AGL 2022

51st GLOBAL CONGRESS ON MIGS

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# SYLLABUS

## Surgical Tutorial 3: Bowel Endometriosis: State-of-the-Art on Surgical Treatment


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

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Helder Ferreira, MD, PhD, MBA*
William Kondo, MD*
Mario Malzoni, MD*

**Surgical Tutorial 3: Bowel Endometriosis: State-of-the-Art on Surgical Treatment**

***Chair:*** *Helder Ferreira, MD, PhD,MBA*

***Faculty:*** *William Kondo, MD, Mario Malzoni, MD*

**Course Description**

The surgical management of bowel endometriosis is a point of clinical controversy. When choosing a surgical approach, issues to consider include efficacy of pain relief, risk of repeat surgery, and risk of complication.

This high-profile session will use a case study to illustrate many facets of care when managing patients with bowel endometriosis. Each expert will share their knowledge and remarkable experience in the advanced surgical approach to such a challenging disease whose treatment becomes even more defiant when it invades the bowel. The bowel shaving, discoid, and segmental resections will be explained *step-by-step* with relevant "tips and tricks." The intra- and postoperative complications related to bowel endometriosis surgery may be very aggressive and associated with high morbidity or even mortality. This surgical tutorial will present several techniques to prevent complications (denervation, fistula, leakage, and bowel dysfunction) and risk factors in a didactic and interactive way.

**Learning Objectives**

*At the conclusion of this course, the participants will be able to:* 1) Identify the indications for shaving, discoid or segmental resections; 2) Articulate in a step-by-step way the different surgical treatments for bowel endometriosis; and 3) Recognize possible risk factors and preventive measures to prevent complications.

**Course Outline**

| | | |
|---|---|---|
| 3:15 pm | Welcome, Introduction and Course Overview | H. Ferreira |
| 3:20 pm | Bowel Endometriosis Treatment: State-of-the-Art | W. Kondo |
| 3:35 pm | Discoid Resection and Totally Laparoscopic Resection with Transanal Natural | M. Malzoni |
| 3:50 pm | Bowel Anastomosis Leakage: Risk Factors and Prevention Techniques | H. Ferreira |
| 4:05 pm | Questions & Answers | All Faculty |
| 4:20 pm | Adjourn | |

# BOWEL ENDOMETRIOSIS: State of the art

Dr. William Kondo
Gynecologist
Vita Batel Hospital, Curitiba - PR, Brazil
Nações Hospital, Curitiba - PR, Brazil
Sugisawa Hospital, Curitiba - PR, Brazil

## Disclosure

"I have no financial relationships to disclose"

## Objectives

- Demonstrate different surgical techniques to manage bowel endometriosis

## BOWEL ENDOMETRIOSIS

**DEFINITION**
- IMPLANT THAT PENETRATES DEEPER THAN THE MUSCLE LAYER OF THE BOWEL

Chapron et al. Anatomical distribution of deeply infiltrating endometriosis: surgical implicationsand proposition for a classification. Hum Reprod 2003;18:157-161.

**PREVALENCE**
- 45 TO 56% OF WOMEN WITH DIE

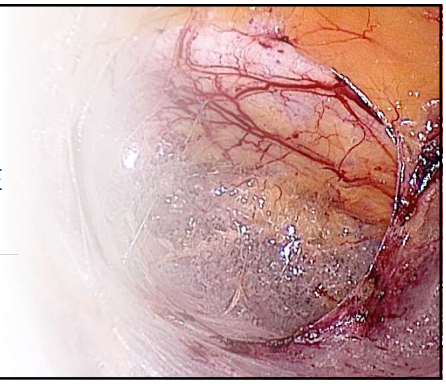
Ginecol Obstet 2012; 34: 278-284.
Piketty et al. Preoperative work-up for patients with deeply i
ultrasonography must definitely be the first-line imaging exa

- 57.1% OF WOMEN WITH OVARIAN E

Ginecol Obstet 2012;34: 420-424.

10% REPRODUCTIVE AGE WOMEN
20-30% DIE
45-56% BOWEL ENDO
1.5%

## PREOPERATIVE WORK-UP



## CLINICAL HISTORY

- SYMPTOMS EVOCATIVE OF ENDOMETRIOSIS
- PAIN SYMPTOMS
- DYSMENORRHEA
- DYSPAREUNIA
- CHRONIC PELVIC PAIN
- INTESTINAL / URINARY CYCLIC SYMPTOMS
- FERTILITY

## PHYSICAL EXAM

VAGINAL EXAMINATION

NODULARITY OR THICKENING IN THE VAGINA, RECTUM, RV SEPTUM, US LIGAMENTS, RETROCERVICAL AREA

IT IS NOT ENOUGH TO DIAGNOSE DIE

- 40% OF PELVIC EXAM REPORTED NORMAL
- DEPTH OF INFILTRATION
- LOCATION OF THE LESIONS

Koninckx PR, et al. Diagnosis of deep endometriosis by clinical examination during menstruation and plasma CA-125 concentration. Fertil Steril. 1996 Feb;65(2):280-7.
Bazot M, et al. Diagnostic accuracy of physical examination, transvaginal sonography, rectal endoscopic sonography, and magnetic resonance imaging to diagnose deep infiltrating endometriosis. Fertil Steril. 2009 Dec;92(6):1825-33

## IMAGING

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


## DIAGNOSIS

Comparison between clinical examination, transvaginal sonography and magnetic resonance imaging for the diagnosis of deep endometriosis

**TVUS** has good sensitivity, specificity, PPV, NPV and accuracy in cases of **DEEP RETROCERVICAL** and **RECTOSIGMOID ENDOMETRIOSIS**

Table III. Sensitivity, specificity, positive and negative predictive values and accuracy of TVUS, digital vaginal examination and MRI in the diagnosis of deep retrocervical and rectosigmoid endometriosis in the 104 patients submitted to laparoscopy.

| Site | Method | Sensitivity | Specificity | PPV | NPV | Accuracy |
|---|---|---|---|---|---|---|
| Recto-sigmoid | TVUS | 98.1% (53/54) | 100% (50/50) | 100% (53/53) | 98% (50/51) | 99% (103/104) |
| | MRI | 83.3% (45/54) | 98% (49/50) | 97.8% (45/46) | 84.4% (49/58) | 90.3% (94/104) |
| | Vaginal-digital exam | 72.2% (39/54) | 54% (27/50) | 62.9% (39/62) | 64.2% (27/42) | 63.4% (66/104) |
| | *P*-value | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Retro-cervical | TVUS | 95.1% (39/41) | 98.4% (62/63) | 90% (39/40) | 97% (62/64) | 97% (101/104) |
| | MRI | 76% (31/41) | 68% (43/63) | 61% (31/51) | 83% (43/53) | 71% (74/104) |
| | Digital vaginal exam | 68.3% (28/41) | 46% (29/63) | 45.1% (28/62) | 69% (29/42) | 54.8% (57/104) |
| | *P*-value | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |

TVUS, transvaginal ultrasonography; MRI, magnetic resonance imaging; *n*, number of cases; PPV, positive predictive value; NPV, negative predictive value.

## DIAGNOSIS

Transvaginal ultrasonography with bowel preparation is able to predict the number of lesions and rectosigmoid layers affected in cases of deep endometriosis, defining surgical strategy

**TVUS is an adequate exam for evaluating DEEP INFILTRATING BOWEL ENDOMETRIOSIS Importance for defining SURGICAL STRATEGY**

Table II Analysis of the information that TVUS-BP is able to offer with respect to lesions of deep endometriosis of the rectum and sigmoid

| | Sensitivity | Specificity | PPV | NPV | Accuracy |
|---|---|---|---|---|---|
| Rectosigmoid lesion detection | 97% (79/81) | 100% (113/113) | 100% (79/79) | 98% (113/115) | 99% (192/194) |
| 95% Confidence interval | 90.5–99.6 | 95.9–100 | 94.2–100 | 93.2–99.7 | 96.6–99.9 |
| Presence of at least two rectosigmoid lesions | 81% (26/32) | 99% (160/162) | 93% (26/28) | 96% (160/166) | 96% (186/194) |
| 95% Confidence interval | 63.0–92.1 | 95.1–99.8 | 75.0–98.8 | 91.9–98.5 | 91.7–98.1 |
| Lesions affecting the submucosal/mucosal layer of the bowel | 83% (30/36) | 94% (135/144) | 77% (30/39) | 96% (135/141) | 92% (165/180) |
| 95% Confidence interval | 66.5–93.0 | 88.1–96.9 | 60.3–88.3 | 90.6–98.3 | 86.4–95.1 |

## DIAGNOSIS

ORIGINAL ARTICLE

Deep infiltrating endometriosis: imaging features and laparoscopic correlation

Review article

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

**REPRODUCIBILITY**

Check for updates

Relevance of Imaging Examinations in the Surgical Planning of Patients with Bowel Endometriosis

Carlos H. Trippia[1], Monica T. Zomer[2,3], Carlos R.T. Terazaki[1], Rafael L.S. Martin[2,3], Reitan Ribeiro[2,3] and William Kondo[2,3]

[1]Department of Radiology, Roentgen Diagnostics Institute, Curitiba, Paraná, Brazil. [2]Department of Gynecology, Sugisawa Medical Center, Curitiba, Paraná, Brazil. [3]Department of Gynecology, Vita Batel Hospital, Curitiba, Paraná, Brazil.

## DIAGNOSIS

ULTRASOUND in Obstetrics & Gynecology

Original Paper

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

**Localization and severity of endometriotic lesions / adhesions can be diagnosed ACCURATELY and NON-INVASIVELY using TVUS GOOD SURGICAL CORRELATION**

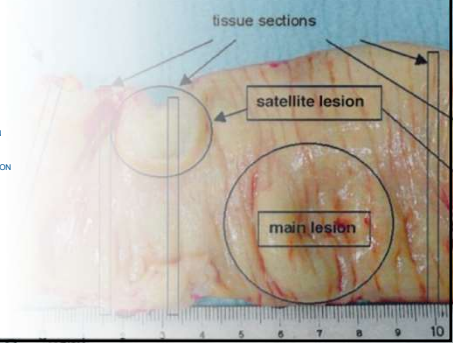
**Results:** In total, 745 women were included in the analysis. Preoperative TVS/TAS and surgical findings showed a concordance rate ranging between 86% and 99% for the presence or absence of endometriotic lesions/adhesions, depending on the evaluated #Enzian compartment. The concordance rate between TVS and surgery ranged between 71% and 92% for different severity grades, in #Enzian compartments O, T, A, B and C. Determining the presence or absence of adhesions at the level of the tubo-ovarian unit and classifying them accurately as Grade 1, 2 or 3 on TVS was more dif… compartm… ranged fr… (#Enzian… FU and F… compartm… compartm… compartm…

**Conclusions:** The localization and severity of endometriotic lesions/adhesions, as described and classified according to the #Enzian classification, can be diagnosed accurately and non-invasively using TVS/TAS. The #Enzian classification provides a uniform classification system for describing endometriotic lesions, which can be used both at TVS/TAS and during surgical evaluation. © 2021 International Society of Ultrasound in Obstetrics and Gynecology.

## CHARACTERISTICS OF THE IMPLANT

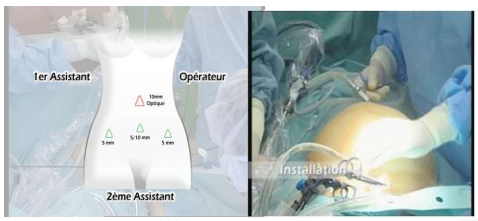
**MULTIFOCALITY**
• LESIONS UP TO 2CM FROM THE MAIN LESION

**MULTICENTRICITY**
• LESIONS BEYOND 2CM FROM THE MAIN LESION





## SURGICAL TECHNIQUE







## TYPES OF SURGERY

Gynecology & Obstetrics

Laparoscopic Treatment of Deep Infiltrating Endometriosis Affecting the Rectosigmoid Colon: Nodulectomy or Segmental Resection?

