

## Case Study on Comparative Study between Early and Delayed Ileostomy Closure

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### Abstract

**Background and objectives** - Ileostomy is often constructed in emergency surgical conditions like enteric or tubercular perforations when patients present late in the course of illness to preclude primary closure. But the ostomy carries with it lot of morbidity making the quality of life poor. The early closure of ostomy can minimize the associated morbidity and help the patient to enjoy better quality of life sooner. Our aim was to prospectively compare the morbidity and mortality associated with early and delayed ileostomy closure.

**Methods**- A total of 100 patients were selected admitted from OPD and Emergency in Department of Surgery who underwent laprotomy planned procedure and required temporary ileostomy. Period of study was two years from Dec 2017 to Dec 2019. The study group was divided into two cohorts : 40 patients in early ileostomy closure group where reversal was done in 4 weeks and 60 in delayed ileostomy closure group where reversal was done in 10-12 weeks. Each cohort was followed up initially weekly for first 6 weeks and then at 12th week and then after 6 months.

**Results**- Stoma related complications were seen more commonly among delayed ileostomy closure group e.g. stoma prolapse seen in 11.66% of patients of DC group in comparison to none in EC group, stoma retraction seen in 3.33% patients of DC group in comparison to none in EC group. Intraoperative adhesion was significantly higher in delayed ileostomy closure group. Among postoperative complications incidence of skin excoriation was higher in delayed closure group (35%) compared to early ileostomy closure group. The frequency of ileostomy wound closure site infection was slightly more in early ileostomy closure group (25.0%). Incidence of anastomotic leak in this study was 5%, all of which were promptly diagnosed & intervened.

**Conclusion**- The present study potentially highlights the advantages 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 patient is done. This significantly cuts down the convalescent period of the patient and helps him lead a better quality of life much earlier.

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### I. Introduction:

The loop ileostomy is a type of stoma created to divert the flow of intestinal content away from a distal colorectal anastomosis. It defunctions an anastomosis and limits the clinical impact of an anastomotic leak, which is one of the most feared complications in colorectal surgery. According to retrospective and prospective studies a loop ileostomy is favored over loop colostomy for ease of construction and lower complication profile. Additionally, the efficacy of a loop ileostomy in reducing the consequence of anastomotic dehiscence and improving outcomes in distal colorectal anastomoses is well documented in prospective cohort studies. However, a systematic review<sup>5</sup> has shown nearly 20% of patients develop a variety of ileostomy-related complications that can negatively affect quality of life and lead to hospital readmissions. For these reasons, loop ileostomies tend to be temporary and many surgeons aim to reverse them within 3 months, although the optimal time for reversal of ileostomy remains unknown. The reversal operation generally is regarded as safe, with reported mortality rates as low as 0.4%. This surgery is commonly performed through a circumstomal incision followed by full mobilization of the ileostomy, formation of ileo-ileal anastomosis, and closure of the fascia and wound. In some instances, a full laparotomy is required. However, the literature suggests that up to one third of loop ileostomies may never be reversed. A number of factors have been shown to be implicated in the delay or failure of stoma closure; these factors included older age, comorbidities, delayed recovery after the initial operation, complications such as anastomotic dehiscence, and the need for adjuvant chemotherapy. It is hypothesized that the time delay may have an impact on postoperative outcomes when the loop ileostomy is eventually closed.

The time for reversal of the stoma is an issue of central importance, and we therefore aim to investigate morbidity and mortality, health economic implications as well as patient-reported outcome related to the time of reversal of a temporary loop ileostomy.

**AIMS AND OBJECTIVES:**

To evaluate the length of time between loop ileostomy construction and its closure. To quantify stoma related morbidity and to identify the potential advantage of early closure.

