Case Report

Hand-assisted laparoscopic subtotal colectomy with cecorectal anastomosis for chronic idiopathic colonic pseudo-obstruction: Report of a case

Kensuke Miyazaki[1)], Yasuhiro Torashima[1)], Satoshi Mochizuki[1)], Seiya Susumu[1)], Kengo Kanetaka[1)], Susumu Eguchi[1)], Takashi Kanematsu[1)], Kuniko Abe[2)], Fumihiko Fujita[1)],

1) Department of Surgery, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

2) Department of Pathology, Nagasaki University Hospital, Nagasaki, Japan

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Address correspondence to:

Kensuke Miyazaki, M.D.

Department of Surgery, Nagasaki University Graduate School of Biomedical Sciences

1-7-1 Sakamoto, Nagasaki 852-8501, Japan

TEL: 81-95-819-7316 / FAX: 81-95-819-7319

E-mail: kemiyazaki-gi@umin.net

Abstract

Chronic idiopathic colonic pseudo-obstruction (CICP) is characterized by the chronic disturbance of colonic motility without mechanical obstruction, any underlying disease or medication. Currently, there are no established medical treatments for CICP. A 62-year-old female who had undergone right hemicolectomy for splenic flexure syndrome caused by idiopathic megacolon was referred to our hospital with relapse, experiencing palpitation and abdominal fullness. She was diagnosed with CICP according to findings of marked dilation of the colon without mechanical obstruction, dilation of other parts of the gastrointestinal tract, or underlying disease. The dilated colon was surgically removed by hand-assisted laparoscopic subtotal colectomy, followed by cecorectal anastomosis. Histopathologically, there was no degeneration or lack of ganglion cells in Auerbach's plexus. The patienthas experienced no severe symptoms after undergoing the present operation.

Introduction

Intestinal pseudo-obstruction (IPO) is a syndrome caused by severe disturbances of gastrointestinal motility without mechanical obstruction (1). This syndrome can occur in either an acute or a chronic form, and is sometimes associated with high morbidity and mortality rates (2,3). IPO can be classified as chronic idiopathic intestinal pseudoobstruction (CIIP) or chronic idiopathic colonic pseudoobstruction (CICP). The treatment is determined by the classification, i.e., surgical treatment is indicated for CICP, but not for CIIP, demonstrating the importance of accurately distinguishing IPO as either CICP or CIIP. CICP is defined as a chronic disturbance of colonic motility localized to the colon without mechanical obstruction, any underlying disease, or medication

(2). Although patients with CICP are not rare, no medical treatments for CICP have yet been established. We herein describe the case of a patient with CICP who obtained satisfactory results from hand-assisted laparoscopic subtotal colectomy with cecorectal anastomosis.

Case report

A 62-year-old female was diagnosed with a recurrence of chronic intestinal pseudo-obstruction syndrome (CIPS). The patient had a 10-year history of chest discomfort with chest pain or palpitation, dyspnea, and severe constipation, followed by subsequent left lateroabdominal pain. After examination, she was diagnosed with splenic flexure syndrome caused by an idiopathic megacolon. She underwent colonoscopy several times to eliminate recurrent excessive colonic gas, but experienced a re-stagnation of gas and a re-dilation of the colon. Thereafter, she underwent left hemicolectomy to eliminate the dilated colon, in February 2004. Surgery resolved the compression of the heart by the colon, and the patient experienced a complete disappearance of her chest discomfort. Based on the patient's medical history and histopathological findings showing no lack or degenerative change of ganglion cells (Auerbach's plexus), the final diagnosis was chronic idiopathic colonic pseudo-obstruction (CICP). Although the patient was asymptomatic for five and a half years after surgery, she suffered a relapse with palpitations and abdominal fullness. Therefore, she was referred to our hospital to be evaluated for potential surgical treatment. Her symptoms included abdominal fullness, intermittent abdominal pain, palpitations and chest discomfort. During the preoperative evaluation, marked dilation of the entire remnant colon was detected on plain X-rays (Fig. 1 a) and a barium enema of the colon (Fig. 1 b, c).

Contrast enema of the small intestine showed no passage disturbance or dilated small intestine. Her past medical history showed no underlying disease. Therefore, we diagnosed her with a relapse of CICP. After obtaining sufficient informed consent, the patient underwent subtotal colectomy by hand-assisted laparoscopic surgery (HALS). She was 158 cm in height, 45 kg in weight and her body mass index was 18.0 at the time of the surgery.

