An endoscopic dilation method using the rendezvous approach for the treatment of severe anastomotic stenosis after rectal cancer surgery: A case report

Takuya Nakashima  
Gifu University Hospital  
https://orcid.org/0000-0001-5993-9571

Nobuhisa Matsuhahshi  
(nobuhisa517@hotmail.com)  
Gifu University Hospital

Tomonari Suetsugu  
Gifu University Hospital

Yoshinori Iwata  
Gifu University Hospital

Shigeru Kiyama  
Gifu University Hospital

Takao Takahashi  
Gifu University Hospital

Masahiro Fukada  
Gifu University Hospital

Itaru Yasufuku  
Gifu University Hospital

Yuta Sato  
Gifu University Hospital

Takeharu Imai  
Gifu University Hospital

Yoshihiro Tanaka  
Gifu University Hospital

Naoki Okumura  
Gifu University Hospital

Masaya Kubota  
Gifu University Hospital

Takashi Ibuka  
Gifu University Hospital

Masato Shimizu  
Gifu University Hospital
Case report

Keywords: colorectal cancer, anastomotic stenosis, endoscopic dilation, rendezvous method

DOI: https://doi.org/10.21203/rs.3.rs-45601/v1

License: ☕️ This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

Background: Postoperative anastomotic stenosis is a common complication in colorectal cancer patients (3-30%). Complete anastomotic stenosis is rare; however, when it occurs, almost all cases require surgical treatment. We herein report a case in which endoscopic dilation was effective for treating complete anastomotic stenosis after high anterior resection in a rectal cancer patient.

Case presentation:

The patient was a 67-year-old man who underwent laparoscopic high anterior resection for rectal cancer (Rs, 3/4circ, type2, pT4a, pN0, cM0, fStageII) in May 2018. The postoperative course was good and the patient was discharged on the 12th postoperative day. Subsequently adjuvant chemotherapy was initiated with oral uracil and tegafur plus leucovorin (UFT/LV); however, he complained of frequent defecation and melena after completion of the first course of chemotherapy. Thus, colonoscopy was performed, which revealed anastomotic stenosis. Endoscopic dilation was initially attempted, but failed. Thus, low anterior resection was performed with diverting colostomy. Four additional courses of chemotherapy were administered for one month after surgery. At six months after the second surgery, colonoscopy was performed, and complete anastomotic stenosis was pointed out again. The patient was successfully treated by endoscopic dilation using the rendezvous method. After this treatment, the lumen of the anastomotic site was observed to have narrowed again and endoscopic dilatation to treat anastomotic stenosis was repeated. In addition, he received local injection of steroids in anastomotic stenosis site. The lumen of anastomotic stenosis remained after the local injection of steroids and closure of colostomy was performed nine months after the second operation.

Conclusions: Endoscopic dilation using the rendezvous method was effective for treating anastomotic stenosis after colorectal surgery.

Background

The incidence of postoperative anastomotic stenosis in colorectal cancer patients ranges from 3–30% [1]. The causes of anastomotic stenosis include a history of irradiation, de-functionalization, anastomotic leakage and sepsis, and preoperative obesity [1]. Severe anastomotic stenosis, such that the lumen cannot be confirmed, is extremely rare. Once it occurs, almost all cases require surgical treatment. In the present case, endoscopic dilation was effective for treating complete anastomotic stenosis after high anterior resection for rectal cancer.

