

A PROSPECTIVE STUDY FOR ASSESSING THE OUTCOMES AFTER EARLY AND DELAYED ILEOSTOMY REVERSAL IN A TERTIARY CARE CENTREMd. Hasanuzzaman¹, Asis Kumar Saha^{2*}, Prasenjit Das³, Saran Hembram⁴, Arijit Banik⁵, Krishnendu Mondal⁶

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ABSTRACT

Background: - Temporary ileostomy or diverting ileostomy is done frequently to prevent the consequence of primary anastomotic leakage, to control the abdominal sepsis or as a part of damage control surgery. On the other hand ileostomy is also associated with certain complications like peristomal excoriation, fluid electrolyte imbalance, dehydration, renal compromise and social separation. So our main aim of the study is to compare the outcomes between early and delayed ileostomy reversal according to feasibility, cost of therapy, hospital stay, morbidity, mortality and health related quality of lifestyle for the patients with temporary ileostomy. **Methods:** - 50 patients who underwent temporary ileostomy in our tertiary care centre after meeting the inclusion and exclusion criteria were included in the study. They were divided into two groups with 20 patients in early reversal arm and 30 patients in delayed reversal arm. Both groups were compared on the basis of various parameters. **Results:** - There were statistically significant advantage of early reversal of ileostomy group over delayed reversal group in terms of stoma related complications, less intraoperative adhesion, post operative morbidities and length of hospital stay. Whereas complications like anastomotic leak, wound dehiscence, faecal fistula and incidence of post operative incisional hernia formations were statistically not significant in both groups. Although post operative wound infection is more common in early reversal group. No mortality was recorded in both groups. **Conclusions:** - Early reversal of temporary ileostomy is feasible immediately after recovery from primary emergency conditions without any increased risk of different perioperative complications.

KEYWORDS: Ileostomy, Ileostomy reversal, Early reversal.**INTRODUCTION**

Ileostomy is an external opening constructed between the small intestine and the abdominal wall, usually by using distal ileum, but sometimes with more proximal small intestine.^[1] Ileostomy can be various types, of which temporary or diverting ileostomy is one of the most commonly performed procedures in emergency situation now a days. Temporary or diverting ileostomy is done to prevent the consequence of primary anastomotic leakage, to control the abdominal sepsis or as a part of damage control surgery. Creation of ileostomy is also associated with certain complications like peristomal excoriation, fluid electrolyte imbalance, dehydration and renal compromise. Sometimes these complications are so severe that it is necessary to close the ileostomy early in the post operative period. In our country intestinal stoma is also a stigma and with this type of high output stoma, patient cannot join to his or her normal day to day activities.^[2,3,4,5,6] Early reversal of ileostomy can be done just after the primary anastomosis heals or control of abdominal sepsis. On the other hand delayed reversal of ileostomy is usually done in situations like multiple ileal ulcerations, non healing wound, tuberculosis, crohn's disease and uncontrolled sepsis.^[4] Although the closure

of the stoma is a minor surgical procedure, it may be associated with appreciable morbidity.

So our main aim of the study is to compare the outcomes between early and delayed reversal of ileostomy according to cost of therapy, hospital stay, morbidity, mortality, economic burden on the society and its effect on the health related quality of lifestyle.^[7,8]

The rationale of this study is also to determine the optimal time of reversal of temporary or diverting ileostomy.

METHODS

Study was done at tertiary medical college and hospitals, Kolkata, India.

Total number of 50 Patients, who underwent temporary or diverting ileostomy for different pathology, in the Department of General surgery from March 2018 to August 2019 were taken for the study.

They were divided into two groups with 20 patients in early reversal arm and 30 patients in delayed reversal

arm. Both groups were compared on the basis of various parameters

Inclusion Criteria

1. Patients with a temporary ileostomy of diverse etiology.
2. Patients who are physically & mentally fit to undergo surgery within 3 weeks.
3. Patients with clinical Stage I to Stage III peritoneal contamination during primary surgery [Grading of peritoneal contamination devised by Hinchey]^[9]
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 communicative problems.
5. Clinical Stage IV peritoneal contamination (Hinchey).
6. Patients with HIV infection.

A prospective longitudinal study was designed to compare different parameters of both the arms. Allocation of patients in two arms was done by the process of randomization.

Parameters studied

A. Pre-Operative Parameters

1. History and clinical examination.
2. Early presentation.
3. Late presentation.
4. Delayed operation.
5. Indication for ileostomy creation.

