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# Laparoscopic rectal resections and fast-track surgery: what can be expected?

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## KEYWORDS:

Laparoscopic rectal resections;  
Fast track surgery;  
Short-term results;  
Length of stay

## Abstract

**BACKGROUND:** We present the results of combining protocols of standardized laparoscopic rectal resection (LRR) and perioperative fast track care.

**METHODS:** Patients undergoing LRRs were identified from a prospectively maintained, institutional review board–approved database. Perioperative fast track care and laparoscopic operations were performed according to a standardized system.

**RESULTS:** Thirty-seven patients were included. Conversion was performed in 2 males (5%). The mean operative time was 184 minutes (range 109 to 410 minutes). The mean hospital stay was 3.0 days (range 1 to 8 days) with 90% of patients discharged less than 5 days after surgery. No anastomotic leaks or mortality occurred and the in-hospital complications rate was 8%. Readmission occurred in 3 patients (8%). No specimen had involved distal or circumferential resection margins.

**CONCLUSIONS:** LRRs can be performed safely and effectively for rectal pathologies. Laparoscopy in conjunction with modern perioperative care provides rapid recovery with efficient use of hospital resources.

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Laparoscopic low anterior resection and laparoscopic proctosigmoidectomy for rectal and distal sigmoid disorders have not gained the same acceptance among colorectal surgeons as segmental laparoscopic colon resection. The feasibility, safety, and short- and long-term oncological outcome have been reported to be equal to open rectal resection.<sup>1–3</sup> This has been verified in a recent Cochrane review of laparoscopic resections in colorectal cancer; however, the long-term results were still requested.<sup>4</sup> Nevertheless, the lower frequency of laparoscopic rectal resections (LRRs) is probably due to the technical chal-

lenges of the rectal dissection inside the narrow pelvis, and to the fact that only recently have data been published showing that laparoscopic approach may have the same results as open surgery for rectal cancer.<sup>5</sup> The potential advantages of LRR should equal laparoscopic colectomy for short-term end points such as reduction in hospital stay, shorter postoperative ileus, smaller abdominal wounds with less pain, and reduced frequency of wound complications.<sup>6</sup> However, the traditional arguments against laparoscopic colorectal surgery, including longer operative time, increased equipment costs, and high rates of conversion that lead to increased costs and morbidity, as well as increased use of hospital resources, may be even more salient due to the complexity of LRR. Some authors have provided results showing that these problems may be overcome.<sup>7–9</sup>

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Standardization of surgical technique has already improved the quality of open rectal cancer surgery<sup>10</sup> and now should be applied to laparoscopic rectal dissection. Documentation of equal or improved patient outcomes with equivalent or reduced hospital costs compared to open rectal surgery should increase the popularity of the laparoscopic approach. To truly realize the potential benefits of laparoscopy, the surgical technique needs to be used in conjunction with a modern, standardized enhanced recovery program that includes postoperative order sets to accelerate recovery and shorten hospital stay.

The purpose of this report is to describe the results of a standardized laparoscopic technique combined with a fast-track perioperative care pathway for patients undergoing rectal resections.

## Methods

Prior approval for this study was obtained from the institutional review board (IRB), and our patients operated with laparoscopic access for rectal and rectosigmoid pathologies were entered prospectively into an IRB-approved database from August 2005 through November 2007. The database is registered in the National Library of Medicine (<http://ClinicalTrials.gov> NCT #: NCT00622557). Only patients undergoing low anterior resections either as total mesorectal excision (TME) or partial mesorectal excision (PME) were included. All patients were operated on by the most experienced colorectal staff surgeon (C.P.D.). Patients with body mass index > 45 or prior major or multiple abdominal surgeries were not considered candidates for LRR.

Collected data included age, body mass index, type of procedure, length of operation, estimated blood loss in milliliters, complications, postoperative length of stay (LOS; defined as the difference between surgery date and discharge date), reoperations, mortality, readmittance within 30 days. The pathological variables of distal and circumferential (CRM) resection margins, TME grading, and number of detected lymph nodes were recorded by retrospective review of the pathology reports.

## Operative technique

The same operative setup and standardized technique were applied for all patients.<sup>8,9,11</sup>

## Fast-track perioperative care protocol

As previously described by Delaney et al<sup>12</sup> and Basse et al,<sup>13</sup> perioperative care was standardized to promote early mobilization and diet. Importantly, all patients were given information and educated both orally and with brochures preoperatively at the outpatient clinic, describing the perioperative care pathway and expected outcomes. Oral me-

chanical bowel preparations were used. Pre-emptive analgesia with oral diclofenac 100 mg was given the evening before surgery. Orogastric tubes were used intraoperatively and removed before extubation. Intra-abdominal drains were rarely used. Postoperative analgesia was provided with a patient-controlled intravenous morphine pump (PCA) for 12 hours to 18 hours postoperatively. Supplementary ketorolac was administered intravenously. Oral analgesia was started on the first postoperative day if diet was tolerated, and the PCA discontinued. Liquids were offered ad libitum after surgery and normal diet was started from the morning of postoperative day 1. Thereafter, dietary intake was without any restrictions.

Patients were encouraged to ambulate as soon as possible after the procedure, recommending 5 walks outside the room the first postoperative day. Urinary catheters were generally removed the first morning after surgery, and intravenous fluids were stopped once the patients tolerated adequate oral intake.

Discharge criteria included the tolerance of fluids and solid diet, adequate oral analgesia, passage of flatus or stool, and the patient being happy to be discharged with adequate home support. Telephone follow-up was performed on the first or second day after discharge and an outpatient visit was planned for 30 days postoperatively.

## Results

Thirty-seven patients were identified during the study period who underwent LRR for the following indications: malignancy (carcinoma in the rectum, or rectosigmoid junction) in 17 (46%), rectal polyp in 4 (11%), inflammatory disease (diverticulitis with phlegmon, abscess, or fistula) in 14 (38%), and for Crohn's proctitis and left colonic ischemia in 1 patient each (Table 1). Five (14%) patients had a diverting loop ileostomy to protect a coloanal anastomosis. Conversion was performed in 2 males (5%) because of a long and narrow pelvis that made transection at the pelvic floor difficult. The mean operative time was 184 minutes (range 109 to 410 minutes). The patient with the 410-minute operation time had a low rectal cancer and underwent a laparoscopic procedure with intersphincteric resection with handsewn coloanal anastomosis. Mean estimated blood loss was 105 mL (range 20 to 400 mL).

The mean hospital stay was 3.0 days (range 1 to 8 days) overall, and 2.8 days for completed cases. For the 2 converted patients, the hospital stay was 4 days. For patients younger than 65 years, the mean hospital stay was 2.6 days, compared to 3.6 days for the patients age 65 years or older. Ninety percent of the patients were discharged at postoperative day 4 or earlier.

No anastomotic leaks or mortality occurred and the overall morbidity (in-hospital and 30-day readmissions) was 16% (Table 2). Unplanned readmissions within 30 days occurred in 3 (8%) patients. Seven patients (19%) had a

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