

Complication Patterns of Loop Ileostomy

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Abstract

Background: Loop ileostomy is a temporary diversion of small intestinal contents towards exterior through anterior abdominal wall. Though it is a good procedure for a better outcome of primary surgery it has itself many complications. **Objective:** To determine the clinical spectrum of loop ileostomy complications. **Materials and method:** This prospective study was conducted from January, 2017 to December, 2017. Consecutive 30 patients requiring loop ileostomy were enrolled in the study by purposive sampling and were categorized into Group A requiring emergency surgery and Group B planned for elective surgery. Data regarding sociodemographic, clinical, surgical and outcome profile were recorded in a pre-structured, interview and observation based, peer reviewed data collection sheet. Data were compiled, edited and analyzed with SPSS version 23. Data were presented as mean and standard deviation, frequency percentage and median with range. **Results:** The mean age of the patients were 32.79 ± 5.19 years (age range: 20-43 years) and 49.16 ± 6.17 years (age range: 28-76 years) in Group A and Group B respectively with sex ratio of male to female of 4:1 and 3:1. Out of 10 patients in Group A, 4(40%) patients underwent resection anastomosis with ileostomy and primary repair with loop ileostomy whereas 2(20%) patients underwent exteriorization of multiple perforation site. In Group B among 20 patients, 9(45%) underwent low anterior resection with loop ileostomy and 5(25%) patients underwent left hemicolectomy with loop ileostomy. Out of 10 patients in Group A, 5(50%) patients each suffered from skin excoriation and major wound infection. On the contrary, among 20 patients in Group B, 11(55%) and 4(20%) patients suffered from skin excoriation and stomal obstruction. Only skin excoriation was evident as statistically significantly higher in Group B than in Group A ($p 0.03$). Among the general complications, electrolyte imbalance (60% vs 40% in Group A and B respectively) and respiratory tract infection (10% each in Group A and B) were evident. **Conclusion:** Skin discoloration, skin edema, major and minor wound infection, prolapse, skin excoriation and stomal obstruction are the different spectrum of loop ileostomy complications in our perspective. Among them skin excoriation is much higher in routine cases than emergency surgery.

Keywords: Loop ileostomy; Complications.

Delta Med Col J. Jan 2021;9(1):17-22

Introduction

Ileostomy is a frequently performed surgical procedure. It is an iatrogenic stoma which maintains the external communication between

distal part of ileum and the anterior abdominal wall. Diversion of the small intestinal alkaline content through this stoma can reduce the effects

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of distal anastomotic leak and also the rate of leak-related surgery.¹ In Bangladesh, ileostomy is also performed in various ileal, caecal and appendiceal conditions like ileal perforation, colonic injury, etc. It is thus performed in both elective and emergency surgeries. Complications following the creation of stoma are experienced by 20-40% of ostomates and can be early such as ischemia, hemorrhage and infection. Besides, the late complications may be stenosis, diarrhea, necrosis, fistula formation, abscess formation, prolapse, obstruction, hernia and skin irritation.² In addition, ileostomy usually adversely affects the quality of life due to physical retraction and psychological problems.³ Ileostomy, if temporary, demands a second surgery, readmission and hospital stay. Furthermore, financial burden is also a complaint here. Moreover, reversal shows significant morbidity with mortality with complications in about 33% cases.⁴

To avoid ileostomy related complications, meticulous surgery with sound surgical principles is mandatory. For that reason, it is advocated to be performed by an experienced surgeon always who is not only technically skilled but also able to understand the potential metabolic and mechanical problems. Before creating the stoma, a judicious assessment, careful surgical technique and skilled enterostomal nursing must be ensured for a satisfactory short term and long term outcome. The key to the management of surgical complications of ileostomy is the prevention.

The main aim of this study was to determine the clinical spectrum of loop ileostomy complications in Delta Medical College Hospital and National Institute of Cancer Research & Hospital.

Materials and method

This prospective study was conducted in the department of Surgery of Delta Medical College Hospital from January, 2017 to December, 2017. Total 30 patients requiring emergency or routine loop ileostomy were included by purposive sampling. Thereafter, they were informed regarding the surgery and the research. The patients who had the history of previous

laparotomy or ventral hernia were excluded from the study. After taking informed written consent, the patients were thoroughly evaluated with adequate history, proper clinical examination and relevant investigations as related to their primary disease and anesthetic fitness. All the emergency patients were resuscitated first and routine surgery patients were sent to the department of anesthesia for pre-anesthetic check up.

