



Transanal Endoscopic Operation (TEO) Repair of Rectovaginal Fistula and Anastomotic Leakage: A Case Series

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Abstract

Introduction: Interest in transanal endoscopic surgery has increased in the past decade. This approach facilitates both primary procedures such as polypectomy and local tumor excision as well as the treatment of postoperative complications including bleeding, leakage, and fistula formation.

This study aimed to describe our group's use of the transanal endoscopic operation (TEO) in the repair of fistulae and anastomotic leakages, with the operations being led by an experienced surgeon (F.C.).

Case Presentation: Here, we describe three patients who developed postoperative complications after being subjected to anterior rectal resection. One of them developed a leakage of the anastomosis on the third postoperative day, while the others developed recurrent fistulae a long time after the surgery. These complications were all treated via TEO.

In one case, the transanal procedure was performed three times because of the recurrence of the fistula. In another case, it was associated with laparoscopy to treat peritonitis that occurred secondary to anastomotic disruption. In the last case, the patient had a history of years of fistula recurrence associated with pelvic abscess, and the TEO approach proved to be determinant in the resolution of the problem. In all cases, the transanal surgery definitively repaired the defect; the patients were discharged and, to date, remain without recurrence.

Conclusion: In the hands of experienced surgeons and for selected cases, TEO appears to be a valid option for treating postoperative complications, such as fistulae and anastomotic leakage. This procedure averts the need for major surgery associated with greater morbidity and shows excellent results.

Keywords: Transanal endoscopic microsurgery, Transanal endoscopic surgery, Rectovaginal fistula, Minimally invasive surgery

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Introduction

Interest in transanal endoscopic surgery has increased in the last decade. This approach was originally developed for polypectomy and local tumor excision; it was subsequently used for the

treatment of postoperative complications including bleeding, leakage, and fistula formation (1, 2).

Fistulae and Anastomotic Disruption

Rectovaginal fistulae and anastomotic disruption represent uncommon complications of colorectal

surgery. The reported incidence of post-surgical, rectovaginal fistulae is very low (3).

Common factors contributing to fistula formation are trauma (mostly resulting from obstetric surgeries), infection, tumor, inflammatory bowel disease, colorectal surgery related to partial healing of colorectal anastomosis or a previous abscess, and prior history of pelvic radiation (4, 5).

The surgical treatment of fistulae is considered to be highly difficult and no standard surgical technique is accepted worldwide (3, 4). The failure rate for repairs and the recurrence rates of fistulae are high regardless of the surgical option chosen. Recurrent fistulae are considered more complex because of the association with tissue scarring and a more limited blood supply (4, 6, 7).

Anastomotic disruption after anterior rectal resection is a severe complication that arises in 3-20% of cases (8). Important risk factors include the level of anastomosis, wound contamination, operation time, preoperative steroid use, neoadjuvant chemoradiation therapy, and the absence of a protective stoma (9, 10). Treatment of these leakages depends on its size and location as well as the presence of peritonitis or systemic inflammatory response syndrome and the general condition of the patient (11, 12). Treatment can be conservative or, when it fails, we can choose between several options (12).

Small lesions can be treated with percutaneous drainage, transanal drainage, and the creation of a protective ileo- or colostomy (open or laparoscopic). Larger disruption or leaks with severe local complications can necessitate reintervention with breakdown of the anastomosis and the creation of a colostomy (8, 10).

Surgical Technique

Transanal endoscopic operation (TEO) is a relatively new technique originally designed by Karl Storz for the treatment of benign rectal lesions and early rectal cancer (T1) up to 20 cm from the anal verge, averting the need for abdominal surgery. The endoscopic approach preserves the sphincter apparatus but requires the expertise of a surgically trained provider (2, 13, 14).

