ORIGINAL ARTICLE

DOI: 10.52054/FVVO.2024.13453
Facts Views Vis Obgyn 2025;17(1):61-67

Do we need a preventive stoma in surgery for colorectal endometriosis? A retrospective series of 97 patients treated at an expert centre

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ABSTRACT

Background: Various surgical techniques for the treatment of colorectal endometriosis have been described, and the benefit of a preventive stoma remains unclear.

Objectives: The aim of our study is to evaluate the risk of complications in patients who underwent surgery for colorectal endometriosis without a policy of preventive stoma.

Methods: Retrospective cohort study of 97 consecutive patients treated for colorectal endometriosis in an expert centre from January 2022 to January 2024.

Main Outcome Measures: Complications after colorectal endometriosis surgery in patients without preventive stoma.

Results: Forty-three patients were managed by segmental resection, 20 patients by single-disc excision, 5 patients by double-disc excision and 29 patients by rectal shaving. 48 patients required vaginal suturing. We found complications in 14% of patients. Severe complications (Clavien-Dindo ≥3) were encountered in 8.24% of patients. 3.09% developed a rectovaginal fistula. Patients with a colorectal endometriosis nodule larger than 3 cm had more complications than patients with smaller nodules (57.1% vs. 42.9% of total complications), with a *P*-value close to the statistical significance.

Conclusions: Surgery for colorectal endometriosis performed in high-volume centres by expert surgeons leads to a reduction in the risk of postoperative complications. In our study, we did not perform routine preventive stoma formation, and we did not find an increase in postoperative complications compared to the literature.

What is New? This study provides data on the risk of postoperative complications in patients undergoing surgery for colorectal endometriosis without a preventive stoma policy.

Keywords: Colorectal endometriosis, endometriosis surgery, preventive stoma

Introduction

Endometriosis is a benign disorder in women, which is defined as the presence of endometrial-like tissue outside the uterus, inducing a chronic inflammatory reaction. The exact number of women suffering from endometriosis is unknown because some are asymptomatic, but it is estimated that up to 15% of all women of reproductive age have endometriosis.[1] The estimated incidence of colorectal endometriosis in patients with deep endometriosis (DE) varies between 5.3% and 12%.[2]

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Received: 23.07.2024 **Accepted:** 18.12.2024 **Publication Date:** 28.03.2025

Cite this article as: Collinet P, Renso M, Briez N. Do we need a preventive stoma in surgery for colorectal endometriosis? A retrospective series of 97 patients treated at an expert centre. Facts Views Vis Obgyn. 2025;17(1):61-67

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Surgical management of colorectal endometriosis is an option after failure of medical treatment.[3]

Several laparoscopic surgical techniques have been presented for treating colorectal endometriosis, including rectal shaving, disc excision, and segmental resection.

The benefits in terms of improvement of quality of life and pain management have been widely discussed over the last two decades.[4] A key surgical objective is to minimise complications, particularly that of a rectovaginal fistula, one of the most serious complications affecting both quality of life and fertility. Various surgical techniques have been described to reduce this risk: avoiding opening the vagina, placing the omentum or peritoneum between vaginal and rectal sutures or performing a transitory diverting stoma at the end of the procedure.

In rectal cancer, the literature supports the systematic use of a diverting stoma after low colorectal anastomosis to reduce complications. For colorectal endometriosis surgery, we do not have definitive guidelines, and it is impossible to automatically extrapolate data due to differences between patients managed for endometriosis and for rectal cancer.[5]

Therefore, the benefit of a preventive stoma in colorectal endometriosis surgery remains unclear, due to the lack of comparative studies, and its role has been widely debated over the last ten years. A recent study did not reveal statistically significant differences in the risk of rectovaginal fistula between women with rectovaginal endometriosis managed with a preventive stoma or not.[6]

The aim of our study is to evaluate the risk of complications in patients who underwent surgery for colorectal endometriosis without a policy of routine stoma formation.

Methods

Patients treated for colorectal endometriosis requiring surgical treatment managed at the Hopital Privé Le Bois, Ramsay Santé in Lille (France) from January 2022 to January 2024 were enrolled consecutively in our retrospective, cohort study.

The study population was treated by the same gynaecologic surgeon (P.C.) and by the same bowel surgeon (N.B.), both of whom are experts in endometriosis surgeons.

A preoperative assessment was performed by radiologists with experience in deep infiltrative endometriosis; all the patients underwent preoperative pelvic magnetic resonance imaging and computed tomography colonography. This allowed characterisation of the rectal nodules (size, location, whether unifocal or multifocal) as well as the identification of other endometriotic lesions within the pelvis. To perform the rectal nodule excision, we utilised three different techniques (depending on nodules' characteristics and localisation): segmental resection, disc excision or rectal shaving.