SEGMENTAL BOWEL RESECTION

CONSERVATIVE PROCEDURES

## TYPES OF SURGERY

**CONSERVATIVE (NODULECTOMY)**
- RECTAL SHAVING
- MUCOSAL SKINNING
- DISCOID RESECTION
  - SCISSORS (HARMONIC) + SUTURE
  - CIRCULAR STAPLER
  - LINEAR STAPLER

**RADICAL**
- SEGMENTAL BOWEL RESECTION

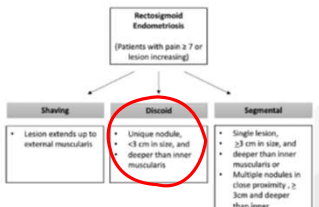
Kondo et al. Laparoscopic treatment of deep infiltrating endometriosis affecting the rectosigmoid colon: nodulectomy or segmental resection? Gynecol Obstetric. 2013; 13:001.

## TYPES OF SURGERY

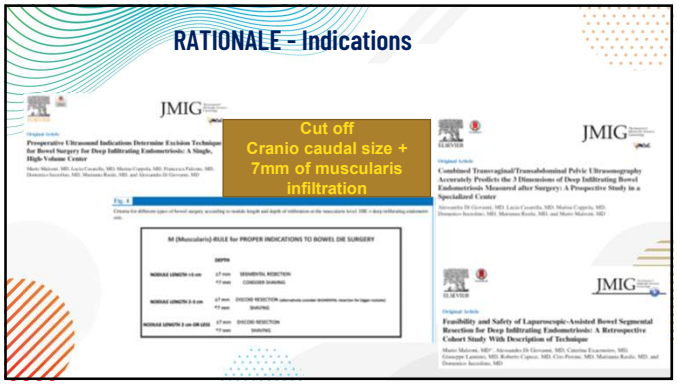
JMIG

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

Fig. 1
Clinical pathway algorithm for bowel endometriosis according to the clinical examination and preoperative transvaginal ultrasound with bowel preparation.



## RATIONALE - Indications




- SURGICAL APPROACH

## GENERAL STRATEGY

EXPOSURE

RESTORE NORMAL ANATOMY

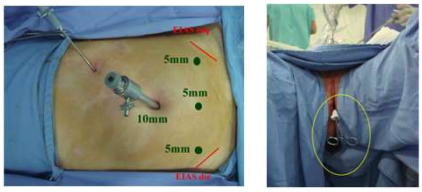
START DISSECTION IN HEALTHY TISSUE

FOLLOW THE BUBBLES

AVOID UNNECESSARY DISSECTION AND EXCISION

## SURGICAL STEPS

### PATIENT POSITIONING



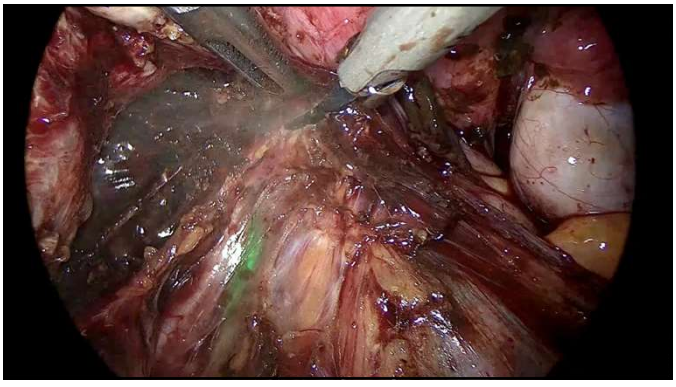

Kondo et al. Surgical Treatment of deep endometriosis by laparoscopy. In: Laparoscopy: New developments, procedures and risks (ISBN 978-1-61470-747-9);

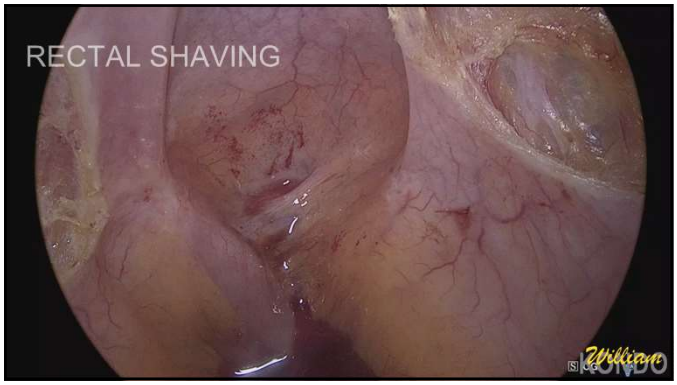
## SYSTEMATIC APPROACH

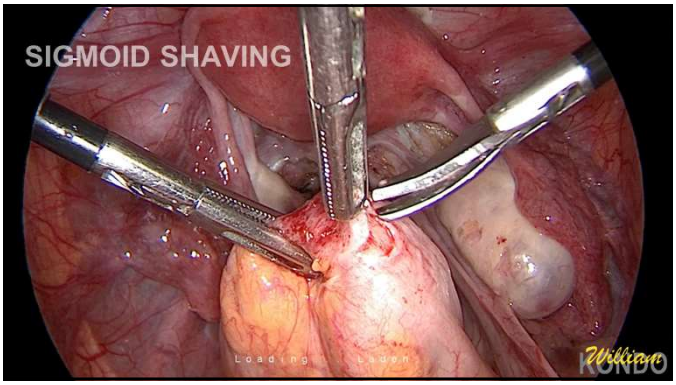
ADHESIOLYSIS
EXPOSURE
SIGMOID COLON DETACHMENT
ACCESS TO THE LEFT URETER
- URETERAL IDENTIFICATION

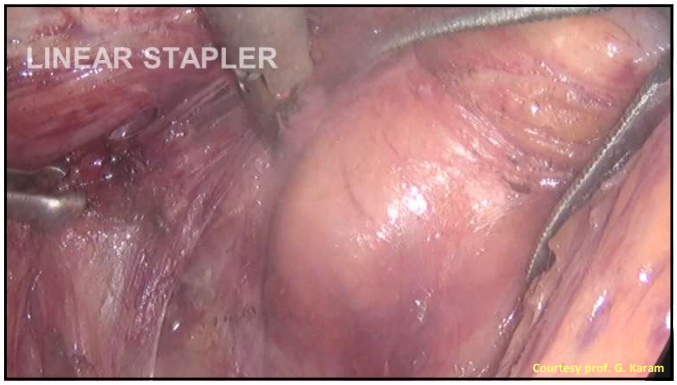
ACCESS TO THE PARARECTAL FOSSA
- HYPOGASTRIC NERVE

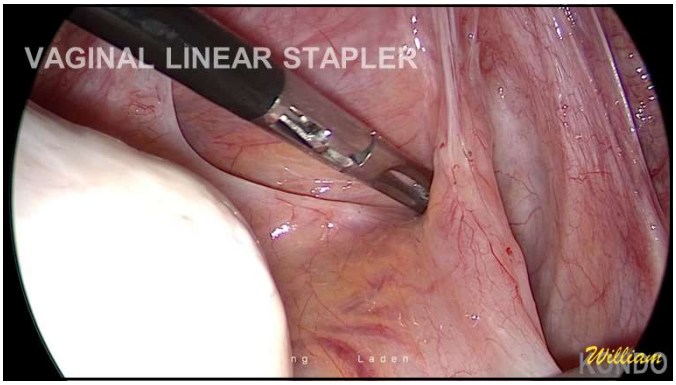
NODULE DETACHMENT
**BOWEL TREATMENT**
SAFETY TESTS



