

Strictureplasty In Diffuse Intestinal Crohn's Disease: Report Of A Case

V Ozben, M Gonenc, B Baca, U Korman, I Hamzaoglu

Citation

V Ozben, M Gonenc, B Baca, U Korman, I Hamzaoglu. *Strictureplasty In Diffuse Intestinal Crohn's Disease: Report Of A Case*. The Internet Journal of Surgery. 2008 Volume 21 Number 1.

Abstract

In Crohn's disease, both medical and surgical treatments are palliative; however, operative therapy can provide effective symptomatic relief for those patients with complications from Crohn's disease, such as intestinal obstruction due to strictures. Segmental intestinal resection followed by primary anastomosis is the usual surgical technique. As an alternative to segmental resection, stricturoplasties have been the procedures of choice to deal with short bowel syndrome in patients with extensive involvement by the disease such as diffuse jejunoileitis and for those who are at risk for developing short bowel syndrome due to previous resections. Depending on the length of the stricture, the reconstruction can be fashioned in the form of Heineke-Mikulicz and/or Finney strictureplasty. Side-to-side isoperistaltic strictureplasty has emerged as a bowel-sparing surgical alternative for the management of longer segments of disease with multiple strictures. We, hereby, aimed to present the treatment of a 21-year-old patient with diffuse intestinal strictures due to Crohn's disease.

INTRODUCTION

Multiple or massive resections of the small bowel may subsequently lead to short bowel syndrome in patients with Crohn's disease (CD). Although terminal ileum is the most commonly affected site, a few patients may have multiple segments of disease in the jejunum and proximal ileum that refer to diffuse jejunoileal disease. Diffuse jejunoileitis (DJ) is one of the most challenging courses in the management of CD patients because of the high rates of failure with both medical or endoscopic treatments and surgical treatment with extensive resections, especially in the past decades, that may lead to short bowel syndrome (1,2). Strictureplasty (Sxpl) offers an excellent alternative for the management of such patients (3,4).

Gastrointestinal surgeons have been searching for alternative surgical techniques to overcome some disadvantages of conventional Sxpls (Heineke-Mikulicz, Finney). Side-to-side isoperistaltic strictureplasty (SSIS) has emerged as a bowel-sparing surgical alternative to resection for the treatment of extensive CD. This technique differs from other conventional Sxpls, in that it may be used to treat longer segments of disease with multiple strictures by carrying out a longitudinal enterotomy and subsequent side-to-side enteroenterostomy. Therefore, SSIS widens the diameter of the involved bowel without sacrificing any mucosal absorptive area (5).

CASE REPORT

A 21-year-old male patient was admitted to our hospital with obstructive intestinal symptoms. He has been followed by a gastroenterologist with the diagnosis of CD for nearly 5 years, and has been managed with medical treatment (for the first two years, the initial dose of azathioprine was 100 mg/day po, which was later tapered down to 50 mg/day po for maintenance, and prednisolone 40 mg/day po during the first three months were administered). Barium swallow meal study revealed multiple stenotic segments in the small bowel. Obstructive symptoms did not resolve in spite of intensive medical therapy, and surgical treatment was considered. A total of 13 strictures were found in enteroclysis imaging preoperatively and during the surgical exploration, as shown in Figure 1. The first three strictures which were shorter than 7cm in length were managed with Heineke-Mikulicz (HM) Sxpl. The next involved area of small bowel that included 8 strictures in 90cm was divided at its midpoint with its mesentery. Then, the intestinal ends were spatulated triangularly to avoid blind stumps. While approximating the two intestinal loops, care was taken not to place the stenotic segments adjacent to each other. The two intestinal loops were then anastomosed by one layer interrupted sutures in order to create a side-to-side isoperistaltic enteroenterostomy (Figure 2). Resection and end-to-end enteroenterostomy were done for the 20cm

involved area in the terminal ileum that included 2 strictures. The patient was discharged on the 8th postoperative day without any complications, and was referred to the gastroenterologist for the maintenance of the medical treatment. Azathioprine 100mg po and budesonide 6mg po have been administered post-operatively. No obstructive symptoms have occurred during the 54-month follow-up period.

