

An Improvement in the Quality of Life after Performing Endoscopic Balloon Dilation for Postoperative Anastomotic Stricture of the Rectum

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Abstract

A 55-year-old woman underwent a low anterior resection for rectal cancer 7 years earlier at a different hospital. Thereafter, she often had such symptoms as abdominal pain, frequent bowel movements, and constipation. We considered postoperative bowel adhesion to be the cause of these symptoms, and a laparoscopic adhesiotomy was therefore performed twice. However, the symptoms did not substantially improve thereafter. A colonoscope of conventional diameter could barely pass through the anastomotic site of the operation, but we initially judged the anastomotic stricture to not be severe. However, we finally determined the anastomotic stricture to be the cause of these symptoms; X-ray examinations frequently showed the blockage of feces or the collection of gas images in the colon when the symptoms occurred. We therefore performed endoscopic balloon dilation (EBD) after performing electroincision of the scar tissue of the anastomotic ring. We dilated the area of the lesion to a diameter of 20 mm using the EBD technique, and thereafter the patient finally showed an improvement in quality of life. There have been some reports describing the usefulness of EBD for the treatment of colorectal anastomotic stricture. Past studies have reported the indications of EBD to include stricture, which is defined as a narrowed anastomosis through which a 12-mm-diameter colonoscope cannot be passed. Nevertheless, it seemed that when the clinical manifestations of anastomotic stricture are clear, such as those observed in our case, we should not too strictly adhere to this definition.

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Key words: rectal cancer, anastomotic stricture, endoscopic dilation

Introduction

Anastomotic stricture, like leakage, is an

important complication of gastrointestinal surgery. On the other hand, several recent reports have described the usefulness of endoscopic balloon dilation (EBD) for the treatment of an alimentary

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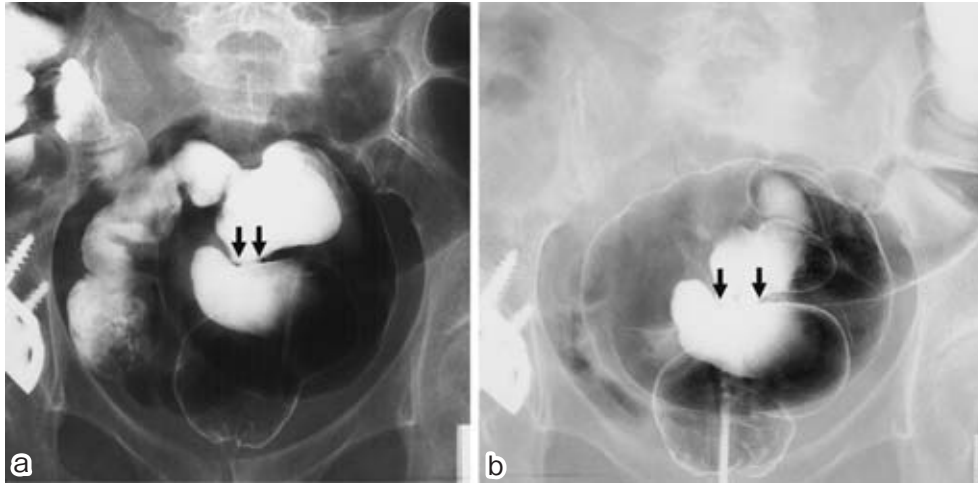


Fig. 1 a, A barium enema study before EBD: arrows indicate stricture at anastomosis; b, A barium enema study 5 months after performing EBD: arrows indicate the decrease in stricture.

