

# Multidisciplinary Treatment of Severe Deep Endometriosis

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## ABSTRACT

**Introduction:** Endometriosis is a clinical entity characterized by the presence of endometrial tissue outside the endometrium, being the most aggressive rectocolonic condition.

**Design:** Descriptive, retrospective case series study.

**Objective:** Evaluate the feasibility of colorectal resections in this complex pathology that must be approached in a multidisciplinary way and report the results obtained from more than 10 years of work.

**Material and methods:** In the period between 2005 and early 2017, 29 patients were evaluated in a multidisciplinary way.

**Results:** One hundred and seventy-one patients were operated on for deep endometriosis, mean age 34 years. Twenty-nine patients required colon resection, 27 anterior resection and 2 sigmoidectomies. Seventeen end-to-end and 12 end-to-side stapled anastomoses were performed. Twenty-eight anastomoses were performed between 7 and 5 cm from the anal margin and one at 4 cm. In the latter, a protective transverse colostomy was made. The mean operative time was 90 (45-195) minutes. The conversion rate was 15%. Complications were hemoperitoneum, anastomotic fistula, and wound infections. The average hospital stay was 5 days.

**Conclusion:** Laparoscopic treatment of this disease is feasible. Despite the distortion it generates in the anatomy of the pelvis, the current trend emphasizes the need for minimally invasive treatment.

**Keywords:** Endometriosis; Laparoscopy; Treatment

## INTRODUCTION

Endometriosis is a clinical entity characterized by the presence of endometrial tissue outside the endometrium. Rectocolonic involvement is the most aggressive form, and even more so when it involves the rectovaginal septum. Rectal involvement causes chronic pelvic pain, dyspareunia, infertility, rectal bleeding, and often painful bowel movements in some patients. Laparoscopic treatment of this disease is difficult due to the distortion of the pelvic anatomy that it generates; however, current trends emphasize the need for minimally invasive treatment of this condition.

The objective of this study was to evaluate the feasibility of colorectal resections in deep endometriosis, a complex pathology that must be approached in a multidisciplinary way and report the results obtained from more than 10 years of work.

## MATERIAL AND METHODS

This is a descriptive and retrospective case-series study developed in a referral center, in the period between 2005 and early 2017. Twenty-nine patients were evaluated in a multidisciplinary way. The patients were always

referred from other centers, including the interior of the country, for surgical treatment. Inclusion criteria were patients with chronic pelvic pain, a previous diagnosis of deep endometriosis and deep colonic involvement. Patients without colon involvement previously diagnosed by laparoscopy were excluded. The preoperative workup was carried out with transvaginal ultrasound, high resolution magnetic resonance and videocolonoscopy. Demographic data, gynecological history (including treatment of endometriosis, hormonal therapy), operative procedure, performance of protective ostomy, distance from the anastomosis to the anal margin, operative time, hospital stay, morbidity and mortality were registered. The Clavien-Dindo classification was used to evaluate complications.<sup>1</sup>

## RESULTS

In the period described, 171 patients were operated on; the mean age was 34 (range 18-52) years. The main reasons for consultation were chronic pelvic pain and dyspareunia (Table 1). Twenty-nine patients required colon resection; 27 anterior resections and 2 sigmoidectomies were performed. Seventeen end-to-end and 12 end-to-side stapled anastomoses were performed. Twenty-eight anastomoses were performed between 7 and 5 cm from the anal margin and one at 4 cm. In the latter, a protective transverse colostomy was made. The mean operative time was 90 (range 45-195) minutes. All surgeries were performed by the Gynecology and Coloproctology teams,

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and in cases of ureteral compromise, also participated the Urology team. The conversion rate was 15%. The associated procedures performed by the Gynecology team are shown in Table 2. The mean hospital stay was 5 (range 4-10) days. The complications can be seen in Table 3.

