

Single-center Experience of a Safe and Feasible Segmental Resection of Rectosigmoid Endometriosis

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Received: 07-10-2020

Revised: 29-12-2020

Accepted: 04-01-2021

Abstract

Introduction: Bowel endometriosis, defined as the presence of endometrial tissue infiltrating the intestinal muscularis propria layer and beyond (3), has a predilection for the sigmoid colon and rectum.

Methods: We examined and described the role of surgical resection of bowel deep infiltrating endometriosis (DIE) along with primary gynecological resection in 9 patients.

Results: These 9 patients had rectal DIE that either infiltrated the deep muscularis layer or involved more than half of the bowel circumference, in which case surgical resection was necessary to avoid distorting the bowel axis and subsequent stricture. Cases with only perirectal fat and rectal serosa involvement without lumen obstruction were treated with either disc excision or shaving and were excluded from this study.

Conclusion: Segmental resection can safely and feasibly be incorporated into the comprehensive multidisciplinary management of bowel endometriosis, even with minimally invasive techniques. Further efforts to expand its use are necessary, broadening the scope of bowel endometriosis management across the country.

Keywords: Bowel endometriosis, Deep infiltrating, Segmental resection

Please cite this paper as:

Nugroho A, Saunar RY, Jamtani I, Syahbana LS, Hudaya S, Widarso A, Poniman T. Single-Center Experience of a Safe and Feasible Segmental Resection of Rectosigmoid Endometriosis. *Ann Colorectal Res.* 2020;8(4):187-191. doi: 10.30476/ACRR.2021.88432.1065.

Introduction

Endometriosis, a condition in which endometrial-like tissue is present outside the uterus, is seen in up to 15% of women of reproductive age (1, 2). It is described as deep infiltrative when it is found under more than 5 mm of the peritoneal surface, most commonly located in the uterosacral ligaments,

inside the rectovaginal septum or vagina, or in the rectosigmoid area, ovarian fossa, pelvic peritoneum, ureters, and bladder. Bowel involvement has been reported in 3-37% of cases, and in 90% of those cases involving the rectum or sigmoid colon (1). We aim to describe our experience in the multidisciplinary management of rectosigmoid deep infiltrating endometriosis (DIE) cases that underwent segmental

resection in our center.

Materials and Methods

Data from January 2018 to October 2018 of patients with endometriosis in Fatmawati Central General Hospital were reviewed retrospectively. Out of all endometriosis cases, we focused on DIE affecting the rectosigmoid. Important clinical variables that were collected included age at presentation, symptoms related to endometriosis, physical and radiological findings, intra-operative findings, and post-operative care. Data were tabulated and analyzed using a combination of Microsoft Excel and SPSS 26.0.

Clinical Evaluation

The clinical evaluation included patient interviews, physical assessment, and radiographic imaging. The list of symptoms that were collected included chronic pelvic pain, dysmenorrhea, dyschezia, dysuria, dyspareunia, and low back pain. Each symptom was assessed pre-operatively according to the visual analog scale (VAS). This was followed by a routine pelvic exam to evaluate the presence of any nodules. Abdominal and transvaginal ultrasonography (USG) were performed followed by pelvic magnetic resonance imaging (MRI). Cases of DIE with bowel involvement were discussed prior to the surgical decision in a multidisciplinary setting that included a gynecologic surgeon (as the primary surgeon), a colorectal surgeon, radiologists, and pathologists.

Surgery

The surgery was done either via laparotomy or laparoscopy. A team of gynecologic and colorectal surgeons carried out the surgical procedure step by step. Step 1 – adhesiolysis, ovarian surgery, and removal of the involved peritoneal tissue. Step 2 – opening of the presacral space, development of avascular spaces, isolation, and preservation of pelvic sympathetic fibers of the inferior mesenteric plexus, superior hypogastric plexus, upper hypogastric nerves, and lumbosacral sympathetic trunk and ganglia. Step 3 – dissection of parametrial planes, isolation of ureteral course, lateral parametrectomy, and preservation of sympathetic fibers; the pelvic ureters and iliac vessels were identified and ureterolysis was performed. Step 4 – posterior parametrectomy. Step 5 – development of the rectovaginal septum and sparing of the caudal portion of the inferior hypogastric plexus. Step 6 – saving the caudal portion of the inferior hypogastric plexus in the paravaginal space. Step 7 – rectal resection and colorectal anastomosis. Segmental resection was performed for nodules ≥ 30 mm or nodules < 30 mm infiltrating the muscularis layer and beyond and involving more than half of the bowel circumference. Perirectal lesions and lesions < 30 mm contained in the serosa layer were treated by discoid resection. We did not routinely perform ileostomy.