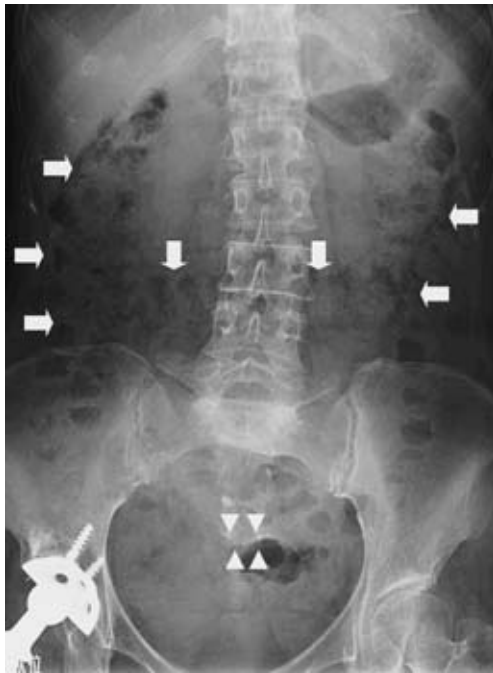


Fig. 2 A plain abdominal X-ray film shows feces blockage in the ascending, transverse and descending colon (**arrows**). Staples of the rectal anastomosis are shown (**arrowheads**).

canal anastomotic stricture¹⁻⁴. We herein report the postoperative state of a patient who had undergone a low anterior resection for rectal cancer which included repeated consultations with a physician for abdominal pain over a 7-year period, but who finally achieved an improvement in quality of life (QOL) after undergoing EBD therapy.

Case Report

A 55-year-old woman underwent a low anterior resection for rectal cancer 7 years earlier at a different hospital. The histological examination showed the resected specimen to be Stage II (well-differentiated adenocarcinoma, pT3, N0, M0). She first visited our hospital 1 year after the operation. She sometimes complained of abdominal pain and either frequent bowel movements or constipation. The symptoms usually subsided within a few days by either suppressing or stopping all dietary intake while receiving peripheral vein nutrient infusion treatment on an outpatient or inpatient bases. There were no abnormal findings on the hematological examination and no signs of carcinoma recurrence based on the findings of computed tomography findings. No areas of stenosis were identified on a radiographic examination of the small intestine. A barium enema study performed 2 years after the operation showed mild anastomotic stricture (**Fig. 1a**). A colonoscope of a conventional diameter of 13 mm could barely be passed through the anastomotic site of the operation; we initially judged the stricture not to be severe. We repeated the colonoscopic examination regularly afterwards, but it was difficult to judge whether the anastomotic area of stricture was the main cause of the abdominal

