

OUTCOME OF LOOP ILEOSTOMY REVERSAL: A PROSPECTIVE STUDY

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ABSTRACT

OBJECTIVE: To evaluate the outcome of loop ileostomy reversal in terms of hospital stay, morbidity, and mortality in our set up.

METHODOLOGY: This descriptive observational study was conducted on 261 patients, in the Surgical "B" Unit of Khyber Teaching Hospital, Peshawar from January 2010 to June 2012, by using a convenient sampling technique. Data was collected on a predesigned proforma and analyzed by SPSS version 17.0.

RESULTS: Out of the total 261 patients, 185 (70.88%) were males and 76 (29.12%) were females. The age range was from 15 to 58 years with a mean age of 29.74 ± 8.59 years. The duration of surgery was 23 to 47 minutes with a mean duration of 32 ± 5.43 minutes. The mean stay of the patients after the surgery was 6 ± 2 days ranging from 4 to 12 days. The morbidity rate was 11.11% ($n=29/261$) and no mortality was observed in the series. The commonest complication was surgical site infection in 17 (6.51%) patients, followed by post operative ileus in 10 (3.83%) patients, small bowel obstruction in 1 (0.38%) patient and anastomotic leakage in 1 (0.38%) patient.

CONCLUSION: Reversal of loop ileostomy is a safe procedure having good outcome in terms of low morbidity, mortality and hospital stay.

KEY WORDS: Loop ileostomy, reversal of ileostomy, small bowel obstruction, surgical site infection, anastomotic leak, intestinal anastomosis, postoperative ileus.

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Although ileostomy is a life saving procedure on one hand but on the other hand it causes physical and emotional trauma to patient with additional economic burden. But reversal done after adequate nutritional buildup of the patient, at a suitable time with proper technique is associated with minimal morbidity. Ileostomy closure techniques range from simple hand sewn technique to stapled. Although stapled ileostomy closure is expensive but decreases the operative time.⁷ While hand sewn anastomosis is simple and cost effective but is time consuming. Multiple factors influence the stoma closure and its sequelae like surgeons experience, perioperative treatment including use of bowel preparation and antibiotic prophylaxis, the interval between primary surgery & closure and surgical technique.⁸⁻¹⁰

Ileostomy reversal is associated with various complications and overall morbidity rate ranges from 10.8 to 69%.⁵ Different postoperative complications reported after ileostomy reversal are wound infection, haematoma, anastomotic leak, small bowel obstruction (SBO) at the site of anastomosis, iatrogenic bowel injury, local abscess and post reversal peristomal dermatitis.^{11,12} These postoperative complications have ill effects on patient's health, increase the hospital stay leading to increased costs.¹³

INTRODUCTION

A loop ileostomy is an opening which is constructed surgically in intestine, meant for temporary fecal diversion and is usually closed after a period of time.¹⁻³ It is a common constituent component of laparotomy being performed in patients who presents late or seen with severe abdominal sepsis, profound shock and major multiple abdominal injuries particularly involving large intestine.

It is basically fashioned to buy time for the pathological process distal to the stoma to heal, but is usually associated with morbidity.⁴ This safe procedure has dramatically changed the disease process with its outcome⁵ and improved survival in common indications like typhoid, traumatic or tubercular perforation or as fecal diversion for protection of distal primary anastomoses performed for crohn's disease or ulcerative colitis.⁶

In Pakistan various studies have been conducted on outcome of loop ileostomy closure with variable results. However, no such study has been conducted in our local set up so we planned this study with the objective to evaluate the outcome of loop ileostomy reversal in terms of hospital stay, morbidity and mortality which will be helpful to improve the patient health care of our patients.

METHODOLOGY

This descriptive observational study was conducted in the Surgical “B” Unit of Khyber Teaching Hospital, Peshawar from January 2010 to June 2012. A total of 261 patients were included in the study by using a convenient sampling technique. The survey comprised of all the patients above 14 years of age and of either sex with temporary loop ileostomy performed in emergency, and came for reversal in the follow up. The study had been priorly approved by ethical committee of the hospital. All patients who underwent the stoma formation after the resection of malignant tumors, patients who had more than one stoma or had repeated complications of stoma were excluded from the study. Data was collected from the patients on a

structured proforma including patient’s demographics, indication of ileostomy, duration of surgery, length of hospital stay and post operative complications. The data was analyzed using SPSS 17.0.

