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## RESEARCH ARTICLE

### COMPARATIVE STUDY OF EARLY AND DELAYED LOOP ILEOSTOMY AND COLOSTOMY CLOSURE

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#### ABSTRACT

**Background and Objectives:** Ileostomy or colostomy 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 closure and late closure.

**Methods:** A total of 47 ileostomies were made for various indications during period Feb. 2013- Nov. 2014. Patients were divided into two cohorts by the time of stoma closure. Early closure group in which stoma was closed within 4-6 weeks and late closure group in which stoma was closed after 90 days. No colostomy was closed early. So our observations are on early closure of ileostomy only.

**Results:** Total 15 patients were taken up for ileostomy closure between 4-6 weeks (EC group) and remaining 32 were late closure (LC group). Only 4 patients in early closure group had minor complication of skin excoriation. Where as in late closure group 17 patients had minor complication of prolapse plus skin excoriation and 1 patient presented with obstruction requiring relaparotomy and re-stoma formation. There was no instance of anastomotic leak, intra-abdominal abscess, or mortality in EC group and only single case developed entero cutaneous fistula but was managed conservatively.

**Conclusions:** The present study clearly highlights the potential 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 patients is done. This significantly cuts down the convalescence period of the patient and helps him to live a better quality of life much earlier.

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## INTRODUCTION

"Most lay persons, as well as all too many physicians and surgeons, have a horror image of the constantly discharging intestinal stoma and frequently think, out of ignorance, that death is preferable to an Ileostomy" Dr Albery Lyons, 1952. This was the thinking of many physicians and patients with a stoma until the 50's. While the construction of a stoma is now seen as routine and a relatively low-risk procedure, it is for many people still a difficult choice. But let us be glad, we live in this time, because people with bowel disease previously had little chance of survival. In the developed countries - ileostomy is mainly constructed as a protective cover for distal colorectal or ileo-anal pouch anastomosis.

In developing countries- it is still often made in emergency surgical setting where infective conditions like enteric or tubercular perforations are common and patient present late in the course of illness to preclude primary closure. Studies have shown inferior quality of life in patients with a stoma compared with those who underwent similar procedures without stoma formation (Gooszen *et al.*, 2000 and Gögenur *et al.*, 2005). 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 or colostomy construction and its closure. To quantify stoma

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related morbidity and, to examine the potential advantage of early closure.

## MATERIALS AND METHODS

**Study design and setting:** This was a prospective comparative study of patients admitted for loop ileostomy and colostomy closure at RIMS, Ranchi, from Feb 2013 to Nov. 2014. Patients allocated into two cohorts - Group A(15 Patients) whose stoma were closed at 4 – 6 weeks and Group B (32 patient) whose stoma closed at 12 weeks. Only those patient were taken up for early stoma closure whose Hb was >10gm% and sr. albumin >2.5gm%. In addition distal loopogram /cologram using water soluble contrast done in all cases to ascertain the distal patency of the intestinal tract. No colostomy closed in 4-6 weeks so our study is based on ileostomy closure only.

**Inclusion criteria:** All patient admitted for ileostomy closure.

**Exclusion criteria**

- Signs of active infection
- Repeated complication of stoma/more than one stoma
- Medical causes for delayed laparotomy
- Permanent/end ileostomy, colostomy

**Study tools** a. Detailed history b. Full clinical assessment c. Necessary routine investigations d. Post op complication.

**Follow up:** During hospital stay and Periodic review.

## OBSERVATIONS AND RESULTS

Patients were divided into 2 groups, Group A: Early stoma closure (EC) Patients with stoma closure within 4 to 6 weeks (n=15). Group B: Late stoma closure (LC) patients with stoma closure at 3 months (n=32). Most patients to undergo early closure were in younger age group (11- 30 years , n= 10 , 66.67% in EC vs 59.37% in LC) (Table 1). Of total, 34 (72.34%) patients were male and 13(27.66%) were female. The most common cause of stoma formation was enteric perforation 61.7%, (n=29) followed by Koch's abdomen and trauma each accounting for 12.76% (n=6) of cases (Table 2). Majority of the patients had no stoma complication in either of the group. Incidence of Skin excoriation and prolapse of stoma were higher (53.13% vs 26.67%) in late closure group than early closure (Table 3).

