A New Technique for Laparoscopic Anterior Resection for Rectal Endometriosis

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ABSTRACT

Background: Anterior rectal resection is sometimes necessary to treat deeply infiltrating rectovaginal endometriosis. We describe a completely laparoscopic approach as a new way of excising rectal endometriosis that can be used without opening any part of the rectum. This avoids opening the abdomen or any risk of fecal spillage.

Methods: The patient received preoperative oral bowel preparation. Ureteric stents (6 F) were inserted cystoscopically. The peritoneum in the ovarian fossae was opened lateral to any disease and the rectum reflected off the back of the cervix, leaving any endometriosis on the front of the rectum. The pelvic peritoneum was reflected medially, below the level of the ureters. The mesorectum was then dissected off a 6-cm length of rectum by using a Harmonic scalpel. A circular end-to-end anastomosis instrument was passed anally until the outline of the anvil was visible, inside the colon, above the diseased rectum. The anvil was detached and held by a soft grasper before the rectum was then divided above and below the disease using a laparoscopic stapling device. The tip of the anvil was pushed through the proximal end of the colon allowing reanastomosis of the rectal stump.

Conclusion: The patient was discharged after 5 days without complications.

Key Words: Laparoscopy, Colon resection, Endometriosis.

INTRODUCTION

Endometriosis affecting the rectum accounts for a small but significant group of women with severe pelvic pain.1,2 Perhaps because of the inadequacy of conservative or medical measures,3–5 many authors advocate the complete surgical removal of rectovaginal disease, even if surgery involving the rectum is required.2,6 Surgical techniques for this are still being developed. We report herein a modification of existing techniques to enable a small anterior resection to be done without having to open either the abdomen or the rectal lumen.

METHODS

The Patient

The patient was a 28-year-old woman with a 10-year history of pelvic pain. She had severe pain on defecation. She had 2 previous laparoscopies demonstrating endometriosis. The most recent had suggested tethering of the rectum to the back of the cervix. When filling out a visual analogue pain survey, she gave pain scores for dysmenorrhea (40/100), dyspareunia (20/100), pain on defecation (85/100), and daily pain (65/100). She had considerable impairment in her quality of life, and using the EQ-5D quality of life assessment, she gave herself a self-rated evaluation of 31 out of 100 (population mean = 88.82) for the quality of her health and had a calculated health state of 0.09 out of a maximum of 1.0 (population mean = 0.93).7 On examination, a tender nodular area was noted at the top of the posterior fornix of the vagina. She was extensively counseled prior to the procedure and received liquid oral bowel preparation the day before the surgery.

The Procedure

The patient received a general anesthetic, during which an epidural was sited for postoperative pain relief. She was placed in a low Lloyd-Davies position. Ureteric catheters (6 French gauge) were inserted cystoscopically to facilitate identification of the ureters. After insufflating carbon dioxide to a pressure of 18 mm Hg via an intramuilibrium disposable Verress needle, the following ports were sited:
A 10-mm umbilical port, through which a 10-mm laparoscope was passed, 5-mm ports in the right and left iliac fossae, lateral to the inferior epigastric vessels, and a 12-mm port with 5-mm reducer was inserted suprapubically, to the right of the midline but medial to the inferior epigastric vessels. A survey of the pelvis was performed. We found the rectum tethered to the back of the cervix and the left pelvic side wall with incomplete obliteration of the pouch of Douglas (Figure 1). A deep peritoneal nodule of endometriosis was found overlying the bladder. The ovaries were normal. For most of the procedure, dissection was performed using Maryland grasping forceps and Metzenbaum scissors with a single-patient use replaceable tip. Hemostasis, suction, and irrigation were achieved using a Surgiflex WAVE (ACMI, USA) and 20 watts of bipolar power.

The technique of opening of the peritoneum lateral to any disease and reflecting the tethered rectum off the back of the cervix has already been described and illustrated by Redwine2 and is therefore not illustrated herein. Using this technique, the peritoneum was opened laterally on the pelvic sidewall below the level of the ureters. These incisions were joined in the midline across the back of the cervix. The tethered rectum was then reflected down, allowing dissection into the rectovaginal space and leaving any disease on the surface of the rectum. The peritoneal incisions are extended medially and again are joined at the midline by incising over the serosal surface of the rectum, proximal to the diseased area. This technique allows the en-bloc excision of any diseased peritoneum either lateral to or overlying the rectum. At this point, we had isolated a 3-cm patch of nodular endometriosis that infiltrated the muscular layer of the rectum. It was apparent that this area was too large to be excised without creating a large defect in the rectum, and a decision was made to proceed to a segmental anterior resection.