## DISCUSSION

Since 1899, with Russell's works, endometriosis has been defined as "the presence of endometrial tissue, glands and stroma, outside the uterine cavity". In the 1990s, the term deep endometriosis was defined for lesions that infiltrate more than 5 mm, affecting the underlying organs.<sup>2</sup> Endometriosis is a common gynecological disease that affects approximately 10% of women during their reproductive age. The annual costs of endometriosis per patient for healthcare and loss of productivity have been estimated at \$ 2801 and \$ 1023, respectively. These costs are considerably higher than those associated with Crohn's disease or migraine.<sup>2</sup>

In all women, some of the menstruation falls into the abdominal cavity through the tubes. There are defense mechanisms that neutralize those endometrial cells that fall into the abdomen. In some women, for unknown reasons, these mechanisms fail and the cells implant outside the uterus constituting endometriosis in the form of an implant, nodule or cyst. Sometimes endometriosis can be located in surgical scars, intestines, rectum, bladder, vagina, vulva and cervix.

It is a benign disease, malignancy is very rare. The implants that respond to female hormones, produce inflammation, and later scars that cause adhesions between organs, altering the normal anatomy of the pelvis and the reproductive function.<sup>3</sup>

It has an important genetic, epigenetic, hormone-dependence and inflammatory component in its etiopathogenesis; therefore it should be considered a chronic disease (Table 4).<sup>4</sup> Current theories are:

1. Retrograde menstruation, the most accepted. It would derive from a reflux of endometrial tissue through the fallopian tubes during menstruation and subsequent implantation in the peritoneum of the pelvis and the ovaries;
2. Implantation of endometrial stem cells, a theory derived from the preceding one. In the development of endometrial cells, some stem cells disperse throughout the peritoneum;
3. Abnormalities of the Müllerian remnant, suggested by implantation in the cul-de-sac of Douglas and uterosacral ligaments. An aberrant differentiation or migration of the Müllerian duct may be the cause of endometrial cell dispersal in fetal life;

TABLE 1: SYMPTOMS

Symptoms	n=29 (%)
Dyspareunia	29
Chronic pelvic pain	29
Rectal bleeding	4
Infertility	10

TABLE 2: PROCEDURES

Procedure	n
Ovarian cystectomy	12
Unroofing	14
Hysterectomy and bilateral salpingo- oophorectomy	1
Unilateral salpingo- oophorectomy	2

TABLE 3: MORBIDITY ACCORDING TO CLAVIEN-DINDO CLASSIFICATION

Complication	n	Classification
Hemoperitoneum	2	IIIB
Anastomotic fistula	1	IIIB
Wound infections	4	II

4. Coelomic metaplasia. The peritoneum covering the pelvis and ovaries may have metaplasia towards endometrial cells.

Endometriosis of the rectovaginal septum corresponds to the most severe form. It can infiltrate both the vagina and the rectum and, in the most severe cases can spread laterally, compromising one or both ureters. Although infrequent, intestinal involvement is observed in 3-37% of patients and mainly affects the rectosigmoid colon.<sup>5,6</sup> In our series, 16% of the operated patients had colonic involvement a high incidence that has been evidenced in other referral centers for the treatment of endometriosis.<sup>7</sup>

Defining the characteristic clinical picture for deep endometriosis with intestinal involvement is difficult. It should be borne in mind that it presents mainly with pelvic pain (e.g. dysmenorrhea, profound dyspareunia, non-cyclic pelvic pain). Lower gastrointestinal symptoms and/or changes in bowel habits may coexist secondary to colorectal involvement, such as rectal bleeding, rectal urgency, and painful defecation during menstruation.<sup>8-10</sup> But even more important it is to understand that the picture clinical of intestinal involvement is very varied, making its diagnosis difficult.

The usefulness of the physical examination in diagnosis is controversial. Findings are varied and depend on the location of the lesions and the day of the menstrual cycle on which the examination is performed.<sup>11,12</sup> Although a tender nodule in the posterior vaginal cul-de-sac is most common, its absence does not rule out the condition. According to Chapron,<sup>13</sup> in 65% of patients with deep and compromise rectal endometriosis, painful nodules are not palpable on vaginal examination. The presence of red le-

sions during speculoscopy is another finding suggestive of endometriosis of rectovaginal septum. However, it is absent in 70% of cases of intestinal endometriosis. Regarding the rectovaginal examination, it is clear that its usefulness is limited, since the lesions are usually located higher and are out of reach. Based on our experience, we strongly recommend examining the patient during the menstrual period, if the history suggests the presence of deep endometriosis.