Figure 1

Figure 1. Enteroclysis view showing the stenosing form of Crohn's disease with skip areas: multiple short or long stenosing segments (arrows) between prestenotic dilated segments (a). Macroscopic view of the intestinal loops during the operation

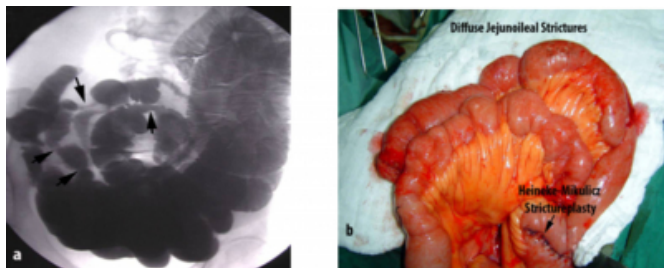
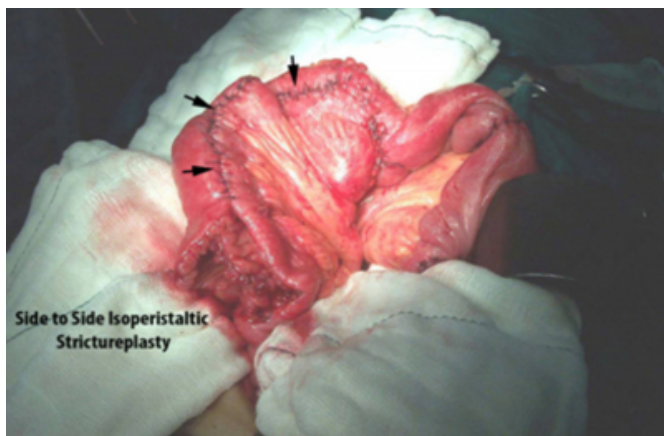


Figure 2

Figure 2. Eight strictures in 90cm of the intestine were dealt with side-to-side isoperistaltic strictureplasty.



DISCUSSION

Diffuse jejunoileitis (DJ) is an uncommon clinical entity that accounts for 3-10% in the entire CD population (1,2). Unfortunately, medical treatment is not effective in most patients with DJ. Furthermore, duodenal involvement usually accompanies this form of CD (46%) (6,7). The most common indication for surgery in DJ is recurrent intestinal obstruction. Since DJ has a poor prognosis due to its resistance to medical treatment and high recurrence rates, bowel-sparing surgical procedures have become popular in

order to reduce the incidence of short bowel syndrome. Regarding the current data, many authors suggest that Sxpl procedures are safe and effective for CD patients with multiple strictures (5,8,9).

Sxpl was first proposed by Katariya et al. in order to treat ileal strictures secondary to intestinal tuberculosis (10). In the late 1970s, Lee and Papanioannou used Sxpl to treat fibrostenotic strictures in CD (11). The main goal of developing the Sxpl procedures is the attempt to prevent resective procedures that may eventually lead to short bowel syndrome. Since patients with CD usually need multiple surgical interventions for complications such as strictures, fistulae etc., short bowel syndrome occurs at a rate of 5-10% depending on the disease process, as well as its medical and surgical treatment (5,6,12,13).

Sxpl techniques have gradually gained popularity because of their clear advantages for the last two decades (11). Indications for Sxpl were reviewed and widened with increasing experience. According to present data, several important indication have been considered as a routine surgical treatment option for the strictures in CD (14,15,16).

Heineke-Mikulicz and Finney Sxpls, the first performed techniques for Sxpl, and both named for similar pyloroplasty techniques, are simple and effective for short segment strictures (17). The former is suitable for shorter segment strictures that are 0-7cm in length, while the latter may be used for longer segment strictures up to 15cm in length (11,18). However, HM Sxpl should not be used for multiple strictures that are in close proximity to each other because of possible tensioning at the suture line (19). In addition, Finney Sxpl has the disadvantage of creating a blind diverticulum that may lead to bacterial overgrowth (20). Finally, both of these Sxpl techniques have limited utility for longer segment strictures (>15cm) and DJ with multiple strictures (21).

