Diffuse Small Bowel Crohn’s Disease Treated with Side-to-Side Isoperistaltic Strictureplasty: Report of Two Cases and Description of a Variation of the Original Technique

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Abstract
Diffuse small bowel Crohn’s disease is unusual and it is characterized by multiple diseased segments involving the jejunum and ileum. The most frequent indication for surgery is an intestinal obstruction, often complicated by a high grade of malnutrition. The natural history of this clinical form is not well defined and the optimal surgical approach remains controversial. We herein present our surgical policy in two cases of diffuse small bowel Crohn’s disease, who were particularly at risk of developing short bowel syndrome. We focused our attention on the use of side-to-side isoperistaltic strictureplasty as described by Michelassi for the treatment of stenoses longer than 20 cm. We also propose the application of this technique for the treatment of shorter stenosis cases.

Key words Crohn’s disease · Strictureplasty · Short bowel syndrome

Introduction
Crohn’s disease represents a chronic inflammation that can affect any part of the gastrointestinal tract. The pathological picture can include stenosis, fistulas, or abscesses. Because of the recurrent nature of this disease, Crohn’s patients may require several intestinal resections over time.1 Those patients with diffuse Crohn’s disease are particularly at risk of short gut syndrome and, in the last 20 years, a more conservative surgical approach has been developed.

Strictureplasty for Crohn’s disease was first introduced more than 20 years ago by Lee and Papaioannou.2 Thanks to this new surgical modality massive resections were avoided, with a good palliation of obstructive symptoms. The side-to-side isoperistaltic (SSI) strictureplasty, described in the original report of three cases by Michelassi in 1996, is actually indicated for long (30–40 cm) Crohn intestinal stenosis and consists of the overlapping and suturing of the two halves of diseased segments.3 In a large prospective longitudinal study, where 21 patients underwent SSI strictureplasty, this procedure was clearly demonstrated to be safe and effective in preventing a radiological and histological relapse at the site of the strictures.4

In this report, we present our surgical policy for two cases of diffuse Crohn’s disease and for the first time describe the application of SSI strictureplasty in cases with short stenosis.

Case Reports

Case 1
A 26-year-old woman was referred for the first time to the Department of Surgical and Gastroenterological Sciences of the University of Padova in July 1999 with a 7-year history of jejunum-ileal Crohn’s disease and no previous surgical history. At admission the patient was receiving steroid medication, was malnourished, had a low body weight (39 kg), was edematous, and was suffering from obstructive episodes. The inflammatory and nutritional parameters were remarkably altered (C-reactive protein (CRP) 16.8 mg/l, acid α-glycoprotein 1.68 g/l, albumin 1.2 g/dl, transferrin 0.7 mg/l, retinol binding protein 10.6 mg/l). The pre-operative workup included enteroclysm, esophagastroduodenoscopy (EGDS), and colonoscopy. At laparotomy (Fig. 1a) we found a long diseased jejunal segment (40 cm) 60 cm from the Treitz ligament and four short areas of ileal stenosis. The terminal ileum and

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the cecum were also involved. We performed a long jejunal SSI strictureplasty according to the technique described elsewhere, and four Heineke-Mikulicz (HM) type strictureplasties. An ileocecal resection was necessary for the terminal ileum disease. The patient was discharged on the ninth postoperative day, without any complications. Twelve months later she is asymptomatic, with normal nutritional and inflammatory parameters, a standard body weight and no further need of steroids.

Case 2

A 21-year-old man was admitted to our institution for Crohn’s disease (diagnosis made at the end of 1998) complicated by malnutrition, obstructive episodes, and deep venous thrombosis. No previous surgery had been performed in this steroid-treated patient. At admission the patient was underweight, with fever and diarrhea. All the inflammatory and nutritional parameters were altered (CRP 177 mg/l, acid α-glycoprotein 3.32 g/l, albumin 2.49 g/dl). The preoperative workup included enteroclysm, EGDS, and colonoscopy. During the operation we found two short jejunum-ileal stenoses at 100 and 150 cm from the Treitz ligament, and two long diseased segments (20 and 25 cm, respectively) at 115 and 160 cm (Fig. 1b). The terminal ileal and the ascending colon showed severe disease. The short stenoses were treated with HM strictureplasties, while the two long ones underwent two modified SSI strictureplasties. After dividing the diseased loops and its mesentery at the midpoint, the two halves were approximated using an absorbable interrupted seromuscular suture. A longitudinal enterorotomy was performed on both halves and the end of each loop was spatulated to avoid any blind stumps. The strictureplasty was completed inside by a running full-thickness suture and was then continued anteriorly as a running Connell’s suture. Interrupted seromuscular sutures were used to reinforce the external layer. An ileocolic resection was necessary for the ileocolic disease. The postoperative course was complicated by an episode of melena treated with blood transfusions. The patient was discharged 19 days after the operation. Eighteen months later the patient is asymptomatic, with a considerable gain in weight (body weight 69 kg), normal inflammatory and nutritional values (CRP 0.6 mg/l, albumin 4.52 g/dl), and is not undergoing steroid treatment.

Discussion

Diffuse small bowel Crohn’s disease represents 5% of the entire Crohn’s population. The surgical approach is mandatory in at least 80% of the population and obstruction is the most common indication for surgery. These patients are often young and malnourished with considerable weight loss before surgery. The long-term prognosis is less favorable than for localized disease. Andrews et al. report a high mortality rate (9 of 27 patients) after surgery and the long-term prognosis is poorer than for other small bowel clinical forms.