Among the complementary examinations, transrectal ultrasonography for its correct interpretation requires trained personnel and routine performance. Others have advocated transvaginal ultrasonography; the images appear as linear thickenings or hypoechoic nodules of variable size depending on the time of the menstrual cycle.<sup>14</sup> Bazot et al.,<sup>15</sup> in a prospective controlled study, included 142 patients; they demonstrated that it was a useful tool in the diagnosis of intestinal endometriosis compromise. The presence of endometriomas is a marker of severe disease and an independent risk factor for the need for intestinal resection during surgical treatment. In an analysis of 1,785 patients with ovarian endometriosis, only 1% had a single lesion.<sup>16,17</sup>

One aspect to consider refers to the involvement of other pelvic structures, particularly the ureter. Usually corresponds to an entrapment or stenosis secondary to fibrosis that compromises it by neighborhood. Fortunately, such a commitment is rare. However, in those nodules of large size ( $\geq 3$  cm) and / or with lateral extension, this compromise can reach 11% of cases. Establishing its diagnosis before or during surgery is of vital importance since, without treatment and as a result of the obstruction, it can lead to the loss of kidney function. Based on the above, we have decided in our center to perform a urological study of all patients with type III nodules according to the Donnez classification (Table 5), those greater than 3 cm or those with lateral extension. The preoperative installation of double J catheters allows the identification of the ureter and facilitates ureterolysis. Even so, the surgical treatment is complex and may require partial resection of the ureter and subsequent reimplantation in the bladder. Current theories are:

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TABLE 4: PATHOPHYSIOLOGY<sup>4</sup>

<b>Epidemiological factors</b>
Reproductive and menstrual factors:
Parity ↓
Age of menarche (early) ↑
Menstrual cycle duration (short) ↑
Duration of blood losses ↑
Constitutional factors:
Family history ↑
Body mass index ↓
Freckles ↑
Nevi ↑
Personal habits:
Alcoholism ↑
Diet: inconsistent
Smoking: no effect
Regular exercise ↓
Cellular and molecular alterations
Steroid biosynthesis and altered receptor response:
Increased ERβ expression
Increased aromatase expression
Intermediate progesterone signal disorders: HOXA10, FOXO1, NF-κB, Hlc-5, NCoR2
17-βhydroxysteroid dehydrogenase-2 deficiency
Greater invasiveness and vascularization:
Expression not regulated MMP
Increased peritoneal BEGF
Hyperactive AKT
Recruiting of Tie-2 macrophage expression
Inflammatory response:
Chemokine production: RANTES, MCP-1, IL-8
Recruitment of alternately activated macrophages
Peritoneal increase in IL-6, TNF
NF-k-B dependent path compromise
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implantation in the cul-de-sac of Douglas and uterosacral ligaments, an aberrant differentiation or migration of the Müllerian duct may be the cause of endometrial cell dispersal in fetal life;

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Magnetic resonance imaging (MRI) is an increasingly used diagnostic tool in the preoperative evaluation of deep endometriosis of the posterior pelvis. This technique is superior to ultrasonography and provides more complete and objective information on the anatomy of the pelvis. However, MRI shows some limitations with the presence of endometriomas in the vicinity of the uterosacral ligaments or with retroverted uterus.<sup>17,18</sup> In our experience, MRI has a high correlation with intraoperative findings.

The videocolonoscopy is useful to identify lesions with intestinal transmural involvement and to biopsy them. However, mucosal involvement is rare, so the examination will usually be normal or with signs of extrinsic compression.<sup>19</sup> In our experience, only one of the 171 women had colonic mucosal involvement.

The sensitivity of the different diagnostic methods has been compared (Table 6).

