

Complications of laparoscopic protective loop ileostomy in patients with colorectal cancer

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Citation

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Abstract

Background: A loop ileostomy is constructed to protect a distal colonic anastomosis usually as part of a laparoscopic colectomy. Closure of this temporary stoma is generally performed within 12 weeks after the primary surgery. Stoma-related complications can occur following both the construction and the closure of the stoma and adversely affect the quality of life of cancer patients. The aim of this study was to evaluate the predisposing factors and quantify stoma-related complications. **Methods:** Between January 2000 and December 2004 sixty-eight patients with colorectal cancer underwent laparoscopic colectomy and laparoscopic construction of a temporary protective loop ileostomy. Stoma-related complications and operative morbidity following ileostomy closure were analysed retrospectively by reviewing the medical records and the stoma-therapist charts. **Results:** Stoma-related complications occurred in 17 of the 68 patients (25%), and 11 patients (16.1%) had complications after ileostomy closure. There was no mortality. Old age (>70 years), BMI >27 and late ileostomy closure (>3 months) were associated with higher morbidity. **Conclusion:** Laparoscopic loop ileostomy is effective and safe and reliably protects a low rectal anastomosis. Early ileostomy closure (less than 12 weeks after primary surgery) could reduce the incidence of stoma-related complications in patients with colorectal cancer and improve their quality of life.

INTRODUCTION

In laparoscopic colorectal cancer surgery, a temporary loop ileostomy is constructed to protect a distal colonic anastomosis and prevent pelvic sepsis, especially in presence of a low pelvic anastomosis [12]. Laparoscopic protective loop ileostomy is easy to construct and to close and it is therefore considered by many surgeons the preferred method for fecal diversion [345] after a laparoscopic colectomy.

Besides, in contrast to loop transverse colostomies, ileostomies are less odorous and require fewer appliance changes. Construction and closure of a defunctioning loop ileostomy are associated with several complications. Factors considered to predispose to stoma-related complications are high body mass index (BMI), diabetes, use of steroids and immunosuppressive therapy, surgical technique and length of time between construction and closure.

Ileostomy closure and restoration of the intestinal continuity are usually performed 9 to 12 weeks after construction [67]. Because ileostomy closure is not a high-priority procedure this operation is often postponed increasing the risk of complications such as dehydration, prolapse, retraction and parastomal herniation [89]. Moreover, a loop ileostomy, like any stoma, adversely affects the quality of life [101], which is

further impaired if stoma-related complications occur, especially in cancer patients. The aim of this study was to evaluate the predisposing factors to stoma complications and a possible association between duration of fecal diversion and complications and to quantify the overall stoma-related morbidity.

PATIENTS AND METHODS

The records of 68 consecutive patients with a temporary loop ileostomy operated on between January 2000 and December 2004 at the Department of Surgery of our institution were retrospectively analysed. Only protective, temporary loop ileostomies constructed at the end of a laparoscopic resection in patients with colorectal cancer were included in this analysis. All ileostomies were constructed with the intention that they should be closed within 3 months after the primary operation. Before closure, a water-soluble enema examination was carried out to demonstrate adequate healing of the anastomosis, absence of stenosis and sinuses. Data were collected regarding the surgical details of the ileostomy construction and closure and stoma-related morbidity.

All patients were seen by a stoma-therapist on a regular

basis, who registered stoma-related problems and complications, both in the hospital and in the outpatient department. This information was analysed and combined with the data obtained from the medical records.

Details of laparoscopic colectomies performed in the selected group of patients with colorectal cancer who had laparoscopic ileostomy at the end of the procedure are shown in Table 1. We performed laparoscopic loop ileostomy mainly in the context of laparoscopic anterior resections of rectal cancer (41 out of 68 cases, 60.3%), followed by laparoscopic sigmoid resections (14 cases, 20.5%), laparoscopic left hemicolectomies (4 cases, 5.8%). In the remaining 9 cases (13%), laparoscopic ileostomy was constructed at the end of a laparoscopic total colectomy performed to remove synchronous colonic cancers.

Figure 1

Table 1: Laparoscopic procedures in 68 patients with temporary loop ileostomies

Rectal cancer	Laparoscopic anterior rectal resection	41
Sigmoid Cancer	Laparoscopic sigmoid resection	14
Multiple neoplasms	Laparoscopic total colectomy	9
	Laparoscopic left hemicolectomy	4
Total		68

LAPAROSCOPIC ILEOSTOMY CONSTRUCTION AND CLOSURE TECHNIQUE

Preoperatively, the enterostomal therapist marks the site of the ileostomy with the patient standing, at an adequate distance from bony prominences and umbilicus.

