

Laparoscopic Subtotal Colectomy for Acute or Severe Colitis With Double-end Ileo-sigmoidostomy in Right Iliac Fossa

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Abstract: The aim of this study was to report an original technique of laparoscopic subtotal colectomy (STC) for acute colitis complicating inflammatory bowel disease where both ileostomy and sigmoidostomy are located in the right iliac fossa. Thirty-five consecutive laparoscopic STC cases with ileo-sigmoidostomy in right iliac fossa were retrospectively reviewed. There was no mortality. No patient was reoperated until stoma closure. Bowel continuity was restored by either ileorectal anastomosis ($n=14$) or secondary proctectomy with ileal-pouch-anal anastomosis (IPAA; $n=21$). Elective approach was performed in 11 of 14 ileorectal anastomoses (79%) and through iterative laparoscopy in 21 of 21 IPAA (100%). Laparoscopic STC with ileo-sigmoidostomy in right iliac fossa avoid a secondary wound incision for sigmoidostomy, and offers the possibility of an elective approach for ileorectal anastomosis as in 79% of the patients. It allowed, in all cases, a totally laparoscopic approach for the second step of IPAA.

Key Words: inflammatory bowel disease, subtotal colectomy, ileostomy, sigmoidostomy, laparoscopy

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Despite major advances in medical therapy for inflammatory bowel disease (IBD), nearly 40% of the patients with severe acute colitis require emergency subtotal colectomy,¹ mainly because of failure of nonsurgical treatment^{2–5} (ie, intravenous steroids, cyclosporine, or both) or for complicated form of acute colitis (toxic megacolon, colonic perforation, or massive hemorrhage).

Surgical treatment of severe or complicated colitis includes, as a first step, subtotal colectomy with Brooke ileostomy in right iliac fossa. However, management of the distal rectosigmoid stump remains controversial. It may be closed and left in the abdominal cavity as a Hartmann pouch, but most of the authors report the creation of a sigmoidostomy either creating a new scar on the left iliac fossa or inserting the stump in the lower part of the midline incision.^{6–8}

Both techniques present possible drawbacks: (a) in case of a sigmoidostomy fashioned in the left iliac fossa, although no specific complication can be related, patients

present a second stoma site, with the potential risk of wound dehiscence and esthetic concerns during follow-up; and (b) in case of a sigmoidostomy fashioned in the lower part of the midline incision, patients are possibly exposed to wound abscess, and most importantly to acute small bowel obstruction due to the midline position of the mesosigmoid.

For these reasons, to avoid the creation of 2 separate stoma sites, we proposed since 1997 to perform both ileostomy and sigmoidostomy in the same orifice on the right iliac fossa during open subtotal colectomy. This technique not only avoids a second scar, but also probably reduces the risk of small bowel obstruction by positioning mesosigmoid not in a midline position but laterally in the right iliac fossa.

However, we argue that this technical innovation could be even more attractive using laparoscopic approach, because the sigmoid is left behind for second step surgery. Our technique could facilitate the surgical procedure for intestinal continuity restoration, not only for ileorectal anastomosis where the anastomosis is made through an elective incision on the right iliac fossa, but also for the second step of ileal pouch-anal anastomosis (IPAA) by iterative laparoscopy.

Thus, the aim of this study was to report an original technique of laparoscopic subtotal colectomy with ileo-sigmoidostomy in right iliac fossa for patients with acute or severe colitis complicating IBD.

MATERIALS AND METHODS

Patients

Medical records of 35 consecutive IBD patients who underwent laparoscopic subtotal colectomy with ileostomy and sigmoidostomy in right iliac fossa since 2000 were retrospectively reviewed.

There were 14 women and 21 men with a mean age of 39 ± 16 years (range: 15 to 73 y).

All the patients had severe or acute colitis complicating either Crohn disease (CD) or ulcerative colitis (UC), refractory to medical treatment or with complicated form (ie, perforation, hemorrhage, or toxic megacolon). As we reported earlier, the decision for surgical treatment was based on clinical, biologic,⁹ radiologic, and endoscopic^{10,11} severity criteria at admission and on failure of medical treatment.^{2–5}

Final diagnosis, on the basis of final pathologic examinations of specimens, was CD in 8 patients (23%) and UC in 27 (77%).

