Laparoscopic-assisted vs open ileocolic resection for Crohn’s disease

A comparative study

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Received: 12 July 1999/Accepted: 13 December 1999/Online publication: 13 June 2000

Abstract

Background: The objective of this study was to compare laparoscopic-assisted ileocolic resection for Crohn’s disease of the distal ileum with open surgery in two consecutive groups of patients.

Methods: From 1995 until 1998, 48 patients underwent open ileocolic resection at the Academic Medical Center (AMC) in Amsterdam, while 30 patients had laparoscopic-assisted ileocolic resection at the Leiden University Medical Center (LUMC). Patient characteristics, perioperative course, and recovery were compared. Differences between the groups were tested using Student’s t-test for independent groups and chi-square tests when appropriate.

Results: The open and the laparoscopic patient groups were comparable for age, gender, body mass index (BMI), prior abdominal surgery, and length of resected bowel. The conversion rate was 6.6%. Laparoscopic operating times (138 ± 36 min) were significantly longer than those observed in the open group (104 ± 34 min). Discharge was significantly earlier in the laparoscopic group than the open group (5.7 vs 10.2 postoperative days, p < 0.007). Postoperative morbidity did not differ significantly between the patients treated traditionally (14.6%) and laparoscopically (10%).

Conclusion: Compared to open surgery, laparoscopic ileocolic resection for Crohn’s disease is associated with similar morbidity rates, a shorter hospital stay, and improved cosmetic results, justifying the laparoscopic approach as the procedure of choice.

Key words: Laparoscopy — Ileocolic resection — Crohn’s disease — Distal ileum — Small bowel

Since the first reported successful series of laparoscopic colectomies in 1991, an increasing number of mostly retrospective studies of laparoscopic(-assisted) bowel surgery have been published. Prospective reports of the first results of laparoscopic bowel surgery in selected patients have reflected institutional learning curves. Laparoscopic colorectal surgery for malignancy is still controversial, particularly due to several reports of port site metastases [4, 13, 14, 19]. In cases of colorectal cancer, laparoscopy needs to be performed with caution since cure and long-term survival cannot be traded for improved short-term recovery [9]. However, no such controversy exists when dealing with benign diseases. Therefore, laparoscopic colorectal surgery for benign diseases has been met with great enthusiasm and widespread acceptance.

Although a variety of laparoscopic intestinal procedures have been done in different settings, many surgeons have been reluctant to apply them to patients with Crohn’s disease. Thickening of intestinal mesentery, inflammatory adhesions, and masses and unsuspected fistulas or abscesses can significantly complicate this already technically challenging procedure [11]. Some papers have dealt specifically with laparoscopic bowel surgery for inflammatory bowel disease [1, 2, 8, 10, 11, 12, 20]. The procedures mainly include stoma surgery; ileocolic resection; left, right and (sub)total colectomy for Crohn’s disease; and subtotal or even restorative proctocolectomy. Most of these reports have concerned series of highly selected patients. The only available studies comparing open and laparoscopic surgery assessed two patient groups that underwent surgery in one institution, making a selection bias inevitable [8, 20].

The object of this study was to compare two consecutive groups of patients with Crohn’s disease of the distal ileum, one having laparoscopic-assisted ileocolic resection in one hospital (LUMC), the other having open ileocolic resection in a nearby hospital (AMC) during a similar time period.
Patients were placed in the French position. A three-trocar approach was used (subumbilical, 10-mm; light fossa, 10-mm; suprapubic, 5-mm). The laparoscopic part of the operation was done by a laparoscopic surgeon. The open part of the operation was done by a surgical trainee under supervision. Enlargement of the planned incision was considered a conversion to open surgery.

Laparoscopic technique

Patients were placed in the French position. A three-trocar approach was used (subumbilical, 10-mm; right fossa, 10-mm; suprapubic, 5-mm). The surgeon stood between the legs of the patient with the camera holder in his left hand and monopolar cautery scissors in his right hand. The surgeon’s assistant was standing on the left side of the patient manipulating the cecum with a retractor. Insertion of the videoscope through the trocar in the right fossa enabled a safe laparoscopic mobilization of the right colon with optimal visualization of the right ureter and duodenum. Ureter stent placement was therefore considered unnecessary. After full mobilization of the right colon, the distal ileum and the cecum were exteriorized through a 4-6 cm vertical incision through the umbilicus. Vascular ligation, bowel division, and a sutured side-to-end anastomosis were performed extracorporeally. The laparoscopic part of the operation was done by a laparoscopic surgeon. The open part of the operation was done by a surgical trainee under supervision. Enlargement of the planned incision was considered a conversion to open surgery.

Open technique

Through a midline incision, the right colon was mobilized. After vascular and bowel division, usually a sutured side-to-end ileocolic anastomosis was performed. The procedure was done by a surgical resident supervised by an experienced surgeon.

At both AMC as well as LUMC, the extent of bowel resection was determined by the macroscopic involvement of the bowel. Postoperatively, mobilization, start of oral feeding, and discharge were allowed as soon as possible at both hospitals.

Data analysis

Parameters including age, gender, body mass index (BMI), preoperative steroid dosage, tube feeding, prior abdominal operations, length of resected bowel, and additional procedures were assessed for both the open group and the laparoscopic-assisted groups in order to determine whether the patient groups were comparable. The perioperative course of the laparoscopic group of patients was compared with the open group by evaluation of the conversion rate in the laparoscopic group, operating times, blood loss, ability to tolerate >1000 ml of fluids, first bowel movement, narcotics required in the first 72 hs, length of postoperative hospital stay, and presence of perioperative complications. Results were compared according to the intention-to-treat principle.

Mean operating times, blood loss, and morbidity rates were assessed in the laparoscopic group according to year of surgery in order to determine a learning curve effect, since all laparoscopically treated patients were operated by or under the supervision of one laparoscopic surgeon (W.A.B).

Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS-PC for Windows 7.5). Differences between groups were tested using Student’s t-test for independent groups. When appropriate, chi-square tests were done to determine differences between groups. A value of p < 0.05 was considered statistically significant.

Results

The open and laparoscopic patient groups were comparable for age, gender, body mass index (BMI), and length of resected bowel (Table 1). More patients in the open group had prior abdominal surgery (25%; appendectomy, n = 8; colostomy, n = 1, lower midline incision for gynecological indications, n = 3) than those in the laparoscopic group (20%; appendectomy, n = 4; laparoscopic cholecystectomy, n = 1; laparoscopic colostomy, n = 1). Preoperatively, the laparoscopic patient group had a significantly more extensive medical treatment for Crohn’s disease, since preoperative steroid dosages and the incidence of tube feeding were higher in this group (Table 1). More additional procedures were done in the laparoscopic group (33%) than in the group that had traditional surgery (19%) (Table 2).

Two of the 30 attempted laparoscopic ileocolic resections were converted to open surgery. In the second consecutive patient, an ileosigmoidal fistula was found, necessitating conversion to laparotomy. In the second patient in whom laparoscopic resection was not completed, conversion was done because of suspicion of malignancy during laparoscopy. A right colectomy was done according to oncologic principles. Pathologic examination of the specimen revealed an Astler Collar C1 adenocarcinoma of the ileocecal valve.

Laparoscopic operating times (138 ± SD 36 min) were significantly longer than those observed in the open group (104 ± SD 34 min). Although not significantly so, blood loss tended to be higher in the laparoscopic group. Resumption of an oral diet (fluid intake and normal diet) was earlier