We use a three-trocar technique for laparoscopic colectomy and once the resection and anastomosis are completed we construct laparoscopically a protective loop ileostomy when the risk of dehiscence is high. The distal ileum about 20cm proximal to the ileocecal valve is brought out under direct vision through an enlargement of the trocar site in the right lower abdominal quadrant ensuring adequate fascial opening and correct limb orientation. Once the loop is drawn through the abdominal wall, a rod is used to support it, and the correct orientation is checked again laparoscopically at the end of the procedure.

Closure of the ileostomy includes a peristomal, elliptical skin incision, mobilization of the proximal and distal limbs down to the fascia and closure of the opening using interrupted polygalactin sutures (3-0 Vicryl). Occasionally, direct closure of the opening is not possible due to scarring or discrepancy. In these cases a segment of ileum including

the stoma is resected and continuity restored using an end-to-end anastomosis. After reinsertion of the bowel back into the abdominal cavity, the fascia is sutured and the skin is closed.

POSTOPERATIVE MANAGEMENT

After surgery, the patient is given adequate instruction on stoma care: replacement of the ileostomy bag and stoma hygiene. Recommendations regarding the necessary changes in the diet are given and the importance of adequate oral fluid intake to minimize the risk of dehydration is emphasised. The supporting rod is generally removed between the 5th and 7th postoperative day, depending on the amount of edema: the greater the swelling, the earlier it is removed. The enterostomal therapist visits each patient twice a month until the ileostomy is taken down.

RESULTS

Sixty-eight patients (31 female, 37 male) with a median age of 56 years (range 38-83 years) were included in the study. All patients underwent laparoscopic colectomy for colorectal cancer (Table 1) and ileostomy was created laparoscopically at the end of the procedure.

Stoma-related complications were observed in 17 of the 68 patients (25%) (Table 2).

Figure 2

Table 2: Stoma-related complications

Stenosis	1
Dehydration with renal failure	3
Electrolyte imbalance	1
Peristomal dermatitis	5
Prolapse	4
Parastomal hernia	2
Retraction	1
Total	17 (25%)

Two patients were readmitted due to stoma-related complications (one case of dehydration from high-output stoma with renal failure and one case of symptomatic stomal prolapse) and were treated with early ileostomy closure.

The stoma-related complications in the remaining 15 patients were managed non-operatively either as outpatients or at the moment of ileostomy closure (e.g. prolapse, parastomal hernia). The majority of these complications

were effectively treated by the enterostomal therapist (e.g. by changing the appliance in the case of skin rash or by digital dilation in case of stenosis). At the end of follow-up, all the ileostomies had been closed after a median period of 71 days (range 43-141 days) but only 45 (65%) had been closed within the expected period of 3 months after construction.

The remaining 23 patients (35%) had a medical reason for delayed closure (anastomotic leak or fistula, prolonged recovery, or postoperative radiotherapy). In only 6 cases (8.8%) postoperative complications occurred early after ileostomy creation (within 3 months) whereas in 11 cases (16.1%) they occurred late (after 3 months) (Fig. 1).

Old age (>70 years) and BMI >27 were associated with a higher morbidity (Fig. 2; Fig. 3)

In our study, we did not have small intestinal obstruction after ileostomy creation and we believe this is due to the fact that all the ileostomies were constructed laparoscopically, under direct vision with the possibility to ensure the correct orientation of the loop.

The median admission time for ileostomy closure was 8 days (range 4-16 days) and there was no postoperative mortality.

Eleven patients (16.1%) experienced complications after ileostomy closure (Table 3): one case of anastomotic leak requiring reanastomosis; two cases of small bowel obstruction due to transitory edema of the anastomosis and treated conservatively; 5 cases of wound infection (7.3%) treated with drainage and broad-spectrum antibiotics. During the follow-up period, incisional hernia at the site of the previous stoma developed in 3 patients (4.4%).