Hospital stay was defined by interval time from operation to discharge. All complications before discharge and until intestinal continuity restoration were recorded as morbidity or mortality.

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Surgical Procedure

Laparoscopic technique for subtotal colectomy was described earlier.¹² Briefly, patients were placed in a modified lithotomy position with closed arms, nasogastric tube, and bladder catheter. A 15-mm Hg pneumoperitoneum was established with a 10-mm laparoscopic port, placed through the umbilicus, using direct open technique. A 0-degree laparoscope was used and a diagnostic laparoscopy was performed, confirming preoperative diagnosis. The other laparoscopic ports were positioned under direct vision. Usually, 4 additional port sites (5 to 12 mm) were used, generally one in each abdominal quadrant. Special attention was made to place the port of the right lower quadrant in the site of the future ileostomy.

First, we separated the greater omentum and transverse colon, incising the avascular plane between the structures, which subsequently facilitated mobilization of the splenic flexure. Secondly, left colon was mobilized by incising the peritoneal reflection along the paracolic gutter; during this step, left ureter was identified. Thirdly, mesocolic vessels were proximally divided. Then, using left lateral position, complete mobilization of the right colon was performed, paying attention especially to the duodenum.

A 5-cm transversal open laparotomy was made on the right iliac fossa (at the exact location of the port site). The colon specimen was extracted. Then, both sigmoid (above the rectosigmoid junction) and ileum (close to the ileocecal junction) were divided extracorporeally, using mechanical stapler. The double-end ileo-sigmoidostomy, in the same orifice, was then performed in the right iliac fossa, using the 5-cm incision made earlier.

Pneumoperitoneum was then recreated to check hemostasis and the absence of small bowel incarceration between both terminal ileum and sigmoid loops. No abdominal drainage was left in place.

Postoperative Management

During postoperative course, all patients received daily irrigation of the remnant rectal stump transanally with steroids (prednisolone, Solupred, 80 mg/d) and mesalazine (Pentasa). This daily irrigation was maintained until restoration of intestinal continuity, 3 months later.

RESULTS

Conversion into laparotomy was required in 2 patients (6%), because of intra-abdominal adhesions ($n=1$), and complicated case with perforated acute colitis ($n=1$). The mean operative time was 252 ± 56 minutes (range: 150 to 420 min). No intraoperative complication related to the stoma procedure on right iliac fossa was noted.

The mean hospital stay was 8 ± 3 days (range: 4 to 17 d).

Postoperative Mortality and Morbidity Until Intestinal Continuity Restoration

There was no mortality. Among the 35 patients, 5 (14%) experienced medical or surgical complications (Table 1). Only 2 had a transient episode of small bowel obstruction treated conservatively. No reoperation was needed for complication until intestinal continuity restoration.

Restoration of Intestinal Continuity

With a mean delay of 80 ± 20 days (range: 43 to 129 d), intestinal continuity was restored in 100% of the

TABLE 1. Postoperative Morbidity After Laparoscopic Subtotal Colectomy With Double-end Ileo-sigmoidostomy in Right Iliac Fossa for Severe Acute Colitis Complicating Inflammatory Bowel Disease ($n=35$)

	n	%
Surgical morbidity		
Wound hematoma	1	3
Small bowel obstruction	2	6
Peristomal abscess	1	3
Medical morbidity		
Pulmonary embolism	1	3
Total	5	14

cases. Fourteen patients (40%) underwent ileorectal anastomosis and 21 (60%) a secondary proctectomy with IPAA. Intestinal continuity restoration was performed through elective incision in 11 of 14 (79%) ileorectal anastomoses and through iterative laparoscopy in 21 of 21 (100%) IPAAs. Thus, only 3 of 35 patients (9%) required midline laparotomy for the second surgical procedure.

DISCUSSION

This study showed that laparoscopic subtotal colectomy with double-end ileo-sigmoidostomy in right iliac fossa was associated with low morbidity, no reoperation, and no mortality. This original technique can avoid a secondary wound incision for sigmoidostomy, and also offers the possibility of an elective approach for ileorectal anastomosis as in 79% of our patients. Finally, it allowed in 100% of the cases a totally laparoscopic approach for the second step of IPAA.

