

## Stapled Mucosectomy: An Alternative Technique for the Removal of Retained Rectal Mucosa after Ileal Pouch-Anal Anastomosis

[Metin Ertem](#) and [Volkan Ozben](#)✉

Department of General Surgery, Cerrahpasa Medical School, Istanbul University, Istanbul, Turkey.

✉Corresponding author.

Correspondence to: Volkan Ozben. Department of General Surgery, Cerrahpasa Medical School, Istanbul University, Surmene Devlet Hastanesi, Genel Cerrahi Klinigi, P.O. Box: 61600, Surmene, Trabzon, Turkey. Tel: [+90-462-746-1422](tel:+904627461422), Fax: [+90-462-746-1429](tel:+904627461429), Email:

[volkanozben@yahoo.co.uk](mailto:volkanozben@yahoo.co.uk)

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### Abstract

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Restorative proctocolectomy (RPC), when performed with a stapled ileal pouch-anal anastomosis (IPAA), allows the retention of the rectal mucosa above the dentate line and can result in disease persistence or recurrence, as well as neoplastic lesions in patients with ulcerative colitis (UC). We report the case of a patient with chronic UC who underwent staple mucosectomy, which is an alternative technique that evolved from stapled hemorrhoidopexy, rather than more traditional procedures. The patient had undergone laparoscopic RPC with a stapled IPAA 2 cm above the dentate line and a temporary loop ileostomy. Because the histopathology showed low-grade dysplasia in the proximal rectum, stapled mucosectomy with a 33-mm circular stapler kit at the time of ileostomy closure was scheduled. Following the application of a purse-string suture 1 cm above the dentate line, the stapler was inserted with its anvil beyond the purse-string and was fired. The excised rectal tissue was checked to ensure that it was a complete cylindrical doughnut. Histopathology of the excised tissue showed chronic inflammation. There were no complications during a follow-up period of 5 months. Because it preserves the normal rectal mucosal architecture and avoids a complex mucosectomy surgery, stapled mucosectomy seems to be a technically feasible and clinically acceptable alternative to the removal of rectal mucosa retained after RPC.

**Keywords:** Ulcerative colitis, Retained rectal mucosa, Stapled mucosectomy, Surgical technique

### INTRODUCTION

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Restorative proctocolectomy (RPC) with ileal pouch-anal anastomosis (IPAA) is now considered the procedure of choice for the surgical treatment of patients with ulcerative colitis (UC).<sup>1-3</sup> The IPAA can be performed using either a stapling technique or a handsewn technique with mucosectomy. Currently, double stapled IPAA is favoured as it is simpler and provides better functional results than the handsewn IPAA with mucosectomy.<sup>1,3</sup> On the other hand, the stapled technique allows the retention of 1 to 2 cm strip of the rectal and anal transition zone

mucosa above the dentate line.

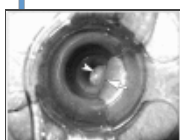
Since UC is a mucosal disease, often originating in the rectum and progressing proximally, retention of the potentially diseased rectal mucosa exposes UC patients not only to chronic inflammation or disease recurrence but also to neoplastic lesions, as already reported.<sup>2,4</sup> For this reason, a number of techniques have been proposed in order to eradicate the rectal mucosa,<sup>5-10</sup> however, these techniques harbor several disadvantages with respect to either technical aspects or histopathologic interpretation of the excised tissue. Here, we report on a case in order to introduce an alternative technique, stapled mucosectomy, for the removal of the rectal mucosa retained after previous RPC with stapled IPAA.

## CASE REPORT

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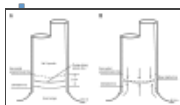
A 62-year-old male patient who had had a 7-year history of UC refractory to medical therapy underwent laparoscopic RPC with an ileal J-pouch, IPAA and temporary loop ileostomy in our institution. The J-pouch was created with the stapled technique and the pouch was anastomosed approximately 2 cm above the dentate line using a 31-mm transanal circular stapler. Postoperatively, the patient was discharged home after an uneventful recovery. The histopathology of the proctocolectomy specimen showed low grade dysplasia in the proximal rectum with no evidence of malignancy throughout the colon. Based on the result of the histopathology, an elective surgery for a completion mucosectomy at the time of ileostomy closure was scheduled.