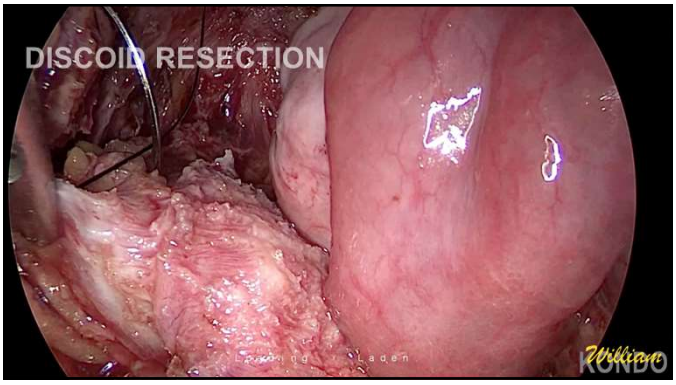

RECTAL SHAVING

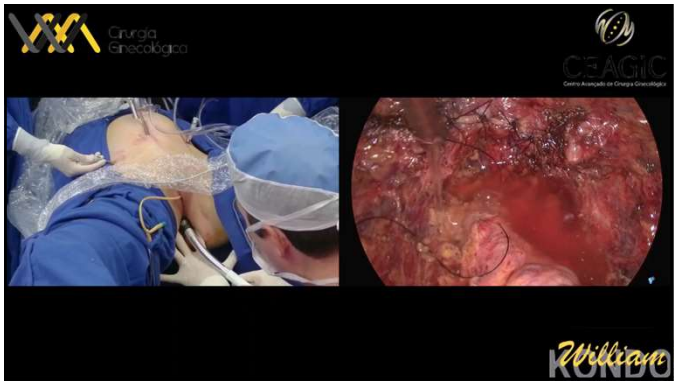

SIGMOID SHAVING

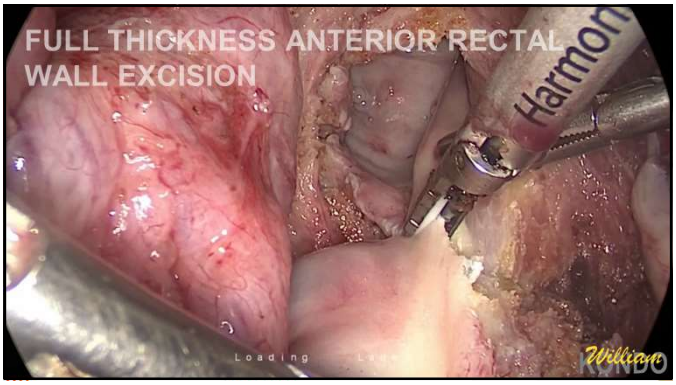

LINEAR STAPLER
Courtesy prof. G. Karam

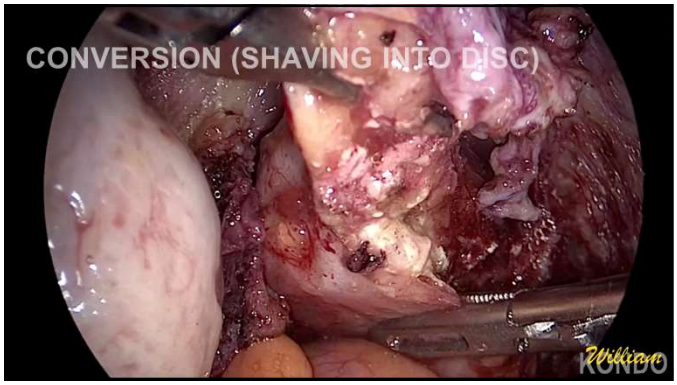

VAGINAL LINEAR STAPLER


SHAVING - DISCOID RESECTION

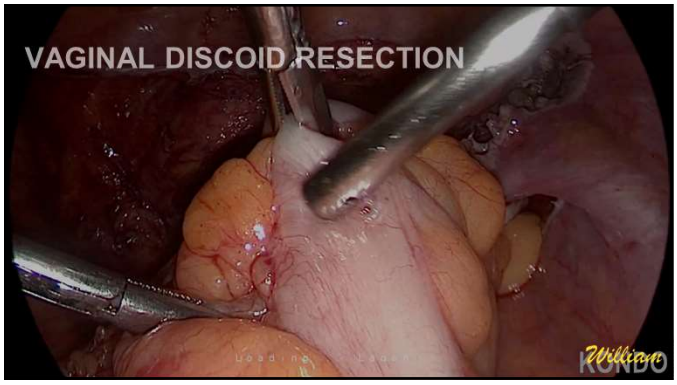

DISCOID RESECTION

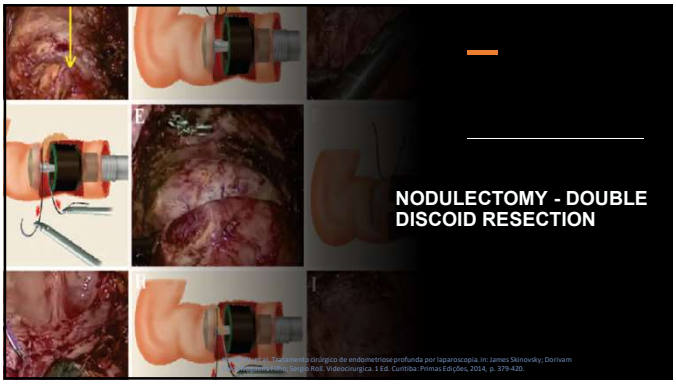

Cirurgia Ginecológica
CEAGIC
William
KONDO

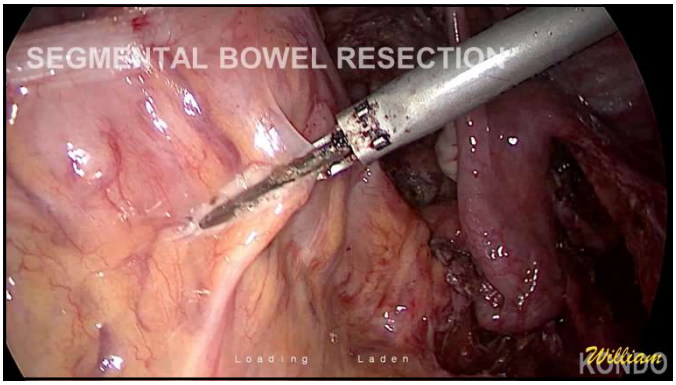

FULL THICKNESS ANTERIOR RECTAL WALL EXCISION
Harmon
William
KONDO

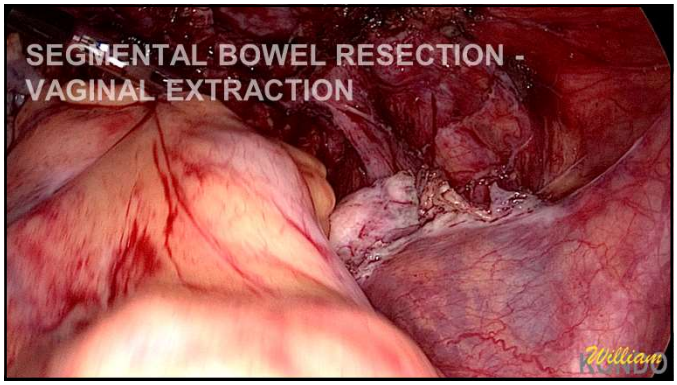

CONVERSION (SHAVING INTO DISC)
William
KONDO

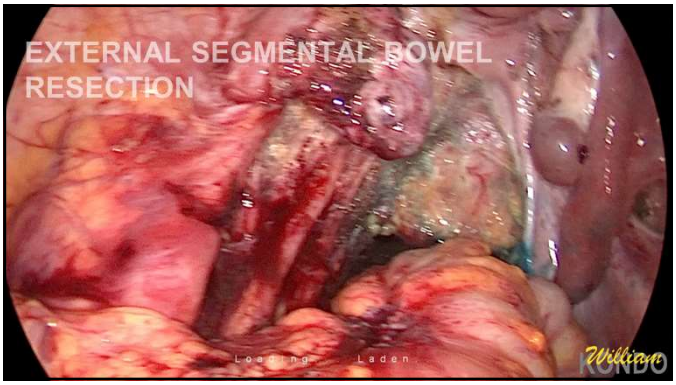

EXTERNAL DISCOID RESECTION
William
KONDO


VAGINAL DISCOID RESECTION
William
KONDO

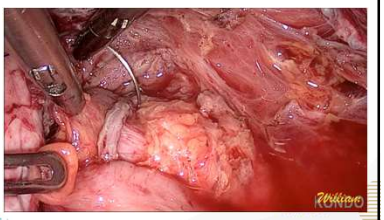

NODULECTOMY - DOUBLE DISCOID RESECTION

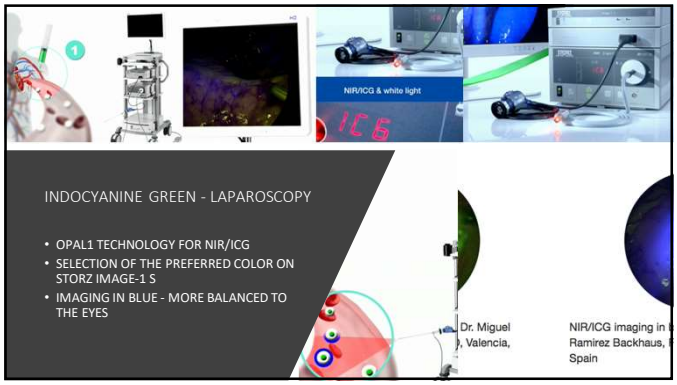

## SAFETY TEST

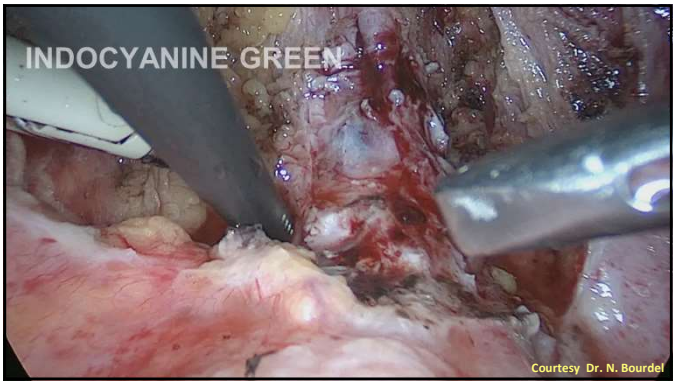


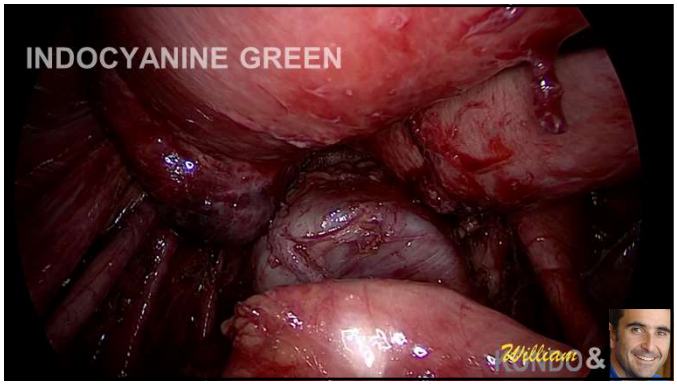
## INDOCYANINE GREEN - LAPAROSCOPY

- FLUORESCENCE IMAGING DEVICE (WITH AN ADAPTED LIGHT SOURCE AND CAMERA = NEAR INFRARED FLUORESCENCE IMAGING
- FLUORESCENT DYE INTRAVENOUSLY = ICG = INDOCYANINE GREEN

- DIAGNOSIS (NORMAL- APPEARING, "CLEAR" LESIONS OF ENDOMETRIOSIS)
- ASSESS TISSUE PERFUSION






Personal
Experience
Private Center

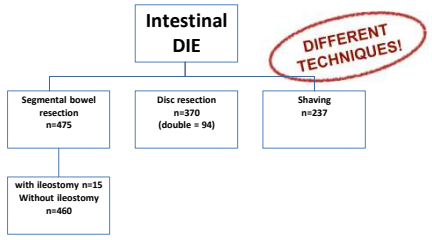
## STRATEGY – Personal experience

**PREOPERATIVE**
- LIQUID DIET 24H BEFORE THE SURGICAL PROCEDURE
- BETWEEN 8 AND 4H BEFORE SURGERY: GATORADE
- FASTING 4H BEFORE THE SURGICAL PROCEDURE
- RECTAL ENEMA 4H BEFORE SURGERY

**INTRAOPERATIVE**
- GENERAL ANESTHESIA
- BLADDER CATHETER AND OROGASTRIC TUBE (RETRIEVED AT THE END OF THE PROCEDURE)
- NO DRAIN

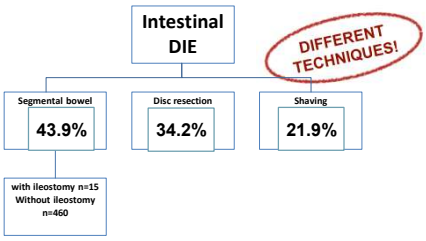
## STRATEGY – PERSONAL EXPERIENCE

JANUARY 2010 – DECEMBER 2021
1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)




## STRATEGY – PERSONAL EXPERIENCE

JANUARY 2010 – DECEMBER 2021
1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)




## STRATEGY – PERSONAL EXPERIENCE

JANUARY 2010 – DECEMBER 2021
1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)

| | Segmental (n=475) | Disc resection (n=370) | Shaving (n=237) |
|---|---|---|---|
| Age (yrs) | 35.9 | 35.2 | 34.8 |
| Ca-125 | 63.1 | 36.4 | 38.3 |
| Surgical time (min) | ***164*** | ***116*** | ***133*** |
| Hysterectomy | 97 (20.4%) | 68 (18.4%) | 57 (24%) |
| Vaginal resection | 130 (27.4%) | 83 (22.4%) | 62 (26.2%) |
| Number of intestinal implants | 2.5 | 1.1 | 1.02 |
| Intraoperative bleeding (cc) | 62.5 | ***38.6*** | ***58.9*** |

## STRATEGY – PERSONAL EXPERIENCE

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47.8% 40.8% 50.2%

## STRATEGY – PERSONAL EXPERIENCE

**POSTOPERATIVE**
- CLEAR LIQUIDS 4 TO 6H AFTER SURGERY
- PAIN CONTROL (DIPYRONE + NSAIDS)
  - OPIOIDS (IF NEEDED)
- EARLY DEAMBULATION
- DVT PROPHYLAXIS 7 TO 10 DAYS (ENOXAPARIN 40MG)

**DISCHARGE CRITERIA**
- GOOD PAIN CONTROL
- NO NAUSEA / VOMITING
- SPONTANEOUS VOIDING
- NO INTESTINAL BLEEDING

# PERSONAL EXPERIENCE

**POSTOPERATIVE RECOMMENDATIONS**

- LIQUID / SEMI-SOLID DIET IN THE FIRST 7 DAYS
- RE-EVALUATION IN POD 5 TO 7

# STRATEGY – PERSONAL EXPERIENCE

**JANUARY 2010 – DECEMBER 2021**
**1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)**

| | Segmental (n=475) | Disc resection (n=370) | Shaving (n=237) |
|---|---|---|---|
| Hospitalization (hours) | 25.4 | 20 | 17.8 |