In an earlier study¹³ from our group including more than 160 open subtotal colectomies with sigmoidostomy in the midline incision, morbidity was up to 33%. Moreover, small bowel obstruction was noted in 15% of the patients requiring reoperation before intestinal continuity restoration in 8% of cases. By contrast, with the present technique, no patient presented small bowel obstruction. This difference could be explained not only by the laparoscopic approach but also by the midline position of the mesosigmoid, increasing probably the risk of small bowel obstruction.

Very few studies reported results of laparoscopic subtotal colectomy for IBD with different management of the rectal stump: Seshadri et al¹⁴ reported a study including 37 patients (although only 26 operated for IBD) in whom the rectal stump was left in the abdominal cavity as a Hartmann pouch. The authors observed an 8% rate of small bowel obstruction with a 5% reoperation rate for obstruction. Similarly, Marcello et al¹⁵ reported 19 laparoscopic subtotal colectomies for IBD (with rectal stump located either in the lower part of the midline incision, either open or left enclosed). In this study, the wound infection and small bowel obstruction rates were 10% and 6%, respectively. More recently, Watanabe et al¹⁶ published the results of 30 hand-assisted laparoscopic subtotal colectomies for severe acute colitis. The authors demonstrated lower rates of postoperative complications and relaparotomy and a shorter hospital stay after hand-assisted laparoscopic procedure comparing with open approach. However, in this study, hand-port was placed through a 7-cm lower paramedian incision and sigmoidostomy was systematically fashioned in the left iliac fossa.

Beyond cosmetic concerns, we argue that double-end ileo-sigmoidostomy placed in the same location is more convenient, facilitating stoma management and daily irrigation of the rectal stump. It also allows preservation of the muscular wall, probably decreasing the risk of long-term wound dehiscence.

Furthermore, for intestinal continuity restoration, present data suggested that this technique facilitates not only ileorectal anastomosis but also IPAA.

For second step of ileorectal anastomosis,^{2–4,17,18} as in most of CD patients, and in selected patients with UC, we demonstrated that double-end ileo-sigmoidostomy allowed us to perform intestinal continuity restoration through elective approach in 79% of cases, subsequently avoiding the necessity of either midline incision or iterative laparoscopic during the second operation. In contrast, in case of laparoscopic subtotal colectomy with either sigmoidostomy in the midline incision, in the left iliac fossa, or with rectal stump left enclosed in the abdominal cavity, ileorectal anastomosis cannot be made by elective approach and required either open approach or laparoscopy, which are both more complex procedures.

Concerning the second step of IPAA, double-end ileo-sigmoidostomy probably seems to facilitate the procedure using the elective incision (stoma site in the right iliac fossa) for J-pouch construction and rectal closure, followed by laparoscopic proctectomy and anastomosis, as in 100% of the patients of our study, as we reported earlier in 18 consecutive patients undergoing laparoscopic 3-step IPAA in our unit.^{19,20} More recently, we reported 82 consecutive IPAA in whom almost 50% underwent a previous laparoscopic subtotal colectomy with double-end ileo-sigmoidostomy in the right iliac fossa within a similar 11% rate of conversion in patients undergoing IPAA after previous subtotal colectomy or not.²¹ By contrast, if ileostomy and sigmoidostomy are located in 2 different sites, iterative laparoscopy should be probably more difficult and longer. In a recent study including 26 patients undergoing previous laparoscopic subtotal colectomy with rectal stump left in the abdomen, Fowkes et al²² reported a 20% conversion rate to a full midline laparotomy during second step of laparoscopic IPAA. Furthermore, in the “non-converted” patients, a Pfannenstiel incision was made for pouch construction. In this study, pouch construction was always performed through right iliac fossa incision, and rectosigmoid dissection never required conversion into laparotomy.

In conclusion, laparoscopic subtotal colectomy with double-end ileo-sigmoidostomy in right iliac fossa is associated with low morbidity, and facilitates second step of intestinal continuity restoration for both ileorectal and IPAA.

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