

Stoma Reversal, A Hospital-Based Study of 32 Cases.

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Citation

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Abstract

Background/Objective: Formation of intestinal stoma is a common surgical practice. In this retrospective study we aim to study the indications for stoma creation, complications of stomas, timing and methods of stoma reversal, reasons for any delays and post-reversal complications. **Material and Methods:** Charts of patients who underwent stoma creation and reversal over a 3 year period from 2005 November to 2008 October at Patan Hospital are included in this study. **Results:** A total of 32 stomas were created out of which 23 were reversed. Overall pre- and post-takedown complications were 39% and 52%, all of which were minor complications, not requiring major interventions. There was no significant difference in outcome due to early vs. late reversal, types of anesthesia, or reversal technique. **Conclusion:** Reversal of temporary stomas can be done safely at an early date, with no demand of special anesthesia, requiring minimal access to the abdomen and with safe early discharge without expecting serious complications or readmissions.

INTRODUCTION

Formation of an intestinal stoma is frequently a component of surgical intervention for diseases of the small bowel and colorectal pathology. The most common intestinal stomas are ileostomies and colostomies; either end or loop stomas. A number of non-randomized studies¹⁻³ and randomized controlled trials⁴⁻⁷ have been performed in an effort to determine which of these two stomas is superior. Both types of stoma effectively defunction the distal bowel. However, loop ileostomies appear to be associated with a lower incidence of complications related to stoma formation and reversal, though they may have a high risk of postoperative intestinal obstruction⁷. Both stomas are comparable with respect to patient quality of life, and the degree of subsequent social restriction is influenced more by the number and type of complications than by the types of stoma formed⁸.

Reversal of a loop stoma can be carried out under local, spinal or general anesthesia by intraperitoneal or extraperitoneal (the preferred method of the author) closure. The operation is easier to perform if a period of at least 12 weeks is allowed to elapse between formation of the stoma and reversal so that there is time for edema and inflammatory adhesions to settle¹. The freshened edges of the enterotomy can be anastomosed or a resection of a certain length of the proximal and distal ends of the stoma is

done and they are anastomosed. Two randomized trials and a non-randomized study comparing suture reversal with stapled reversal yielded conflicting results with respect to complication rates⁹⁻¹¹, but both trials reported that extra costs were incurred when staples were used. Once the stoma is reversed, the loop is returned to the abdominal cavity or left in extraperitoneal space, and the abdominal muscles are closed by interrupted synthetic absorbable or non-absorbable sutures. The skin may be left open or just one or two loose sutures are put to facilitate drainage and prevent infection.

For the end stomas, laparotomy is carried out, the closed distal stump is identified and a simple end-to-end anastomosis is performed after adequate mobilization and freshening of both ends. The anastomosis can be performed in single layer interrupted absorbable suture or two layer (inner layer: continuous catgut, and outer layer: interrupted silk; the preferred method of the author).

Complications after stoma formation are frequent and varied, which can adversely affect quality of life. The complication rate has been reported to be about 25% after a colostomy formation, as high as 57% after an end ileostomy¹² and 75% after a loop ileostomy¹³. The more common problems encountered are stomal (necrosis, stenosis, hernia, retraction, prolapse), peristomal (dermatitis, mechanical trauma) and metabolic complications.

Wound infection after stoma reversal is common. Incisional hernia can develop at the stoma site, and its incidence is increased by wound infection in the postoperative period. Breakdown of the anastomosis lying beneath the incision will lead to a fecal fistula. If there is a complex inflammatory mass at the reversal site, spontaneous healing is less likely¹.

MATERIALS AND METHODS

A retrospective study of charts of patients with creation of stomas over a 3-year period from November 2005 to October 2008 was done. The notes were studied to determine the causes for stoma creation, complications of stoma, timing of reversal of the stoma, methods used for reversal, reasons for any delays in reversal and post-reversal complications.

The patients who underwent stoma reversal at Patan Hospital were included in the study while those who did not have the stoma reversed due to any reason were excluded.

RESULTS

From a total of 32 patients who fulfilled the inclusion criteria, 23 (71.8%) had their stomas reversed at Patan Hospital and were included in the study. Indications of stoma creation (Table 1) and type of stomas formed (Table 2) is summarized below.

Figure 1

Table 1: Indication of stoma creation in 23 patients

Indication	n (%)
Friable/Inflamed bowel	9 (39%)
Defunctioning distal anastomosis	7 (30.4%)
Exteriorisation of perforation	5 (21.7%)
Dense fibrous inter-loop adhesions	1 (4.4%)
Anastomotic leakage	1 (4.4%)

Figure 2

Table 2: Type of stomas in 23 patients.

Stoma	n (%)
Loop Ileostomy	10 (43.5%)
End Ileostomy	7 (30.4%)
Loop Colostomy	4 (17.4%)
End Colostomy	2 (8.8%)

Figure 3

Table 3: Pre-takedown complications among 23 patients

Complications	n (%)
Wound infection	6 (26%)
Paralytic ileus	3 (13%)

Among the 23 patients, no major pre-takedown complications were noted. All wound infections (6 patients) resolved by antibiotics and dressings; while 1 wound infection needed debridement. Patients with features of paralytic ileus (3 cases) resolved conservatively.

