

## Determination of Ideal Time for Termination of End Ostomy Based on Primary Aetiology: A Retrospective Analysis

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### Abstract

Construction of the ostomy is one of the routinely performed diversion procedure. End ostomies (ileostomy /colostomy) are being constructed for emergency abdominal conditions which requires resection of the bowel but re- establishment of its continuity may not be feasible at that situation. Termination of the loop ostomy is simple and it usually doesn't require formal laparotomy. Whereas termination of end ostomy needs formal laparotomy and bowel mobilisation, adhesionolysis which is associated with increase intra and postoperative morbidities. This can be avoided by undertaking the procedure at appropriate time based on primary aetiology, that is for Traumatic conditions as primary cause end ostomy can be terminated safely at early stage (8-10 weeks). Where as in case infective and inflammatory conditions are the primary causes one should safely wait at least 16 weeks before taking up for the procedure.

**Keywords:** End Ileostomy; End Colostomy; Traumatic Causes; Infective and Inflammatory Causes; Termination of Ostomy.

### Introduction

End ostomy (ileostomy or colostomy) is one of the routinely performed emergency procedure. It is mainly performed in an acute abdominal condition where the resection of the bowel is required but

restoration of the continuity of the bowel by primary anastomosis may not possible due to various patient and disease related factors.

End ostomies were usually constructed for emergency abdominal conditions like abdominal trauma (blunt or penetrating), Infective and inflammatory conditions (enteric, T.B and Diverticular perforations, Appendicular mass, abscess, gangrene and perforation with gross peritoneal contamination, requiring segmental resection, Strangulated hernias requiring laparotomy and resections) [11,12].

These ostomies were being constructed with the intention to establish the continuity of the bowel as early as possible (6-12 weeks) [1,2,6] which helps the patient to lead normal life.

Termination of loop ostomies are simple and doesn't require formal laparotomy, whereas termination of end ostomies require formal laparotomy and mobilisation of bowel, the main problem in reversing the end ostomy is the presence of dense inflammatory adhesions between the bowel loops and bowel loops and abdominal wall, this requires the lot of adhesion lysis and mobilisation of bowel to establish its continuity, this procedure may associated with increased morbidity like prolonged operative time, more blood loss, wound infection, prolonged postoperative ileus, prolonged hospital stay, anastomotic leak and re-do ostomy, prolonged outpatient follow up and financial burden.

There are no set protocols for timing of ostomy closure [7], scheduling of reversal is extremely variable among institutions [3].

### Aim

Aim of our study is to determine the ideal time for termination of end ostomies in order to reduce the operative as well as postoperative morbidity.

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## Materials & Methods

For this study of retrospective analysis data is collected from the records of the all 50 patients who has undergone emergency abdominal surgeries with construction of end ostomy (Ileostomy / colostomy) between 2013-2016, in Narayana General Hospital affiliated to Narayana Medical college. out of the 50 patients 30 patients has undergone end ileostomy and 20 patients has undergone end colostomy.

We have collected the data with respect to the Disease for which the primary surgery and construction of end ostomy was done.

Duration from the primary surgery at which the ostomy was terminated.

Presence or absence of adhesions (dense or flimsy).

Duration of hospital stay.

### Inclusion Criteria

Records of the all the patients who has under gone Emergency laparotomy and construction of the end ostomy (ileostomy or colostomy) irrespective of age, sex, and disease were included.

### Exclusion Criteria

Records of the all the patients who has undergone elective, loop and permanent ostomies were excluded from the study.

## Methods

Termination of the end ostomy was planned after the patient was recovered from the primary ailment and carried out with formal preoperative evaluation, with confirmation of the patency of distal bowel segment, preparation of the patient & bowel. All patients were operated under general anaesthesia with prophylactic systemic antibiotic coverage. Initially end ostomy stump was mobilised with the skin margins and bowel end was fashioned then formal laparotomy was carried out adhesiolysis and mobilisation of bowel was done, distal end of the bowel was identified and fashioned restoration of the bowel continuity was established by end to end or end to side hand seven anastomosis, wound was closed over drain and patient was followed up in post op ward.

Table 1: Mean hospital stay

S. No	Duration at ostomy closed	End Ileostomy			End colostomy			P value
		Traumatic cause	Infec-inflam cause	P value	Traumatic cause	Infec-inflam cause	Malignancy	
1	8-10 weeks	7.71days	14.5 days	0.001	8.3days	15days		0.002
2	16 weeks and above		7.87days	0.001		8.16 days	8.5days	0.001

Table 2: End ileostomy closure presence or absence of adhesions n=30

S. No	Duration at ostomy closed	Traumatic cause n=14			Infec-inflam cause n=16			P value
		Dense adhesions	Flimsy/no adhesions	P value	Dense adhesions	Flimsy/no adhesions		
1	8-10 weeks	nil	14 patients	0.001	8 patients	nil		0.005
2	11-13weeks							
3	14-16 weeks							
4	16weeks and above				nil	8 patients		0.005