The surgical route was exclusively laparoscopic. Rectal shaving was performed by the gynaecologic surgeon alone, either using cold scissors, monopolar scalpel or ultrasonic energy, as deep as possible into the thickness of the rectal wall in order to allow the complete removal of the endometriotic nodule. For full-thickness mural nodules , the rectal muscular layer was repaired through absorbable interrupted sutures. If, at the end of the shaving, the rectal wall was still infiltrated by the deep endometriotic nodule, the visceral surgeon would perform disc excision using an end-to-end circular transanal stapler. The rectal shaving is an absolutely essential prerequisite of disc excision. When multiple nodules were revealed, they were managed with a double disc excision.

Segmental resection was performed, as previously described, by other teams.[7,8] First, a dissection of the recto-vaginal space and mobilisation of the rectum was performed, followed by a section of the mesorectum and mesocolon in contact with the posterior wall of the rectosigmoid. The rectum was distally sectioned using a laparoscopic stapler, then the extraction of the piece was carried out through a small suprapubic transverse incision. The affected section of the digestive tract was resected, and colorectal anastomosis was performed using an end-to-end transanal stapler with a diameter of either 28 mm or 31 mm.

At the end of the surgical procedure an assessment of rectal suture was carried out with a bubble test or by applying betadine solution into the rectum.

The decision to create a stoma, by either ileostomy or colostomy, was not based on preoperative findings. It was based on intraoperative findings after discussion between the gynaecologic and bowel surgeons. The criteria that led to the creation of a stoma were: the close proximity of vaginal and rectal sutures, unsatisfactory bubble test of the colorectal anastomosis or a very low rectal suture.

The vaginal suturing, when necessary, was performed using either a running V-lock 2/0 suture or interrupted Vicryl 2/0 suture(s).

The patients met the bowel surgeon pre-operatively to discuss the procedure, the risk of complications and the possible need of a preventive stoma. Generally, the type of surgical procedure (segmental resection, discoid resection or rectal shaving) was planned preoperatively based on the imaging's findings in a multidisciplinary meeting between the gynaecologist, the bowel surgeon and the radiologist.

All the other endometriotic lesions were treated concomittantly using, where required, ureterolysis, resection of utero-sacral ligament(s), partial colpectomy, hysterectomy, treatment of endometrioma and oophorectomy.

The post-operative complications were assessed according to the Clavien-Dindo classification.[9]

Statistical Analysis

For the statistical analysis, GraphPad Prism 10 software was used. The number of patients and percentages (qualitative variables) were used, as well as median values and range (continuous variables). A comparison was performed using Fisher's exact test (qualitative variables), and continuous variables were assessed by One-Way ANOVA between groups. $P < 0.05$ was considered statistically significant.

Results

A total of 97 consecutive patients were enrolled and treated from January 2022 to January 2024 by the same gynaecologic surgeon and the same bowel surgeon.

Forty-three patients were managed by segmental resection. The remaining fifty-four patients had conservative surgery: 20 treated by single disc excision, 5 by double disc excision and 29 by rectal shaving.

Table 1 shows the baseline characteristics of the study population.

In the whole population, the rectal nodule was most commonly found in the high rectum. The diameter of the largest nodule was greater in the group of patients

Table 1. Patient's baseline characteristics.

Parameter	Total of patients (n=97)	Conservative surgery (n=54)	Segmental resection (n=43)
Age (years)	34.9 (20.3-49.3)	35.1	36.2
Previous abdominal surgery	35 (36%)	33 (61.1%)	21 (48.8%)
Preoperative symptoms			
- Dysmenorrhea	68 (70.1%)	34 (62.9%)	33 (76.7%)
- Dyspareunia	33 (34.0%)	16 (29.6%)	16 (37.2%)
- Chronic pelvic pain	44 (45.4%)	17 (31.5%)	27 (62.8%)
- Digestive symptoms	65 (67.0%)	33 (61.1%)	32 (74.4%)
- Urinary symptoms	8 (8.2%)	3 (5.6%)	5 (11.6%)
Preoperative therapy			
- EP	39 (40.2%)	22 (40.7%)	17 (39.5%)
- Progesterone	63 (64.9%)	35 (64.8%)	28 (65.1%)
- IUD	16 (16.5%)	12 (22.2%)	4 (9.3%)
- Analogues	22 (22.7%)	12 (22.2%)	10 (23.3%)
Localisation of deep nodules			
- Low rectum	3 (3.1%)	1 (1.9%)	2 (4.7%)
- Medium rectum	20 (20.6%)	15 (27.8%)	5 (11.6%)
- High rectum	37 (38.1%)	19 (35.2%)	18 (41.9%)
- Sigmoid colon	32 (32.9%)	12 (22.2%)	20 (46.5%)
- Caecum and others	5 (5.2%)	0 (0%)	5 (11.6%)
Height of the lowest nodule (cm from the anal verge)	11.9	13.3	11.5
Diameter of largest rectal nodule (mm)	35 (15-100)	26.8	39.6

EP: Endometriosis, IUD: Intrauterine device.

treated with segmental resection than in the group having conservative surgery.