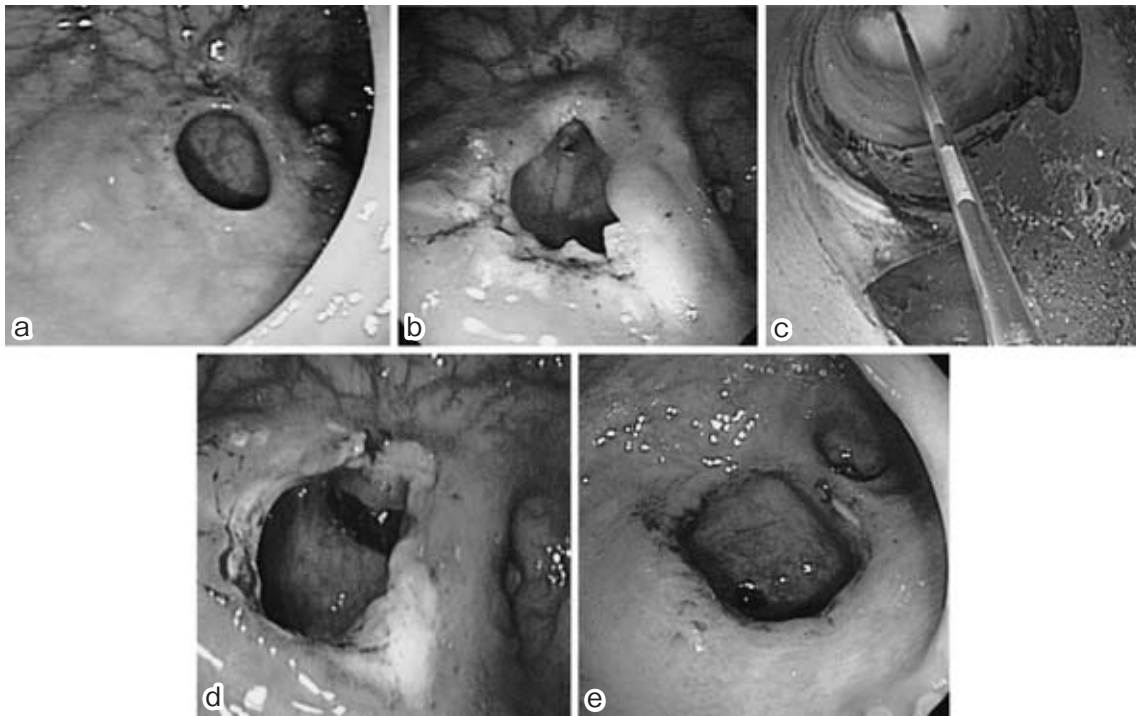


Fig. 3 Endoscopic view of dilation procedure:

a, before dilation; **b**, after performing pre-cuts with electroincision; **c**, during balloon dilation; **d**, after balloon dilation; **e**, 2 weeks after dilation therapy was performed for a second time.

pain and irregular bowel movements. We thus considered postoperative bowel adhesion to be the most likely cause of the symptoms, and a laparoscopic adhesiotomy was thus performed twice after obtaining the patient's informed consent. Under a laparoscopic view, the adhesions of the small intestine were observed, and the adhesive tissue on the intestine was resected as completely as possible. However, the symptoms did not substantially improve thereafter. Radiographic examinations frequently showed the blockage of feces or the collection of gas images in the colon when symptoms occurred (**Fig. 2**). We reconsidered that the disorder in the passage of bowel contents at the site of anastomosis was thus the cause of these symptoms. As a result, we finally decided to perform EBD. Before performing EBD, we made three small incisions with an electric knife, so-called snares that are used for endoscopic mucosal resection, at the site of anastomosis (**Fig. 3a-e**). We used a Controlled Radial Expansion balloon dilator (Boston Scientific Japan, Tokyo; **Fig. 4a**) with a diameter of 18 to 20 mm and maintained a fixed expansion pressure with

the Alliance Integrated Inflation System (Boston Scientific Japan; **Fig. 4b**) and filled the balloon with water for 5 minutes. We performed EBD twice with an interval of 3 weeks. No incidental symptoms were observed during the dilation procedures. Two weeks after EBD had been performed a second time, proctoscopic examination showed no signs of retraction, and after 5 months, barium enema study revealed a decrease in the stricture (**Fig. 1b**). Since EBD was performed, the symptoms of abdominal pain and frequent bowel movements or constipation have all greatly subsided, and the average number of bowel movements has decreased from 4 to 6 per day to 1 to 2 per day. The frequency of visits to a physician after the first operation is summarized in **Figure 5**. The frequency did not change after the laparoscopic adhesiotomy but it decreased markedly after EBD. The patient has not consulted a physician for these symptoms since 4 months after the last EBD.

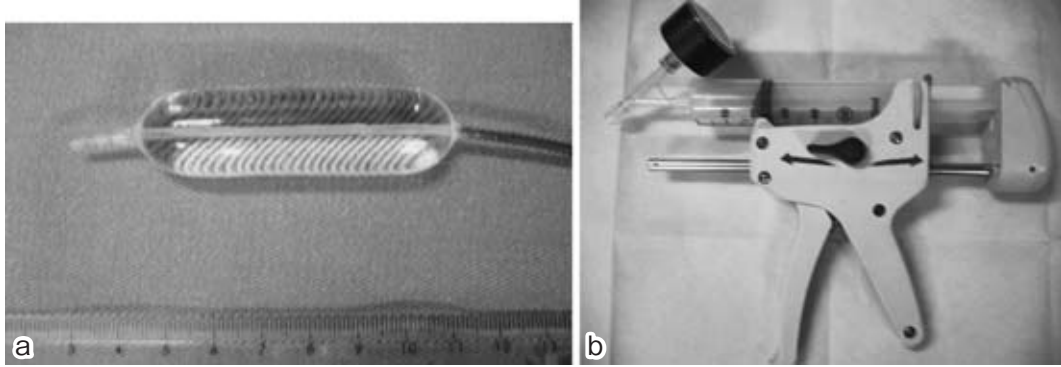


Fig. 4 **a**, Balloon catheter for dilation (balloon is inflated with water); **b**, inflation device consists of a main unit, a pressure meter, and a control knob.