The operation was performed with a 7 cm median lower-abdominal incision along the scar of the previous laparotomy to allow for insertion of the surgeon's left hand. Two 5 mm trocars were placed in the right and left lateral regions of the abdomen at the level of the navel, one for the scope and the other for the dissecting devices. As noted in the preoperative evaluation, the entire colon was extremely dilated, disturbing the operative field of view. After handassisted laparoscopic mobilization of the colon, the rectum was divided 2 cm above the peritoneal reflection, and the oral side of the colon was divided at the origin of the ascending colon (near the ileocecal valve) to preserve the cecum and ileocecal valve. The mesocolon was then divided along the intestinal wall, and the colon was resected and removed (Fig. 2). The ileocecal artery and vein were preserved. The cecum was mobilized completely from the retroperitoneum.

Subsequently, end-to-end cecorectal anastomosis was successfully performed, using a double-stapling technique with a circular stapling device, without any tension on the anastomosis or torsion of the jejunum and mesentery (Fig. 3). A cecorectal anastomosis was performed for intestinal reconstruction, rather than an ileal pouch, since the dilated cecum was sufficient to serve as a reservoir. The total length of the operation was 220 min, and intraoperative blood loss was 150 g.

Histopathologically, although a thin muscle layer was observed, there was no degeneration or decrease in ganglion cells of the Auerbach's plexus in the resected specimen (Fig. 4), the same as had been observed during the primary operation (Fig. 5).

The postoperative course was uneventful. The patient's chest discomfort disappeared, and constipation was controlled with a mild laxative. As of the writing of this report, the patient has been doing well with no severe symptoms 18 months after surgery.

Discussion

Dudley (1) described the frequent co-occurrence of symptoms of intestinal obstruction with the absence of mechanical obstruction as IPO. Some cases of IPO of unknown etiology were reported as chronic idiopathic intestinal pseudo-obstruction (CIIP) by Maldonado et al. (3). In addition, Anuras et al. (2) reported that CICP represents a persistent functional intestinal disorder localized in the colon alone, without mechanical obstruction. IPO can be caused by underlying systemic disease such as a neuromuscular disorder. CIIP is idiopathic and can have an unknown etiology as well, but typically involves the entire gastrointestinal tract. In addition, CIIP can frequently lead to complications with urological dysfunction, such as a neurogenic bladder or hydronephrosis.

No medical management for CICP has been established; however, some reports recommend surgical removal of all of the distended intestinal tissue (4-7). CIIP, on the other hand, does not require surgery, but instead is treated with medications such as prokinetics (8,9) or nutritional support such as central venous

nutrition (10) or home parenteral nutrition (11). In some cases, palliative surgery has been performed and improved the quality of life of patients with CIIP (12,13). However, surgical intervention is not a curative treatment option for CIIP patients, and the benefit is likely temporary.

The case described herein was preoperatively diagnosed with CICP based on the fact that the intestinal disorder was localized in the colon and no complications involving urological dysfunction were noted. Surgery was subsequently performed to remove the dilated colon. The first operation for this patient was performed for splenic flexure syndrome in order to reduce pressure against the left side of the diaphragm with removal of colonic gas at the splenic flexure of the colon. If the patient had been diagnosed with CICP at that time, subtotal proctocolectomy would have been indicated. According to previous reports (9), insufficient resection or colostomy alone for the treatment of CICP is not able to provide symptomatic improvement, which might also apply to the present case.

Total colectomy or proctocolectomy has been performed for many years to treat various colorectal diseases, particularly inflammatory bowel diseases, such as ulcerative colitis or Crohn's disease. Recent studies (14-16) reported the feasibility of total colectomy or proctocolectomy using a laparoscopic approach. We selected a hand-assisted approach for this case in order to maintain a clean operative field by blocking the dilated colon with the surgeon's hand. Polle et al. (17) reported that there were no significant short-term benefits for a complete laparoscopic approach when compared with the hand-assisted technique for restorative proctocolectomy. We believe that a hand- assisted laparoscopic approach is the best surgical procedure for CICP.

We performed subtotal colectomy with cecorectal anastomosis for this case, and we believe that this procedure is beneficial for the treatment of CICP, rather than the ileal pouch method. Patients with CICP often have a poor nutritional status because of their inability to maintain adequate oral intake due to fears of anastomotic leakage. We therefore selected cecorectal anastomosis for this case, because it required fewer anastomosis sites compared to the ileal pouch method.