SSIS, since its inception in 1992, has ultimately overcome the limitations, and offers a bowel-sparing surgical treatment alternative for patients with multiple strictures over a long segment of intestine (5). This procedure is based on a simple concept, but its performance is technically challenging. A reasonable scepticism and fear has come out about the procedure because the possibility of a high rate of complications such as dehiscence of a suture line on an inflamed or fibrotic intestine (14). However, the worldwide rate of septic complications (related to the leakage of Sxpl) reported in the literature reaches 8% with a reoperation rate

of 5% (22). This rate of septic complications does not seem to be different from the incidence of those associated with other resective surgical procedures (6,22). Moreover, Yamamoto et al. reported that most of the complications such as leakage and dehiscence of the suture line were at the resection sites, rather than the Sxpl sites (6).

The post-operative complications associated with SSIS may be attributed to both nutritional and surgical factors (explorative findings and technical factors). Since the patients with the fibrostenotic form of CD usually have a poor nutritional status, appropriate alimentation strategy is necessary to reduce the likelihood of post-operative complications (14). Besides, explorative findings play an important role for rational decision making to perform the correct procedure. The presence of septic complications such as free perforation, abscess formation, fistulae, and fragility of the intestinal walls to be sutured due to deep ulcerations may be considered as relative contraindications for the procedure (23,24). Suspicion of malignancy, presence of a large amount of pus, phlegmonous aspect of intestinal wall, and urgent surgery are the real contraindications for SSIS (16).

Technical details of the procedure are well-recognized but modified by some authors with increasing experience in order to reduce the rate of post-operative complications. Several technical factors including the overlooked or misjudged strictures and adhesions distal to the Sxpl site (8, 25), ischemia at the Sxpl site due to technical difficulty in dividing the thickened mesentery (19), and difficulty of application of approximating two different intestinal segments that have unproportional wall thicknesses may cause anastomotic leakage.

Current data confirms that surgical recurrence after the Sxpl procedures is not more frequent than that after resective procedures (26, 27). Moreover, a surgical recurrence rate of 23% with SSIS appears to be favorable when compared with the total cumulative rates of surgical recurrence 5 years after HM and Finney Sxpls ranging between 28% and 41% (17, 27, 28). In this case, no recurrence has been observed during a 52-month follow-up period.

In conclusion, we consider that SSIS is a safe and effective bowel-sparing surgical procedure for the strictures related to CD. However, the procedure should be performed by or with the guidance of an experienced surgeon because of its technical difficulty. Besides, careful selection of patients is also important. Finally, the risk of malignant transformation

at the SSIS site is still needed to be assessed.