The intraoperative findings are shown in Table 2.

Only one patient in the segmental resection group, required conversion to open surgery due to the presence of extensive adhesions and multiple uterine fibroids. In the segmental resection group the operative time was statistically longer than in the group that underwent conservative surgery. Most patients had endometriotic lesions in other anatomical locations, which required associated surgical procedures (hysterectomy, partial colpectomy, adnexectomy, ureterolysis, management of ovarian endometriomas). More specifically, in the segmental resection group 11 patients had concomitant hysterectomy and 7 patients had concomitant partial colpectomy, while in the conservative group 15 patients had concomitant hysterectomy and 15 patients had concomitant partial colpectomy. Thus, a total of 48 patients had vaginal suturing concomitant with the surgical procedure on the digestive tract.

Table 3 presents the post-operative complications. Data on immediate postoperative complications was available in all patients. We did not find any statistical differences in the complications between the two groups, but we found that the segmental resection group had more Clavien Dindo I complications, and the conservative surgery group had more severe Clavien-Dindo IIIB complications. Among the severe complications (Clavien Dindo IIIB) one patient developed a ureteral fistula requiring uretero-vesical reimplantation, two dehiscences of anastomoses, one recto-vaginal fistula and one pelvic abscess.

Table 2. Intraoperative findings.

Parameter	Conservative surgery (n=54)	Segmental resection (n=43)	
Operative route			
- Laparoscopic	54 (100%)	42 (97.7%)	
- Laparoscopic converted to open surgery	0 (0%)	1 (2.3%)	
Operative time (min)	103 (± 60.9)	150 (± 48.5)	*P*=0.039
Procedure on the digestive tract			
- Shaving only	29 (53.7%)		
- Disc excision	20 (37%)	43 (100%)	
- Double disc excision	5 (9.2%)		
- Segmental resection	0 (0%)		
Preventive stoma	1 (1.8%)	1 (2.3%)	*P*=0.874
Length of colorectal resection (cm)	-	9.09 (3.5-40)	
Associated procedure			
- Hysterectomy	15 (27.8%)	11 (25.6%)	
- Colpectomy	15 (27.8%)	7 (16.3%)	
- Ureterolysis	48 (88.9%)	41 (95.3%)	
- Adnexectomy	8 (14.8%)	15 (34.9%)	
- Resection of bladder nodule	1 (1.8%)	1 (2.3%)	
- Management of endometrioma	12 (22.2%)	11 (25.6%)	
- Reimplantation of the ureter	1 (1.8%)	1 (2.3%)	
- Nephrectomy	0 (0%)	1 (2.3%)	
- Appendicectomy	1 (1.8%)	2 (4.7%)	

Table 3. Post-operative complications.

	Conservative surgery	Segmental resection	
Total complications	8 (14.8%)	6 (13.9%)	*P*=0.684
Clavien-Dindo	3 (5.6%)	3 (6.9%)	*P*=0.479
Clavien Dindo	0 (0%)	0 (0%)	-
Clavien Dindo	1 (1.9%)	2 (4.6%)	*P*=0.429
Clavien Dindo	4 (7.4%)	1 (2.3%)	*P*=0.261

Table 4 presents the relationship between the complications and some parameters that were chosen for analysis. A rectal nodule ≥30 mm and the presence of associated vaginal suturing were associated with more complications, although this was not statistically significant.

Discussion

We reported the results of a complete assessment of intraoperative findings and postoperative complications in 97 consecutive patients with colorectal endometriosis, managed with a policy of no preventive stoma unless strictly necessary by intraoperative findings, in the same centre by the same expert gynaecological surgeon and bowel surgeon.