# STRATEGY – PERSONAL EXPERIENCE

**JANUARY 2010 – DECEMBER 2021**
**1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)**

| | Segmental (n=475) | Disc resection (n=370) | Shaving (n=237) |
|---|---|---|---|
| Conversion | 0.21% (1) | 0 | 0 |
| Urinary retention | 1.4% [7 (<7d)]<br>4% [19 (30d)]<br>1.5% [7 (>30d)] | 1.3% [5 (<7d)]<br>1.6% [6 (26d)] | 2.1% [5 (<7d)]<br>0.42% [1 (30d)] |
| Rectal bleeding | 2.1% [10 (small)]<br>1.05% [5 massive (2 transfusion)] | 8.6% [32 (small)]<br>2.1% [8 massive (4 transfusions)] | 0 |
| Anastomotic fistula | 1.7% [8 (6 reoperations)] | 0 | 0 |
| Reoperations | 2.5% [12 (2x subocclusion – 3x vaginal vault bleeding – 6x fistula - 1X bleeding)] | 0.54% [2 (pelviperitonitis)] | 0.4% [1 (pelviperitonitis)] |
| Stenosis | 1.5% (7) | 0 | 0 |

# STRATEGY – PERSONAL EXPERIENCE

**JANUARY 2010 – DECEMBER 2021**
**1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)**

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| Stenosis | 1.5% (7) | 0 | 0 |

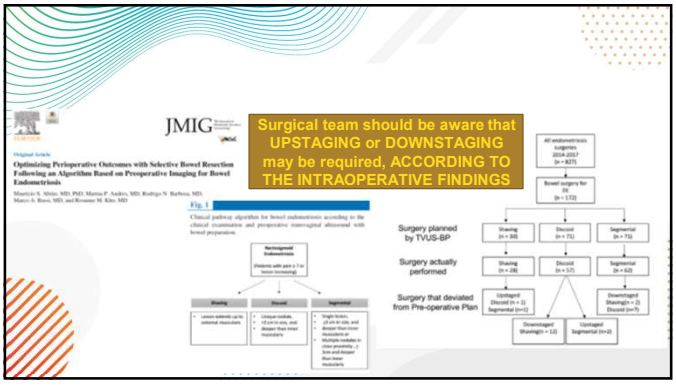
5.5%
1.6%
0.42%
2.1%
1.7%
2.5%

# STRATEGY – PERSONAL EXPERIENCE

**JANUARY 2010 – DECEMBER 2021**
**1082 (46.35%) INTESTINAL DIE (AT THE RECTOSIGMOID)**

**READMISSION**
- GLOBAL = 2.96% (N=32)
  - CONSERVATIVE SURGERY = 0.98% (N=6)
  - SEGMENTAL BOWEL RESECTION = 5.47% (N=26)

**REOPERATION**
- GLOBAL = 1.38% (N=15)
  - CONSERVATIVE SURGERY = 0.49% (N=3)
  - SEGMENTAL BOWEL RESECTION = 2.53% (N=12)



## PATIENT INFORMATION & CONSENT FORM

DISEASE
SURGICAL PLAN
RISKS

PAIN ⟷ FERTILITY
HYSTERECTOMY

# STRATEGY

**ANTERIOR COMPARTMENT**
- BLADDER
- URETER

**POSTERIOR COMPARTMENT**
- RETROCERVICAL / US LIGAMENT
- POSTERIOR VAGINAL FORNIX
- RECTUM (SHAVING – DISC RESECTION – SEGMENTAL BOWEL RESECTION) – ILEOSTOMY
- URETER

## TAKE HOME MESSAGES

**BOWEL ENDOMETRIOSIS HAS HIGH PREVALENCE**

**DIAGNOSIS IS CLINICAL + IMAGING EXAMS**

**SURGICAL INDICATION IS CLINICAL**

**SURGERY MUST BE COMPLETE AND DEPENDS ON TRAINING, KNOWLEDGE OF ANATOMY AND SURGICAL PRINCIPLES/TECHNIQUES**

Cirurgia Ginecológica — KONDO — CEAGIC Centro Avançado de Cirurgia Ginecológica

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www.endoscopiaginecologica.med.br

THANKS FOR YOUR ATTENTION!

HOSPITAL DAS NAÇÕES Você em boas mãos — HOSPITAL VITA BATEL — Centro Médico Hospitalar Sugisawa

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# Discoid Resection and Totally Laparoscopic Resection with Transanal Natural Orifice Specimen Extraction (N.O.S.E.) for Deep Endometriosis Infiltrating the rectum

**Mario Malzoni, M.D.**
Center for Advanced Pelvic Surgery
Avellino, Italy

ENDOSCOPICA MALZONI GROUP



## CORRECT MANAGEMENT in REFERRAL CENTERS

- Correct anamnesis and clinical evaluation
- Skilled imaging
- Correct surgical indication, preoperative surgical strategy
- Complete counseling and informed consent
- Surgical experience and knowledge of anatomy
- Adequate post-op surveillance
- Skilled management of post-op complications

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



Surgery for **deep endometriosis infiltrating the sigmoid colon or the rectum**

### Indications

- Symptoms
  if hormonal treatment is - not effective
  - not tolerated
  - contraindicated
- Severe Bowel stenosis with risk of occlusion
- Infertility



Surgery for **deep endometriosis infiltrating the sigmoid colon or the rectum**

### Key objectives


- To **restore functions and anatomy**
- To **remove symptoms**
- To **preserve pelvic autonomic innervation**
- To **achieve a complete removal of all endometriotic lesions** in order to:
  - minimize the risk of intra-/post-operative complications
  - maximize the chance of pregnancy (if desidered)
  - prevent the risk of recurrence



Surgery for **deep endometriosis infiltrating the sigmoid colon or the rectum**

### Indications

for shaving, discoid and segmental resection


To date,
**there is no consensus**
regarding patient eligibility for
shaving, discoid or segmental resection



## Tailoring radicality for bowel surgery
## Should we excise fibrosis or can we leave it?

Endometrial stromal and glands have been shown to represent only a minor component of endometriotic lesions and they are often absent in some disease forms.

Smooth muscle component and fibrosis represent consistent features of all disease forms.

Based on these observations, the definition of endometriosis should be reconsidered as:

A fibrotic condition in which endometrial stroma and epithelium can be identified

Vigano P, et all. Hum Reprod. 2018 Mar 1;33(3):347-352

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## . Should we excise fibrosis or can we leave it?

Mario Malzoni, M.D.

- Fibrosis is an essential disease aspect
- Adhesions are typically free of endometrial components that is a pathologic characteristic of the disease
- Should pay close attention to the progress on the management of fibrotic desease such as endometriosis
- Some cases of endometriosis-related extensive pelvic adhesions may paradoxically remain without a definite diagnosis or erroneously considered long-term consequence of pelvic inflammatory disease.
- False negative diagnoses can occur if pathologists stick to the current definition of endometriosis requiring the concurrent demonstration of both endometrial stroma and glands
- Improve accuracy of non-invasive diagnosis with use of USG and MRI

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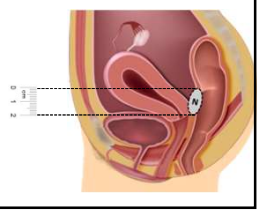
### Indications

for shaving, discoid and segmental resection

The **decision** making process with regard to surgical choice **should take into consideration**

→ Largest nodule diameter

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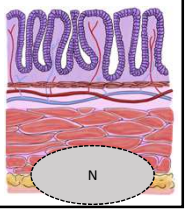
### Indications

for shaving, discoid and segmental resection

The **decision** making process with regard to surgical choice **should take into consideration**

→ Largest nodule diameter

→ Infiltration depth

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### Indications

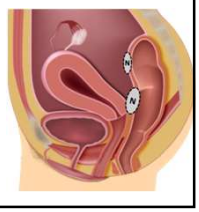
for shaving, discoid and segmental resection

The **decision** making process with regard to surgical choice **should take into consideration**

→ Largest nodule diameter

→ Infiltration depth

→ Number of lesions

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### Indications

for shaving, discoid and segmental resection

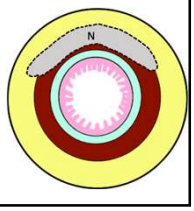
The **decision** making process with regard to surgical choice **should take into consideration**

→ Largest nodule diameter

→ Infiltration depth

→ Number of lesions

→ Circumferential bowel involvement

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Mario Malzoni, M.D.

Deep endometriosis infiltrating the recto-sigmoid: critical factors to consider before management

Mauricio Simões Abrão[1,*], Felice Petraglia[2], Tommaso Falcone[3], Joerg Keckstein[4], Yutaka Ouga[5], and Charles Chapron[6,7,8]

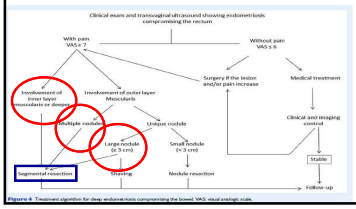


Figure 4 Treatment algorithm for deep endometriosis compromising the bowel. VAS: visual analogic scale.

Journal of Minimally Invasive Gynecology, Vol 23, No 4, May/June 2016

JMIG

Editorial

**Pillars for Surgical Treatment of Bowel Endometriosis**

Mauricio S. Abrao, MD

JMIG

Original Article

**Segmental and Discoid Resection are Preferential to Bowel Shaving for Medium-Term Symptomatic Relief in Patients With Bowel Endometriosis**

Karolina Afors, MBBS, BSc[*], Gabriele Centini, MD, Rodrigo Fernandes, MD, Rouba Murtada, MD, Errico Zupi, MD, Cherif Akladios, MD, PhD, and Arnaud Wattiez, MD, PhD

Journal of Minimally Invasive Gynecology, Vol 23, No 7, November/December 2016

**Diagnostic work-up**

The KEY question

**Do sonographers, radiologists and surgeons speak the same language?**

Anatomic structures are defined according to different interpretations of the anatomy

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## BOWEL


Normal rectosigmoid wall layers: **M** , muscularis (hypoechoic); **SM** , submucosa (hyperechoic); **m**, mucosa (hyperechoic); the thin hypoechoic layer between submucosa and mucosa is the muscularis mucosae.