References

1. Cooke WT, Swan CHJ. Diffuse jejuno-ileitis of Crohn's disease. *QJM* 1974;179:583-601.
2. Tan WC, Allan RN. Diffuse jejunoileitis of Crohn's disease. *Gut* 1993;34:1374-8.
3. Alexander-Williams J, Haynes IG. Up-to-date management of small-bowel Crohn's disease. *Adv Surg* 1987;36:355-61.
4. Reese GE, Purkayastha S, Tilney HS, et al. Strictureplasty vs. resection in small bowel Crohn's disease: an evaluation of short-term outcomes and recurrence. *Colorectal Dis*. 2007;686-94.
5. Michelassi F, Taschieri A, Tonelli F, et al. An international, multicenter, prospective, observational study of the side-to-side isoperistaltic strictureplasty in Crohn's disease. *Dis Colon Rectum* 2007;277-84.
6. Yamamoto T, Allan RN, Keighley MRB. Long-term outcome of surgical management for diffuse jejunoileal Crohn's disease. *Surgery* 2001;129:96-102.
7. Nugent FW, Roy MA. Duodenal Crohn's disease: an analysis of 89 cases. *Am J Gastroenterol* 1989;84:249-54.
8. Kendall GP, Hawley PR, Nicholls RJ, et al. Strictureplasty: a good operation for small bowel Crohn's disease? *Dis Colon Rectum* 1986;29:312-6.
9. Fazio VW, Galandiuk S. Strictureplasty in diffuse Crohn's jejunoileitis. *Dis Colon Rectum* 1985;28:512-8.
10. Katariya RN, Sood S, Rao PG, et al. Strictureplasty for tubercular strictures of the gastrointestinal tract. *Br J Surg* 1977;64:496.
11. Lee EC, Papaioannou N. Minimal surgery for chronic obstruction in patients with extensive or universal Crohn's disease. *Ann Royal Coll Surg* 1982;64:229.
12. Dietz DW, Fazio VW, Laureti S, et al. Strictureplasty in diffuse Crohn's jejunoileitis: Safe and durable. *Dis Colon Rectum* 2002;45:764-70.
13. Earnest DL. Physiologic consequences of surgical treatment for inflammatory bowel disease. In: Kirsner JB, Shorter RG, eds. *Inflammatory bowel disease*. Baltimore: Williams & Wilkins, 1995.
14. Tonelli F, Ficari F. Strictureplasty in Crohn's disease. Surgical option. *Dis Colon Rectum* 2000;43:920-6.
15. Worsey MJ, Hull T, Ryland L, et al. Strictureplasty is an effective option in the operative management of duodenal Crohn's disease. *Dis Colon Rectum* 1999;42:596-600.
16. Tonelli F, Fedi M, Paroli M, et al. Indications and results of side-to-side isoperistaltic strictureplasty in Crohn's disease. *Dis Colon Rectum* 2004;47:494-501.
17. Michelassi F, Upadhyay GA. Side-to-side isoperistaltic strictureplasty in the treatment of extensive Crohn's disease. *J Surg Res* 2004;117:71-78.
18. Hurst RD. Management of small bowel Crohn's disease. *Prob Gen Surg* 1999;16:58.
19. Poggioli G, Laureti S, Pierangeli F, et al. A new model of strictureplasty for multiple and long stenoses in Crohn's ileitis: side-to-side diseased to disease-free anastomosis. *Dis Colon Rectum* 2003;46:127-30.
20. Hurst RD, Michelassi F. Strictureplasty for Crohn's disease: techniques and long-term results. *World J Surg* 1998;22:359.
21. Crohn BB, Yunick AM. Ileojejunitis. *Ann Surg* 1941;113:371.
22. Dehn TC, Kettlewell GW, Mortensen NJ, et al. Ten year experience of strictureplasty in the surgical treatment of Crohn's disease. *Br J Surg* 1989;76:339-41.
23. Michelassi F, Hurst R, Melis M, et al. Side-to-side

isoperistaltic strictureplasty in extensive Crohn's disease. A prospective longitudinal study. *Ann Surg* 2000;232:401-8.

24. Ozuner G, Fazio VW, Lavery IC, et al. How safe is strictureplasty in the management of Crohn's disease? *Am J Surg* 1996;171:57-61.

25. Alexander-Williams J, Haynes IG. Conservative operations for Crohn's disease of the small bowel. *World J Surg* 1985;9:945-951.

26. Sayfan J, Wilson AL, Allan A, et al. Recurrence after

strictureplasty or resection for Crohn's disease. *Br J Surg* 1989;76:335-8.

27. Ozuner G, Fazio VW, Lavery IC, et al. Reoperative rates for Crohn's disease following strictureplasty: long-term analysis. *Dis Colon Rectum* 1996;39:1199-1203.

28. Dietz DW, Laureti S, Strong SA, et al. Safety and long-term efficacy of strictureplasty in 314 patients with obstructing small bowel Crohn's disease. *J Am Coll Surg* 2001;192:330.

Author Information

Volkan Ozben, MD

Department of General Surgery, Istanbul University, Cerrahpasa Medical School

Murat Gonenc, MD

Department of General Surgery, Istanbul University, Cerrahpasa Medical School

Bilgi Baca, Asc. Prof.

Department of General Surgery, Istanbul University, Cerrahpasa Medical School

Ugur Korman, MD

Department of Radiology, Istanbul University, Cerrahpasa Medical School

Ismail Hamzaoglu, Professor

Department of General Surgery, Istanbul University, Cerrahpasa Medical School