

## Original Research

### Comparison of early and conventional ileostomy closure following bowel loop surgery in enteric perforation

Bhupendra Prasad

Associate Professor, Department of General Surgery, K M Medical College, Mathura, Uttar Pradesh, India

#### ABSTRACT:

**Background:** An intestinal stoma is a purposeful anastomosis between a segment of the gastrointestinal tract and the skin of the anterior abdominal wall. Hence this study was conducted to compare early and conventional ileostomy closure following bowel loop surgery in enteric perforation. **Materials & methods:** The present study was conducted to compare early and conventional ileostomy closure following bowel loop surgery in enteric perforation. A total of 20 subjects were enrolled. Subjects were randomly divided into two study groups: Early ileostomy closure: This group comprises of those in whom ileostomy closure was done between 4-6 weeks following index surgery. Conventional ileostomy closure: This group comprises of those in whom the closure of temporary ileostomy was carried out as per unit protocol in our hospital after 8-12 weeks. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. **Results:** While analyzing statistically, it was seen that mean preoperative stoma bag among patients of group B was significantly higher in comparison to patients of group A. Mean operative time among the patients of group A and group B was 61.5 minutes and 68.5 minutes respectively. Non-significant results were obtained while comparing the mean operative time among patients of group A and group B. Among patients of group A, bleeding and intra-abdominal collection were seen in 10 percent of the patients each. Among patients of group B, bleeding and intra-abdominal collection were seen in 30 percent of the patients and 20 percent of the patients respectively. Mean time to feeding postoperatively among the patients of group A and group B was 4.6 days and 5.1 days respectively. Non-significant results were obtained while comparing the mean time to feeding postoperatively. **Conclusion:** The present study clearly highlights the potential safety of early closure of ileostomy without any added morbidity or mortality, and is a feasible alternative to a more conventional delayed approach, provided careful selection of patients is done.

**Key words:** Stroma, Early, Late

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**Corresponding author:** Bhupendra Prasad, Associate Professor, Department of General Surgery, K M Medical College, Mathura, Uttar Pradesh, India

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#### INTRODUCTION

An intestinal stoma is a purposeful anastomosis between a segment of the gastrointestinal tract and the skin of the anterior abdominal wall. Intestinal stoma (also called as ostomies) is classified according to the segment of the intestine that is brought out to the surface of the body. Small-bowel ostomies (ileostomies) can be distinguished from large-bowel ostomies (colostomies).<sup>1,2</sup>

In case of developing countries like India, ileostomies are usually made in emergency surgeries where enteric perforation is more common.<sup>3</sup> Intestinal perforation is a serious complication of typhoid fever (enteric fever) and it is associated with high

mortality and morbidity, due to lack of medical facilities in remote areas and delay in hospitalization.<sup>3</sup> Ileostomy is usually reserved to patients with severe disease, delayed presentation and very contaminated abdomen, with a high risk of suture leakage. Ileostomy has been also described as a routine primary procedure although it is associated with high morbidity rate and complications like prolapse, stricture, retraction, parastomal hernia, mainly when performed in patients with critical conditions.<sup>4,5</sup> Stoma creation affects different patients in different manner. It leads to perception of an altered body image, changes in daily routines of the patient, their lifestyle and sexuality. Stoma reversal may cause major complications, which ranges from 4% to 30%,

requiring reoperation. The reports on early versus conventional stoma closure are conflicting.<sup>6-8</sup> Hence this study was conducted to compare early and conventional ileostomy closure following bowel loop surgery in enteric perforation.

## MATERIALS & METHODS

The present study was conducted to compare early and conventional ileostomy closure following bowel loop surgery in enteric perforation.

### INCLUSION CRITERIA

- All consecutive patients between the ages of 18 years and 70 years.
- Patients who underwent temporary ileostomy following bowel surgery for enteric perforation.
- Widal and/or Biopsy and/or Blood Culture proven enteric perforation.

### EXCLUSION CRITERIA

- Patients in whom temporary ileostomy creation was done for reasons other than enteric perforation.
- Patients with evidence of sepsis or organ failure in the postoperative course.
- Repeated complication of stoma/more than one stoma.