Following re-hospitalization in the eighth postoperative week, a phosphate enema a day before surgery and antibiotic prophylaxis (Cefuroxime 1.5 g, Metronidazole 500 mg) at anesthesia induction were administered to the patient. After the administration of general anesthesia and the placement of an epidural catheter for pain control, the patient was prepared, placed in a lithotomy position and a Foley catheter was placed. Stapled mucosectomy was performed using a 33-mm circular stapler kit (PPH; Ethicon Endo-Surgery, Cincinnati, OH, USA). First, the anal canal was lubricated and the obturator piece of the instrument was used for mild anal dilatation. Then, the obturator was removed and an operating anoscope was placed for the exposure of the anal canal. The dentate line was identified ([Fig. 1](#)). The gap in the anoscope was rotated in the anus for the application of a 2/0 monocryl purse-string suture with a 25-mm curved needle. Every bite included mucosal and submucosal layers of the rectum 1 cm above the dentate line. The distance between the purse-string suture and the dentate line was kept the same over the entire circumference. Each bite of the pursestring suture was taken 2 to 3 mm behind the exit point of the preceding bite in order to prevent sliding of the purse-string. Then, the anoscope was removed and the lubricated open circular stapler was inserted with its anvil beyond the purse-string suture. The purse-string was firmly tied on the shaft and its free ends were pulled through the lateral ports of the stapler device with a suture grasper. The tails of the purse-string were pulled as the jaws of the circular stapler were closed. The stapler was fired and it was then gently withdrawn from the anal canal. Following the withdrawal of the stapler, the excised tissue was checked for complete cylindrical doughnut. At the end of this procedure, the staple line was inspected by rotating the dilator. There were no bleeding points, and the lumen above the dentate line was seen to be free of the rectal mucosa ([Fig. 2](#)). The excised tissue was sent for histopathologic analysis. Afterwards, the ileostomy was closed in the usual fashion with hand-sewn sutures. The operation was terminated with no intraoperative complications.



[Fig. 1](#)

Visualization of the anal canal with an operating anoscope (arrow and arrowhead point to the dentate line and the ileal mucosa, respectively).



[Fig. 2](#)

Schematic illustration of the anatomy of the anal canal before (A) and after (B) the stapled mucosectomy procedure.

After surgery, pain control was provided by epidural analgesia and nonsteroidal anti-inflammatory agents as required. The patient was allowed to take clear oral fluids on the fourth postoperative day. Histopathologic examination of the excised tissue showed chronic inflammatory reaction within the retained rectal mucosa. The patient had an uneventful post-operative recovery and was discharged home on the sixth postoperative day. On follow-up visits, the patient did not complain of any faecal incontinence or nocturnal soiling. The postoperative Wexner incontinence score was 2/month. Endoanal ultrasonography (Fig. 3) and anal manometry performed in the first postoperative month revealed no abnormality of the anal sphincter structure and function, and endoscopic examination of the anal canal and the pouch was normal (Fig. 4). No complications have been observed during a follow-up period of 5 months.

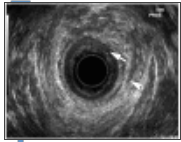


Fig. 3

The anal sphincter complex is seen intact on the postoperative endoanal ultrasound (arrow and arrowhead point to the internal and external anal sphincters, respectively).



Fig. 4

Postoperative endoscopic examination of the anal canal (arrow and arrowhead point to the new staple line and the ileal J-pouch, respectively). The excised rectal mucosa is shown in the inlet figure.

## DISCUSSION

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It is well documented that chronic inflammation may lead to dysplasia and dysplasia may ultimately lead to neoplasia in patients with long-standing UC.<sup>2</sup> In the presented case, the preoperative colonoscopic biopsy did not reveal any evidence of dysplasia until after the histopathologic examination of the proctocolectomy specimen. Since the presence of dysplasia in the surgical specimen is a primary risk factor for developing dysplasia in the retained rectal mucosa,<sup>2</sup> we preferred a corrective surgical procedure at the time of the ileostomy closure rather than performing an intensive endoscopic surveillance with regular biopsies.

