



## A CRITICAL EVALUATION OF ILEOSTOMY WITH POSTOPERATIVE MORBIDITY AND OPTIMAL TIMING OF ILEOSTOMY CLOSURE

### Surgery

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### ABSTRACT

**Introduction:** Ileostomy is often a rescue operation in a number of difficult surgical situations that needs both surgeon and the patient to take a "tough call", so as to eventually make a smooth sailing out of turbulence. 'Ileostomy' makes the task of the surgeon challenging since he has to intelligently manage nutrition, effluent reduction, effective collection along with choosing an optimal timing for its successful closure. This not only benefits the patient, but is also a cost-effective use of healthcare resources.

**Aim & Objective:** To identify the indications and to evaluate different techniques and types of ileostomy.

**Material and Methods:** A prospective study carried out on 62 patients. Operative findings, procedure done, immediate and late complications were recorded. Patient followed up at: 3 & 6 weeks. Readmission for ileostomy closure (4; 6 or 8 weeks). The final time of closure of ileostomy was noted with its optimal timing.

**Results:** Duration of surgery at the time of ileostomy closure at <4 week was 27.65 ± 4.79 mins and at >4 week was 54.81 ± 4.58 mins, (p<0.001). Duration of hospital stay less in early closure as compared to late closure. More cases of excessive effluent, fluid & electrolyte imbalance in late ileostomy closure (>4 weeks) as compared to early ileostomy closure (<4 weeks) (p<0.05). Mean hospital stay 8.87±1.84 days. Maximum (54.85%) patients discharged within 8 days after procedure. 2 (3.23%) cases expired. 93.33% (56) patients were satisfied with their outcome. 4 (6.67%) cases had postoperative complications and complaint about the outcome.

**Conclusion:** Most of the researches are focused on early reversal of ileostomy and very little literature is available on early reversal of colostomy. The present study included the reversal of both and showed no mortality in early and delayed stoma closure.

### KEYWORDS

Ileostomy, Stoma closure, Ileostomy Closure.

### INTRODUCTION

Ileostomy, a frequently performed surgical procedure, is an external communication constructed between the distal part of the small intestine and the abdominal wall. The rationale for a temporary loop ileostomy is to provide defunctioning in case of potentially dangerous anastomotic complications with an obvious risk for mortality. Fecal diversion through a temporary stoma can reduce the effects of anastomotic leak and also the rate of leak-related interventions. The thought of stoma, whether permanent or temporary, is frightful and anxiety provoking. It is important to relieve the patient's fear about living with a stoma by proper counseling and providing literature on their disease and the proposed surgery is often helpful<sup>1</sup>.

Ileostomy is often a rescue operation in a number of difficult surgical situations that needs both surgeon and the patient to take a "tough call", so as to eventually make a smooth sailing out of turbulence. A spectrum of conditions exists for opting ileostomy<sup>2</sup>.

All kinds of procedural choices such as loop ileostomy, end ileostomy, temporary and permanent and barreled/non barreled ileostomy. The post-operative period for ileostomy is morbid for the patient as the effluent is copious, posing difficulty in collection, electrolyte imbalance and a fast downslide in his metabolic status. 'Ileostomy' makes the task of the surgeon challenging since he has to intelligently manage nutrition, effluent reduction, effective collection along with choosing an optimal timing for its successful closure. This not only benefits the patient, but is also a cost-effective use of healthcare resources.

Despite the major advancement in the field of surgery, construction of intestinal stoma is still a common and frequently performed procedure. The debate has continued between proponents of ileostomies as a routine and those who restrict their use to when surgical difficulties occur during the operation or in high risk patients. Ileostomies are often closed after 2–3 months but the optimal timing of ileostomy closure remains to be established<sup>3</sup>.

### AIMS AND OBJECTIVES

1. To identify the indications for ileostomy and to evaluate the different techniques and types of ileostomy.
2. To study postoperative morbidity in patients with ileostomy.
3. To study various therapeutic strategies for management of ileostomy.

### MATERIALS AND METHODS

This is a comprehensive prospective study carried out in Department of Surgery, Geetanjali Medical College & Hospital, Udaipur, over a period of two years (2016-2017). Sixty Two patients undergoing exploratory laparotomy for various reasons, viz intestinal perforation, malignant intestinal obstruction, mesenteric vascular ischemia, etc. with creation of ileostomy were evaluated.

Patients under 12 years with enterocutaneous fistula and urinary conduits were excluded from the study. Data was collected on proformas. On arrival in emergency / OPD, routine haematological, radiological, and other relative investigations were noted. A detail recording of all patients was done as proforma specifically designed for study.