All the patients included in the study were evaluated by taking detailed history, physical examination and relevant investigations including routine baseline investigations, serum electrolytes, and distal loopogram in order to confirm distal patency of the gut by using water soluble contrast media (gastrograffin). The past record of every patient was reviewed in order to determine the indication of ileostomy and the date of operation.

Technique of reversal

All the reversal procedures were performed on elective list. Reversal of loop ileostomy was performed within 6-8 weeks by standard technique of closure after doing preoperative distal loopogram to detect the distal patency. All the cases were operated by consultant surgeon under general anesthesia after taking informed consent. All patients were offered a clear liquid diet the night before surgery. Prophylactic antibiotics

(inj. cefuroxime 1.5gm I/V and metronidazole 500 mg I/V) were administered before induction of anesthesia. Adrenaline solution was injected around the stoma before the commencement of the procedure to decrease the bleeding and ease the dissection. An elliptical incision was made just around the stoma and dissection was continued around the stoma till the peritoneal cavity was approached and opened. After entering the peritoneal cavity all the adhesions were released under direct vision by blunt and sharp dissection. Then loop was mobilized and the edges of the ileostomy were freshened and the stoma was closed transversely with Vicryl 2/0 in a single interrupted extramucosal layer technique. Gross apparent leak was checked per-operatively by squeezing the contents of the gut and luminal patency with the thumb and index finger. The bowel was returned into the peritoneal cavity and placed just under the wound. Enmass closure of the abdominal wall was done with polypropylene I after securing hemostasis. Skin was closed with polypropylene 2/0. patient was kept NBM till resumption of bowel sound and passage of flatus. All the operated patients were regularly followed up postoperatively in OPD on 10 day, three and five weeks after discharge for any short term complications.

TABLE I: INDICATIONS FOR LOOP ILEOSTOMY (n=261)

Indication	No. of cases (n=261)	Percentage
Ileal perforation	105	40.22
Used as Covering stoma	52	19.92
Tubercular perforation	50	19.15
Abdominal Trauma	41	15.70
Strangulated hernia	8	3.07
Perforation due to Worms	5	1.91

TABLE II: EARLY POSTOPERATIVE COMPLICATIONS ASSOCIATED WITH ILEOSTOMY REVERSAL (LESS THAN 30DAYS)

Complications	No. of cases (n=261)	Percentage
Surgical Site Infection	17	6.51
Postoperative ileus	10	3.83
Small bowel obstruction	01	0.38
Anastomotic leak	01	0.38

RESULTS

Out of total 261 cases 185 (70.88%) were males and 76 (29.12%) were females, with male to female ratio of 2.43:1. The age range was from 15 to 58 years with a mean age of 29.74±8.59 years. The commonest indication for which the stoma was fashioned was ileal perforation and the rest of the indications are shown in Table I. The duration of surgery ranged from 23 to 47 minutes with a mean duration of 32±5.43 minutes. The mean hospital stay of the patients was 6±2 days ranging from 4 to 12 days. Postoperatively, 29(11.11%) patients developed complications. The

commonest complications were the surgical site infections in 17 (6.51%) patients (Table II). The patients with superficial SSI were managed conservatively by stitch removal, daily dressings and antibiotics according to culture and sensitivity. Postoperative ileus was treated conservatively. Two patients (0.766%) with complication like adhesive small bowel obstruction and anastomotic leak required surgical intervention. No mortality was found in this study.

DISCUSSION

Loop ileostomy was for the first time reported in 1999 by Turnbull and Weakley.¹⁴ Since then it gained popularity as it is technically simple with excellent fecal diversion, there is liquid discharge with no smell, and has decreased rate of local complications.¹⁵ In addition to these advantages, its reversal as compared to loop colostomy is associated with minimal morbidity and mortality.¹⁶ Although its construction is relatively easy but its closure is not a simple procedure as it is associated with complications. So in order to minimize the post operative complications and to improve the outcome ileostomy reversal requires adequate nutritional rebuilt of patient, adequate control of primary gut disease, proper time of closure after initial surgery, proper preoperative preparation and technically skilled surgeon having considerable experience of the procedure.