Once the diagnosis is confirmed, the only effective the-

TABLE 5: DONNEZ CLASSIFICATION OF RETROPERITONEAL ENDOMETRIOSIC NODULES

Nodule type	Characteristics
Type I	Rectovaginal septum size 2 cm (15% of nodules)
Type II	Retrocervical location (60% of nodules)
Type III	"Hourglass" or Diabolo-Like size 3 cm infiltrates rectal wall

TABLE 6: DIAGNOSTIC METHODS

Method	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	LR +	LR -	Gold estándar
TRUS	100	98	75	100	50	-	Surg, histo
TVUS	91	98	97	91	46	0.1	Surg, histo
Ultrasound	92	84	85	89	5.8	0.1	Surg, histo
MRI	78	93	90	83	11	0.2	Surg, histo
Barium enema	100	98	98	100	50	-	Surg, histo
CT	99	100	100	93	-	0.01	histo

\*TRUS: Transrectal ultrasound. TVUS: Transvaginal ultrasound. MRI: Magnetic resonance imaging. CT: Computerized tomography. PPV: Positive predictive value. NPV: Negative predictive value. LR: Likelihood ratio. Surg: Surgery. Histo: Histology.

therapeutic alternative in symptomatic patients is to achieve complete surgical resection of the ectopic endometrial tissue. However, such surgery is complex and associated with possible complications.<sup>20-22</sup> Therefore, prior planning and coordination of a multidisciplinary team is crucial.

Medical therapy, before or after surgery, is used in order to facilitate the procedure or to reduce the risk of recurrence, although there is no evidence to support it. This treatment option is only temporary and should not constitute the definitive management alternative.<sup>23</sup>

There is no clear consensus on the indications with which intestinal resection should be performed in endometriosis; in general it is indicated in symptomatic patients, when there is suspicion of malignancy, in the presence of deep implants that compromise >50% of the intestinal circumference, with nodules >3 cm, multiple nodules or transmural involvement.<sup>24-26</sup>

Since the first laparoscopic intestinal resection for endometriosis was performed in 1991,<sup>27</sup> this option has become a possible alternative for the management of deep endometriosis of the posterior pelvis with intestinal involvement.<sup>28,29</sup>

There are several types of resection in surgery for deep endometriosis with colonic involvement, complete resection, discoid resection, and shaving.<sup>30,31</sup>

Laparoscopic anterior resection has reported a success rate in the treatment of endometriosis close to 94%, with an approximate acceptable morbidity of 15%.<sup>32</sup>

In a series from the Hospital Italiano de Buenos Aires group, 17 patients (mean age 35 years), were operated on for severe deep endometriosis.<sup>31</sup> The majority of them consulted for chronic pelvic pain and the most compromised site was the rectum (52%) followed by the rectosigmoid junction. The operative procedures were: low anterior resection in 9 patients (with diverting ostomy in 4), high anterior resection in 5 and right hemicolectomy in 3. Overall morbidity was 23% with one anastomotic dehiscence and null mortality.

According to a series by Chaperon's group, 100 women with chronic pelvic pain underwent reoperation due to incomplete surgeries, which is why they promote complete resection of the lesion, including the affected colonic segment.<sup>33</sup>

Thus, the recurrence rate was 2% and the rate of fistulas in unprotected anastomoses in our series was 0.03%, one

case out of 28. It would seem that the incidence of fistulas in these types of patients is lower than in rectal resections for cancer.

Disc resections represent an alternative that limits pelvic dissection, resulting in less surgical trauma and less operative time. Moawad<sup>30</sup> compared 14 laparoscopic low anterior resections with 8 laparoscopic discoid resections and reported less blood loss, fewer associated complications and less hospital stay with the latter. But on the other hand, 2 had rectal strictures that required dilations. This report does not mention anastomotic fistulas in either of the two therapeutic options. The lesions they treated were less than 3 cm in diameter.

As a simpler alternative, shaving (or nodular resection) of the intestinal wall has been proposed. The advantage of low morbidity when a nodular resection is performed is not necessarily related to an increased recurrence of pain if the nodule recurs, especially in women who may benefit from subsequent medical treatment.

The 2017 series by Renner et al.<sup>32</sup> reported rectal shaving with ultrasound scalpel or plasma in 64 and 58 women, respectively, for nodules classified as <1 cm, and > 3 cm in diameter, located in the middle and upper rectum. Except for two rectal fistulas (1.6%), most complications were not related to rectal shaving. Results revealed a statistically significant improvement in digestive function and pelvic pain at 1 and 3 years after rectal shaving, but not constipation. Rectal recurrences occurred in 4% of patients, 2.4% of whom had segmental resection, 0.8% shaving, and 0.8% disc excision.