Case Presentation

The patient was a 67-year-old man who underwent laparoscopic high anterior resection with colorectal anastomosis using the double stapling technique (DST) as a treatment for rectal cancer (Rs, 3/4circ, type2, pT4a, pN0, cM0, fStageII) (Fig. 1) in May 2018. The postoperative course was good and the patient was discharged on the 12th postoperative day without complication. Subsequently, adjuvant
chemotherapy was started with oral uracil and tegafur plus leucovorin (UFT/LV); however, he complained of frequent defecation and melena after the completion of the first course of chemotherapy. Colonoscopy was therefore performed and anastomotic stenosis was pointed out. The stenosis caused obstruction with granulation (Fig. 2). Biopsy of the granulated tissue showed no malignant findings. Endoscopic treatment was performed but failed due to intestinal perforation with a guidewire. Low anterior resection was therefore performed with diverting colostomy as emergency surgery. After the operation, he was asymptomatic and completed five cycles of UFT/LV. At six months after the second operation, the patient indicated that he wanted the colostomy closed. Thus, colonoscopy was performed as a preoperative evaluation. Complete anastomotic stenosis was again pointed out. Due to concerns about strong adhesions of the pelvic cavity after two surgeries, we planned endoscopic dilation using the rendezvous method to treat complete anastomotic stenosis. The anastomotic lesion became narrow, and the lumen of anastomotic site was difficult to detect. Endoscopes were inserted simultaneously from both the oral and anal sides, and treatment was started (Fig. 3). An incision was made from the anal side with a needle scalpel while looking at the light source from the oral side and a fluoroscopic image. Dilation was subsequently performed from the anal side using 8.5-10.5-mm balloons at 1 atm, 2 atm and 3 atm, for 1 minute each. Finally, the stenosis showed remarkable improvement. No clear perforation was observed on endoscopy. After the treatment, the lumen of the anastomotic site was observed to have narrowed again and endoscopic dilatation was repeated. In addition, local injection of steroids (triamcinolone, 40 mg) was performed after endoscopic dilatation. The lumen of the anastomotic stenosis remained after the local injection of steroids and closure of the colostomy was performed nine months after the second operation. He was discharged 30 days after surgery without problems with his defecation function or anastomotic stenosis.

Discussion

Postoperative anastomotic stenosis is a common complication that occurs in 3–30% of patients with colorectal cancer [1]. However, severe anastomotic stenosis such that the lumen cannot be confirmed is extremely rare. Endoscopic treatment is often difficult in such cases. Causes of anastomotic stenosis include—but are not limited to—infection, obesity, history of irradiation, impaired blood flow, postoperative leakage, and use of a stapling device [1][2].

In general, anastomotic stenosis is associated with symptoms that often include difficulty in bowel movement, abdominal distension, and anal pain [3]. However, in cases in which colostomy is present, as in this case, attention is required as there are no symptoms related to stenosis. Various treatments for severe anastomotic stenosis, such as endoscopic treatment with EUS [4] and transanal surgery (TAMIS) [5], have been reported. In this case transabdominal repeat surgery, such as surgery of the pelvic cavity, are too invasive and risky and should only be considered as the last resort. Thus, less invasive options, such as balloon dilation, transanal stricturoplasty, stent placement and stapler stricturoplasty are preferable. We succeeded in treating complete anastomotic stenosis using the rendezvous method.
In 1987, Sommer et al. reported, for the first time, the principle of combining percutaneous and endoscopic approaches as the rendezvous technique [6]. The rendezvous technique is mainly used in the treatment of the biliary system [7]. Our search of the relevant literature in PubMed revealed that the rendezvous technique was first used for severe anastomotic stenosis after low anterior resection of rectal cancer in 2010 [8]. In the present case, colostomy was present; thus, we were able to treat the patient safely using the rendezvous method. A video of the surgery was reviewed after the occurrence of anastomotic stenosis; however, we could not identify any point within the surgical procedure that might have caused the anastomotic stenosis and anastomotic tension. Among the abovementioned risk factors, the possibility of impaired blood flow cannot be ruled out. Recently, the intravenous injection and monitoring ICG has been reported as a method for assessing anastomotic blood flow during surgery [9]. The local injection of steroids is also very effective for anastomotic stenosis. In this case, repeated endoscopic dilatation was performed even after the stenosis was released. However, local steroid injection successfully maintained the lumen of the anastomotic site after dilatation. Currently, this is the main method for treating anastomotic stenosis after ESD for esophageal cancer [10][11]. Although there are few reports on the application of this method in the region of the colon and rectum [12], it seems to be a minimally invasive and effective option for treating anastomotic stenosis in such cases.

**Conclusion**

Endoscopic dilation using the rendezvous technique was an effective treatment for severe anastomotic stenosis. This procedure should be performed by an experienced endoscopist to avoid complications, such as intestinal perforation. This is therefore considered an effective method for the minimally invasive treatment of severe anastomotic stenosis.

**List Of Abbreviations**

EUS : endoscopic ultrasound

TAMIS : transanal minimally invasive surgery

ICG : indocyanine green

ESD : Endoscopic submucosal dissection

**Declarations**

**Funding**

None.

