groups, and communities. At a minimum, cultural competency is recommended to include the following: (A) Applying linguistic skills to communicate effectively with the target population. (B) Utilizing cultural information to establish therapeutic relationships. (C) Eliciting and incorporating pertinent cultural data in diagnosis and treatment. (D) Understanding and applying cultural and ethnic data to the process of clinical care, including, as appropriate, information pertinent to the appropriate treatment of, and provision of care to, the lesbian, gay, bisexual, transgender, and intersex communities.

Title VI of the Civil Rights Act of 1964 prohibits recipients of federal financial assistance from discriminating against or otherwise excluding individuals on the basis of race, color, or national origin in any of their activities. In 1974, the US Supreme Court recognized LEP individuals as potential victims of national origin discrimination. In all situations, federal agencies are required to assess the number or proportion of LEP individuals in the eligible service population, the frequency with which they come into contact with the program, the importance of the services, and the resources available to the recipient, including the mix of oral and written language services. Additional details may be found in the Department of Justice Policy Guidance Document: Enforcement of Title VI of the Civil Rights Act of 1964 [http://www.usdoj.gov/crt/cor/pubs.htm].

Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency”, signed by the President on August 11, 2000 [http://www.usdoj.gov/crt/cor/13166.htm] was the genesis of the Guidance Document mentioned above. The Executive Order requires all federal agencies, including those which provide federal financial assistance, to examine the services they provide, identify any need for services to LEP individuals, and develop and implement a system to provide those services so LEP persons can have meaningful access.

Dymally-Alatorre Bilingual Services Act (Assembly Bill 305) requires that state agencies that serve a substantial number of non-English-speaking people employ a sufficient amount of bilingual persons in order to provide certain information and render certain services in a language other than English.