A total of 20 subjects were enrolled. Subjects were randomly divided into two study groups: Early ileostomy closure: This group comprises of those in whom ileostomy closure was done between 4-6 weeks following index surgery. Conventional ileostomy closure: This group comprises of those in whom the closure of temporary ileostomy was carried out as per unit protocol in our hospital after 8-12 weeks. All the

results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. Chi-square test and student t test were used for evaluation of level of significance. p- value of less than 0.05 was taken as significant.

## RESULTS

Mean age of the patients of group A and group B was 37.5 years and 38.1 years respectively. Hence; both the groups were comparable in terms of age-wise distribution of patients. 80 percent of the patients of group A and 70 percent of the patients of group B were males while the remaining were females. Hence; both the groups were comparable in terms of gender-wise distribution of patients. Among the patients of group A and group B, preoperative stoma bag used were 5.5 and 11.5 respectively. While analyzing statistically, it was seen that mean preoperative stoma bag among patients of group B was significantly higher in comparison to patients of group A. Mean operative time among the patients of group A and group B was 61.5 minutes and 68.5 minutes respectively. Non-significant results were obtained while comparing the mean operative time among patients of group A and group B. Among patients of group A, bleeding and intra-abdominal collection were seen in 10 percent of the patients each. Among patients of group B, bleeding and intra-abdominal collection were seen in 30 percent of the patients and 20 percent of the patients respectively. Mean time to feeding postoperatively among the patients of group A and group B was 4.6 days and 5.1 days respectively. Non-significant results were obtained while comparing the mean time to feeding postoperatively.

**Table 1: Pre-operative Stoma Bag Used**

Group	Mean	SD
Group A	5.5	1.7
Group B	11.5	1.7
p- value	0.000 (Significant)	

**Table 2: Operative time (mins)**

Group	Mean operative time	SD
Group A	61.5	11.8
Group B	68.5	11.2
p- value	0.082	

**Table 3: Distribution of patients according to Peri-operative complications**

Peri-operative complications	Group A		Group B		p- value
	Number	Percentage	Number	Percentage	
Bleeding	1	10	3	30	0.115
Conversion to midline laparotomy	1	10	1	10	
Intra-abdominal collection	1	10	2	20	
Anastomotic leak	1	10	1	10	

**Table 4: Mean time to feeding postoperatively**

Mean time to feeding postoperatively (days)	Group A	Group B
Mean	5.1	5.5
SD	1.1	1.3
p- value	0.112	

## DISCUSSION

An intestinal stoma is one of the most common surgical procedures, in which exteriorization of either small bowel or large bowel through the anterior abdominal wall is performed. It may be performed for the management of wide ranges of benign and malignant gastrointestinal conditions on an emergency or regular basis. Stomas can be divided into two broad categories depending on the part of the exteriorized bowel: ileostomies, involving a part of the ileum, and colostomies, created using a part of the colon. Both of these can either be end-ostomies -where the bowel is divided with the proximal part being used to form the stoma while the peripheral remains inside the abdomen as a stump with its end sutured- or loop ostomies, where the antimesenteric wall of the intestine is partially divided. The intestine is brought up to the skin, creating an ostomy with two openings, one “functional” and one unfunctional.<sup>8-10</sup> Hence this study was conducted to compare early and conventional ileostomy closure following bowel loop surgery in enteric perforation.

Mean age of the patients of group A and group B was 37.5 years and 38.1 years respectively. Hence; both the groups were comparable in terms of age-wise distribution of patients. 80 percent of the patients of group A and 70 percent of the patients of group B were males while the remaining were females. Hence; both the groups were comparable in terms of gender-wise distribution of patients. Among the patients of group A and group B, preoperative stoma bag used were 5.5 and 11.5 respectively. While analyzing statistically, it was seen that mean preoperative stoma bag among patients of group B was significantly higher in comparison to patients of group A. Aljorfi AA et al reviewed the available literature in order to ascertain the benefits behind early closure of loop ileostomy. The literature was searched for all studies that included a comparison between the outcomes of early and late closure of loop ileostomy in terms of morbidity, mortality, or quality of life, where available. Early closure of loop ileostomy is defined as closure less than three months and late as more than three months, in accordance with conventional literature. Finally, the remaining articles were assessed for quality and their results were compared to one another in order to draw the conclusions. The results were slightly inclined toward early closure of loop ileostomy. However, there were limitations of the studies reviewed, including the heterogeneity of studies, selection bias, lack of clear definition of measured outcomes, and small sample size. Taking that into consideration, the results of early closure of

loop ileostomies in the selected patients were promising and require further investigation.<sup>11</sup>