The equipment required for TEO consist of five parts. First, a proctoscope 40 mm in diameter with working scope lengths of 7.5, 15, and 20 cm, besides a handle and a luer lock connector for smoke evacuation. Second, an obturator. Third, the working attachment (faceplate) for the operating rectoscope tube, with fixation for the telescope and one 5- to 12-mm channel, and two 5-mm channels for instruments, as well as a silicone leaflet valve, sealing caps, and a luer lock connector for carbon dioxide gas insufflation. Fourth, a forward oblique 30° telescope with a two-dimensional enlarged view, 5 mm in diameter and 21 cm in length, provided with a 45° angled eyepiece and fiberoptic light transmission. Fifth, a supportive arm that allows

fixation to the operating table, so no assistant is required to hold the optics. Standard laparoscopic grasping forceps, an ultrasonic shear, and a needle holder are used; ligasure, coagulation, and ultracision may be applied to control bleedings. The images are displayed on the laparoscopic monitor just like any standard laparoscopic surgery (15-18).

Several applications of TEO have been described for a variety of rectal lesions, making it an alternative to other surgical procedures that are associated with higher morbidity (2).

The use of TEO in non-conventional applications (such as fistulae and anastomotic disruption) by experienced surgeons appears to be a valid option in situations other than its classical indications and may benefit patients who can be spared other surgical procedures associated with greater morbidity. In the literature, we can find several cases in which transanal minimally invasive surgery has been used to treat such types of disease (5, 11, 12, 19).

Thus, we want to describe three instances in which TEO (in one case combined with laparoscopy) was used to treat and resolve colo-rectal anastomosis complications.

Case Presentation

Case One

A 77-year-old Caucasian man underwent laparoscopic anterior rectal resection with colorectal Knight-Griffen anastomosis for sub-stenosing intestinal adenocarcinoma localized at 15-18 cm from the anal verge (pT2N1c). The postoperative days were immediately complicated by an episode of rectal hemorrhage. Sigmoidoscopy revealed three spots of arterial bleeding at the level of the colorectal anastomosis. The bleeding was stopped using hemostatic forceps (Coagrasp).

On the third postoperative day, after the sudden appearance of high temperature and a change of the quality of the drainage, the patient underwent rectoscopy, which documented disruption of the stapled anastomosis. For this reason, he underwent urgent surgery. The first attempt to perform laparoscopic surgery failed because of visceral adhesences and the presence of fibrinous peritonitis, with consequent conversion to laparotomy. A protective ileostomy was created; at the same time, the leakage was repaired via TEO.

After the positioning of the TEO platform, a leakage 2 cm in diameter was found on the anterior wall of the rectum, which was sutured using the laparoscopic needle driver through the rigid proctoscope using a resorbable self-locking monofilament suture.

The patient tolerated the procedure well and had an uneventful postoperative course. He was discharged from the hospital after 18 days of recovery.

A colonoscopy performed one month later documented an anastomotic stricture, which was endoscopically balloon-dilated. The stricture

resolved, and his ileostomy was taken down two months after surgery without complications.

Eight months after the operation, the patient remains without cancer recurrence and has normal bowel function.

Case Two

A 51-year-old Caucasian man underwent laparoscopic anterior rectal resection for a tumor of the sigmoido-rectal junction in 2014, which was complicated by an anastomotic disruption. For this reason, a protective ileostomy was created, which was taken down two months later without complications.

Four years after surgery, the patient presented to the emergency room because of pelvic pain and fever. The clinical examination and the CT revealed abscess formation near the colorectal anastomosis in communication with the anastomosis via two fistulae. For this reason, he underwent urgent surgery with the creation of an ileostomy and the lysis of adhesions.

One month later he was subjected to the positioning of an anal endosponge because of the recurrent fistula, with significant clinical improvement. A large abscess was also drained. A fistulography performed one month later documented the obliteration of the fistulae.

One year later, for the recurrence of a fistula due to an anastomotic disruption, the patient underwent a fistulectomy followed by the closure of the fistula by TEO. The patient lay in the supine position. The fistula, measuring 5 mm, was identified on the posterior rectal wall. The first part of the procedure consisted of freshening the margin of the fistula. Following this, a slowly resorbable monofilament suture was used to close the defect. To date, the patient remains without cancer and fistula recurrence.

Case Three

A 49-year-old Caucasian woman presented to the surgery department due to a rectal adenocarcinoma situated 9 cm from the anal verge. She underwent robotic anterior rectal resection with Total Mesorectal Excision (TME) and Knight-Griffen anastomosis; a protective ileostomy was created. The patient had undergone chemoradiotherapy prior to the surgery.