Results

There were 170 cases of endometriosis within the timeline, out of which DIE was diagnosed in 47 cases (27%). DIE that affected the bowel, including those that only affected the perirectal fat and rectal serosa, were 19 cases (40%); 11 cases (58%) had DIE involving the serosa and muscularis layers. A total of 8 cases (42%) had only perirectal fat and rectal serosa involvement that did not involve more than half of the bowel circumference and were treated with either disc excision or shaving. Those cases were excluded from this study. In addition, 2 out of the 11 cases of rectal DIE were excluded due to incomplete clinical and radiological data (Figure 1). We examined and described the clinical characteristics of 9 patients with rectal DIE who were treated with segmental resection along with primary gynecological resection (Tables 1 and 2).

All the patients, except for one, had complained of dysmenorrhea (89%). Chronic pelvic pain was seen in 78% of cases ($n=7$), while dyschezia was present in six cases (67%) and dyspareunia and low back pain were present in five cases (56%) (Table 1). Three patients (33%) were on constant oral pain-killers; four (44%) were on hormonal therapy, and four (44%) had previous ovarian cystectomy surgeries. An overlap was seen between patients with hormonal therapy and previous surgeries (Table 1).

DIE nodules were detected in 4 patients (44%) through pelvic examination and transvaginal USG. All patients had undergone MRI, which accurately detected rectal DIE nodules in all but one case (89%). In our study, the majority of patients underwent laparoscopic segmental resection along with primary gynecological resection (89%) with a mean surgical duration of 438.3 ± 114.6 minutes and a mean blood loss of 355.5 ± 174.0 ml. All patients were discharged without any complications within 6 to 12 days (Table 2).

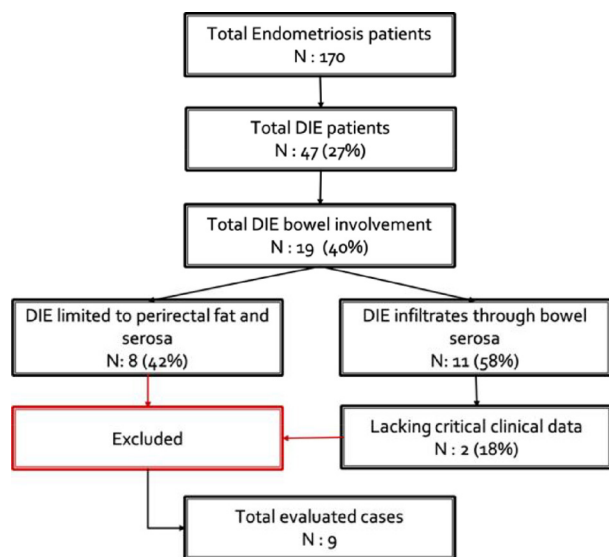


Figure 1: Patient selection

Table 1: Patient Characteristics

No.	Age	VAS of symptoms						Previous Treatments			
		CPP	Dys-menorrhea	Dys-chezia	Dys-uria	Dys-pareunia	LBP	Surgery	Hormonal Therapy	Oral pain-killers	
1.	46	0	0	0	0	0	0	Ovarian cystectomy	Yes	No	
2.	36	5	7	0	0	6	4	None	No	Yes	
3.	40	4	8	5	0	5	5	Ovarian cystectomy	Yes	No	
4.	25	4	8	6	0	4	3	None	No	No	
5.	38	0	6	4	0	5	0	None	No	Yes	
6.	40	4	6	0	0	0	0	None	No	Yes	
7.	42	3	7	6	0	0	0	Ovarian cystectomy	Yes	No	
8.	40	5	9	7	0	7	5	Ovarian cystectomy	Yes	No	
9.	33	2	5	5	0	0	2	Other (benign rectal polyp)	No	No	
Total		7 (78%)	8 (89%)	6 (67%)	0	5 (56%)	5 (56%)	Ovarian cystectomy 4 (44%)	4 (44%)	3 (33%)	
Mean±SD	37.7±6	3±1.9	6.2±2.6	3.6±2.8	0	3±2.9	2.1±2.2				