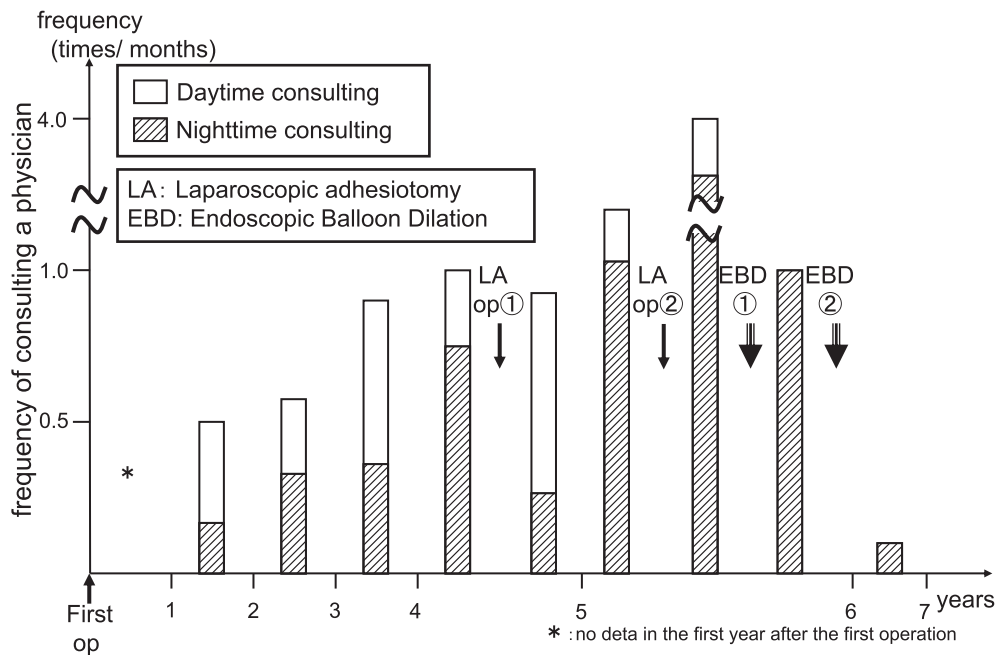


Fig. 5 Frequency of consulting a physician after the first operation is shown. After laparoscopic adhesiotomy was performed, the frequency remained high. After EBD was performed, the frequency markedly decreased.

Discussion

In 1981, Smith et al.⁵ reported the results of a survey of the American Society of Colon and Rectal Surgeons (ASCRS), anastomotic stricture after left colonic and rectal resections were reported in 315 of 3,594 cases (8.8%). In 1994, Weinstock et al.⁶ reported endoscopically diagnosed anastomotic stricture after resections for colorectal cancer in 13 (7.1%) of 321 cases. On the other hand, in 1989, Luchtfeld et al.⁷ analyzed 123 cases of intestinal anastomotic stricture as a result of a survey of the ASCRS. Fifty-three

patients (43%) had constipation, 44 (36%) had bloating, and 39 (32%) had small-caliber stools. Thirty-one of the patients (25%) had asymptomatic stricture.

Many procedures have been attempted for the management of anastomotic stricture after colorectal resection. Digital dilation may be suitable for some cases of low rectal stricture. Hegar dilators, stricture-scopes⁸, and Foley catheter balloons⁹ have been used. In the 1970s and 1980s, EBD was advocated as a technique safer and more efficient than some of the surgical dilation techniques described for postoperative rectal strictures. Since

then, EBD has been used in for the esophagus, the gastric outlet, and the rectum. In 1990, Fregnose et al.² reported 16 patients with postoperative colonic stricture who were successfully treated with EBD with no initial treatment failures. Stricture recurred in only 1 patient (6.2%) 5 months after the first attempt.