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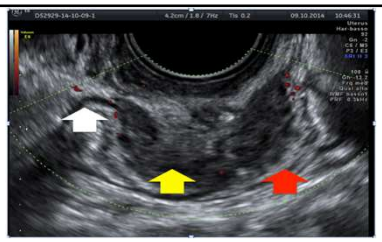

normal muscularis (white arrow); endometriotic infiltration with resulting thickened muscular layer (yellow arrow) hyperechoic submucosal layer (red arrow ) with signs of infiltration (hypoechoic spots)

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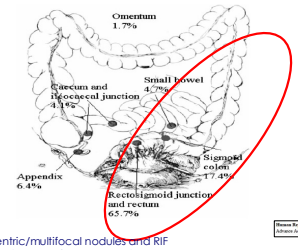
## COMBINED TA/TV APPROACH

*Bowel-rectosigmoid*




*CONSIDER:*

- **MRI:** for multicentric/multifocal nodules and RIF
- **COLONOSCOPY**: in case of rectal bleeding

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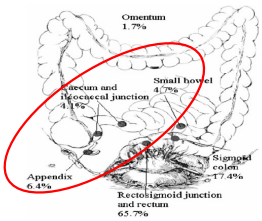
## COMBINED TA/TV APPROACH

*Small bowel/right colon*

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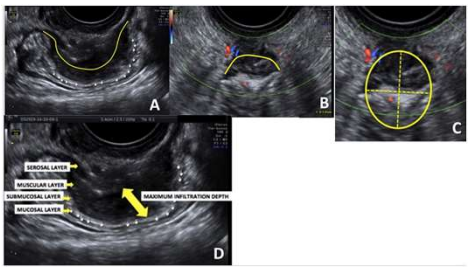


## US PRESURGICAL EVALUATION ACCURACY

**4983 patients** undergoing surgery for DIE (2013-2018)

Table 2 Ultrasound evaluation diagnostic accuracy for endometriotic lesions by site

alt-text: Table 2

| Lesion site | Surgical prevalence, n (%) N=4983 | Sensitivity % 95% CI | Specificity % 95% CI |
|---|---|---|---|
| Right uterosacral ligament | 2940 (59) | 97.33 96.63–97.81 | 98.22 97.91–98.97 |
| Left uterosacral ligament | 3787 (76) | 98.28 98.26–99.00 | 100 99.53–99.99 |
| Torus | 3637 (73) | 98.33 97.82–98.67 | 98.81 98.09–99.27 |
| Vaginal fornix | 1943 (39) | 97.35 96.45–97.91 | 98.42 97.93–98.84 |
| Rectovaginal septum | 548 (11) | 98.45 97.13–99.26 | 96.41 96.17–97.21 |
| Right parametrium | 1694 (34) | 97.91 97.21–98.56 | 98.48 98.04–98.87 |
| Left parametrium | 2043 (41) | 98.30 97.74–98.83 | 99.21 98.75–99.42 |
| Rectum/Rectosigmoid junction | 1046 (21) | 100 99.46–100 | 100 99.90–100 |
| Sigmoid | 448 (9) | 100 99.15–100 | 100 99.88–100 |
| Ileum/Cecum | 49 (1) | 82.35 68.64–90.02 | 98.31 97.94–98.65 |
| Bladder | 298 (6) | 98.36 96.10–99.28 | 100 99.75–100 |

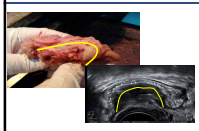
CI=confidence interval.

Preoperative Ultrasound Indications Determine Excision Technique for Bowel Surgery for Deep Infiltrating Endometriosis: A Single, High Volume Center

| | |
|---|---|
| Article reference | JMIG4053 |
| Journal | The Journal of Minimally Invasive Gynecology |
| Corresponding author | Alessandro Di Giovanni |
| First author | Mario Malzoni |
| Received at Editorial Office | 9 May 2019 |
| Article revised | 7 Aug 2019 |
| Article accepted for publication | 31 Aug 2019 |
| DOI | https://doi.org/10.1016/j.jmig.2019.08.034 |

*Preoperative Ultrasound Indications determine excision technique for bowel surgery for deep infiltrating endometriosis: a single, high volume center. Malzoni M. et al, JMIG 2020*





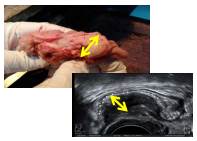
**Indications**

for shaving, discoid and segmental resection

Malzoni M et al., J Minim Invasive Gynecol 2020

Based on

Maximum nodule diameter



| Infiltration of the muscularis layer & | N <3 cm | N ≥3 cm |
|---|---|---|
| <7 mm | Shaving | Shaving |
| ≥7 mm | Discoid resection | Segmental resection |



## **Discoid** Resection

**Laparoscopic Technique for Discoid Resection of Rectal Endometriotic Nodules.**

Malzoni M, Coppola M, Rasile M, Luzzolino D, Casarella L, Di Giovanni A, Falcone F.
**J Minim Invasive Gynecol. 2021** Jan;28(1):16-17. doi: 10.1016/j.jmig.2020.05.016. Epub 2020 May 23.
PMID: 32454172

JMIG The Journal of Minimally Invasive Gynecology



## **Segmental Bowel** Resection (Our Classical technique)

**Surgical Principles of Segmental Rectosigmoid Resection and Reanastomosis for Deep Infiltrating Endometriosis.**
Malzoni M, Iuzzolino D, Rasile M, Coppola M, Casarella L, Di Giovanni A, Falcone F.
**J Minim Invasive Gynecol. 2020** Feb;27(2):258. doi: 10.1016/j.jmig.2019.06.018. Epub 2019 Jul 17.

JMIG The Journal of Minimally Invasive Gynecology



## **Segmental Bowel** Resection (Our New N.O.S.E. Technique)

**Totally Laparoscopic Resection with Transanal Natural Orifice Specimen Extraction for Deep Endometriosis Infiltrating the Rectum.**
Malzoni M, Rasile M, Coppola M, Iuzzolino D, Casarella L, Di Giovanni A, Falcone F.
**J Minim Invasive Gynecol. 2021 Jul**

JMIG The Journal of Minimally Invasive Gynecology



## Our Complications on 600 Segmental Bowel resection

- RECTAL BLEEDING (3.2%)
- ANASTOMOSIS LEAKAGE (**1.6%**)
- RECTO-VAGINAL FISTULAS (**1.4%**)
- SEVERE PERITONITIS (0.8%)
- STENOSIS (1,3%)
- BOWEL DYSFUNCTIONS (19%)

(Constipation,frequent movements, defecation pain)

Malzoni M., M.D.

Totally Laparoscopic Resection with Transanal NOSE for Deep Endometriosis Infiltrating the Rectum

Preliminary (unpublished) data from a total of **28 patients**
8-month observation period (May 2021 - April 2022)

Patient characteristics

| Variable | N =28 |
|---|---|
| Age (years), median [range] | 33 [28 – 48] |
| BMI (kg/m2) , median [range] | 21.7 [18.2 – 27.6] |
| Previous pregnancies, n (%)<br>- None<br>- One or more SFTM<br>- At least one NFTD | <br>19<br>6<br>3 |
| Previous abdominal surgeries, n (%)<br>- Yes<br>- No | <br>16<br>12 |
| Previous abdominal surgeries for DIE, n (%)<br>- At least one surgery<br>- Two surgeries | <br>12<br>8 |

Malzoni M., M.D.

Totally Laparoscopic Resection with Transanal NOSE for Deep Endometriosis Infiltrating the Rectum

Preliminary (unpublished) data from a total of **28 patients**
8-month observation period (May 2021 - April 2022)

| Additional surgical procedures/organ resections at the time of sigmoid/rectal surgery with NOSE, n | |
|---|---|
| - Ileo-cecal resection | 1 |
| - Endometrioma(s) treatment | 2 |
| - Mono-/bilateral salpingectomy | 6 |
| - Monolateral salpingo-oophorectomy | 3 |
| - Mono-/bilateral neurolysis | 6 |
| - Mono-/bilateral ureterolysis | 13 |
| - Myomectomy | 2 |

- **None of the pts had protective ileostomy (including ghost ileostomy)**
- Abdominal drain was placed in only 1 patient
- Bladder catheter was removed at the end of surgical procedure in all pts
- **All pts received complete removal of all visible endometriosis**
- **Antibiotics were administered both intraoperatively and in the 5 days after surgery**

Malzoni M., M.D.

Totally Laparoscopic Resection with Transanal NOSE for Deep Endometriosis Infiltrating the Rectum

Preliminary (unpublished) data from a total of **28 patients**
8-month observation period (May 2021 - April 2022)

Intra and post-operative outcome measures

| Variable | No. (%) |
|---|---|
| Length of surgery (minutes), median [range] | 95 [57 – 132] |
| Blood loss (cc), median [range] | 10 [5 – 70] |
| RBC transfusion (U), mean | 0 |
| Intra-operative complications, n (%) | 0 (0) |
| Post-operative complications, n (%) | 0 (0) |
| Passing gas after surgery (day(s)), median [range] | 1 [1 – 2] |
| Passing feces after surgery (day(s)), median [range] | 4 [4 – 7] |
| Hospital length of stay (days), median [range] | 5 [5 – 7] |

Malzoni M., M.D.

**A good strategy should pay attention to all perioperative phases**

**Post-operative phase**

Implementation of the ERAS approach

| | |
|---|---|
| **Mobilisation** | started the day of surgery |
| **Oral intake** | clear liquids resumption started the day of surgery and solid food resumption the postoperative day 1 |
| **Analgesia** | opioid-sparing |
| **Fluid management** | Euvolemia |
| **VTE prophylaxis** | Mechanical +/- chemoprophylaxis |

ERAS Society recommendations. Nelson et al., 2019.

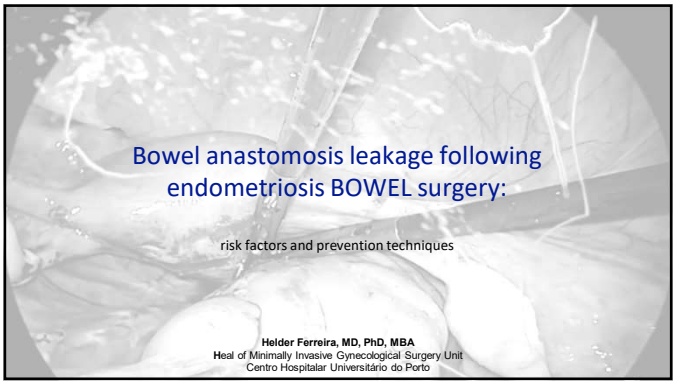
Endometriosi. Stato dell'arte — Mario Malzoni, M.D.

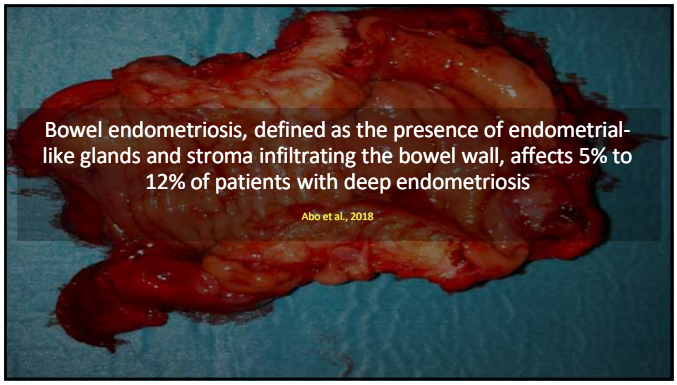
## CONCLUSIONS

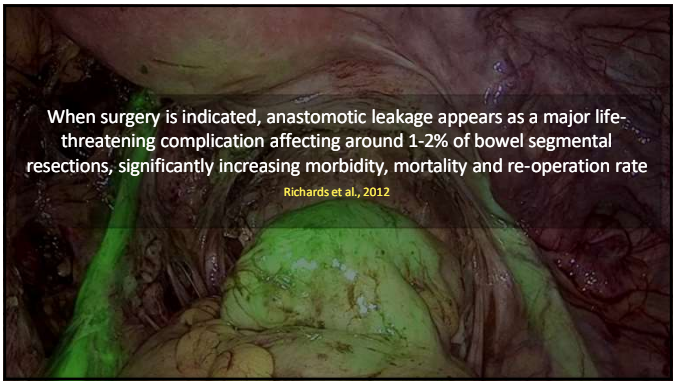
## Urgent actions required

- To agree on endometriosis classification system allowing to share diagnostic and therapeutic results, to conduct credible multicenter surgical trials, and to set standards for postgraduate education.
- To develop a list of quality indicators for DIE surgery.
- To better define the clinical boundaries of elective surgery for DIE.
- Centralized referral of patients with DIE to high-volume expert centers.