**Table 1. Age of the patients**

Age (years)	Closure of stoma	
	Early closure	late closure
0-10	0	1
11-20	6	11
21-30	4	9
31-40	0	4
41-50	5	6
>60	0	1
Total	15	32

Most of the patients passed flatus within 48 hrs of closure. Chi- square test yielded is  $P = 0.142$ , meaning no significant difference ( $p > 0.05$ ) between both groups. Minor post closure complications were more common in early group (20% vs 3.12%).

**Table 2. Indications of stoma formation**

Indication	frequency	percent
Enteric perforation	29	61.70
Koch's abdomen	6	12.76
Traumatic perforation	6	12.76
Defunctioning ileostomy	4	8.51
Appendicular perforation	2	4.25
Total	47	100

**Table 3. Complications of stoma formation**

Complications	Closure of stoma	
	Early closure	Late closure
None	11	14
Skin excoriation	4	11
Prolapse	0	6
Obstruction	0	1
Total	15	32

**Table 4. Post stoma closure complications**

Complications	Stoma closure			
	Early		Late	
	No.	%	No.	%
None	10	66.66	28	87.50
Wound infection	3	20	1	3.12
Wound dehiscence	1	6.67	1	3.12
Leak	0	0	2	6.24
E-C fistula	1	6.67	0	0

One patient develop E-C fistula which was managed conservatively .Major complication like Anastomotic leak occurs in 2 patients of late closure group which required re-laprotomy and re-stoma formation (Table 4). Average duration of hospital stay was 5-6 days in both the groups, only 1 patients in each group required > 10days of admission. Chi Square test yield  $p=0.340$  ( $p > 0.5$ ), means there was no difference between two. None of the patients developed any complication till date after successful stoma closure and hospital discharge.

## DISCUSSION

Intestinal stomas are often created in acute abdominal situations when primary repair of bowel carries high risk of failure due to gross peritoneal contamination or severely inflamed bowel as can occur in enteric and tubercular perforations (Zida *et al.*, 2010 and Sushil Mittal *et al.*, 2014). Stoma is associated with morbidity in the form of skin irritation, diarrhoea, prolapse, retraction, para-stomal hernia, ileus, and increased fluid and electrolyte loss (Leary *et al.*, 2001; Gooszen *et al.*, 1998; Bakx *et al.*, 2004) Stoma's are socio-economically expensive too, because they require training in stoma care, multiple hospitalizations and contacts to general practitioners and hospital clinics. In some cases, such procedures also involve costs in connection with sick leave. Restoration of intestinal continuity is usually performed after 8–12 weeks. However, during this time, stoma related complications occur in a quarter of patients, with adverse effects on quality of life (Gooszen *et al.*, 2000). Present study demonstrates that patients undergoing early stoma closure had less complications than patients undergoing late closure. We also observed similar operative times in the EC group when compared with the LC group. Thus, our results do not support

the assumption of a “hostile” abdominal environment during early re-laparotomy /closure. The inclusion and exclusion criteria of the present study of early closure were virtually identical to Menegaux *et al* (2002), and Alves *et al* (Alves *et al.*, 2008). The timing of early closure as defined in present study is 4-6 weeks post initial surgery, which is comparable to study conducted by Nadim *et al* in 2010, and Samiullah *et al* in 2010, which was 4 weeks and 23.5 days (mean duration) respectively. Present study concur with these studies on early closure of temporary stomas, and with favorable outcome. In present study incidence of stoma complications like skin excoriation and prolapse were higher (53.13% vs 26.67%) in late closure group than early group. In term of post stoma closure complication wound infection was the most frequently encountered complication (20.00%) in early group and one patient develop enterocutaneous fistula, which was managed conservatively. Although minor complications were less In late closure group, two patients developed anastomotic leak requiring re-operation and re-stoma formation. Most importantly, we did not encounter any intra-abdominal abscesses, anastomotic leaks or mortality figures in early closure group. This is in contrast to a recorded leak rate of 4.5% and mortality of 2.2% by Samiullah *et al.* (2010), and, 5.76% leak rate plus mortality of 1.2% by Nadim Khan *et al* (11) in evaluating the early closure of temporary loop stoma. We can say that the results of our study are comparable to results of other studies on early closure of stoma, or even better as far as anastomotic leak and mortality rates are concerned. The stringent adherence to surgical principles, meticulous tissue mobilization and careful selection of patients perhaps all together can lead to favorable outcome in stoma closure, even if done earlier.

### 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 and also personal benefits for patients.

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