VAS: visual analog score; CPP: chronic pelvic pain; LBP: low back pain; USG: ultrasonography; MRI: magnetic resonance imaging; DIE: deep infiltrating endometriosis; LOS: length of stay

Table 2: Nodule and Surgery Characteristics

No.	DIE Nodule Location			Nodule Characteristics				Surgery			Pathology	Post-op LOS [#]
	Pelvic exam	USG	MRI	Size (cm)	Depth	Distance from ACL (cm)	Bowel circumferential	Approach	Duration [*]	Blood loss [†]		
1.	Sacrouterine lig.	None	Rectal wall	1,5	Muscularis	4	1/2	Laparoscopy	300	400	Rectal endometriosis	11
2.	None	Sacrouterine lig.	Ant. Rectal wall		Serosal	12	2/3	Laparoscopy	210	200	Rectal endometriosis	10
3.	Post. Fornix	None	Ant. Rectal wall	6,4	Mucosal	10	1/3	Laparoscopy	510	700	Rectal endometriosis	9
4.	Post. Fornix	Rectovaginal	Ant. Rectal wall	9,7	Muscularis	12	½	Laparoscopy	465	500	Rectal endometriosis	10
5.	None	Left Uterosacral lig.	None		No infiltration	7	0	Laparotomy	510	200	Rectal endometriosis	9
6.	None	None	Pre rectal fat and ant. Rectal wall		Serosal	11	2/3	Laparoscopy	390	200	Rectal endometriosis	10
7.	None	None	Pre rectal and parametrium fat		Muscularis	10	1/3	Laparoscopy	540	200	Rectal endometriosis	6
8.	Rectosigmoid	Rectosigmoid	Rectum		Muscularis	8	1/3	Laparoscopy	510	400	Rectal endometriosis	12
9.	None	None	Intraluminal rectum		Sub mucosal	6	1/2	Laparoscopy	510	400	Rectal endometriosis	10
Total	4 (44%)	4 (44%)	8 (89%)					Laparoscopy 8 (89%)			9 (100%)	
Mean ±SD									438.3 ±114.6	355.5 ±174.0		9.6 ±1.6

*Minutes; †CCs; #Days

Discussion

Bowel endometriosis, defined as the presence of endometrial tissue infiltrating the intestinal muscularis propria layer and beyond (3), has a predilection for the sigmoid colon and rectum. This may be associated with the movement of refluxed endometrium enclosed by the sigmoid colon, which settles in the pouch of Douglas (4). Here, we examined and described the clinical characteristics of nine patients with rectal DIE who were treated with segmental resection along with primary gynecological resection (Table 1). These 9 patients had rectal DIE that either infiltrated the deep muscularis layer or involved more than half of the bowel circumference, making segmental resection necessary to avoid distorting the bowel axis and subsequent stricture (5). Cases with only perirectal fat and rectal serosa involvement with no lumen obstruction were treated with either disc excision or shaving and were excluded from this study.

The most common clinical manifestations of endometriosis are pelvic pain and infertility. In DIE involving the bowel, gastrointestinal symptoms may diverge depending on the location and the menstrual cycle. Manifestations such as constipation, diarrhea, rectal pain during defecation (dyschezia), and rectal bleeding may occur if the rectosigmoid is involved (1, 3). However, in many women, endometriosis is asymptomatic. In such cases, bowel resection may not be indicated (1, 3). A thorough pre-operative workup is necessary to accurately assess the extent of the disease, plan the multidisciplinary management, and appreciate the possibility of complications (1, 3). In our center, these workups were performed by the gynecologist and were discussed with the multidisciplinary team consisting of radiologists, pathologists, digestive surgeons, and, in some cases, urologists. DIE nodules were detected in four patients (44%) through pelvic examination and transvaginal USG. All patients subsequently underwent an MRI, which accurately detected rectal DIE nodules in all but one case (89%). The reported sensitivity of transvaginal USG and MRI in detecting DIE is similar (90% and 91%, respectively) (1); however, in this limited report, MRI had the upper hand in accurately diagnosing DIE and describing its location and extent of the disease. These results were corroborated by intraoperative findings and the histopathology report in all cases.