**Competing interest**

The authors declare that they have no competing interests.
Author's contributions

All authors participated in the patient’s care. NM, MK, TI and HA performed the surgeries described in this report. NM, TN and TS constructed the conception and design of this report. TN, NM, TS, MS and KY prepared the draft of the manuscript. All authors read and approved the final manuscript.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1975 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Consent for publication

Not applicable.

References

1. Rohini McKee MD, Victor E, Pricolo MD. Stapled revision of complete colorectal anastomotic obstruction. The American Journal of Surgery. 2008;195:526–7.

2. Korontzi MI, Kontovounisios C, Armoutidis V, et al. Dehiscence, stenosis and local recurrence after anterior resection in relation to the level of rectal cancer. Hellenic J Surg. 2011;83:274–83.

3. Lee SY, Kim CH, Kim YJ, Kim HR. Anastomotic stricture after ultralow anterior resection or intersphincteric resection for very low-lying rectal cancer. Surgical endoscopy. 2018 Feb;32(2):660–6.

4. Payal Saxena A, Azola V, Kumbhari AN, Kalloo, Mouen A, Khashab. EUS-guided rendezvous and reversal of complete rectal anastomotic stenosis after Hartmann’s reversal. Gastrointest Endosc. 2015 Feb;81(2):467–8.

5. Bong JW, Lim S-B. Transanal minimally invasive surgery as a treatment option for a completely occluded anastomosis after low anterior resection: A new approach to severe anastomotic stenosis. Asian journal of endoscopic surgery. 2019;12(2):175–7.

6. Sommer A, Burlefinger R, Bayerdörffer E, Ottenjann R. Internal biliary drainage in the "rendezvous" procedure. Combined transhepatic endoscopic retrograde methods [in German]. Dtsch Med Wochenschr. 1987;112:747–51.
7. Arne Bokemeyer F, Müller H, Niesert M, Brückner D, Bettenworth T, Nowacki, et al. Percutaneous-transhepatic-endoscopic rendezvous procedures are effective and safe in patients with refractory bile duct obstruction. United European gastroenterology journal. 2019;04(3):397–404. 7.

8. Dario Raimondo T, Facella F, Rossi E, Sinagra. Simona Di Caro. Endoscopic rendezvous in stricture of colorectal anastomosis: a new approach. Digestive and liver disease; official journal of the Italian Society of Gastroenterology and the Italian Association for the Study of the Liver. 2013 Dec;45(12);1063–4.

9. Higashijima J, Shimada M, Yoshikawa K, Miyatani T, Tokunaga T, Nishi M, et al. Usefulness of blood flow evaluation by indocyanine green fluorescence system in laparoscopic anterior resection. J Med Investig. 2019;66(1.2):65–9.

10. Paul A, Lucha JE, Fticsar MJ, Francis. The strictured anastomosis: successful treatment by corticosteroid injections–report of three cases and review of the literature. Dis Colon Rectum. 2005 Apr;48(4);862–5.

11. Chu Y, Chen T, Li H, Zhou P, Zhang Y, Chen W, et al. Long-term efficacy and safety of intralesional steroid injection plus oral steroid administration in preventing stricture after endoscopic submucosal dissection for esophageal epithelial neoplasms. Surgical endoscopy. 2019;04(33(4):1244–51.

12. Lucha PA, Fticsar JE, Francis MJ. The strictured anastomosis: successful treatment by corticosteroid injections. Dis Colon Rectum. 2005;48:862–5.

Figures
Figure 1

Resected specimen: Rs, 3/4circ, type2, pT4a, pN0, cM0, fStageII.
Figure 2

Severe anastomotic stenosis with granulation
Figure 3

A-F Endoscopic dilation using rendezvous method. A) Observed from the oral and anal side, the anastomotic lesion became narrow, and the lumen of anastomosis was difficult to detect. B) An incision was made from the anal side with a needle scalpel while looking at the light source from the oral side. C) A radiographic image during rendezvous method. Endoscopes were inserted simultaneously from both the oral and anal side. D) Inserted guide wire without perforation. E) Dilation was performed from the oral side using 8.5-10.5 mm balloons at 1 atm, 2 atm and 3 atm for 1 minute each. F) The stenosis was improved remarkably.