B. Intra Operative Parameters

1. Intra operative findings.
2. Degree of peritoneal contamination.

C. Post-Operative Parameters

1. Skin excoriation.
2. Wound infection.
3. Wound dehiscence.
4. Fecal fistula.
5. Anastomotic leakage.

Table 3: Indications for ileostomy formation in our study population.

Indication	Early ileostomy reversal	Delayed ileostomy reversal
Enteric perforation	10 (50%)	18 (60%)
Trauma	3(15%)	3(10%)
Inflammatory Bowel disease	01(5%)	01(3.33%)
Colorectal carcinoma	6(30%)	8(26.6%)

Most of patients in our study had undergone ileostomy in emergency situation for enteric perforation or abdominal trauma. Ileostomy done for patients with rectal carcinoma were diverting in nature to protect the distal anastomosis. The timing of ileostomy closure did not vary significantly with different disease conditions.

Study Technique

Patients with temporary ileostomy were randomly selected for intervention in both early and delayed reversal group.

Early reversal of ileostomy was done within 3 weeks of primary operation or immediately after recovery from primary emergency.

Delayed reversal of ileostomy was done usually after 10-12weeks of primary operation.

Close follow up of patients of both groups done in every week for 1st 6 weeks after discharge then at 12 weeks and 6 months for assessment of any complication.

The data and outcome was analysed and compared using statistical software - MEDCALC SOFTWARE VERSION 16.4.2.0.

RESULTS

Total of 50 patients were included in the study. The maximum number of patients was in the age group of 38-47 yrs (40%).

Table 1: Distribution of study population according to age group at presentation.

Age group (years)	Frequency	Percentage
18-27	04	8.0%
28-37	08	16%
38-47	20	40%
48-57	12	24%
58-70	06	12%
Total	50	100%

Table 2: Distribution of study population according to gender and timing of ileostomy reversal.

Timing of ileostomy reversal	Male	Female
Early	15	5
Delayed	17	13
Total	32	18

Of the total 50 patients included in the study, 32 were male patients and 18 were female patient and the timing of ileostomy closure did not vary significantly with sex distribution.

Table 4: Peritoneal contamination of study population during 1st operation.

Grading of peritoneal contamination(Hinchey Classification)	Number of Patients
Grade I	14
Grade II	15
Grade III	5

Table 5: Stoma Related Complications in our study population.

Sl no.	Stoma related complications	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)
1	Stoma prolapse	0	5(16.66%)
2	Stoma retraction	0	1(3.33%)
3	Stoma necrosis	0	0
4	Peristomal hernia	0	0

In early reversal of ileostomy group stoma related complications were not recorded, while in delayed reversal group five cases of stoma prolapsed (16.66%)

and one case of stoma retraction (3.33%) were recorded although it was statistically insignificant.

Table 6: Presence of intraoperative adhesion during ileostomy reversal in our study population.

Intraoperative adhesion	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	2(10%)	14(46.66%)	X ² (1)=7.414 P=0.006
No	18(90%)	16(53.33%)	
Total	20	30	

Comment: Difference between the two groups highly significant.

Table 7: Operative time for stoma closure in our study population.

	Early ileostomy closure group(n=20)	Delayed ileostomy closure group (n=30)	Unpaired T test
Operative time for stoma closure (min) (Mean ± SD)	76.4± 17.1	78.0 ± 22.28	P= 0.697

Comment: Operative time for stoma closure between the two groups was found to be statistically insignificant.

Table 8: Presence of peristomal skin excoriation in our study population.

Skin excoriation	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	3(15%)	13(43.33%)	X ² (1)=4.414 P=0.035
No	17(85%)	17(56.66%)	
Total	20	30	

Comment: Difference between the two groups highly significant.

Table 9: Incidence of ileostomy closure site wound infection in study population.

Ileostomy closure site wound infection	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	8(40%)	4(13.33%)	X ² (1)=6.678 P=0.031
No	12(60%)	26(86.66%)	
Total	20	30	

Table 10: Incidence of wound dehiscence in our study population.

Presence of wound dehiscence	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	1(5.00%)	3(10%)	X ² (1)=0.407 P=0.523
No	19(95%)	27(90%)	
Total	20	30	

Comment: Difference between the two groups not statistically significant.

Table 11: Incidence of post reversal anastomotic leak in our study population.

Anastomotic leak	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	1(5.00%)	2(6.66%)	X ² (1)=0.0591 P=0.808
No	19(95.00%)	28(93.33%)	
Total	20	30	

Table 12: Incidence of faecal fistula formation in our study population.