We analysed both early and late postoperative complications with a mean follow-up of 49 ± 15 months. All patients were followed up to at least 30 days post-operation. Out of all the patients, we found that a total of 14% had complications which is less than that described in literature. Roman et al.[10], described a total amount of early postoperative complications of 30% in a retrospective series of 168 patients, without any differences in patients treated with preventive stoma or not. More specifically, 8.2% of patients had severe complications (Clavien-Dindo ≥3) and 3.1% developed a rectovaginal fistula. There was no statistical difference between the groups that received segmental resection or conservative surgery. Similarly, in another retrospective study of 364 patients, a postoperative risk of rectovaginal fistula of 3.8% was reported.[11] A French study, including 1,135 patients managed for colorectal endometriosis, reported the risk of fistula and leakage after shaving, disc excision, and segmental resection as 1.3%, 3.6%, and 4.7%, respectively.[12] The largest systematic review and meta-analysis on surgical outcomes after colorectal surgery for endometriosis[13] resection, an overall rate of rectovaginal fistula of 1.5% (0.3%, 2.7%, and 3.3% after shaving, disc excision, and segmental resection respectively).

Although the difference was not statistically significant, we observed a higher complication rate in the group that underwent conservative surgery (disc excision or rectal shaving), contrary to findings in the literature. This could be explained by the fact that over 50% of our conservative surgery was performed to remove nodules larger than 3 cm which could lead to an increased risk of postoperative complications. However, we believe that conservative surgery helps preserve the rectum and may lead to better functional outcomes, which were not evaluated in this study. Additionally, disc excision and rectal shaving required less operative time (*P*=0.039).

We also analysed the relationship between the postoperative complications and the presence of concomitant vaginal and rectal suturing, so patients in which we had performed concomitant hysterectomy or partial colpectomy, and we observed no differences in the risk of complications. Therefore, we believe that these cases no longer indicate the need for preventative stoma formation, as was indicated a few decades ago. Moreover, quite often we forget complications that are related to the stoma. In a series of 163 patients that received a diverting stoma after colorectal surgery for endometriosis, a risk of severe complications Clavien-Dindo IIIb of 8% was found.[14] Thus, this is an argument for limiting the use of preventive stomas to only selected cases, and women should also be informed that the use of a preventive stoma does not completely exclude the risk of recto-vaginal fistula.

Finally, we observed that patients with a colorectal endometriosis nodule larger than 3 cm had more complications than patients managed for smaller nodules (57.1% vs. 42.9% of total complications), with a *P*-value close to statistical significance. These findings should be validated by larger prospective studies and ought to be considered in the preoperative assessment to reduce the risk of major complications.

Table 4. Relationship between complications and size of nodule, vaginal suture or stoma.

	Complications (n=14)	
Nodule ≥30 mm Nodule <30 mm	8 (57.1%) 6 (42.9%)	*P*=0.079
Vaginal suture No vaginal suture	8 (57.1%) 6 (42.9%)	*P*=0.849
Stoma No stoma	2 (14.3%) 12 (85.7%)	*P*=0.197

Study Limitations

Our study has three main limitations: the retrospective collection of data, the sample size and the lack of functional outcome assessment.

The limited sample size may be too small to detect statistically significant differences when complication rates are rare. To counter this, we suggest using a larger sample size in future prospective studies to evaluate the incidence of complications and a real need for diverting stomas in patients with colorectal endometriosis. In future research, it would be beneficial to assess differences in functional outcomes in two groups of patients (with and without a stoma).

Our study has two particular strengths. Firstly, women managed with conservative surgery (disk excision or rectal shaving) had endometriotic nodules which significantly infiltrated the digestive wall, not only superficially. Because of this, the rectal shaving was performed as deeply as possible into the thickness of the rectal wall and for the full-thickness nodules, rectal muscular layer was repaired by resorbable separate stitches. Secondly, all the patients were managed by the same gynaecologist and bowel surgeon. This ensured a homogeneous population to allow complication comparison. The surgical procedures were all performed in a centre with a deep expertise in endometriosis management, ensuring a multidisciplinary management that has been demonstrated to be crucial in the postoperative outcomes. The impact of surgeon expertise in colorectal endometriosis on morbidity and postoperative complications has already been demonstrated,[15] so we recommend that, in order to improve patients' quality of life, surgery for deep infiltrative endometriosis is performed in high volume centres.

Conclusion

Surgery for colorectal endometriosis performed in high volume centres by expert surgeons leads to a reduction in the risk of postoperative complications. In our study, we did not use a routine preventive stoma and we did not find an increase in postoperative complications compared to the literature. Future research should include a prospective study comparing patients with and without stoma with a larger sample size to evaluate the incidence of complications and the true necessity of diverting stomas in colorectal endometriosis surgery.

Ethics

Ethics Committee Approval: No ethical approval was required as the retrospective study used routinely available clinical data only.

Informed Consent: Retrospective study.

Acknowledgements: None.

Footnotes

Authorship Contributions

Surgical and Medical Practices: P.C., N.B., Concept: M.R., P.C., N.B., Design: M.R., P.C., Data Collection or Processing: M.R., Analysis or Interpretation: M.R., P.C., Literature Search: M.R., Writing: M.R., P.C.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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