Retained rectal mucosa is considered a disease-bearing tissue and, if left untreated, presents a significant risk for disease persistence, recurrence or malignant degeneration in UC patients.<sup>10</sup> Thus, the eradication of the rectal mucosa to provide complete surgical care for such patients has been a major concern for surgeons. To date, a number of techniques have been described and these include chemical debridement,<sup>5</sup> ultrasonic fragmentation,<sup>6</sup> transanal mucosectomy using an ultrasonically activated scalpel<sup>7</sup> and endoscopic transanal mucosal ablation with an urologic resectoscope.<sup>8</sup> However, these techniques either result in ablation of the rectal mucosa or complete mucosal destruction so that the histopathologic examination can not always be thoroughly assessed.<sup>4,11</sup> Another alternative and well-known technique is completion mucosectomy with re-construction of the IPAA. It involves a perineal approach to manually excising the retained anorectal mucosa followed by pouch advancement and neoileoanal anastomosis.<sup>9,10</sup> However, this complex technique may pose several challenges with respect to mucosal excision and anastomosis reconstruction. Excessive anal dilation is often necessary to complete the procedure and there is considerably more tension on the neoileoanal anastomosis because of the relative lack of mobility of the ileal pouch.<sup>9</sup> Furthermore, there is the risk of sphincter mechanism damage due to the excessive manipulation of the anal canal.<sup>10</sup> As it is well known, good continence is primarily dependent on the sphincter function and this is essential for the patient's return to normal daily life.

The idea of the stapled mucosectomy technique was born as a result of the aforementioned disadvantages associated with the previous techniques. As clearly seen, stapled mucosectomy has evolved from stapled hemorrhoidopexy, also known as Longo's procedure,<sup>12</sup> which is based on the resection of the rectal mucosa and anopexy above the dentate line for the surgical treatment of hemorrhoids. As described, the same principles of

Longo's procedure were applied in the presented case for the circumferential removal of the retained rectal mucosa after previous RPC. From a technical perspective, a proper positioning of the stapler within the anal canal is important to avoid damage to the sphincters. In addition, the stapler must be kept on an access with the anal canal in order not to result in an asymmetrical resection due to the inclination of the stapler. Our technique, however, differs from Longo's procedure in the level of the purse-string suture since the stapled mucosectomy requires the placement of a lower purse-string suture at a distance of 1 cm above the dentate line in order to resect the retained mucosal strip of the rectal cuff as well as the anal transitional zone mucosa. In cases where the previous IPAA has been created more than 2 cm above the dentate line, this procedure can be repeated with a new purse-string suture at an appropriate level to ensure complete mucosectomy.

An important advantage of using the stapled mucosectomy technique is the preservation of the normal architecture of the resected rectal mucosa which therefore enables the pathologist to perform a thorough histopathologic assessment. In addition to this, this technique overcomes an incomplete surgical field exposure and the difficult manipulation associated with a complex mucosectomy surgery, as described earlier.

Presumably, the previously reported postoperative complications associated with Longo's procedure such as pain, bleeding, incontinence, septic complications and stenosis<sup>13,14</sup> can also be expected to occur with the stapled mucosectomy. These complications are directly related to the operative technique.<sup>13</sup> Of particular note, postoperative pain can be regarded as a certain limitation since the purse-string suture is performed too close to the dentate line. The administration of epidural analgesia in the presented case enabled a fine control of postoperative pain. If epidural analgesia is not considered, infiltration of local anesthetic agents into the dentate line would be helpful in minimizing pain, as previously described for stapled hemorrhoidopexy.

Based on our limited experience with only one case, stapled mucosectomy seems to be a technically feasible and clinically acceptable alternative procedure for the removal of potentially diseased rectal mucosa retained after RPC. Further studies assessing its efficacy and validating this technique are required.

## Footnotes

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No potential conflict of interest relevant to this article was reported.

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