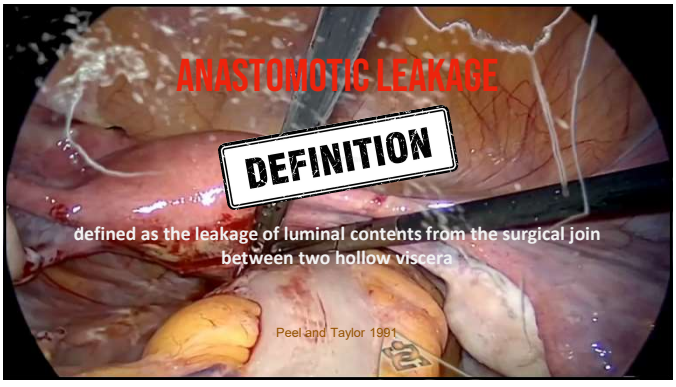

Porto.
PORTO

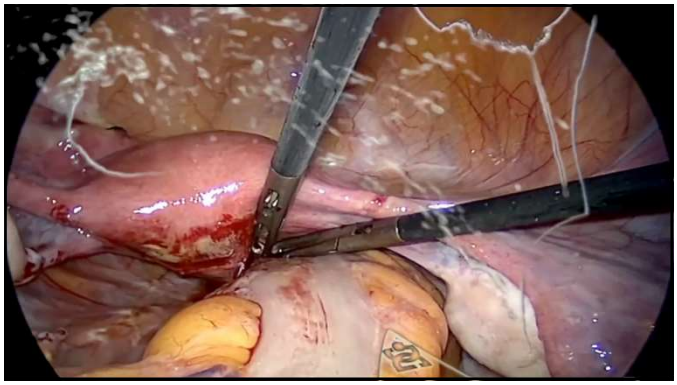

Bowel anastomosis leakage following endometriosis BOWEL surgery:
risk factors and prevention techniques
Helder Ferreira, MD, PhD, MBA
Heal of Minimally Invasive Gynecological Surgery Unit
Centro Hospitalar Universitário do Porto


Bowel endometriosis, defined as the presence of endometrial-like glands and stroma infiltrating the bowel wall, affects 5% to 12% of patients with deep endometriosis
Abo et al., 2018

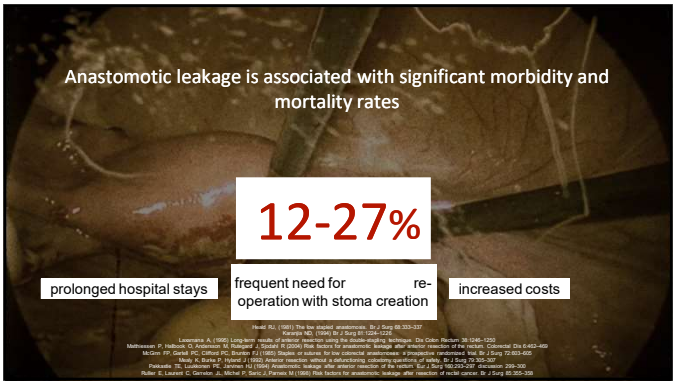

When surgery is indicated, anastomotic leakage appears as a major life-threatening complication affecting around 1-2% of bowel segmental resections, significantly increasing morbidity, mortality and re-operation rate
Richards et al., 2012

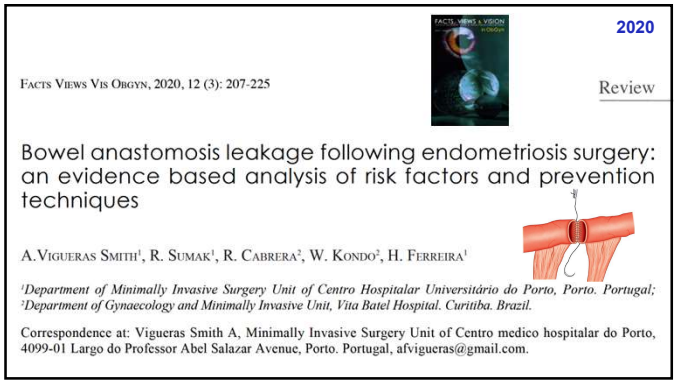

Anastomotic leakage
the most frightful,
surgical complication after low rectal resection
A number of risk factors have been identified, including:
proximity of the anastomosis site to the anus, etc
– Michelangelo Miccini


ANASTOMOTIC LEAKAGE
DEFINITION
defined as the leakage of luminal contents from the surgical join between two hollow viscera
Peel and Taylor 1991







2020

Facts Views Vis Obgyn, 2020, 12 (3): 207-225

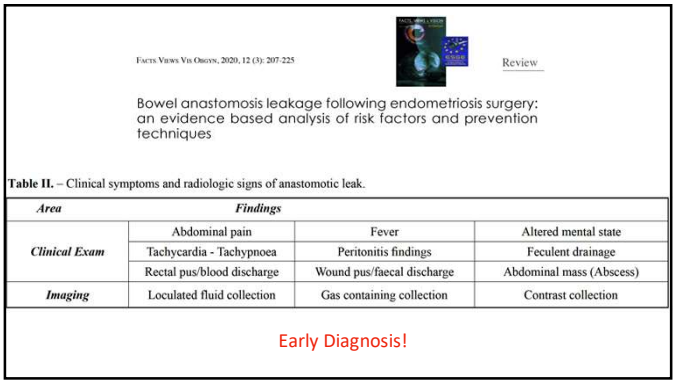
Review

Bowel anastomosis leakage following endometriosis surgery: an evidence based analysis of risk factors and prevention techniques

A. Vigueras Smith[1], R. Sumak[1], R. Cabrera[2], W. Kondo[2], H. Ferreira[1]

[1]Department of Minimally Invasive Surgery Unit of Centro Hospitalar Universitário do Porto, Porto. Portugal; [2]Department of Gynaecology and Minimally Invasive Unit, Vita Batel Hospital. Curitiba. Brazil.

Correspondence at: Vigueras Smith A, Minimally Invasive Surgery Unit of Centro medico hospitalar do Porto, 4099-01 Largo do Professor Abel Salazar Avenue, Porto. Portugal, afvigueras@gmail.com.



Facts Views Vis Obgyn, 2020, 12 (3): 207-225

Review

Bowel anastomosis leakage following endometriosis surgery: an evidence based analysis of risk factors and prevention techniques

**Table II.** – Clinical symptoms and radiologic signs of anastomotic leak.

| *Area* | *Findings* | | |
|---|---|---|---|
| *Clinical Exam* | Abdominal pain | Fever | Altered mental state |
| | Tachycardia - Tachypnoea | Peritonitis findings | Feculent drainage |
| | Rectal pus/blood discharge | Wound pus/faecal discharge | Abdominal mass (Abscess) |
| *Imaging* | Loculated fluid collection | Gas containing collection | Contrast collection |

Early Diagnosis!

## Clinical symptoms and radiologic signs of anastomotic leak

Early Diagnosis!

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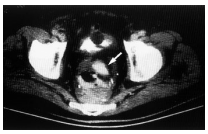


## LAB

leucocytes

CRP

## Image

CT
leakage

Xray
gas

## Gas containing collection

**40%** of patients will have more than 2 cm of free air at 24 hours post laparoscopy

Free intra abdominal air often may be seen on a radiograph **up to a week** postoperatively

**C-reactive protein (CRP) trajectory as a predictor of anastomotic leakage after rectal cancer resection: A multicentre cohort study**

**C-reactive protein can predict anastomotic leak in colorectal surgery: a systematic review and meta-analysis**

CRP


**Table III.** – Risk factors for bowel anastomotic leakage.

| *Setting* | *Risk Factors* | | |
|---|---|---|---|
| *Patient Condition* | Gender - male | Age > 60 | Radiotherapy |
| | Malnutrition/Weight loss | Smoking habit | Steroid use |
| | Renal failure | Diabetes mellitus | Cardiovascular disease |
| | Alcoholism | Concurrent bowel disease (Crohn disease, diverticulitis) | Anaemia |
| | Chemotherapy | Ascites | Cardiovascular disease |
| *Peri-operative Setting* | Prolonged surgical time | Restriction or overload of intravenous fluids | Use of pressor agents |
| | High blood loss and transfusions | Emergency Surgery | Asa classification > 2 |
| *Surgical Technique* | Multifilament absorbable threads | Butressing anastomosis | Left colon anastomosis |
| | Low or ultra-low anastomosis | Double-layer bowel closure | Nodule size over 3 cm diameter |
| | Concomitant opening of the vagina (RVF) | Mechanical bowel preparation | Segmental bowel resection |
| | Positive air-leak test | Total mesorectal excision | |

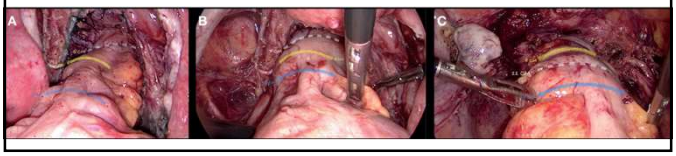
## LEVEL OF ANASTOMOSIS

**The level of the anastomosis can be classified into three types according to their distance from the anal verge (AV):**

**a) High/Medium: Equal or more than 8 cm.**

**b) Low: Less than 8 cm but more than 5 cm.**

**c) Ultra-low: 5 cm or lower.**

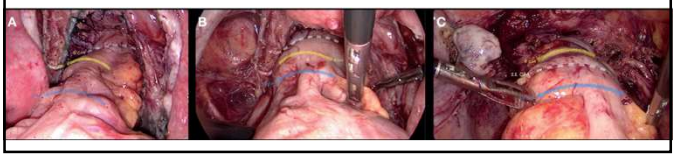



## LEVEL OF ANASTOMOSIS

Recent evidence has consistently shown that the rate is significantly higher in the left side of the colon, and specifically in those performed within 10 cm from AV

*(Bakkeret al., 2014; Trencheva et al., 2013; Abrao et al.,2015)*

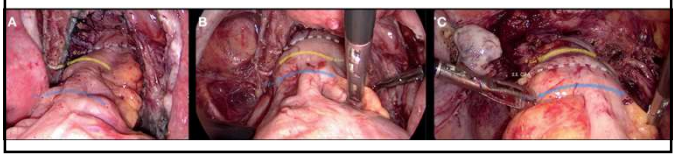
Furthermore, several prospective studies have shown that the **lower the anastomosis; the higher the risk of leakage** (Park et al., 2013).




## LEVEL OF ANASTOMOSIS

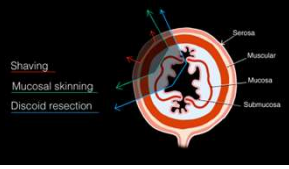
The leakage rate is up to **3.4 times higher for tumours located less than 7 cm from the AV** (Hamabe et al., 2018) and

**ten times higher** for those located **under 5 cm** of the AV (Choi et al., 2010).




## TYPE OF BOWEL SURGERY: SHAVING, DISCOID OR SEGMENTAL RESECTION

**AL events can occur in any of these surgical modalities, but predominantly in the low/ultra-low segmental bowel resection**




## SHAVING, DISCOIDAL OR SEGMENTAL RESECTION?

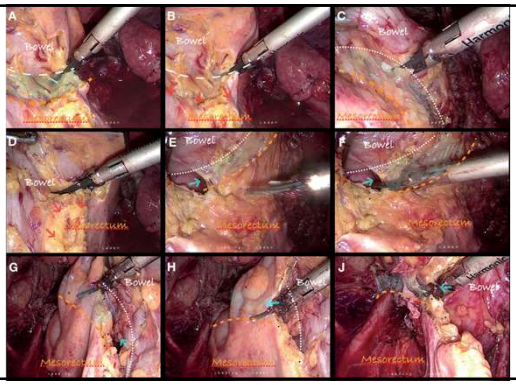
**The rate of rectovaginal fistulas in the disc excision group was threefold higher (3.6%) than the shaving procedures (1.3%) and almost equal to the rate seen in the segmental resections (3.9%)**

## TOTAL OR PARTIAL MESO-RECTAL RESECTION

### (ONCOLOGIC VERSUS BENIGN PATHOLOGY)

A meta-analysis reports a leakage rate of post-TME ranging from 5.4% to 5.8% (Hua et al., 2014). This is explained in part by the fact that endometriosis is a benign disease affecting healthy young women without major comorbidities.