## CONCLUSIONS

Our results show that the approach to deep pelvic endometriosis must be multidisciplinary, including gynecologists, proctologists, urologists and specialists in diagnostic imaging.

Laparoscopic surgery, although often cumbersome, is safe and can be performed if the surgical team is familiar with this challenging condition. Under no circumstances should conversion to laparotomy, nor continuing the procedure through the conventional approach after laparoscopic diagnosis, be considered a failure, which should be something agreed upon by the treating team.

## BIBLIOGRAPHY

1. Dindo D, Demartines N, Clavien P. Classification of surgical complications. A new proposal with evaluation in a cohort of 6336 patients and results of a survey. *Ann Surg* 2004;240:205-13.
2. Vercellini P. Deep Endometriosis: Definition, pathogenesis and clinical management. *JAAGL* 2004;11:153-61.
3. Simoens S, Hummelshoj L, D'Hooghe T. Endometriosis: cost estimates and methodological perspective. *Hum Reprod Update* 2007;13:395-404.
4. Definición. <https://saendometriosis.com.ar/practice-areas/>
5. Vercellini P, Viganò P, Somigliana E, Fedele L. Endometriosis:

- pathogenesis and treatment. *Nat Rev Endocrinol* 2014;10:261-75.
6. Waller KG, Shaw RW. Gonadotropin-releasing hormone analogues for the treatment of endometriosis: long-term follow-up. *Fertil Steril* 1993;59:511-15.
  7. Sampson JA. Intestinal adenomas of endometrial type. *Arch Surg* 1922;5:217-21.
  8. Chapron C, Fauconnier A, Vieira M, Barakat H, Dousset B, Pansini V, et al. Anatomical distribution of deeply infiltrating endometriosis: surgical implications and proposition for a classification. *Hum Reprod* 2003;18:157-61.
  9. Cameron IC, Rogers S, Collins MC, Reed MW. Intestinal endometriosis: presentation, investigation, and surgical management. *Int J Colorect Dis* 1995;10:83-6.
  10. Adamson DG. Diagnosis and clinical presentation of endometriosis. *Am J Obstet Gynecol* 1990;162:568-69.
  11. Chapron C, Barakat H, Fritel X, Dubuisson JB, Bréart G, Fauconnier A. Presurgical diagnosis of posterior deep infiltrating endometriosis based on a standardized questionnaire. *Hum Reprod* 2005;20:507-13.
  12. Koninckx PR, Meuleman C, Oosterlynck D, Cornillie FJ. Diagnosis of deep endometriosis by clinical examination during menstruation and plasma CA-125 concentration. *Fertil Steril* 1996;65:280-87.
  13. Chapron C, Dubuisson JB, Pansini V, Vieira M, Fauconnier A, Barakat H, et al. Routine clinical examination is not sufficient for diagnosing and locating deeply infiltrating endometriosis. *J Am Assoc Gynecol Laparosc* 2002;9:115-19.
  14. Dragisic KG, Padilla LA, Milad MP. The accuracy of the rectovaginal examination in detecting cul-de-sac disease in patients under general anaesthesia. *Hum Reprod* 2003;18:1712-15.
  15. Bazot M, Detchev R, Cortez A, Amouyal P, Uzan S, Darai E. Transvaginal sonography and rectal endoscopic sonography for the assessment of pelvic endometriosis: a preliminary comparison. *Hum Reprod* 2003;18:1686-92.
  16. Bazot M, Thomassin I, Hourani R, Cortez A, Darai E. Diagnostic accuracy of transvaginal sonography for deep pelvic endometriosis. *Ultrasound Obstet Gynecol* 2004;24:180-85.
  17. Redwine DB. Ovarian endometriosis: a marker for more extensive pelvis and intestinal disease. *Fertil Steril* 1999;72:310-15.
  18. Bazot M, Darai E, Hourani R, Thomassin I, Cortez A, Uzan S, et al. Deep pelvic endometriosis: MR imaging for diagnosis and prediction of extension of disease. *Radiology* 2004;232:379-89.