So far, we have reported the findings of EBD in six cases of postoperative anastomotic stricture after undergoing a colorectal resection¹⁰. No complications, such as bleeding or perforation, have so far been observed. Retreatment of EBD or Hegar dilator was required in three cases; otherwise, all were treated successfully. The advantages of the EBD method are numerous: it is minimally invasive, it can be performed safely under visual control, it can be performed repeatedly, and hospitalization is not necessary¹⁰. EBD has been reported to be particularly useful in the dilation of membranous stricture. In our selection of patients for EBD, we excluded any cases in which the stricture was due to a postoperative anastomotic leakage. We consider EBD to not be sufficiently effective for expanding the thick granulation tissue of the scar in those cases¹⁰.

In the present case, we performed pre-cuts by electroincisions of the scar tissue of the anastomotic ring previous to EBD. In 1996, Truong et al.¹¹ reported on 36 patients with benign colorectal anastomotic strictures who had been referred for endoscopic electroincision, as was our patient, with consecutive balloon dilation. They have successfully performed this technique in 35 cases (97.2%); however, in 5 cases (13.9%) the restrict recurred within the first year. Otherwise, all of the patients were treated successfully with further balloon dilation. They also reported, in the cases of recurrent stricture, the initial diameter of the stricture was less than 5 mm in 3 cases and was 5 to 9 mm in 2 cases¹¹. In other studies, papillotome¹², Nd-YAG laser and argon plasma coagulation¹³ have been used with balloon dilation. Although these studies involved small groups of patients, all outcomes were good. Truong et al.¹¹ have reported that electroincisions prevent intestinal wall perforations with EBD because the division of the collagen fibers

in the thickened parts of the anastomotic ring significantly minimizes the risk of an unexpected rupture of the intestinal wall. In addition, they reported that this method facilitates the subsequent balloon dilation. This may expand the indications of EBD for anastomotic stricture, and may also reduce the frequency of recurrent stricture. Regarding the advantages and disadvantages of adding pre-cuts, such as electroincisions, before performing EBD, remain unclear, future research based on prospective analyses and the multicenter treatment of colorectal anastomotic stricture is awaited.

Shimada et al.¹⁴ reported the effectiveness of a new type of staple cutter for the treatment of rectal stricture after double stapling anastomosis. They performed staple cutting by two feasible sites of the stricture with the staple cutter under direct vision, and dilation was then performed digitally. The treatment significantly decreased the number of bowel movements per day. (Mean number of bowel movements: 12.8 vs 3.9, $p < 0.001$.) They believed that the frequent bowel movements were due to anastomotic rectal stricture to be so harmful and distressing that the immediate symptomatic relief of the stricture greatly contributes to the QOL of the patient. In the present case, the mean number of bowel movements decreased from 4 to 6 per day to 1 to 2 per day, and the frequency of abdominal pain and constipation was also markedly reduced. In addition, the frequency of consulting a physician markedly decreased, and the QOL was thus dramatically improved.

Anastomotic stricture has been endoscopically defined in some studies as the inability to pass a 12-mm-diameter scope through the site of anastomosis^{6,13,14}. In the present case, a colonoscope with a conventional diameter of a 13 mm could barely be passed through the anastomotic site, which did not conform to the definition. Truong et al.¹¹ have suggested that endoscopic therapy is indicated for anastomotic stricture, not only in patients who meet the above criteria, but also for some patients who repeatedly demonstrate obstructive clinical symptoms despite conservative therapy. As the symptoms of anastomotic stricture were clear, we performed EBD after first

performing electroincision of the stricture, and thus obtained a good outcome. Given our experience treating colorectal anastomotic stricture in this case, the definition of a 12- or 13-mm diameter colonoscope not being able to be passed through may not necessarily apply to all cases when the clinical and radiological symptoms of anastomotic stricture are obvious.

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