The mesorectum was dissected using the Ultracision Harmonic scalpel (Ethicon, USA), exposing a 6-cm length of rectum that incorporated the diseased area (Figure 2). A circular end-to-end anastomosis instrument (28-mm Premier Plus CEEA, Tyco Healthcare, USA) was inserted through the anus and advanced up the rectum to a point proximal to the disease. By unscrewing the handle, the anvil of the CEEA device was made visible through the rectal wall, and the shaft was grasped by using a soft bowel grasper (Figure 3). The handle of the device was then removed, leaving the anvil held in place within the lumen of the rectum, proximal to the disease. An Endo-GIA Universal stapling device (Tyco Healthcare, USA) was used to transect the rectum above and below the diseased area (Figure 4). The excised tissue was removed through the 12-mm port site with the assistance of a retrieval bag. The point of the shaft of the anvil was then pushed through the transverse staple line on the proximal end of the colon (Figure 5). No purse string suture was required. The CEEA device was reinserted through the anus, and the anvil reattached (Figure 6). The device was fired, closing the anastomosis. The anastomosis was carefully examined and hemostasis secured. The deep nodule on the surface of the bladder peritoneum was excised. The ureteric catheters were removed. A 30 F rectal catheter was inserted, as well as a urinary catheter. To reduce adhesion formation,
1000 mL of Icodextrin solution (Adept, Shire Pharmaceuticals, UK) was left in the abdomen. The gas was released and the port sites closed. The estimated blood loss was 300 mL.

The patient had an uneventful postoperative course. The urinary catheter was removed after 48 hours when the urine ran clear. The rectal tube was removed after liquid stool was passed on the fourth postoperative day, and the patient was discharged on the fifth day.

Histological examination of the rectum demonstrated endometriosis within the muscularis propria of the rectal wall.

DISCUSSION

Excising rectovaginal endometriosis is a technically challenging process. Almost all the methods involve separating the adherent rectum from the back of the vagina and cervix and dissecting down into the rectovaginal septum. As this is done, the disease can be left on the side of the rectum to be stripped off after the dissection\(^2,\,8\) or can be left on the vaginal side of the septum and excised vaginally.\(^9,\,10\) Shaving the disease off the front of the rectum invariably thins the serosal surface, and procedures to plicate the uterosacral ligaments and lateral rectal peritoneum across the midline have been described.\(^8\)
Where deeper involvement of the rectal muscularis or mucosa occurs, it is necessary to excise a full-thickness part of the rectum. This can be done by excising a disc of rectal wall or performing an anterior segmental rectal resection. Concerns about the safety of performing such aggressive surgery for benign disease have been raised. Temporary colostomy formation has been performed when the anastomosis is extremely close to the anal margin and to manage a postoperative obstruction, but is otherwise rarely required. Clinically detectable anastomotic leaks occur after 7.3% of resections for carcinoma but to our knowledge have not been reported after resections for endometriosis. Other risks include fistula formation, intestinal obstruction, and pelvic abscess formation, but also appear to be very uncommon.

Advances in laparoscopic techniques and equipment have allowed segmental rectal resections to be performed whilst remaining loyal to the principles of laparoscopic surgery and minimizing the need for the traditional midline laparotomy. Total laparoscopic anterior resection has been described in animal models and has been used extensively for benign and malignant colorectal conditions.

At some points during the several described techniques, the port sites need to be enlarged or a mini-laparotomy needs to be performed to remove the specimen or insert the anvil of the circular end-to-end anastomosis device. Other techniques describe the use of a 33-mm port or a hand port to facilitate the reanastomosis. Most descriptions involve opening a small part of the proximal stump of sigmoid or rectum to insert the anvil into the proximal stump. At this point, the risk of fecal spillage is present, even with adequate bowel preparation, and a purse string suture is required to secure the hole in the proximal stump around the shaft of the anvil.

**CONCLUSION**

Our procedure requires a maximum port size of 12 mm, does not require a mini-laparotomy or a large port for the insertion of the anvil, and prevents any risk of fecal spillage during the operation. We hope this technique will speed postoperative recovery and improve the safety of a laparoscopic anterior resection for patients with rectal endometriosis. We believe that this sort of surgery should be performed in units where sufficient colorectal surgical backup is available and where facilities are in place to ensure that meticulous follow up and audit of these procedures occurs.

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