Critical analysis of the findings of our study shows that good results were achieved in cases of loop ileostomy closure in terms of mean hospital stay, post-operative complications and mortality. This survey was conducted on 261 cases showing mean hospital stay of 6 ± 2 days, morbidity rate of 11.11% and mortality rate of 0%. In our study, mean age of the patients was 29.74 ± 8.59 years, consistent with studies from west but with different causation like ulcerative colitis and crohn disease.¹⁷ In our study no such

case was observed as these diseases are uncommon in Pakisatn.¹⁸ Typhoid, traumatic and tubercular perforation were found to be the most common indications in the mentioned age groups for loop ileostomy. The prevailing literature also support these findings.¹⁹⁻²¹

The complications rate reported in various national and international studies ranges from 5 to 60 percent.^{15,22} In our series the overall rate of complication was 11.11%, which is low compared to the reports of other as high as 30%.²³ Senapati et al in a series of 310 patients reported a complication rate of 22.4%. However Toole'O et al²⁴ and Barry et al²⁵ have shown complication rate of 4% and 7.7% respectively. The rate of surgical intervention in our study is low (0.766%) as compared to others.²³ These complications can be prevented by adequate nutritional built up to optimize patients health, adequate preoperative preparation, sound surgical technique adopted, adequate control of primary gut disease, proper time of closure after initial surgery.

The most common complication observed in our study was surgical site infection which occurred in 17 (6.51%) cases. Van de Pavoordt et al¹⁵ and wexner SD et al⁵ observed surgical site infection in 3% and 1.3% of cases respectively, in which skin incision was left open and was secondarily closed. In all our patients we closed the wound primarily so this may be a contributory factor to the comparative higher rate of wound infection in our study. Majority of wound infections in our series were of minor type and managed by drainage of the infection through a small opening made by removal of few stitches in the wound and a course of broad-spectrum antibiotics according to culture and sensitivity. Although Primary closure increased the hospital stay a little but produced a better cosmetic scar in majority of the cases.

Small bowel obstruction is another commonly observed complication in post-ileostomy reversal. Most of the times it is transient and can be appropriately termed as postoperative ileus which resolves with conservative measures like keeping the patient nil per orum and intravenous fluids replacement. In our series we observed postoperative ileus in 10 (3.83%) cases, all of them managed conservatively. A review of the literature shows similar rates of paralytic ileus.^{27,28}

A small percentage (0.38%) of such patients developed mechanical small bowel obstruction; reasons are manifold, including faulty anastomotic technique and distal bowel obstruction by a variety of inflammatory or malignant reasons. In these cases the patient has to be re-explored via a midline laparotomy and the respective cause addressed therein. In our series, mechanical small bowel obstruction was observed in 1 patient who was re explored after proper resuscitation, the cause being a distal ileal stricture. The affected segment was resected and end to end anastomosis performed.

Anastomotic leak is another dreadful complication and it is literally synonymous with failure of the operation. Many factors can be attributed to this complication include malnutrition, primary gut disease, improper timing of surgery and faulty surgical technique. In our study anastomotic leakage was observed in one patient in whom the ileostomy was refashioned after adequate resuscitation through midline laparotomy. Williams et al conducted a study on 50 patients and reported anastomotic leak in 2% cases.¹⁶ Iqbal P et al, conducted a study in Karachi, reported anastomotic leak in 1.3% cases which required reoperation.¹⁹ The use of linear cutter staplers for the reversal of ileostomy is thought to be theoretically an improvement in anastomotic technique but a multicenter study reveals similar rates of leakage except significant

reduction in operation time.

Duration of Hospital stay in our study was ranging from 4 to 12 days with (mean of 6±2 days). The reason behind the short postoperative hospital stay is the low rate of complication associated with reversal of loop ileostomy. These figures correlate well with the prevailing literature.^{4,20}

Main limitation of our study was lack of long term follow up to see for the late postoperative complications.

CONCLUSION

It is concluded that proximal defunctioning ileostomy closure is a safe procedure with good outcome in terms of duration of hospital stay, morbidity, and mortality. However, similar studies with long term follow up and comparative studies between stapled versus hand sewn closure are recommended.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

- SSA:** Conception and design, acquisition of data, drafting the manuscript, final approval of the version to be published
- NA, MZ & MM:** Acquisition and analysis of data, final approval of the version to be published
- MA:** Critical revision, final approval of the version to be published