Some reports (18,19) indicate that preservation of the ileocecal valve during total proctocolectomy with ileostomy is advantageous because of the reduction of high output liquid loss and defecation frequency, which results in an improved quality of life of patients. In this case, the patient has gained a good state of defecation with a mild laxative, and the frequency of defecation is every other day after the present operation. She does not have abnormal frequent defecation or diarrhea. We believe that the preservation of the ileocecal valve contributed greatly to her satisfactory outcome.

The present case indicates that CICP can be successfully treated by surgical removal of all of the dilated colon, and that hand-assisted laparoscopic subtotal proctocolectomy with cecorectal anastomosis may be one of the best procedures for properly diagnosed CICP patients.

Conflict of interest statement: K. Miyazaki and co-authors have no conflict of interest to declare.

References

1. Dudley HA, Sinclar IS, MacLaren , McNair TJ, Newsam JE. Intestinal pseudo-obstruction. J R Coll Surg Edinb 1958; 3:206-217.

2. Anuras S, Baker CR Jr. The colon in the pseudoobstructive syndrome. Clin Gastroenterol 1986;15(4):745-762.

3. Maldonado JE, Gregg JA, Green PA, Brown AL Jr. Chronic idiopathic intestinal pseudo-obstruction. Am J Med. 1970; 49(2): 203-212.

4. Lane RH, Todd IP. Idiopathic megacolon: A review of 42 cases. Br J Surg 1977; 64(5): 307-310

5. O Súilleabháin CB, Anderson JH, McKee RF, Finlay IG. Strategy for the surgical management of patients with idiopathic megarectum and megacolon. Br J Surg. 2001; 88(10):1392-6.

6. Georgescu EF, Vasile I, Ionescu R. Intestinal pseudo-obstruction: an uncommon condition with heterogeneous etiology and unpredictable outcome. World J Gastroenterol. 2008; 14;14(6):954-9.

7. Ushiyama T. Shinya Y. Noda Y. Haba R. Wakabayashi H. Maeba T et al. A Case of surgically treated chronic idiopathic colonic pseudo-obstruction. Jpn J Gastroenterol Surg. 2002;35:1531-1535

8. Camilleri M, Malagelada JR, Abell TL, Brown ML, Hench V, Zinsmeister AR. Effect of six weeks of treatment with cisapride in gastroparesis and intestinal pseudoobstruction. Gastroenterology 1989; 96: 704-712

9. Cogliandro R, Stanghellini V, Cogliandro L, Tosetti C, Salvioli B, Zamboni PF, Barbara G, De Giorgio R, Corinaldesi R. Symptomatic response to short-term treatment with cisapride but not small bowel manometry predicts a positive outcome in adult patients with chronic idiopathic intestinal pseudoobstruction (CIIP). Gastroenterology 1999; 116: A1087

10. Faulk DL, Anuras S, Freeman JB. Idiopathic chronic intestinal pseudo-obstruction. Use of central venous nutrition. JAMA. 1978;3:240(19):2075-6

11. Amiot A, Joly F, Alves A, Panis Y, Bouhnik Y, Messing B. Long-term outcome of chronic intestinal pseudo-obstruction adult patients requiring home parenteral nutrition. Am J Gastroenterol. 2009;104(5):1262-70.

12. Shibata C, Naito H, Funayama Y, Fukushima K, Hashimoto A, Kitayama T, Nagao M, Matsuno S, Sasaki I. Surgical treatment of chronic intestinal pseudo-obstruction: report of three cases. Surg Today. 2003;33(1):58-61.

13. Stabile G, Kamm MA, Hawley PR, Lennard-Jones JE. Colectomy for idiopathic megarectum and megacolon. Gut. 1991;32(12):1538-40.

14. Fajardo AD, Dharmarajan S, George V, Hunt SR, Birnbaum EH, Fleshman JW, et al. Laparoscopic versus open 2-stage ileal pouch: laparoscopic approach allows for faster restoration of intestinal continuity. J Am Coll Surg. 2010;211(3):377-83.

