Laparoscopic-Assisted Resection of Colorectal Carcinoma

Five-Year Audit


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INTRODUCTION: The place of laparoscopic-assisted colectomy for colorectal carcinoma is controversial. This study reviewed a consecutive series of patients who underwent laparoscopic-assisted resection of colorectal carcinoma in the past five years. METHODS: Two hundred seventeen laparoscopic-assisted resections of colorectal carcinoma were attempted starting in April 1992. Initially, we only selected patients with metastatic disease or patients who were older than 65 years. Subsequently, both palliative and curative resections were attempted in patients with a suitable tumor, with no age limitation. Thus, all suitable patients were randomly assigned to receive either laparoscopic-assisted or conventional open surgery. RESULTS: Data collection was completed in 201 patients. In 22 patients open surgery was performed after a diagnostic laparoscopy. In the remaining 179 patients (90 males) in whom laparoscopic dissection was actually performed, the mean follow-up was 19.8 months, and the mean age was 66.3 years. The procedures performed included right hemicolectomy or extended right hemicolectomy (30 patients), transverse colectomy (2 patients), left hemicolectomy (3 patients), sigmoidectomy (48 patients), anterior resection (59 patients), and abdominoperineal resection (37 patients). Thirty-two (17.7 percent) procedures were converted to open surgery. The mean operation time was 203 minutes. The median blood loss was negligible, and the median requirement of transfusion was zero. The median number of postoperative parenteral analgesic injections was three. The median time to resume diet and hospital discharge were four and six days, respectively. The operative mortality was 1.7 percent. The survival rates at four years were 100, 88.3, and 64.5 percent for patients with Dukes A, B, and C disease, respectively. There was only one (0.65 percent) port-site recurrence. CONCLUSION: Laparoscopic-assisted resection of colorectal carcinoma was technically feasible and safe. It allowed early postoperative recovery with satisfactory long-term survival. Since the introduction of laparoscopic cholecystectomy, laparoscopic surgery has been attempted and applied to many surgical operations. Its acceptance in colorectal malignancy, especially for operation with curative intent, is controversial. Concerns have been raised as to the adequacy of tumor clearance and to the possibility of dissemination of tumor cells by the laparoscopic procedure. On the other hand, the procedure offers the benefit of minimal invasiveness. Its true place can only be determined by prospective, randomized studies with long follow-up results. Our unit has embarked on a series of such randomized trials. Before the results of these randomized studies become available, international consensus is that the procedure should be performed as part of a study. Because the results of cohort studies of laparoscopic surgery for colorectal malignancies may shed light on the potential advantages and disadvantages of the procedure, auditing a large series of patients can be beneficial. This study presents an audit of the procedure performed on consecutive patients who underwent laparoscopic-assisted colectomy for colorectal carcinoma in our unit in the past five years.

PATIENTS AND METHODS

Patient Selection

In the initial part of the study, we only selected consenting patients with metastatic disease or elderly patients (aged 65 years or older). Encouraged by the results, we subsequently released our restriction and performed resections for patients in any age group. In the last part of the study, we stratified the patients according to tumor site, and entered them into randomized studies to receive either laparoscopic-assisted resection or conventional open resection. However, we excluded the following groups of patients:
patients with tumors larger than 6 cm or with a tumor infiltrating to the adjacent organs at sonography, computerized tomography, or both, patients who had previous major abdominal operations near the field of the colorectal operation, patients who did not consent to the procedure, and patients who had intestinal obstruction or perforation.

Preoperative Management

All patients underwent preoperative colonoscopy and biopsy of the tumor. For tumors situated 25 cm above the anal verge, barium enemas were performed to confirm the site of the lesion. Ultrasonography was used to gauge the size of the tumor and to look for evidence of local infiltration, distant metastasis, or both. Computerized tomography was performed if the patients had locally advanced or bulky disease. Bowel preparation was with four liters of polyethylene glycol electrolyte solution the day before the operation. Systemic prophylactic antibiotics consisting of cefuroxime 750 mg and metronidazole 500 mg were administered intravenously at induction of anesthesia. Urinary catheters and nasogastric tubes were routinely used.

Operative Procedures

The operations were performed by surgeons experienced in both laparoscopic and colorectal surgery. Our techniques have been described previously. In principle we mobilized the relevant segment of bowel and transected the lymphovascular pedicle intracorporeally. If reanastomosis of the bowel was planned, one of the port wounds was extended to deliver the specimen under the protection of a plastic bag. The division of the remaining mesentery, the marginal artery, and bowel were performed extracorporeally. For left-sided tumors the anvil of a circular stapler was inserted into the proximal bowel, the stump was put back into the peritoneal cavity, pneumoperitoneum was re-established, and intracorporeal anastomosis was performed. For right-sided tumors the anastomosis was performed extracorporeally. For abdominoperineal resection the specimen was removed via the perineal wound.

Postoperative Care and Data Collection

Diet was resumed postoperatively as soon as bowel function returned clinically. Pethidine 1 mg/kg (or morphine of equivalent potency) was given every four hours on demand. The patients were discharged home when fully ambulatory. The following parameters were measured prospectively: operation time, blood loss and transfusion, postoperative analgesic requirement, time to resume normal diet, duration of hospital stay, morbidity, and mortality. The specimens were fixed unpinned and examined for margins clearance and Dukes staging. All patients were followed up regularly at three-month intervals for clinical examination and carcinoembryonic antigen testing.

RESULTS

Starting in April 1992, 217 laparoscopic-assisted resections for colorectal carcinoma were attempted. Data collection was completed in 201 patients. In the remaining 16 patients the operations were performed shortly before this review and their data were not included in the analysis. In 22 patients laparotomy was performed after a diagnostic laparoscopy. These operations were not strictly laparoscopic-assisted operations, therefore they also were excluded from the analysis.

In the remaining 179 patients the mean follow-up was 19.8 (range, 0.3-62) months. There were 90 males and a mean age of 66.3 (standard deviation, 11.9) years. The locations of tumors were 6 at the cecum, 16 at the ascending colon, 7 at the hepatic flexure, 3 at the transverse colon, 3 at the descending colon, 55 at the sigmoid colon, 85 at the rectum, and 4 at the anal canal. The distribution did not represent the overall distribution of all colorectal cancers because of the different stages of development of the laparoscopic technique for tumor at different sites. The pathologic staging was Dukes A in 10 patients, B in 91 patients, C in 51 patients, and D in 27 patients. Procedures performed included right hemicolectomy or extended right hemicolectomy (30), transverse colectomy (2), left hemicolectomy (3), sigmoidectomy (48), anterior resection (59), and abdominoperineal resection (37). Thirty-two (17.7 percent) procedures were converted to open surgery. If open operation after diagnostic laparoscopy is also considered as conversion, the rate becomes 26.9 percent. Mean operating time was 203 (standard deviation, 51) minutes. Blood loss was recorded as insignificant in 107 cases; the median was therefore zero (range, 0-3000 ml). Median blood transfusion was also zero (range, 0-10 pints). The median of postoperative analgesic requirement was three (range, 0-45) injections. Median time to resume diet and discharge were four and six (range, 2-25 and 2-43) days, respectively. To look at