All the emergency patients were categorized as Group A and all the routine patients were categorized as Group B and included 10 and 20 patients respectively. All the surgeries were performed by at least assistant professor of the department. In the postoperative period, the patients were kept under conservative treatment until ileostomy was functioning.

Here a pre-structured, peer-reviewed, interview and observation based data collection sheet was used as a research tool. All data regarding sociodemographic profile, clinical profile, surgical profile and outcome profile were recorded through this data collection sheet. Data were entered, managed and analyzed through the special software named statistical package for social science (SPSS) version 23 (Illinois; Chicago; USA).

Results

Table I: Baseline characteristics of patients who underwent loop ileostomy (N=30)

Baseline characteristics	Group A (N=10)	Group B (N=20)	Total (N=30)
Age group (in years)			
<20	1 (10%)	0 (0%)	1 (3.33%)
21 – 30	3 (30%)	1 (5%)	4 (13.33%)
31 – 40	5 (50%)	3 (15%)	8 (26.67%)
41 – 50	1 (10%)	11 (55%)	12 (40%)
>50	0 (0%)	5 (25%)	5 (16.67%)
Mean age±SD (in years)	32.79±5.19	49.16±6.17	43.79±10.16
Age range (in years)	20 – 43	28 – 76	20 – 76
Sex distribution			
Male	8 (80%)	15 (75%)	23 (76.66%)
Female	2 (20%)	5 (25%)	7 (23.33%)
Sex ration (M:F)	4:1	3:1	
Household income			
Low <15,000 BDT/month	1 (10%)	3 (15%)	4 (13.33%)
Middle class (15,000-30,000 BDT/month)	7 (70%)	14 (70%)	21 (70%)
Affluent class (>30,000 BDT/month)	2 (20%)	3 (15%)	5 (16.67%)
BMI (kg/m²)			
Malnourished (<18kg/m ²)	1 (10%)	2 (10%)	3 (10%)
Normal (18 – 25kg/m ²)	6 (60%)	12 (60%)	18 (60%)
Overweight (26 – 30kg/m ²)	3 (30%)	5 (25%)	8 (26.67%)
Obese (>30kg/m ²)	0 (0%)	1 (5%)	1 (3.33%)

Table I shows that among 30 patients who underwent loop ileostomy 10(33.33%) were categorized as Group A who were enrolled as emergency cases and 20(66.66%) were categorized as Group B who were enrolled as routine cases.

The mean age of the patients was 32.79±5.19 years (age range: 20-43 years) and 49.16±6.17 years (age range: 28-76 years) in Group A and Group B respectively. Maximum 50% patients in Group A belonged to 31-40 years age group whereas maximum 55% patients in Group B belonged to 41-50 years age group.

The sex distribution showed that 80% and 20% were male and female patients in Group A respectively. The sex ratio of male to female was 4:1. On the contrary, 75% and 25% were male and female patients in Group B respectively. The sex ratio of male to female was 3:1.

The household income revealed that 70% each in Group A and B were from the middle income families.

Besides, BMI statistics of the respondents showed that 60% each in Group A and B had BMI 18-25 or normal.

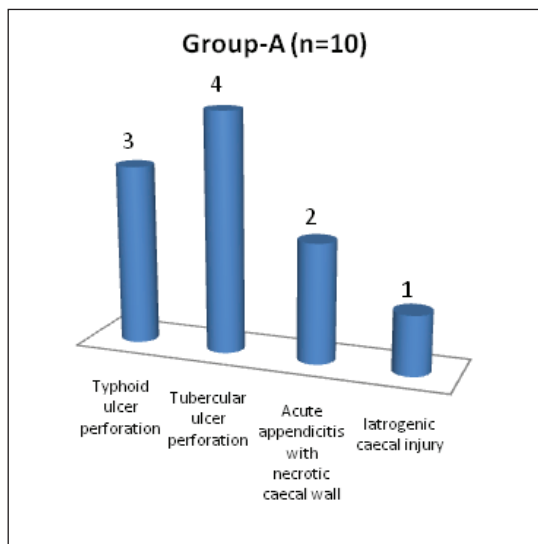


Fig. 1: Distribution of patients according to primary disease in Group A (n=10)