15. Nakajima K, Nezu R, Ito T, Nishida T. Hand-assisted laparoscopic restorative proctocolectomy for ulcerative colitis: the optimization of instrumentation toward standardization. Surg Today. 2010;40(9):840-4

16. Tsang WW, Chung CC, Kwok SY, Li MK. Laparoscopic sphincter-preserving total mesorectal excision with colonic J-pouch reconstruction: five-year results. Ann Surg. 2006 ;243(3):353-8.

17. Polle SW, van Berge Henegouwen MI, Slors JF, Cuesta MA, Gouma DJ, Bemelman WA. Total laparoscopic restorative proctocolectomy: are there advantages compared with the open and hand-assisted approaches? Dis Colon Rectum. 2008;51(5):541-8.

18. Lindsey I, Farmer CR, Cunningham IG. Subtotal colectomy and cecosigmoid anastomosis for colonic systemic sclerosis: report of a case and review of the literature. Dis Colon Rectum. 2003; 46(12):1706-11.

19. Nio Y, Itakura M, Yamaguchi K, Hirahara N. Ileocecal valve-preserving ileostomy after total proctocolectomy--a novel technique for ileostomy. Dig Surg. 2004; 21 (1): 7-9.

FIGURE LEGENDS

FIGURE 1. X-ray and barium enema performed prior to the second operation. **A:** X-ray showed marked dilation of the colon and elevation of the left diaphragm. **B and C:** The rectum was not dilated, while dilated colon was seen with barium enema.

FIGURE 2. The resected specimen from the second operation was flaccid with no obstruction.

FIGURE 3. Illustration of cecorectal anastomosis. End-to-end anastomosis between the cecum and rectum using a double-stapling technique (DST) with a circular stapling device inserted through the anus.

FIGURE 4. Histopathological findings. Histopathologic specimen shows that there are ganglion cells situated in the submucosal layer and the muscular layers without lack or degenerative change. **A:** Sunmucosal plexus (Meissner's plexus) **B:** Myenteric plexus (Auerbach's plexus)

FIGURE 5. Histopathological findings of first operation (performed on 2004) . Histopathologic specimen shows that there are ganglion cells situated in the submucosal layer and the muscular layers without lack or degenerative change, the same as this operation. **A:** Sunmucosal plexus (Meissner's plexus) **B:** Myenteric plexus (Auerbach's plexus)

FIGURE 1.

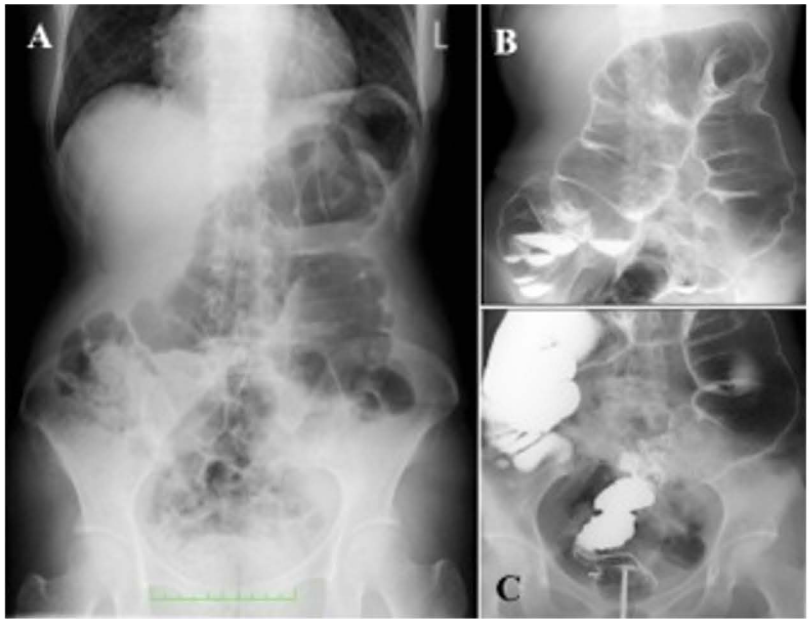

FIGURE 2.