**II. Materials And Methods:**

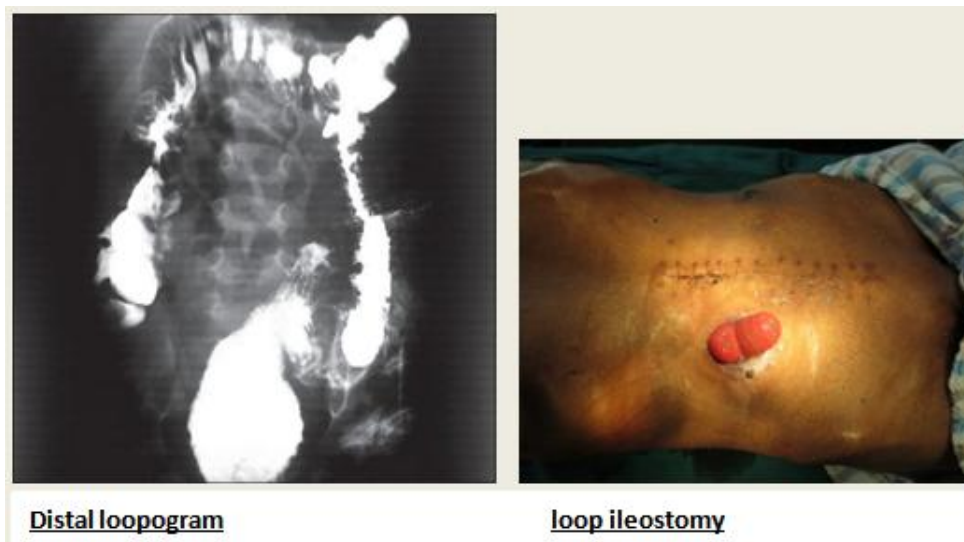
**Study design and setting:** This was a prospective comparative study of patients admitted for loop ileostomy closure at DMCH, Darbhanga, from Dec 2017 to Dec. 2019. Patients allocated into two cohorts - Group A (40 Patients) whose stoma were closed at 4 weeks and Group B (60 patients) whose stoma closed at 10-12 weeks. In addition distal loopogram using water soluble contrast done in all cases to ascertain the distal patency of the intestinal tract.

**INCLUSION CRITERIA:**

1. Patients with a temporary ileostomy of diverse aetiology.
2. Patients who are physically & mentally fit to undergo surgery within 4 weeks.
3. Patients with clinical Stage-I to Stage-III peritoneal contamination during primary surgery.  
Grading of peritoneal contamination devised by Hinchey:  
Stage I – pericolic or mesenteric abscess;  
Stage II – walled-off pelvic abscess;  
Stage III – generalized purulent peritonitis;  
Stage IV – generalized fecal peritonitis.
4. Age (18years to 70years)

**EXCLUSION CRITERIA:**

1. Patients whose stoma is not reversible.
2. Patients who developed abdominal wall dehiscence after primary operation.
3. Patients with tubercular perforation.
4. Patients with HIV infection.



**III. Observations And Results:**

In the present study, maximum number of patients undergoing ileostomy procedure were in age group of 45-55 yrs (28%)<sup>(tab 1)</sup>. Most of the complications in two groups were statistically insignificant. Most common indication for ileostomy procedure in both the groups was enteric perforation EC group (55%) and DC group (35%).<sup>(tab 2)</sup>

Stoma related complications were seen more commonly among delayed ileostomy closure group e.g. stoma prolapse seen in 11.66% of patients of DC group in comparison to none in EC group, stoma retraction seen in 3.33% patients of DC group in comparison to none in EC group although the difference recorded were statistically insignificant.<sup>(tab 3)</sup>

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During the first operation maximum number of patients was found to be in grade IV of Hinchey classification of peritoneal contamination. <sup>(tab 4)</sup>

Among intraoperative parameters, intraoperative adhesion was significantly higher in delayed ileostomy closure group (38.33%) with a p value of 0.0096 <sup>(tab 5 & 6a)</sup>

Operative time for stoma closure was marginally high in delayed closure group (mean 78min) compared to early closure group (mean 76.12 min), which was not statistically significant.