Two stomas were reversed in 6 weeks, 14 in between 6 to 12 weeks and 7 were reversed after 12 weeks. The causes for delayed reversal included general fitness for a second operation in 3 patients, 3 patients were lost to follow-up initially and presented late to the hospital and 1 patient was on anti-tubercular therapy and reversal was done only after the completion of the course.

Fourteen stomas were reversed under general anesthesia, and 9 under spinal anesthesia. Eleven stomas were reversed through the same stomal wound while 12 were approached through the midline scar of the previous operation. Distal loopogram was done in 1 patient to check the patency of the distal bowel.

Resection of a portion of the proximal and distal loops before anastomosis was done in 14 patients, freshening of edges in 6 and ileo-colic anastomosis in 3 patients.

Anastomosis in single layer was done in 12 patients, double layer in 10 patients and stapler was used in 1 patient. Primary closure of the skin was done in all 23 patients.

None of the 23 patients had any significant post-takedown complications. One patient had signs of intestinal obstruction, 7 patients developed signs of paralytic ileus, all of which were managed conservatively, and 12 patients had signs of wound infection, which resolved with dressings and antibiotic cover.

Figure 4

Table 4: Post-takedown complications

Complications	N (%)
Wound infection	12 (52%)
Paralytic ileus	7 (30.4%)
Intestinal Obstruction	1 (4.4%)

DISCUSSION

Reported complication rates after temporary stomas range from 2.4% to 50%^{14,15}. A comparison between these complication rates is difficult because of the different definitions of complications. We have included all deviations from the normal postoperative course as complications. In the stomas created at Patan Hospital, 39% of patients had pre-takedown complications, out of which

26% were superficial wound infections, and 13% had signs of paralytic ileus. None of the patients required any major surgical interventions. No significant comparison could be made on the occurrence of complications between the ileostomy and colostomy groups, neither in the loop nor in the end group.

There is no recognized optimal timing for reversal of temporary ileostomies. However, most surgeons would advocate early reversal of ileostomies in medically fit and willing patients. The vast majority of patients experience an overall improvement in quality of life, physical function and social function following stoma reversal. A patient's general medical fitness, which includes age and co-morbidity, may worsen after major surgery and is important in planning any further surgical procedures. A further factor is the patients' experience of the primary procedure, particularly if they suffered any post-operative complications¹⁶. In the present study, 69% of stomas were reversed within 12 weeks. There were no significant differences in outcome among early or delayed closure; although some authors have mentioned increasing the delay from creation to reversal may result in fewer complications while others argue that early reversal is feasible¹⁷⁻¹⁹.

A routine contrast study is not practiced in Patan Hospital. Among the 23 patients, only 1 had a distal loopogram for suspicion of obstruction as multiple inter-loop adhesions were noted in the index operation. The loopogram revealed contrast passing normally up to the rectum. In patients with an ileostomy, with a smooth postoperative course, a radiological examination of the anastomosis prior to ileostomy reversal appears unnecessary²⁰. Routine gastrograffin enema in the absence of a clinical suspicion of anastomotic failure would appear to be of little value²¹.

Traditionally, the stoma is reversed under general anesthesia. But with careful patient selection, preparation and a gentle and meticulous surgical technique, reversal of loop ileostomy can be achieved under spinal anesthesia or local anesthesia^{22,23}. In the present study, 60 % were reversed under general anesthesia and 40 % under spinal anesthesia. Patients started feeding on the first to third postoperative day. Analgesia requirements postoperatively were similar in both groups. No complications occurred due to the anesthetic technique.

Eleven stomas were reversed through the same stomal wound while 12 were approached through the midline scar of the previous operation. The postoperative results

regarding analgesia, feeding, complications and total days of hospitalization were similar in both the groups. The operative procedure was quicker and dissection minimal in those which were approached through the stomal wound.

Resection and anastomosis was done in 60% of patients, enterotomy suture in 26% and ileo-colic anastomosis in 13%. Anastomosis in a single layer was done in 52% of patients, in double layer in 43% and a stapler was used in 4%. Post-takedown obstruction has been reported with higher frequency in resection and anastomosis compared with enterotomy suture or stapled anastomosis; and there was no difference in anastomotic leaks between the reversal techniques²⁴. In this series, no cases of obstruction requiring surgical intervention and no cases of anastomotic leakage were found.

Prospective comparison between primary closure and delayed primary closure of the wound has unexpectedly shown less wound infection in primary closure than in delayed primary closure²⁵. All of the 23 stomas were closed by primary closure and wound infection was reported to be 52%.

Post reversal complications have been reported to be between 20 and 48%²⁴⁻²⁷, wound infections and anastomotic leakage being the most common surgical complications. In the present series, there was no anastomotic leakage while wound infections were higher than expected (52%). None of the post reversal complications, however, required any major surgical intervention.

The mean hospital stay after stoma reversal was 7 days with the patients undergoing loop ileostomy reversal being discharged earlier (mean 3 days). There was no readmission. This practice significantly reduces the use of hospital resources and decreases economic cost without compromising care²⁸.

CONCLUSION

Advantages of temporary stoma creation clearly outweigh the disadvantages considering the very low percentage of serious complications associated with stoma creation and reversal. Our study, although consisting of a small number of patients, did not find any differences in the complication rates associated with the type of stoma formation, timing of reversal, anesthesia used, and method of reversal. We therefore conclude that temporary stoma reversal can be done safely at an earlier date, with minimal requirement of special anesthesia and minimal access to the abdomen, and

that early discharge is safe without expecting serious complications and readmissions.

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