Two months later, the patient developed a rectovaginal fistula at the level of the anastomosis, 10 cm from the anocutaneous margin. The Ovesco Over-The-Scope Clip system was used for managing the fistula, but the fistula recurred after a month.

Then, we decided to use the TEO system to perform a direct suture repair of the fistula. The patient lay in the supine position. The fistula, measuring 5 mm, was identified on the posterior vaginal wall. During the vaginal time, we unstuck the rectovaginal plane associated with the fistula. Then, the fistula was sutured using detached PDS suture. After the positioning of the TEO system, the fistula

was identified on the rectal side and sutured using a resorbable self-locking monofilament suture.

One month postoperatively, the patient developed a recurrent rectovaginal fistula that opened to the anterior rectal wall. The fistula, measuring 5 mm, was repaired by the TEO system. The patient lay in the supine position, and the fistula was identified. The first part of the procedure consisted of freshening the margin of the fistula. Following this, a continuous suture closure was performed with a resorbable self-locking monofilament suture. Finally, a second layer was used to reinforce the repair using another monofilament slowly resorbable suture.

Six months later, the patient developed a recurrent fistula 8 cm from the anal verge, measuring 2 mm. Thus, we decided to use the TEO system again to perform a direct suture repair (with PDS 3/0) of the fistula, after the freshening of the margin on the rectal wall. The fistula was sutured also on the vaginal side. In the same surgery, we made the ileostomy permanent.

The clinical examination after surgery showed complete healing of the fistula without any evidence of recurrence.

Discussion

This study aimed to describe our group's use of the TEO platform in the repair of fistulae and anastomotic leakage in an effort led by an experienced surgeon (F.C.). Notably, TEO led to favorable outcomes in all patients, thus providing further evidence that fistula and anastomotic rectal leakage can be safely treated using this technique.

All the cases described in this article were patients who underwent anterior rectal resection for tumors of the rectum or the sigmoido-rectal junction and who developed complications. In all cases, we achieved a perfect reparation of the defect by using the TEO platform and, at the moment, all patients remain without recurrence.

In one case, TEO was associated with laparoscopy to treat peritonitis that occurred after postoperative anastomotic disruption because of the necessity to perform peritoneal washing and to create a protective ileostomy. The use of TEO, in this case, was crucial to treat the anastomotic disruption, because of its position, which made it hardly repairable laparoscopically.

In another case, in which the patient had a history of years of recurrence of fistula associated with pelvic abscess treated in several different ways (conservatively and surgically), the TEO approach proved to be determinant in the resolution of the problem, even though it is not possible to exclude a recurrence in the future.

In the last case, the transanal procedure was performed three times because of the recurrence of the fistula. Unfortunately, fistula recurrence is commonly reported (4). Thus, the possibility of using

the TEO system several times is of extreme relevance as it minimizes the need for recurrent major surgery such as laparotomy and averts its consequences.

Our results are in accordance with previous reports demonstrating that transanal minimally invasive surgery could be safely used to treat postoperative complications of colorectal anastomosis. In 2008, Beunis et al. and in 2015, Dapri et al. described three cases of patients treated by transanal repair for leakage of a colorectal anastomosis after laparoscopic anterior resection of the rectum. Their reports provided evidence that intraoperative or late leakage of a colorectal anastomosis can be safely treated by transanal laparoscopy associated with temporary protective diverting loop-ileostomy (11, 12). On the other hand, some reports describe the use of

transanal surgery in the repair of rectovaginal fistulae in a few patients, showing only uncommon minor complications besides low recurrence rates (4, 5, 19).

In conclusion, post-operative rectovaginal fistulae and anastomotic disruption may complicate surgery for rectal cancer. An individualized approach may be necessary to achieve successful closure, and TEO can be safely and successfully used to treat these complications, averting major surgery associated with greater morbidity. Considering the magnified view with the use of traditional laparoscopic instruments as well as the minimally invasive approach, TEO offers excellent potential and can help us achieve desirable outcomes in selected cases.

Conflicts of Interests: None declared.

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