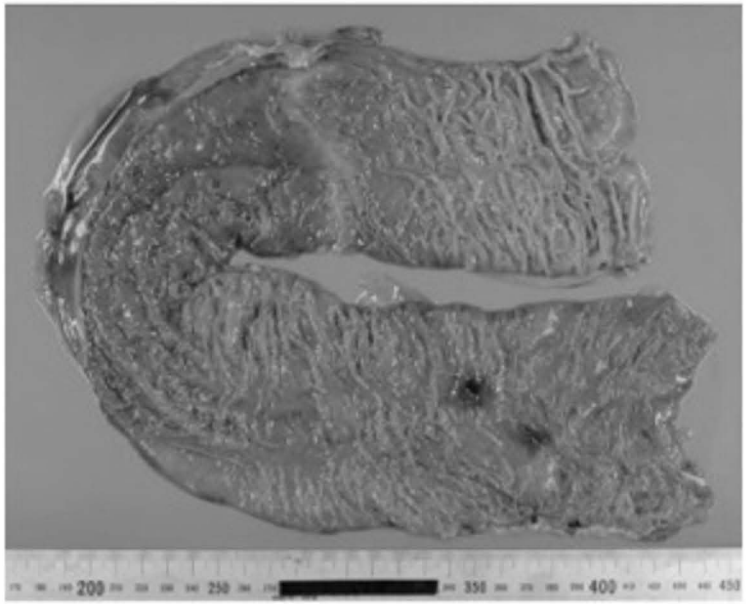

FIGURE 3.

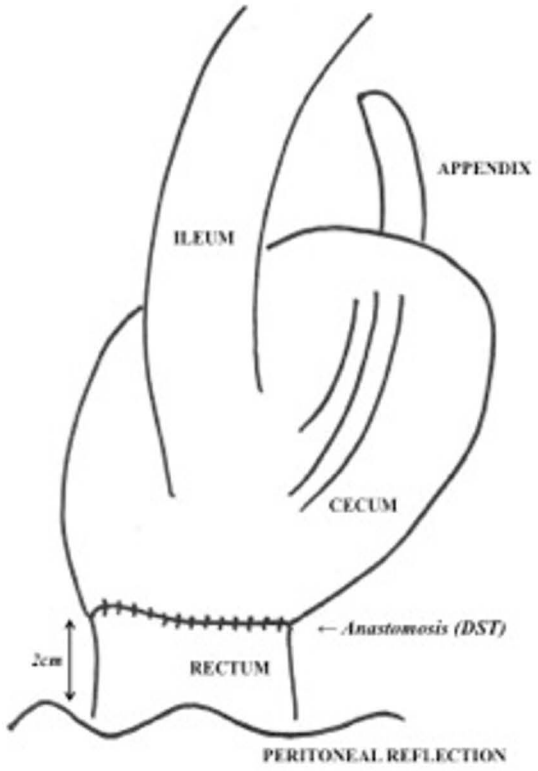
APPENDIX
ILEUM
CECUM
← Anastomosis (DST)
2cm
RECTUM
PERITONEAL REFLECTION

FIGURE 4.

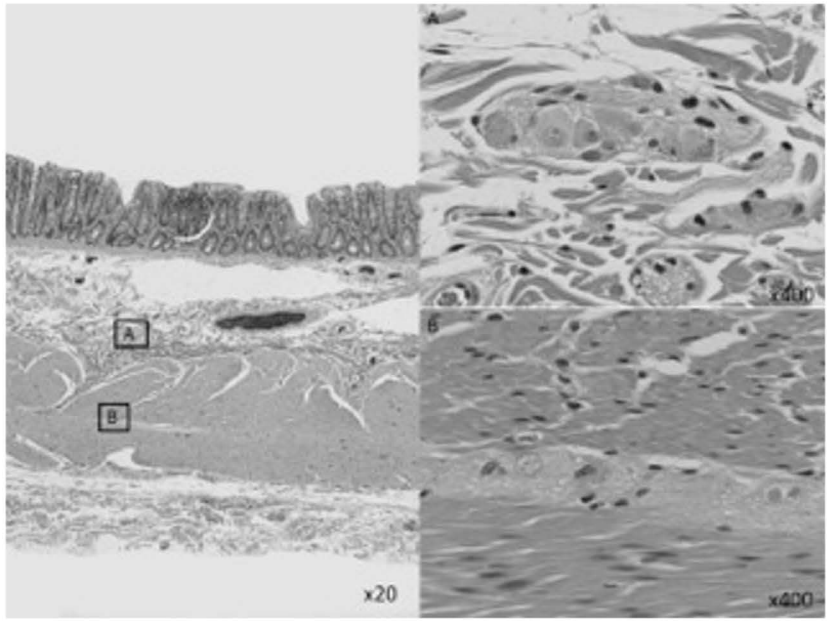

FIGURE 5.