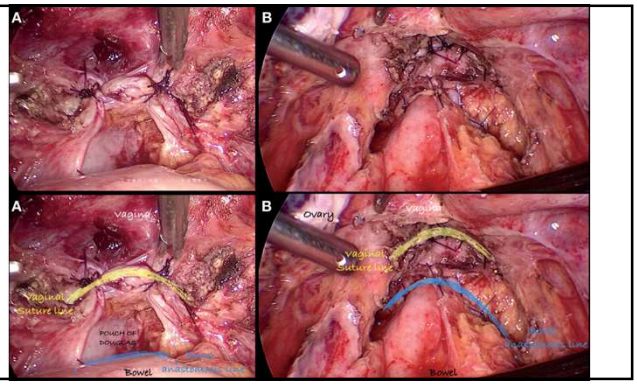
Additionally, and although surgical techniques for segmental resection vary widely among different teams, **DIE bowel resection could encompass a "nerve-vessel sparing segmental resection", where mesorectum resection is limited to the macroscopic DIE infiltration area and cutting of the inferior mesenteric vessels is avoided.**




## CLASSICAL PREVENTIVE TECHNIQUES FOR ANASTOMOTIC LEAKAGE

**Table IV.** – Classical preventive techniques for anastomotic leakage.

| Setting | Actions | | |
|---|---|---|---|
| General | Smoking and alcohol cessation at least 4 weeks pre/ post-operative | Withdraw steroid use pre-operative | Schedule surgery at least 4 weeks after chemotherapy |
| | 5-7 days of immune-modifying nutritional supplementation in malnutrition | Rationale use of NSAIDs | Systematic oral bowel preparation |
| | | | |
| Intra-operative | Short surgical time | Restricted blood transfusion | Normotension during surgery |
| | No tension, no overlap and adequate perfusion of anastomotic line | Avoid opening the vagina | Omentoplasty |
| | Single layer continuous closure | Monofilament delayed absorbable threads | Pelvic and transanal drainages |
| | Limited use of pressors | Re-enforce anastomosis when air leak test (+) | Diverting stoma |





## SURGEON'S EXPERIENCE

Surgeon's experience is still one of the significant factors in deciding whether to perform a stoma or not.

The French group of Bendifallah et al. (2017) analysed the relationship between case volume (rectum and sigmoid colon DIE) and incidence of complications, establishing an optimal cut-off value of 20 cases a year per centre and 7-13 procedures a year per surgeon for significant reduction of grade III and IV complication rates.

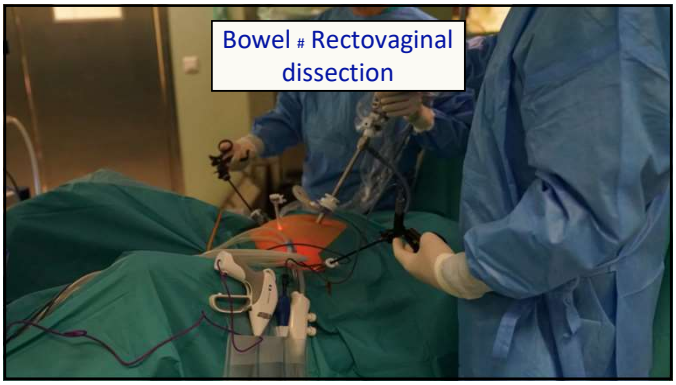
It is clear that this type of colorectal surgery is certainly not an innocuous procedure and an evidence-based approach in the decision making should be adapted.

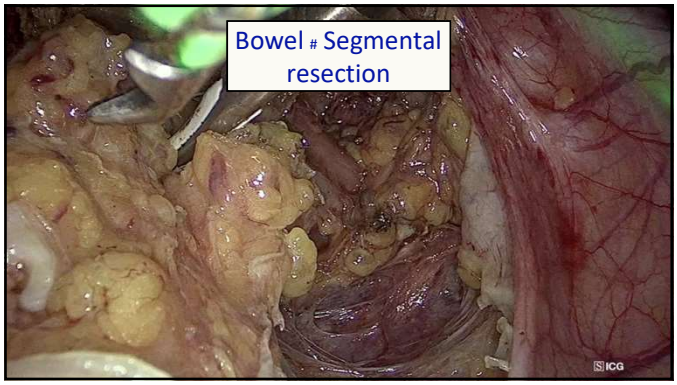
## RETROSPECTIVE STUDIES

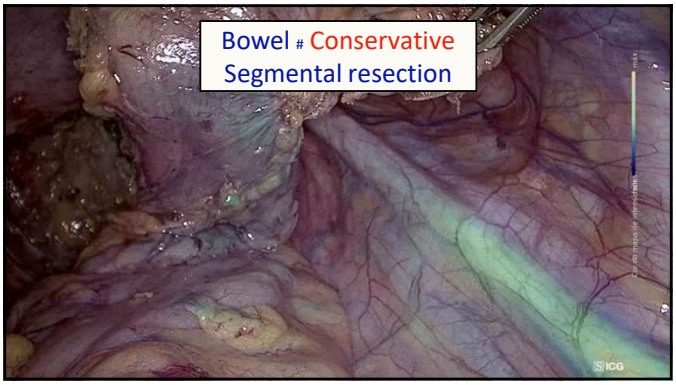
Bertocchi et al. (2019) published the largest series with 1643 segmental resection for bowel DIE. By using the Negrar method (segmental resection without ligature of inferior mesenteric artery), this group focused on the evaluation of the rate of anastomotic stenosis.

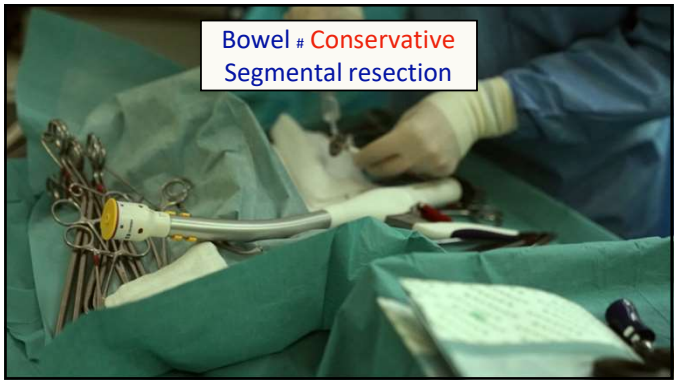
They found 6.3% had symptomatic anastomotic stenosis, of which 1.9% presented with AL. They identified that the presence of a protective ileostomy was the only significant modifiable risk factor related to anastomotic stenosis, present in 32% of stenotic cases.

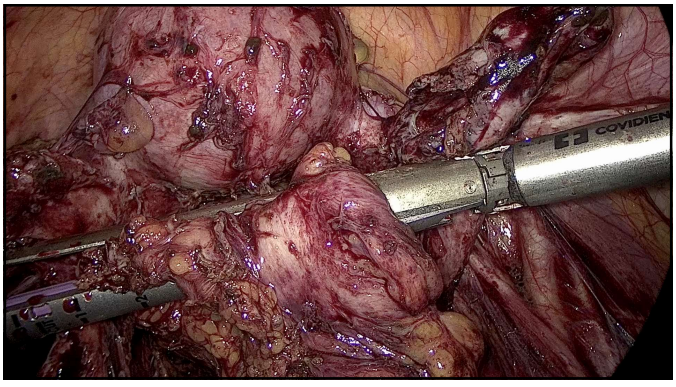
Bertocchi E, Barugola G, Benini M et al. Colorectal anastomotic stenosis: lessons learned after 1643 colorectal resections for Deep Infiltrating Endometriosis. J Minim Invasive Gynecol. 2019;26:100-4.

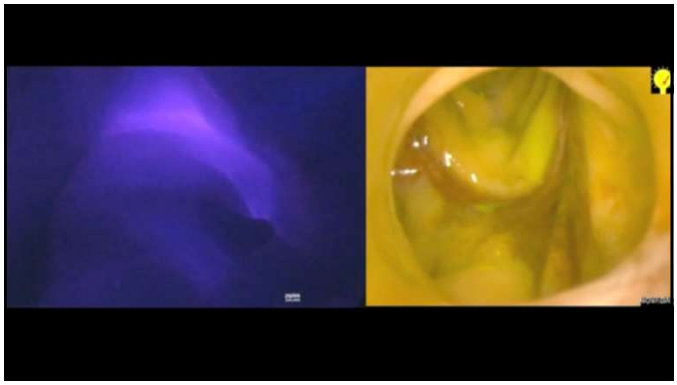


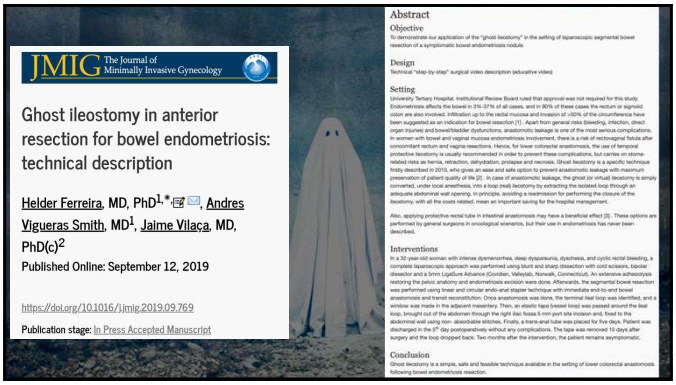



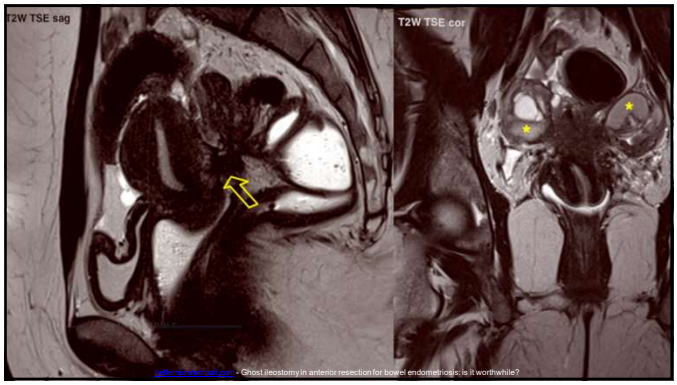






JMIC The Journal of Minimally Invasive Gynecology
Ghost ileostomy in anterior resection for bowel endometriosis: technical description
Helder Ferreira, MD, PhD[1,*], Andres Vigueras Smith, MD[1], Jaime Vilaça, MD, PhD(c)[2]
Published Online: September 12, 2019
https://doi.org/10.1016/j.jmig.2019.09.769
Publication stage: In Press Accepted Manuscript
Abstract
Objective
Design
Setting
Interventions
Conclusion