  19. Landi S, Barbieri F, Fiaccavento A, Mainardi P, Ruffo G, Selvaggi L, et al. Preoperative double-contrast barium enema in patients with suspected intestinal endometriosis. *J Am Assoc Gynecol Laparosc* 2004;11:223-28.
  20. Donnez J, Pirard C, Smets M, Jadoul P, Squifflet J. Surgical management of endometriosis. *Best Pract Res Clin Obstet Gynaecol* 2004;18:329-48.
  21. Yap C, Furness S, Farquhar C. Pre and post operative medical therapy for endometriosis surgery. *Cochrane Database Syst Rev* 2004;3:CD003678.
  22. Urbach DR, Reedijk M, Richard CS, Lie KI, Ross TM. Bowel resection for intestinal endometriosis. *Dis Colon Rectum* 1998;41:1158-64.
  23. Donnez J, Nisolle M, Squifflet J. Ureteral endometriosis: a complication of rectovaginal endometriotic (adenomyotic) nodules. *Fertil Steril* 2002;77:32-7.
  24. Duepree HJ, Senagore AJ, Delaney CP, Marcello PW, Brady KM, Falcone T. Laparoscopic resection of deep pelvic endometriosis with rectosigmoid involvement. *J Am Coll Surg* 2002;195:754-58.
  25. Jerby BL, Kessler H, Falcone T, Milsom JW. Laparoscopic management of colorectal endometriosis. *Surg Endosc* 1999;13:1125-28.
  26. Ribeiro PA, Rodrigues FC, Kehdi IP, Rossini L, Abdalla HS, Donadio N, et al. Laparoscopic resection of intestinal endometriosis: a 5-year experience. *J Minim Invasive Gynecol* 2006;13:442-46.
  27. Redwine DB, Sharpe DR. Laparoscopic segmental resection of the sigmoid colon for endometriosis. *J Laparoendosc Surg* 1991;1:217-20.
  28. Selak V, Farquhar C, Prentice A. Danazol for pelvic pain associated with endometriosis. *Cochrane Database Syst Rev* 2007; 75:485-8.
  29. Dousset B, Leconte M, Borghese B, Millischer A, Roseau G, Arkwright S, et al. Complete surgery for low rectal endometriosis: Long-term results of a 100-case prospective study. *Ann Surg* 2010;251:887-95.
  30. Moawad NS, Guido R, Ramanathan R, Mansuria S, Lee T. Comparison of laparoscopic anterior discoid resection and laparoscopic low anterior resection of deep infiltrating rectosigmoid endometriosis. *JLS* 2011;15:331-38.
  31. Busnelli V, Mentz R, Vaccaro C, Antelo Galarza R, Im V, Gil S, et al. tratamiento laparoscópico resectivo por endometriosis severa con compromiso colorrectal: Factibilidad y seguridad. *Rev Argent Coloproct* 2014;25:204-10.
  32. Renner SP, Kessler H, Topal H, Proske K, Adler W, Burghaus S, et al. Major and minor complications after anterior rectal resection for deeply infiltrating endometriosis. *Arch Gynecol Obstet* 2017;295:1277-85.
  33. Dousset B, Leconte M, Borghese B, Millischer AE, Roseau G, Arkwright S, et al. Complete surgery for low rectal endometriosis: long-term results of a 100-case prospective study. *Ann Surg* 2010;251:887-95.

## COMMENT

The article of Dr. Zapata and co-authors presents the patients operated on for endometriosis in the Hospital de Clínicas. Due to the great variety of symptoms, diagnosis is usually late and can reach 30-40% of women with infertility. Despite advances in diagnostic methods, the laparoscopic approach continues to be the choice. The experience includes 171 operated patients, 29 with colorectal pathology. The conversion, morbidity and mortality rates are acceptable and in accordance with the international literature. It is interesting to highlight the updated review of the subject. It is logical to think that the large number of patients included in the series depends on a great multidisciplinary commitment, by working together with the gynecology service and other relevant services.

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