Operative findings, procedure done, immediate and late complications were recorded. Final diagnosis was made after histopathology report. The details about stoma, appliances, complications and its management were recorded. Usually Hollister or Convatec colostomy bags with wafers and Stomahesive paste was used and bags were applied by a trained doctor or a dispenser. The postoperative period and its associated problems were carefully noted, the various therapeutic strategy used to manage them, special emphasis was given to critically analyse the data of post operative morbidity. The patient follow-up was planned as: 1<sup>st</sup> follow up – 3 weeks, 2<sup>nd</sup> follow up – 2<sup>nd</sup> months and then readmission for ileostomy closure (4 weeks; 6 weeks; 8 weeks). The final time of closure of ileostomy was noted with of its optimal timing.

### Inclusion criteria:

All patients who had undergone Exploratory laparotomy with creation of Ileostomy in Geetanjali Medical College and Hospital from 2016-2018.

### Exclusion criteria:

- Patients with enterocutaneous fistula,
- Patients who refused for ileostomy,
- Patients having permanent ileostomy.

### OBSERVATIONS

Mean age of patients undergoing ileostomy in males was 50.79 ± 10.62 and in females was 58.50 ± 8.91 in our study. Maximum number of patients (82.25%) were in the age group of >40 years.

**Table 1 : Chief Signs & Complaints (Ileostomy)**

Chief Complaints	No.	%
Tenderness	62	100.00%
Guarding	12	19.35%
Rigidity	12	19.35%
Bowel Sound Absent	6	9.68%
Pain Abdomen	62	100%
Vomiting	12	19.35%
Not passing Flatus & motion	25	40.32%
Trauma	19	30.65%
Fever	31	50.00%

Tenderness was the most common physical sign (100%) present in all of the patients followed by guarding (19.35%), rigidity (19.35%) and bowel sound was absent in 9.68% cases. All of the patients had pain abdomen as chief presenting complaint. After which maximum patients complained along with about fever (50%), followed by not passing flatus and motion (40.32%), trauma (30.65%) and vomiting 19.35%.

**Table 2: Operative Indication for Ileostomy**

Operative Indication	No.	%
Enteric perforation (Typhoid)	16	25.81%
Intestinal Obstruction with Gangrenous ileum	16	25.81%
Malignancy	12	19.35%
Blunt Trauma Abdomen	12	19.35%
Tubercular perforation	4	6.45%
Stab Injury	2	3.23%
<b>Total</b>	<b>62</b>	<b>100%</b>

Enteric perforation (typhoid) and intestinal obstruction with gangrenous ileum were the most common indications for ileostomy followed by malignancy and blunt trauma abdomen in 19.35% cases, tubercular perforation in 6.45% and stab injury in 3.23% cases.

Loop ileostomy was the most preferred surgery done in 58.06% cases followed by temporary end ileostomy in 27.42% cases, double barrel was performed in 14.52% cases.

**Table 3: Comparison of Time of Ileostomy Closure (n=61)**

Time of Ileostomy Closure	<4 week	>4 week	P value
Duration of Surgery at the time of Ileostomy Closure (mins)	27.65 ± 4.79	54.81 ± 4.58	<0.001 (HS)
Duration of Hospital Stay	7.91 ± 2.04	9.81 ± 1.59	<0.001 (HS)

Since one patients expired before closure of ileostomy, therefore 61 patients were considered for analysis. Out of these the duration of surgery at the time of ileostomy closure (mins) at <4 week time was 27.65 ± 4.79 mins and at >4 week was 54.81 ± 4.58 mins, this difference was statistically highly significant (p<0.001).

Duration of hospital stay was also less in patients with early closure as compared to late closure. It was at <4 week time 7.91 ± 2.04 days and at >4 week was 9.81 ± 1.59 days, this difference was statistically highly significant (p<0.001).

**Table 4: Complications with Respect to Early V/s Late Ileostomy Closure**

Complications	<4 week (n=33)	>4 week (n=28)	P value
Excessive effluent	0	6	<0.01 (S)
Fluid & electrolyte imbalance	0	3	<0.05 (S)
Skin excoriation	0	2	0.11 (NS)
Minor anastomotic leak	1	0	0.35 (NS)

There were more cases of excessive effluent and fluid & electrolyte imbalance in late ileostomy closure (>4 weeks) as compared to early ileostomy closure (<4 weeks) which was found to be statistically significant (p<0.05). But there is no significant difference in skin excoriation or minor anastomotic leak complications.

Mean hospital stay in our study was 8.87 ± 1.84 days. Maximum patients (54.85%) were discharged within 8 days after procedure and

were asked to follow-up after 30 days, 45 days and 60 days accordingly.

**Table 5: Post Ileostomy Complications**

Post Ileostomy Complications	No. of cases (n=62)	Percentage
Excessive effluent	6	9.68%
Fluid & electrolyte imbalance	5	8.06%
Skin excoriation	2	3.23%
Retraction	2	3.23%
Superficial bleeding from margin	2	3.23%
Wound dehiscence	1	1.61%
Prolapse	1	1.61%
Major leak and faecal fistula	1	1.61%
Chest infection	1	1.61%
Wound sepsis	1	1.61%
Minor anastomotic leak	1	1.61%
NIL	38	62.90%

We observed post ileostomy complications in 38 cases (62.90%) after procedure and in follow-up. The most common complication was Excessive effluent found in 9.68% cases followed by Fluid & electrolyte imbalance in 8.06%, Skin excoriation, Retraction, Superficial bleeding from margin in 3.23% cases.

