Completely Laparoscopic Total Colectomy for Chronic Constipation: Report of a Case

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Abstract
Laparoscopic surgery has had a remarkable impact on the practice of colorectal surgery. However, most operations are performed using a technique of laparoscopic assistance, whereby extracorporeal bowel division and anastomosis are made following laparoscopic mobilization of the bowel. To our knowledge, this is the first report to describe a case of chronic constipation managed by total colectomy with ileorectal anastomosis, performed completely laparoscopically. The diagnosis of slow transit constipation was made by a transit time study. After dissection of the entire colon, the colon to be resected was delivered through the open rectal stump and brought out transanally. The anvil of an intraluminal circular stapler was passed through the rectum into the peritoneal cavity and the end of the open distal rectum was closed with a linear cutting stapler. The anvil of the circular stapler was inserted into the end of the open terminal ileum and fixed with an Endo-Loop, following which an intracorporeal double-stapling anastomosis was performed. By 3 months following surgery, the patient was passing 3–4 stools a day. Thus, we highly recommend this technique as it eliminates the need for a small incision to deliver the resected colon, thereby minimizing the operative time and risk of wound infection.

Key words Chronic constipation · Laparoscopic total colectomy · Transanal extirpation

Introduction
Laparoscopic techniques have changed colorectal surgery, having become the standard approach for the surgical management of benign diseases such as inflammatory bowel disease,1 proctoce, and chronic constipation.2 However, the majority of surgeons employ the technique of laparoscopic assistance.3 This technique delivers the resected colon through an abdominal incision and restores bowel continuity extracorporeally. Although the size of the wound made for laparoscopic-assisted surgery is only about 5 cm long, making this incision increases the operative time and also the risk of a wound infection. We report herein what to our knowledge is the first case of chronic constipation to be managed by total colectomy with ileorectal anastomosis, performed completely laparoscopically, without any accompanying surgical incision.

Case Report
A 34-year-old single woman was referred to our department with intractable, chronic constipation. She had suffered from constipation since she was 16 years old, for which she had been treated by several internists and gastroenterologists, without remarkable success. Her condition became worse with time and when we first evaluated her, she was taking 40–50 laxative tablets per day and giving herself a daily glycerine enema. Concern over emptying her bowels was a constant source of anxiety. Her lifestyle had become restricted by her bowel habits, and she was depressed.

Physical examination revealed that her abdomen was undistended and no mass was palpable. There were no abnormal findings on digital examination of the rectum. Routine blood tests were normal and her serum thyroid hormone levels were within the normal range. A barium enema demonstrated the entire colon to be dilated, from the ascending colon to the rectum, but the haustra appeared normal (Fig. 1). Colonoscopy confirmed that the colonic mucosa had a normal appearance. Anorectal manometry revealed the presence of basal rhythmic
waves and the rectosphincteric reflex was demonstrated. A biopsy of the rectal mucosa confirmed the presence of Auerbach’s plexus, ruling out Hirschsprung’s disease.

The colonic transit time was estimated using radiopaque markers (Sitzmark, Konsyl, Forth Worth, TX, USA). After 3 laxative-free days, she ingested a single capsule of markers. A plain abdominal X-ray was taken 6, 24, 30, 48, 54, 72, 78, 96, and 120 h after ingestion of the marker. All markers reached the terminal ileum within 24 h and stayed in the colon and rectum for the next 5 days, during which time she had no bowel movements. Thereby, a diagnosis of slow transit constipation was confirmed.

**Operative Procedure**

The procedure was performed with the patient in the lithotomy position under general anesthesia. A 12-mm blunt tip trocar was passed into the abdomen under direct vision through a small incision made just below the umbilicus. After pneumoperitoneum had been established, four 12-mm ports were placed in the abdominal wall. A 10-mm, 0° or 30° telescope was inserted through the paraumbilical port. Retraction was achieved by grasping the colon with an intestinal clamp and dissecting it, beginning at the descending colon. Dissection was continued proximally until the entire colon and terminal ileum had been mobilized. Vessels were divided with clips, an ultrasonic scalpel, or a linear stapler. The small bowel was divided at the terminal ileum and the colon was divided at the sacral promontory, leaving about 10 cm of abdominal rectum, using a 45-mm linear stapler. After rectal washout with 2000 ml of saline, the edge of the distal rectum was opened, and the resected specimen was pulled through the rectum and delivered transanally (Fig. 2). The anvil of a circular stapler was delivered into the peritoneal cavity transanally, and the opened distal rectum was then reclosed using the endoscopic linear stapler. The staple line at the terminal ileum was opened and the anvil of the circular stapler was inserted, fixing it in place with an Endo-Loop (Fig. 3). The circular stapling instrument was then passed transanally, advancing the pointed trocar forward through the rectal staple line. The anvil in the terminal ileum was docked with the rectal trocar and an end-to-end anastomosis was created. The stapler was removed transanally and the presence of two doughnuts of tissue was confirmed. The operative time was 390 min.

The patient had an uncomplicated postoperative course with the return of bowel sounds and the passage of flatus within 24 h. She was commenced on a clear liquid diet on the fourth postoperative day, and was discharged on the 18th postoperative day. She passed 7–10 bowel movements each day during her hospital stay, but the frequency had decreased to 3–4 times a day by the third postoperative month.