A tailored approach with an emphasis on patient symptoms is of utmost importance in managing endometriosis (1). In addition to hormonal therapy and painkillers, surgery has been shown to significantly improve symptoms associated with endometriosis (2, 3, 6). Almost half of our study subjects had had previous surgery and hormonal therapy, and 33% were on routine oral painkillers. One patient, 46 years old, had undergone two previous surgeries and was on hormonal therapy but opted for

another surgery when the pain worsened. Surgical management of colorectal DIE was performed as early as 1953, reported by Ponka in 1973, without any postoperative complications or deaths (7). In addition, following the first laparoscopic colectomy in colorectal DIE in 1991, several studies have shown good results (1).

The vital key of endometriosis surgery is radical excision of the disease using the least invasive procedure possible (1, 8). The objectives include attaining a good long-term outcome in pain relief, achieving low recurrence rates, completely removing all endometrial tissue without compromising ovarian function and fertility, preventing postoperative bowel adhesion, and improving the patient's health-related quality of life (1). Significant knowledge of pelvic anatomy is crucial in achieving these targets since DIE is often associated with fibrotic changes that distort the anatomy and surgical field (2).

To avoid twisting of the bowel axis and consequent stricture, segmental resection is recommended over shaving or discoid resection when the lesion diameter is larger than 30 mm (5). Discrepancies in sizes evaluated by MRI and intraoperative findings may exist, so patients should always be well informed of the possibility of segmental resection instead of discoid resection (5). Recently, laparoscopic segmental resection has gained favor since it is feasible and has been known to have a good outcome in addition to less pain, shorter hospital stay, quicker recovery, and better cosmesis (1, 3). In our center, the majority underwent laparoscopic segmental resection (89%) with a mean surgical duration of 438.3 ± 114.6 minutes and a mean blood loss of 355.5 ± 174.0 ml.

The nerve-sparing 'Negar method' was applied in all cases whether laparoscopically or in the open approach. The Negar method has been developed recently and is now the standard of care in performing segmental resection for DIE. In addition, resection of the rectosigmoid segment was done without ligation of the inferior mesenteric artery (IMA). The nerve-sparing technique with preservation of IMA results in the best urinary, intestinal, and sexual function outcomes and is therefore recommended as the standard of care (3, 9). Ureterolysis was performed to identify and avoid injuries to the ureters, especially in difficult cases accompanied by adenomyosis and severe adhesions. Diverting ileostomies in rectal resections are not routinely performed in our center. Patients scheduled for rectosigmoid resections undergo bowel preparation before the surgery, including a total liquid diet starting from 48 hours prior to surgery and one dose of laxative 24 hours before surgery. In addition, a rectal tube is placed for 2 to 3 days after surgery, eliminating the need for a diverting stoma.

Following nerve and IMA-sparing segmental resection for DIE excision, surgical and functional complications are generally low and reversible. In

addition to rectovaginal fistulae, which are mostly reversible, alterations of sexual well-being such as insufficient vaginal lubrication and new-onset anorgasmia may be present as complications and should be given special consideration as they can persist and become permanent. All of our patients were discharged without any complication within 6 to 12 days (Table 1).

Lastly, surgical management of bowel DIE, either by discoid resection or segmental resection, provides relief of symptoms and results in an overall improvement in pelvic pain, gastrointestinal complaints, and quality of life, with negligible recurrence rates (8).

The limitations of our study are its retrospective nature and the relatively small number of segmental

resection. However, this study showed the feasibility of a safe laparoscopic segmental resection of rectosigmoid DIE.

Conclusion

Segmental resection is safe and feasible, even with the minimally invasive technique, and can be incorporated into the comprehensive multidisciplinary management of bowel DIE. Further efforts to expand its use are necessary, broadening the scope of bowel endometriosis management across the country.

Conflicts of interests: None declared.

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