Among postoperative complications incidence of skin excoriation was higher in delayed closure group (35%) compared to early ileostomy closure group and it was statistically significant (p=0.0226). <sup>(tab 6a & 6b)</sup>

The frequency of ileostomy wound closure site infection was slightly more in early ileostomy closure group (25.0%), but it was not statistically significant. <sup>(tab 6a)</sup>

Incidence of anastomotic leak in this study was 5%, all of which were promptly diagnosed & intervened. <sup>(tab 6a)</sup>

Incidence of hospital stay was found to be significantly lower in EC group (24.92 ± 5.12) than that of DC group (41.43 ± 12.29). <sup>(tab 7)</sup>

AGE (YRS)	FREQUENCY	PERCENTAGE (%)
15-25	6	6
25-35	16	16
35-45	22	22
45-55	28	28
55-65	20	20
65-75	8	8
<b>TOTAL</b>	<b>100</b>	

**Table 1. Age wise distribution of subjects Undergoing ileostomy**

INDICATION	EC GROUP N=40	DC GROUP N=60
<b>ENTERIC PERFORATION</b>	22 (55%)	35 (58.33%)
<b>TRAUMA</b>	6 (15%)	2 (3.33%)
<b>INFLAMMATORY BOWEL DISEASE</b>	1 (2.5%)	2 (1.66%)
<b>COLORECTAL CARCINOMA</b>	11 (27.5%)	21 (35%)

**Table 2. Indications for ileostomy procedure in both cohort groups**

S. No.	STOMA RELATED COMPLICATIONS	EC GROUP (N=40)	DC GROUP (N=60)
1	STOMA PROLAPSE	0	7 (11.66%)
2	STOMA RETARCTION	0	2 (3.33%)
3	STOMA NECROSIS	0	0
4	PARASTOMAL HERNIA	0	0

**Table 3. Stoma related complications in both the groups**

GRADING OF PERITONEAL CONTAMINATION (HINCHEY CLASSIFICATION)	NUMBER OF PATIENTS
<b>I</b>	5
<b>II</b>	10
<b>III</b>	21
<b>IV</b>	35

**Table 4. Distribution of patients during first operation according to Hinchey grading for peritoneal contamination**

INTRAOPERATIVE ADHESIONS	EC GROUP	DC GROUP	Chi square test
YES	5 (12.5%)	23 (38.33%)	X <sup>2</sup> (1)= 6.715 P= 0.0096
NO	35	37	
TOTAL	40	60	

Table 5. Intraoperative adhesions. Difference between the two groups is highly significant

COMPLICATIONS	EC GROUP (N=40)	DC GROUP (N=60)
ADHESIONS	5 (12.5%)	23 (38.33%)
SKIN EXCORIATION	5 (12.5%)	21 (35%)
WOUND INFECTION	10 (25%)	6 (10%)
WOUND DEHISENCE	2 (5%)	5 (8.33%)
ANASTAMOTIC LEAK	1 (2.5%)	4 (6.66%)
EC FISTULA	1 (2.5%)	2 (3.33%)
INTESTINAL OBSTRUCTION	3 (7.5%)	5 (8.3%)

Table 6a. Post operative stoma complications in both the cohort groups

SKIN EXCORIATION	EC GROUP	DC GROUP	Chi square test
YES	5 (12.5%)	21 (35%)	X <sup>2</sup> (1)= 5.200 P= 0.0226
NO	35	39	
TOTAL	40	60	

Table 6b: skin excoriation. Difference between the two groups highly significant

	EC GROUP	DC GROUP	Unpaired t-test
LENGTH OF HOSPITAL STAY (Mean±SD)	(24.92 ± 5.12)	(41.43 ± 12.29)	P<0.0001

Table 7. Length of hospital stay. Difference between two groups statistically significant

#### IV. Conclusion:

Early closure of the stoma had no adverse effect on functional results or quality of life. Early closure of a temporary stoma can be done in selected cases between 4 - 6 weeks with favourable outcome (The conclusion rests on a prospective randomized study). By closing the temporary stoma early, we can potentially construct and close the stoma during the same period of hospitalization. This would yield economic and administrative benefits to the department as well as the patient.

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**ANEXURE:**

- EC: Early ileostomy closure group
- DC: Delayed ileostomy closure group.
- IBD: Inflammatory bowel disease.

1Dr. Duli Chand Jat, et. al. "Case Study on Comparative Study between Early and Delayed Ileostomy Closure." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(5), 2020, pp. 25-29.