2 (3.23%) cases expired in our study. Out of them 93.33% (56) patients were satisfied with their outcome. 4 (6.67%) cases had postoperative complications and complaint about the outcome.

## DISCUSSION

In a 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.<sup>20</sup>

The indication of ileostomy in mesenteric vascular thrombosis with gangrenous ileum 6.66%, in which resection of gangrenous ileum with temporary ileostomy was done, which was consistent with series of K. Vaghollcar, et al.

The commonest indication was enteric perforation in our study 30%, fairly comparable with the series Nadkarni et al. 25%, Qamar A et al. 31% and Sushil et al 36.67%.

The next common indication that required ileostomy was traumatic perforation 19.35%, while in series P. Chaudhary et al. 12.8%, Sushil et al. 10% and in the series of Nadim Khan et al. 40.6%. Indication in cases of malignancy was high as compared with series Nadim Khan et al. 1.29% and Qamar A et al 5.5%. The high incident in our series due to referred cases in the Cancer Center in our institute. Another aetiopathology was tuberculosis 6.45%, fairly comparable with the series of Nadkarni et al. 9.3%.

In series of K. Koss et al total colectomy with end ileostomy was performed in 9 patients. Left hemicolectomy in 4 patients and right hemicolectomy in one patient in the series of 14 cases of fulminating necrotic colitis.

As type of surgery preferred totally depends on operative indications of the patients, enteric perforation intestinal obstruction with gangrenous ileum and malignancy being the most common indications in our study. Loop ileostomy was chosen in most of the cases as closure of loop ileostomy is easier and takes less operating time than barrel and temporary end ileostomy. In our study preference was given to temporary ileostomy over primary closure or resection and anastomosis with proximal ileostomy because of severe degree of contamination, inflammation and edematous ileum observed with comorbid medial conditions and septicemic shock.

A study done by Jordi-Galais showed hospital stay was 23.1±4.6 in early group and 34.5±18.6 days in delayed group (p<0.01). In another study by Menegaux, hospital stay was 18-29 days in early group and in delayed group was 14-84 days.

In our study time of closure being ≤4 weeks was most common in 54.10% followed by >4 weeks in 45.90%. One patients died so stoma

closure could not be performed. Our results were comparable to a study done by Shahab A et al. Robertson et al showed that both elective and emergency stomas had similar complication rates. In our setting there was a need for early closure, as stomas were generally poorly managed by patients due to poor education, poverty, unreliable supply of collecting appliances and stoma care facilities. It was our intention to evaluate the safety and efficacy of early over delayed stoma closure.

Tablet Lomotil (Diphenoxylate 2.5 mg) is also a synthetic opioid and likely exerts its antitility effect by binding to the opioid receptors in the intestine. At low doses, diphenoxylate primarily has antitility effects, however, at high doses (e.g., over 40 mg daily), it produces typical opioid systemic effects such as euphoria and sedation suggesting an increased systemic effect.

The complications rate reported in various national and international studies ranges from 5 to 60 percent<sup>16</sup>. In our series the overall rate of complication was 62.90%, which is high as compared to the reports of other<sup>26</sup> as high as 30%.

In our study the morbidity rate related to stomal and non-stomal was 62.90% which is fairly comparable with the series P. Chaudhary et al. 52.5% and Andivox T, et al. 20–60%. In our series stomal related morbidity was skin excoriation 3.23%. Whereas in series of P. Chaudhary et al, it was 20% with series of Sushil et al 33.33% and with series of Qamar A et al. 39%.

## CONCLUSION

In our series 50% ileostomy was indicated in enteric and traumatic perforation, remaining 50% was performed in gangrenous ileum, tubercular ileum, malignancy rectum/colon.

Temporary defunctioning ileostomy helps to reduce morbidity and mortality in patients undergoing surgery for ileal perforation. Higher morbidity observed in patients with enteric perforation, tuberculosis, mesenteric vascular thrombosis with gangrenous ileum, delayed presentation, poor nutritional status, co-morbid conditions and patients admitted in septic shock.

Most of the researches are focused on early reversal of ileostomy and very little literature is available on early reversal of colostomy. The present study included the reversal of both and showed no mortality in early stoma closure and delayed stoma closure. It is due to proper preoperative work-up, sound surgical technique and performance of procedure by experienced surgeon.

The ileostomy closure, and when no reason exists for a delay, ileostomy reversal within 4 weeks after primary surgery is recommended and is closely associated with better functional outcome.

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