DISCUSSION

In our retrospective series of 68 cases of protective loop ileostomy following colonic resection for colorectal cancer, 17 patients developed stoma-related complications (25%). The incidence of complications of loop ileostomy in published series ranges from 3 to 93% [12,13,14]. These complications have a significant impact on patients whose quality of life is already compromised by the presence of a stoma. Most complications were minor and treated effectively by the enterostomal therapist; nevertheless, even mild complications impair quality of life [15]. Small bowel obstruction, one of the most common complications associated with temporary ileostomy [16] was not observed in our series, presumably because all the ileostomies were

constructed laparoscopically under direct vision, ensuring the correct orientation of the loop. Besides, the reduced incidence of intrabdominal adhesion after laparoscopic surgery may decrease the tendency to postoperative small bowel obstruction.

We had significantly less complications in the early compared with the late period after ileostomy construction, but we had to operate on 2 patients and close the ileostomy prematurely because of severe dehydration with renal failure and symptomatic stomal prolapse, respectively.

High body mass index (>27) and old age (>70 years) were associated with higher morbidity in our series, in accordance with several previous reports [17,18]. However, most of the stoma-related complications presented late (>3 months) after the construction of the ileostomy. We therefore believe that many complications could have been avoided if the ileostomy had been closed earlier.

The incidence of complications following ileostomy closure was 16.1% in our series; previous studies reported incidences ranging from 2 to 33% [15,19]. The most frequent complication after ileostomy closure was wound infection (5 cases, 7.35%), higher than previously reported [620], probably due to the fact that the wound was left partially or completely open.

During follow-up period, 3 incisional hernias (4.4%) at the site of the previous stoma were seen, but this number will probably increase with a longer period of follow-up.

Early ileostomy closure (within 3 months after construction) is feasible in most cases and should be encouraged and this will probably reduce stoma-related complications and improve the quality of life in our patients.

Figure 3

Table 3: Complications of ileostomy closure in 11 of the 68 patients (16.1%)

Anastomotic leak	1
Wound infection	5
Small bowel obstruction	2
Incisional hernia	3
Total	11 (16.1%)

Figure 4

Figure 1: Time of closure and onset of stoma related complications in 17 patients in the period after ileostomy construction

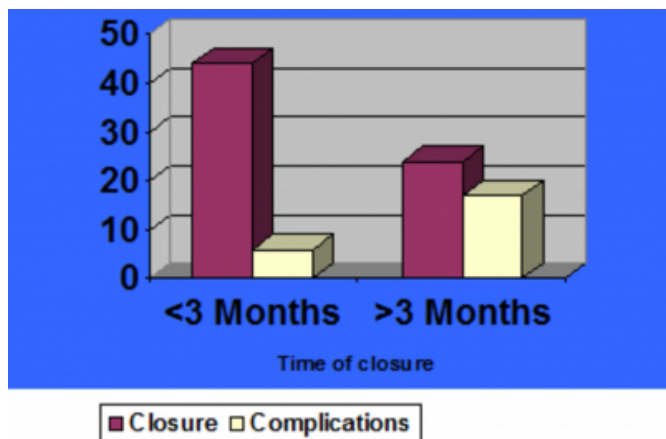


Figure 5

Figure 2: Ileostomy: BMI and morbidity

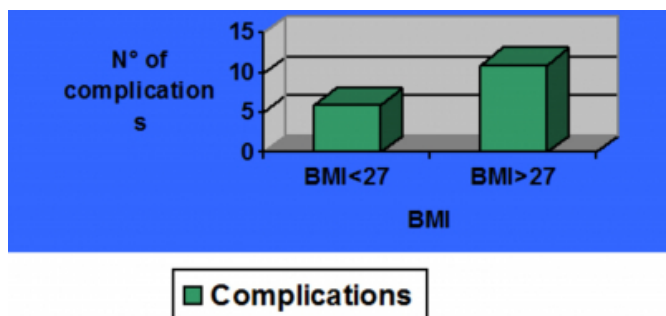
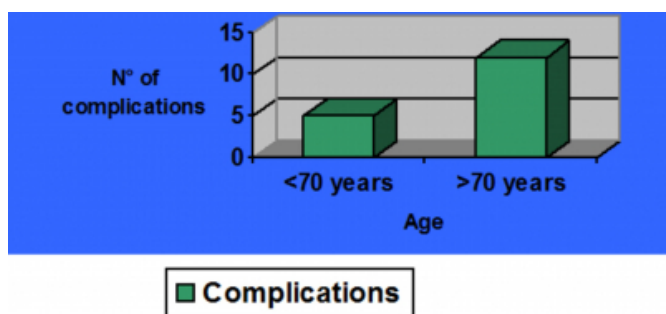


Figure 6

Figure 3: Ileostomy: Age and morbidity



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