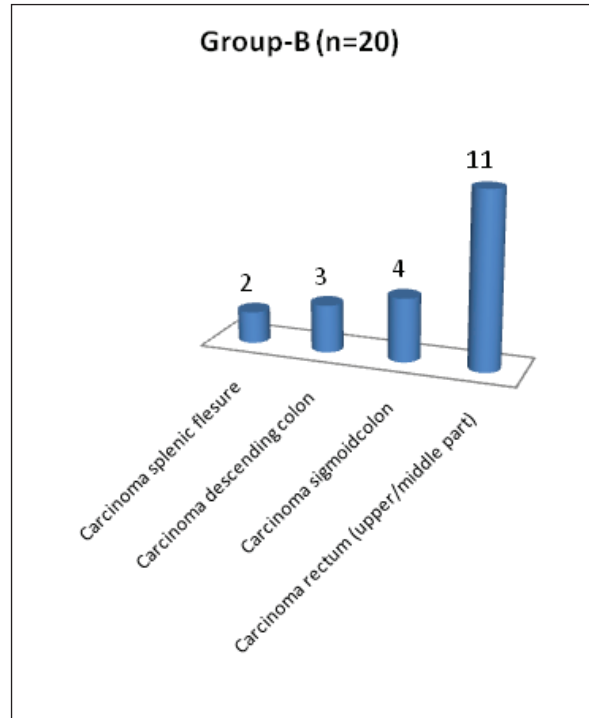


Fig. 2: Distribution of patients according to primary disease in Group B (n=20)

Figure 1 and 2 show the distribution of patients according to primary disease in Group A and Group B respectively.

Table II: Type of surgery (N=30)

Type of surgery	Frequency %
Group A (n=10)	
Resection anastomosis with ileostomy	4(40%)
Exteriorization of multiple perforation site	2(20%)
Primary repair & loop ileostomy	4(40%)
Group B (n=20)	
Left hemicolectomy with loop ileostomy	5(25%)
Sigmoid colectomy with loop ileostomy	4(20%)
Low anterior resection with loop ileostomy	9(45%)
Only loop ileostomy	2(10%)

Table II shows that out of 10 patients in Group A 4(40%) each underwent resection anastomosis with ileostomy and primary repair with loop ileostomy whereas 2(20%) patients underwent exteriorization of multiple perforation sites.

On the contrary, out of 20 patients in Group B 9(45%) and 5(25%) patients underwent low anterior resection with loop ileostomy and left hemicolectomy with loop ileostomy respectively. Besides, 4(20%) and 2(10%) patients underwent sigmoid colectomy with loop ileostomy and only loop ileostomy respectively.

Table III: Complications following loop ileostomy (N=30)

Complications	Group A (n=10)	Group B (n=20)	Total (N=30)	p-value
Local				
Stomal discoloration	1 (10%)	0 (0%)	1 (3.33%)	-
Stomal edema	3 (30%)	4 (20%)	9 (30%)	>0.05 ^{NS}
Skin excoriation	5 (50%)	11 (55%)	16 (53.33%)	0.03 ^S
Major wound infection	5 (50%)	0 (0%)	5 (16.67%)	-
Minor wound infection	2 (20%)	1 (5%)	3 (10%)	>0.05 ^{NS}
Prolapse	1 (10%)	0 (0%)	1 (3.33%)	-
Stomal obstruction	1 (10%)	2 (10%)	3 (10%)	>0.05 ^{NS}
General				
Electrolyte imbalance	6 (60%)	8 (40%)	14 (46.66%)	>0.05 ^{NS}
Respiratory tract infection	1 (10%)	2 (10%)	3 (13.33%)	>0.05 ^{NS}

p-value was calculated by chi square test

S: Significant

NS: Not significant

p-value was significant at <0.05

Table III shows that out of 10 patients in Group A 5(50%) patients each suffered from skin excoriation and major wound infection. On the contrary among 20 patients in Group B, 11(55%) and 4(20%) patients suffered from skin excoriation and stomal obstruction respectively. Only skin excoriation was evident as statistically significant higher in Group B than in Group A (p=0.03).

