Impact of a Laparoscopic Resection on the Quality of Life in Rectal Cancer Patients: Results of 135 Patients

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Abstract

Purpose. To investigate the impact of a laparoscopic resection on the quality of life in rectal cancer patients.

Methods. This study included 135 patients (laparoscopic resection [LR] 65 cases and open resection [OR] 70 cases). The European Organization for Research and Treatment of Cancer QLQ-C30 and QLQ-CR38 questionnaires were used to measure the quality of life before the operation, then 1 week, 3 months, and 1 year after the operation.

Results. Eleven (16.9%) patients underwent a conversion from laparoscopic to open surgery. The incision length and blood loss both decreased significantly in the LR group in comparison to the OR group (P < 0.05). Recovery of the gastrointestinal function, bladder function, and ambulation was more rapid in the LR group (P < 0.05). The patients in the LR group reported better global health status (33.3 vs 25.0, P < 0.001), body image (77.8 vs 66.7, P = 0.008), and less pain (33.3 vs 50.0, P = 0.009) 1 week after operation. Better body image was reported in the LR group even 1 year after the operation (P < 0.05). Fewer financial difficulties were reported by patients in the LR group (P < 0.001). No significant differences were found between two groups on other scales.

Conclusions. This study showed that the quality of life benefits due to minimally invasive laparoscopic surgery were evident only in the immediate postoperative period. A laparoscopic rectal resection therefore provided only better cosmetic benefit over the longer term.

Key words Rectal cancer · Laparoscopic technique · Comparative study · Quality of life

Introduction

Superior short-term outcomes including less blood loss, decreased pain, and faster recovery with no impaired long-term outcome are reported in association with laparoscopic colon surgery.1–3 These findings have encouraged increasing numbers of surgeons to attempt to apply laparoscopic techniques in rectal cancer resection.4–9 A precise resection is required for rectal cancer surgery in a narrow cavity to preserve the bladder and sexual function. It is unclear whether laparoscopic procedures will provide a better quality of life (QOL).

There are obvious disagreements between limited numbers of studies.4 A better short-term and long-term postoperative QOL after laparoscopic resection has been reported.10–12 However, several studies failed to find any long-term QOL benefits after laparoscopic rectal resections.13 Moreover, some centers reported a higher incidence of male sexual dysfunction.14–17 Rectal cancer is one of the most common malignant tumors in China.18 This prospective study used the general questionnaire EORTC (European Organization for Research and Treatment of Cancer) QLQ-C30 and colorectal cancer-specific questionnaire QOL-CR38 to measure the QOL of rectal cancer patients undergoing laparoscopic resection (LR) and open resection (OR). The aim was to evaluate the impact of laparoscopic resection on the QOL in rectal cancer patients.

Patients and Methods

Patients

This was a prospective nonrandomized study. Two urban centers, the Department of Surgical Oncology of the second affiliated hospital, Zhejiang University (Hangzhou) and the Department of Anus and Large Intestine of the second affiliated hospital, Wenzhou University
(Wenzhou), were included in this study. From June 2005 to June 2007, patients with rectal cancer patients due to undergo surgery were screened for inclusion into the study. The study was approved by the ethics committees of both hospitals. Written informed consent was obtained from all patients. The type of operation mode was selected by the patients.

**Inclusion Criteria**

The inclusion criteria required that patients: (1) were at least 18 years old and agreed to join the study; (2) had biopsy-proven single-site primary rectal adenocarcinoma or high-grade intraepithelial neoplasia with a suspicion of adenocarcinoma, which required an anterior or abdominoperineal resection — rectal cancer being defined as carcinoma ≤15 cm from the anal verge; (3) had no history of malignancy; (4) had no previous colorectal surgery; (5) had no bowel obstruction; (6) had no evidence of metastasis by physical examination, chest roentgenogram, and computed tomography of liver and pelvis.

**Surgery and Adjuvant Therapy**

Both centers had performed more than 30 laparoscopic rectal operations and had considerable experience with open procedures before the study. The laparoscopic resection for rectal cancer followed the standard oncological principles, including adequate distal and radial margins, ligation of the superior rectal/inferior mesenteric artery at its origin, and total mesorectal excision (TME), as in the open operation. Laparoscopic intra-abdominal anastomosis was performed by the standard double-stapling technique. Anastomosis via small incision was not allowed. Anal-enhancing perfusion of iodophors was routinely performed to test the integrity of the anastomosis. Conversion to an open procedure was chosen if the laparoscopic approach could not achieve a complete resection or required an incision greater than 10 cm. No ileostomy was routinely performed. A gastric tube was continued until the first passing flatus. Subsequently a semi-liquid diet was administered after at least 24 h of a fluid diet. The urinary catheter was removed after the micturition desire resumed. Ambulation was encouraged the day after the operation. Patient-controlled analgesia (PCA) was a free choice. Parenteral analgesics were given to patients without PCA when necessary. Patients were discharged when a normal diet was tolerated without severe complications. Concurrent radiochemotherapy was given to stage II and III patients before the operation. Postoperative chemotherapy with mFOLFOX6 was given 3 weeks after the operation.

**QOL Measurement**

The QOL was measured by the 3rd Chinese version of the EORTC QLC-C30 questionnaire and the QLQ-CR38 questionnaire. The reliability, responsivity, and validity of the Chinese version of QLC-C30 and QLQ-CR38 have been proven. The details of the questionnaires have been described by Yang et al. The questionnaire was administered before the operation, then 1 week, 3 months, and 1 year after the operation. The questionnaires at 3 months and 1 year after the operation were collected during a return visit or by mail. The application of questionnaires was approved by the EORTC.

**Statistical Analysis**

The scoring procedures and the analysis methods for missing data followed the EORTC QLC-C30 scoring manual. The functional scale and the global health status ranged from 0 to 100, with a higher score representing a higher level of functioning and higher QOL. However, higher scores for the symptom scale represented a higher level of symptomatology. Analysis was by intention-to-treat (ITT). Follow-up was closed by June 2008. The numeration data were analyzed by either the χ2 test or the Fisher exact probability test. The Gaussian distribution data were described by $\bar{x} \pm s$ and analyzed by the t-test. The non-normal distribution data were described by the median and inter-quartile range (M, IQR) and analyzed by the Mann–Whitney U-test. All tests were two-sided and performed using the SPSS 11.0 software package (SPSS, Chicago, IL, USA). A P value of less than 0.05 was considered to be statistically significant, whereas a median difference more than 10 points represented a clinically significant difference.

**Results**

**Demography**

During the study, 182 eligible patients with rectal cancer had surgery in both centers. One hundred and thirty-five patients agreed to join the study, including 65 patients in the LR group and 70 patients in the OR group. Five showed metastasis during the operation including 3 with liver metastasis, 1 with pelvic metastasis, and 1 with para-aortic lymph node metastasis. Nineteen patients had an abdominoperineal resection. The other 116 patients had an anterior resection including 84 TME for middle — low cancer. Ninety-five patients accepted adjuvant radiochemotherapy, including 43 in the LR group and 52 in the OR group. The two groups were balanced with respect to the patients’ baseline charac-