In the present study, mean operative time among the patients of group A and group B was 61.5 minutes and 68.5 minutes respectively. Non-significant results were obtained while comparing the mean operative time among patients of group A and group B. Among patients of group A, bleeding and intra-abdominal collection were seen in 10 percent of the patients each. Among patients of group B, bleeding and intra-abdominal collection were seen in 30 percent of the patients and 20 percent of the patients respectively. Mean time to feeding postoperatively among the patients of group A and group B was 4.6 days and 5.1 days respectively. Non-significant results were obtained while comparing the mean time to feeding postoperatively. Cho HJ et al reported the experience and compared open and laparoscopic HR. Between December 2012 and January 2020, 30 patients who underwent Hartmann reversal were reviewed. All patients either received laparoscopic or open reversal. Of the 87 patients who underwent Hartmann operation (HO), 30 patients received HR. There were 15 males and 15 female patients. The mean operation time was 223.8 minutes (range 115–350 minutes) with mean blood loss of 252.5 mL (range 0–700 mL). There was no conversion from LHR to OHR, and there was no ileostomy formation. Mean time to flatus was 5.0 days (range 2–13 days). There were 15 early postoperative complications and 5 late postoperative complications, but only 1 case of grade 3A. No anastomosis leakage was reported. HR is an operation that can be performed safely in well-selected patients. Minimally invasive techniques, such as LHR, is an attractive option resulting in shorter operation time, less blood loss, less pain, and shorter hospital stay.<sup>12</sup>

## CONCLUSION

The present study clearly highlights the potential safety of early closure of ileostomy without any added morbidity or mortality, and is a feasible alternative to a more conventional delayed approach, provided careful selection of patients is done.

## REFERENCES

1. Obaro SK, Iroh Tam PY, Mintz ED. The unrecognized burden of typhoid fever. *Expert Rev Vaccines*. 2017;16:249–260.
2. Crump JA, Luby SP, Mintz ED. The global burden of typhoid fever. *Bull World Health Organ*. 2004;82:346–353.
3. Chang YT, Lin JY, Huang YS. Typhoid colonic perforation in childhood: a ten-year experience. *World J Surg*. 2006;30:242–247.

4. Mallick S, Klein JF. [Management of typhoid perforation of the small bowel: a case series in Western French Guiana] *Med Trop (Mars)* 2001;61:491–494.
5. Montedori A, Cirocchi R, Farinella E, Sciannameo F, Abraha I. Covering ileo- or colostomy in anterior resection for rectal carcinoma. *Cochrane Database Syst Rev.* 2010;CD006878.
6. Mattheisen P, Hallbook O, Rutegard J, Simert G, Sjodahl R. Defunctioning stoma reduces symptomatic anastomotic leakage after low anterior resection of the rectum for cancer: A randomized multicenter trial. *Ann Surg.* 2007;246(2):207–14.
7. Alves A, Panis Y, Lelong B, Dousset B, Benoist S, Vicaud E. Randomized clinical trial of early versus delayed temporary stoma closure after proctectomy. *Br J Surg.* 2008;95(6):693–8.
8. Robertson JP, Puckett J, Vather R, Jaung R, Bissett I. Early closure of temporary loop ileostomies: A systematic review. *Ostomy Wound Manag.* 2015;61(5):50–7.
9. Rowe KM, Schiller LR. Ileostomy diarrhea: Pathophysiology and management. *Proc (Bayl Univ Med Cent).* 2020;33(2):218-226.
10. Grotelüschen R, Bergmann W, Welte MN, Reeh M, Izbicki JR, Bachmann K. What predicts the outcome in patients with intestinal ischemia? A single center experience. *J Visc Surg.* 2019 Oct;156(5):405-411.
11. Aljorfi AA, Alkhamis AH. A Systematic Review of Early versus Late Closure of Loop Ileostomy. *Surgery Research and Practice.* 2020 Aug 31;2020.
12. Cho HJ, Kim WR, Kim JW. A comparative study between open versus laparoscopic Hartmann reversal: A single-center experience and analysis. *Medicine.* 2021;100(47).