Among the general complications, electrolyte imbalance (60% vs 40% in Group A and B respectively) and respiratory tract infection (10% each in Group A and B were evident).

Discussion

More than 200 years ago, first surgical stoma was created unintentionally as enterocutaneous fistulas resulting from abdominal injuries or complications of intestinal diseases such as incarcerated hernia.⁵ Intestinal perforation resulting from typhoid fever and tuberculosis has always been a concern because of their high morbidity and mortality rates.⁶ Here, majority perforations occur in the terminal ileum.

In case of perforation or obstruction with features of peritonitis a proximal loop ileostomy is usually practiced due to following intra-operative findings as like as insecure repair or anastomosis, multiple perforations, matted bowel loops and grossly unhealthy bowel for presence of severe edema and inflammation.⁷

In this study, the mean age in Group B was 49.16±6.17 years where it was proclaimed that majority patients belonged to 41-50 years age group. These reports were inconsistent with Wong et al.⁸ where they found that patients underwent emergency surgery were generally older than elective cases (mean age 68.6 in emergency and 66.3 years in elective cases). But it is assumed here that majority of our elective cases were diagnosed as malignancies whereas the emergency cases were due to infective causes. In our country, we usually predict the malignancy is a disease of elderly.

From the point of view of sex distribution it was observed that male were higher in both Group A and B in comparison to female. In Group A and B male to female sex ratio were 4:1 and 3:1 respectively. This male predominance was supported by Kumar et al.⁹ whereas opposed by Wong et al.⁸ In Group A, we identified that all the causative primary diseases were non-malignant whereas Kumar et al. claimed that 15 to 30% of colorectal cancers present as emergency care that requires loop ileostomy.

In Group A, tubercular ulcer perforation claimed the majority 40% cases which was subsequently followed by 30% typhoid ulcer perforation that required emergency surgery and loop ileostomy. Results of the study by Chaudhury et al. were in accordance with our findings.¹⁰ Their Zenith discovery was typhoid ulcer perforation On the contrary, in Group B it was evident that all the primary diseases are the members of colorectal carcinoma when carcinoma rectum (upper/middle part) knocked the highest (55%). It was agreed by the report of Kumar et al.⁹

In the immediate post operative period the only stomal discoloration (10%) was evident in Group A. Besides, stomal edema were evident in 30% cases of Group A and 20% cases of Group B.

Data derived from different studies showed that the commonest complication is the parastomal skin excoriation ranging from 5-9 to 43.8% in loop ileostomy.^{7,11} These statistics supported our findings. Rather our findings are a little higher than the previous literatures. It may be due to very small sample size in our study. But it is true that among the complications skin excoriation in Group A is significantly lower than the Group B cases ($p=0.03$).

The reported incidence of wound infection after loop ileostomy is 5.8-26.6% in various studies.^{7,12} In this study 50% and 20% major and minor wound infection respectively were evident. In emergency surgery whereas the figures were 0% and 5% in Group B. It revealed that wound infection is more in unprepared gut through the difference were not statistically significant.

The stomal bleeding incidence is reported to be 1.8% to 6% in different researches.¹³ But in present study, no single case of stomal bleeding was observed in both the groups.

The reported stomal prolapse was 1.2-5.3% in various studies.¹³ But we have got here only single case in emergency cases which represented 10%.

Bowel obstruction after ileostomy creation is relatively common, affecting up to 25% ileostomy patients during lifetime.¹⁴ We have observed 10% each in both the groups. Frequently, these episodes correspond to a stick food bolus proximal to the terminal portion of the small bowel or secondary to an adhesive band. The single case in Group B was due to latter cause whereas last of the stomal obstruction in our perspective were due to stuck food bolus.

In one study, the 5 year survival rate following loop ileostomy in emergency surgeons was revealed as 39.2% in comparison to 64.7% in elective cases.¹⁵ It was beyond scope of our study due to short duration of study period.

Conclusion

Skin discoloration, skin edema, major and minor wound infection, prolapse, skin excoriation and

stomal obstruction are the different spectrum of loop ileostomy complications in our perspective. Among them skin excoriation is much higher in routine cases than emergency surgery.

References

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