Incidence of Faecal fistula	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	1	3(10%)	X ² (1)=0.4076 P=0.532
No	19	27(90%)	
Total	20	30	

Table 13: Length of hospital stay in terms of days in our study population.

	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Unpaired t test
Length of hospital stay (days) Mean±SD	24.92± 5.12	41.6 ± 12.17	X ² (1)=3.125 P=0.077

Table 14: Incidence of post operative incisional hernia in our study population.

Incisional hernia	Early ileostomy closure group(n=20)	Delayed ileostomy closure group(n=30)	Chi Square Test
Yes	2(10%)	0 (00%)	X ² (1)=3.125 P=0.077
No	18(90%)	30(100%)	
Total	20	30	

DISCUSSION

Since the first report of this procedure by Turnbull in 1966,^[10] loop ileostomies gained increased popularity because of its technical simplicity, lack of odour, liquid discharge, decreased rates of stoma related complications.^[11-16]

Loop ileostomy can be a life-saving procedure in the emergency setup. In colorectal surgery, a temporary loop ileostomy is often constructed to protect a distal anastomosis.^[17] The loop ileostomy is favoured by most surgeons because it is easy to construct.^[18]

Traditionally restoration of intestinal continuity is usually performed after 8– 12 weeks. However, during this time, stoma related complications occur in quarter of patients with adverse effects on quality of life.^[19,20]

Complication rates for the reports by Van de Pavoordtet et al, and Phang et al were 17 and 28% respectively. Perez et al in their study confirm the same thing.

Author	Year	Number of Patients	Complication (%)
Van de Pavoordtet et al (24)	1987	293	17
Phang et al (25)	1999	339	28
Hallbook et al (26)	2002	213	13
Perez et al (27)	2006	93	17.2

In our present study, most of the complications in two groups were statistically insignificant.

A total of 50 patients were included in the study. The maximum number of patients were in the age group of 38-47 yrs (40%) and male patients (64%) were more

There is debate as to the interval between primary surgery and closure. If reversal is attempted too early, patients may not have cured adequately from primary surgery, and the stoma will still be oedematous.^[21,22] If closure is carried out too late, there may be difficulty with adhesions and the patient's quality of life will be affected by a larger period with a stoma.

Overall complication rates after ileostomy closure have been reported to be in the range of 10 to 30 %.^[21] Some authors have reported a higher morbidity after ileostomy closure associated with restorative proctocolectomy than that associated with low colorectal or coloanal anastomoses.^[23]

common participant than female. Ileostomy reversal did not vary significantly with sex distributions and with different primary disease condition.

Stoma related complications were seen more commonly among delayed ileostomy reversal group like stoma

prolapse (16.66%) and stoma retraction (3.33%). Although the difference recorded were statistically insignificant.

Incidence of skin excoriation were higher in delayed reversal group (43.33%) compared to early reversal group (15%), which was statistically significant (p value=0.035).

Among intraoperative parameters, intraoperative adhesion was significantly higher in delayed ileostomy reversal group (46.66%) than early reversal group (10%) with a p value of 0.006 which is statistically significant.

Operative time for stoma reversal was marginally high in delayed reversal group (mean 78min) compared to early reversal group (mean 76min) which was statistically insignificant ($P=0.697$).

The frequency of ileostomy wound reversal site infection was more in early ileostomy reversal group (40%) in comparison to delayed groups(13.33%), which is statistically significant(p value=0.031).

In a study conducted by Alves et al (28), in the early closure group frequency of wound infection was published higher (17%).

Incidence of anastomotic leak in this study was 5 to 6%, all of which were promptly diagnosed & intervened.

Length of hospital stay was significantly less in early reversal group as compared to delayed reversal group (24.92 days Vs 41.6 days), with early return to normal day to day activities.

No mortality was recorded in our study population.

CONCLUSION

In conclusion, from reports of our limited experience with both methods, early reversal of temporary loop ileostomy within 3 weeks or immediately after recovery from primary emergency was not associated with significantly increased morbidity except increased post operative wound infection.

Routine allocation of patients with temporary loop stomas to early closure could improve patient well being.

The routine practice of reversing patients to prolonged stoma care should be individualised and further studies are necessary for comparison of disease specific outcomes of reversal.

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Md. Hasanuzzaman

CONFLICT OF INTEREST

Our study is original research work and no part of it has been previously published or submitted to any other journal.

We have conducted our study without any external funding and without any financial burden on the patients.

While conducting this study, voluntary written consent was taken from each patient and confidentiality of the patients' maintained throughout the study.

Md. Hasanuzzaman

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