T2W TSE sag
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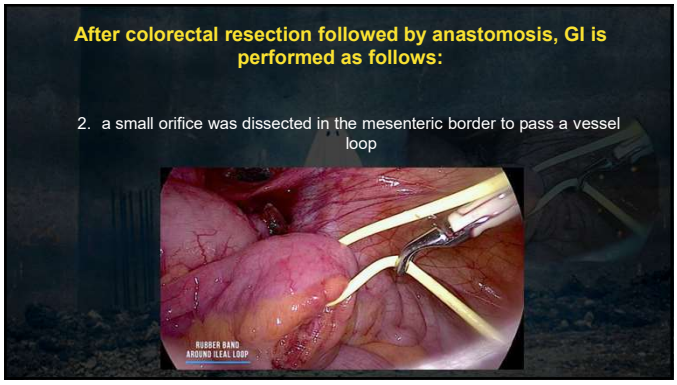
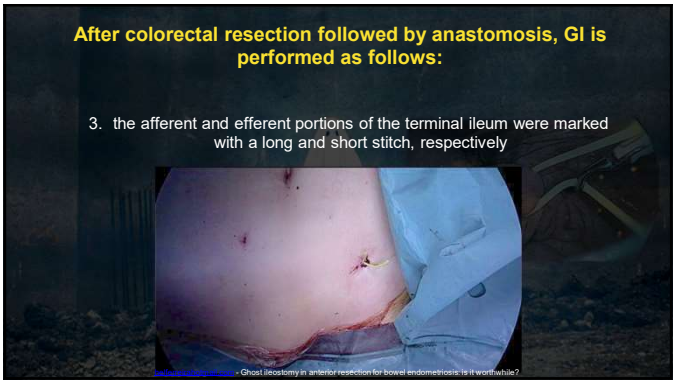
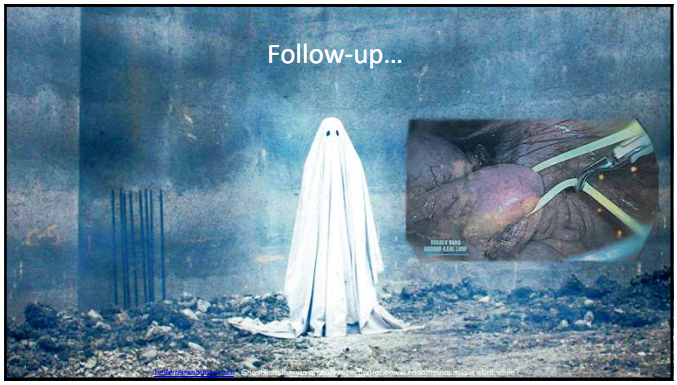
gynecologicalsurgical.com - Ghost ileostomy in anterior resection for bowel endometriosis: is it worthwhile?


After colorectal resection followed by anastomosis, GI is performed as follows:
1. a portion of terminal ileum (20 cm) distant from ileocecal valve was identified
WINDOW IN THE MESENTERY


After colorectal resection followed by anastomosis, GI is performed as follows:
2. a small orifice was dissected in the mesenteric border to pass a vessel loop
RUBBER BAND AROUND ILEAL LOOP


After colorectal resection followed by anastomosis, GI is performed as follows:
3. the afferent and efferent portions of the terminal ileum were marked with a long and short stitch, respectively
gynecologicalsurgical.com - Ghost ileostomy in anterior resection for bowel endometriosis: is it worthwhile?




## Precise schedule follow-up

"GI needs a precise scheduled follow-up after surgery to create the DI as soon as possible if AL is suspected.."

.It also seems to be a safe, feasible, and reproducible technique that does not add significant costs to the surgery



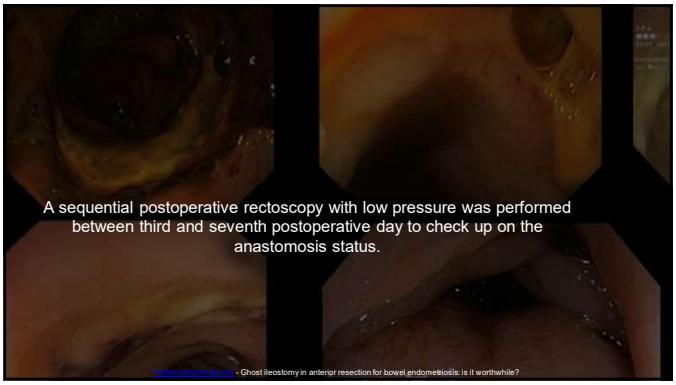


## Precise schedule follow-up

C-reactive protein (CRP) and procalcitonin (PCT) measured on POD 1 and POD 4.
Routine endoscopy on POD 3, and on POD 5 (in doubtful cases)










## Precise schedule follow-up

If no leakage was found in rectoscopy, then oral intake (solids) was tolerated, and the loop was simply removed after approximately 10d-2 weeks as an outpatient.

In cases of clinical suspicion of leakage, GI was converted into a DI.





- If no leakage was found in rectoscopy, then oral intake (solids) was tolerated, and the loop was simply removed after approximately 2 weeks as an outpatient. In cases of clinical suspicion of leakage, GI was converted into a DI. C-reactive protein (CRP) and procalcitonin serum levels were monitored in first and third PODs just with a descriptive intention to establish its relationship with the rectoscopy findings.

In cases of clinical suspicion of leakage, GI was converted into a DI.

e early endoscopy with a flexible scope without insufflation. In all endoscopically detected leaks, conversion of virtual ileostomy into re

helferreirahotmail.com

In cases of clinical suspicion of leakage, GI was converted into a DI.

## Conversion of a virtualileostomy into a real ileostomy

a
A vessel–loop tutoring the terminal ileum is externalized during surgery.

b The skin and subcutaneous and aponeurosis around the vessel–loop is opened with aponeurosis hole calibration (c)

d Once the incision is made, the ileum is gently pulled through the incision (e), exposing the distal side marked in the first surgery.

g The loop is cut open, and the distal side is stitched to the abdomen.

h The proximal portion of the ileum is flipped open to expose the interior surface, and the opposite side is stitched in place (i)

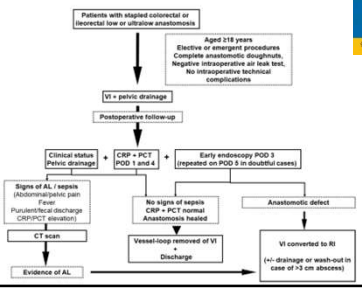
## "Virtual ileostomy" combined with early endoscopy to avoid a diversion ileostomy in low or ultralow colorectal anastomoses. A preliminary report

Blas Flor-Lorente[1] · Luis Sánchez-Guillén[1] · Gianluca Pellino[1] · Matteo Frasson[1] · Álvaro García-Granero[1] · Marta Ponce[2] · Santiago Domingo[3] · Vicente Paya[3] · Eduardo García-Granero[1]

Received: 13 September 2018 / Accepted: 8 March 2019


Langenbeck's Archives of Surgery

Decisional algorithm for the current study. VI virtual ileostomy, RI real ileostomy, CRP C-reactive protein, PCT procalcitonine, AL anastomotic leak, POD postoperative day, LOS length of hospital stay

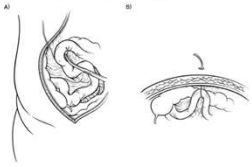


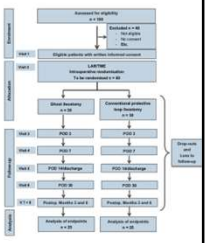

Open access Protocol

## BMJ Open Ghost ileostomy versus conventional loop ileostomy in patients undergoing low anterior resection for rectal cancer (DRKS00013997): protocol for a randomised controlled trial

2020

Felix J Hüttner ,[1,2] Pascal Probst ,[1,2] André Mihaljevic,[1] Pietro Contin,[1] Colette Dörr-Harim,[1,2] Alexis Ulrich,[1,2] Martin Schneider,[1] Markus W Büchler,[1] Markus K Diener,[1,2] Phillip Knebel[1]





Techniques in Coloproctology
https://doi.org/10.1007/s10151-019-02127-2

REVIEW

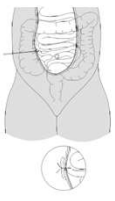
## Virtual ileostomy in elective colorectal surgery: a systematic review of the literature

I. Baloyiannis[1] · K. Perivoliotis[1] · A. Diamantis[1] · G. Tzovaras[1]

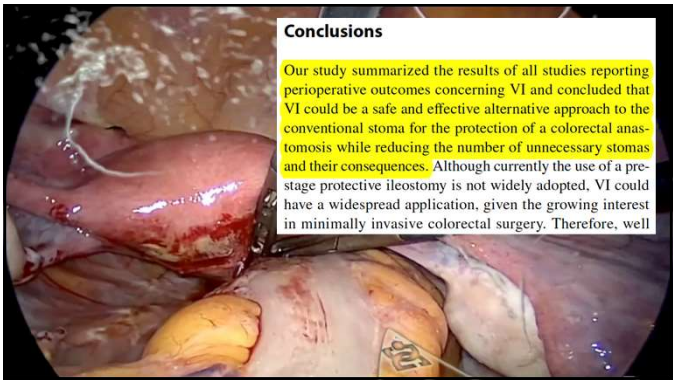
Received: 20 May 2019 / Accepted: 21 November 2019


### Conclusions

Our study summarized the results of all studies reporting perioperative outcomes concerning VI and concluded that VI could be a safe and effective alternative approach to the conventional stoma for the protection of a colorectal anastomosis while reducing the number of unnecessary stomas and their consequences. Although currently the use of a prestage protective ileostomy is not widely adopted, VI could have a widespread application, given the growing interest in minimally invasive colorectal surgery. Therefore, well



**Conclusions** VI could be a safe and effective alternative to a diverting stoma. Although currently, VI is not widely used, it could have a widespread application in laparoscopic surgery. However, definitive trials are needed before firm recommendations on the use of VI can be made.



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Our study summarized the results of all studies reporting perioperative outcomes concerning VI and concluded that VI could be a safe and effective alternative approach to the conventional stoma for the protection of a colorectal anastomosis while reducing the number of unnecessary stomas and their consequences. Although currently the use of a prestage protective ileostomy is not widely adopted, VI could have a widespread application, given the growing interest in minimally invasive colorectal surgery. Therefore, well

## Take home messages

- Results of this evidence-based analysis lead us to recommend the following peri-operative modifiable measures:
  - use of either stapler or handsewn (single layer closure) anastomosis construction;
  - intra-operative use of air leak test to check the mechanical integrity of anastomotic line;
  - systematic use of pelvic (in infra-peritoneal anastomosis) or/and trans-anal drainage;
  - application of further preventive interventions (protective or ghost ileostomy) when the nodule is located under 8 cm from the anal verge and in high-risk patients;
  - closure of the vagina before performing bowel resection (when colpotomy is required);
  - systematic use of non-absorbable oral antibiotics one day before surgery and
  - performing partial mesorectal resection near the bowel wall

## Take home messages

- The treatment, considering the benign nature of endometriosis, must always be tailored according to the patient's disease, desires and expectations, with comprehensive case-by-case selection and patient counseling
- Most of the studies on this topic come from colorectal surgeons' experience. This is relevant since colorectal oncology patients usually have a different demographic than the young, healthy patients in the endometriosis setting. However, the large endometriosis series, including more than 5500 segmental resections, support the conclusions presented here.

# CULTURAL AND LINGUISTIC COMPETENCY & IMPLICIT BIAS

The California Medical Association (CMA) announced new 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 beginning 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)
Cultural Competence In Health and Human Services | NPIN (cdc.gov)
Cultural Competency – The Office of Minority Health (hhs.gov)
Implicit Bias, Microaggressions, and Stereotypes Resources | NEA
Unconscious Bias Resources | diversity.ucsf.edu
Act, Communicating, Implicit Bias (racialequitytools.org)
https://kirwaninstitute.osu.edu/implicit-bias-training
https://www.uptodate.com/contents/racial-and-ethnic-disparities-in-obstetric-and-gynecologic-care-and-role-of-implicitbiases
https://www.contemporaryobgyn.net/view/overcoming-racism-and-unconscious-bias-in-ob-gyn
https://pubmed.ncbi.nlm.nih.gov/34016820/