Table 3: End Colostomy closure presence or absence of adhesions n=20

S. No	Duration at ostomy closed	Traumatic cause n= 6			Infec-inflam cause n=10			Malignancy n=4		
		Dense adhesions	Flimsy/ No adhesions	P value	Dense adhesions	Flimsy/ no adhesions	P value	Dense adhesions	Flimsy/no adhesions	P value
1	8-10 weeks	nil	6 patients	0.01	3 patients	nil	0.002			
2	11-13 weeks									
3	14-16weeks									
4	16 weeks and above				7 patients	0.005	nil	4 patients	0.05	

### Statistical Analysis

The significance of analysis results was evaluated using chi square test, P value < 0.05 were considered as significant.

### Results

In this retrospective analysis total 50 records of the patients who has under gone construction of end ostomy's for emergency abdominal condition were analysed, out of the 50 patients 30 patients has under gone end ileostomy's and 20 patients has under gone End colostomy's.

The shortest duration (from the day at which ostomy was constructed) at which the ostomy was terminated was 8 weeks and the longest duration was 24 weeks.

In case of end Ileostomy 16 cases were constructed for inflammatory and infective causes and 14 cases for traumatic causes. Out of these patients all of the traumatic group patients and 50% (8) of the patients from the infective and inflammatory group has under gone their end ileostomy closure between 8-10 weeks, and remaining 50% (8) in infective and inflammatory group patients has undergone their end ostomy closure at 16 weeks and above time period. out of these patients all patients in traumatic group and those patients who has under gone their end ostomy closure at 16 weeks and above in inflammatory and infective group has only flimsy or no adhesions (Table 2), and their mean hospital stay varies from 7.71-7.87 days (Table 1), where as those patients who has under gone their end ostomy closure between 8-10 weeks in infective and inflammatory group were found to have dense inflammatory adhesions (Table 2), and their mean hospital stay was 14.5 days (Table 1). Out of these eight patients 4 patients had prolonged ileus, 2 patients developed wound infection, and two patients developed postoperative obstruction.



Fig. 1: Photo of end ileostomy for traumatic perforation at 8 weeks after ileostomy showing no adhesions.



Fig. 2: photo of 10 weeks post end ileostomy for cecal perforation with dense adhesions

Similar findings have been observed in patients who has under gone end colostomy closure also (Table 3), out of the total 20 patients who has under gone construction of end colostomy 6, 10, 4 number of patients were of traumatic, infective and inflammatory, malignancy causes respectively. Out of these all of the traumatic group patients and 30% (3) of the infective and inflammatory group patients has under gone their colostomy closure between 8-10 weeks, and rest of all the patients has under gone their colostomy closure at 16 weeks and above time period (Table 3). Out of these patients one patient from the traumatic group and 3 patients from the infective and inflammatory group were found to have dense inflammatory adhesions (Table 3) and mean hospital stay in these patients was 15 days (Table 1), out of these 4 patients two patients had prolonged ileus and two patients developed wound infections. whereas rest of all the patients in traumatic group and those who has under gone their end ostomy closure at 16 weeks and above found to have flimsy adhesions (Table 3) and their mean hospital stay was 8.16-8.5 days (Table 1).

### Discussion

In this retrospective study records of the patients who has under gone end ostomies for various emergency abdominal conditions between 2013-2016 in Narayana general hospital affiliated to the Narayana medical college were analysed. In this study, we have analysed and assessed the ideal time period for the termination of the end ostomies based on primary aetiology for which it was constructed.

In this study, we have found that all the patients in traumatic group who has under gone their end ileostomy closure even at 8-10 weeks and in those patients in infective and inflammatory group those who has under gone their ostomy closure at 16 weeks

and above time period has only flimsy or no adhesions. Whereas patients in infective and inflammatory group those who has undergone their ostomy closure at 8-10 weeks' time period found to have dense inflammatory adhesions. similar findings have been observed in case of end colostomy closure also. The presence of dense adhesions, in infective and inflammatory group those who has under gone early closure of ostomies may be due to primary disease process which triggers the development of inflammatory adhesions which take considerably longer time for the primary disease itself and further adhesions to get resolved.

If any further intervention required in these patients at an early period before settling the disease process and before adhesions gets resolved, associated with lot of adhesionolysis and may need further resection of bowel due to injury during the mobilisation, which results increased morbidity in the form of prolonged postoperative paralytic ileus, post-operative bowel obstruction, increased intraoperative blood loss, wound infection, prolonged hospital stay and OPD follow up etc. Whereas in case of traumatic group there is no active localised inflammation to trigger the development of inflammatory adhesions, and in those patients who has under gone their end ostomy closure at later date that is 16 weeks and above, the disease process and adhesions got resolved by this time hence there is no increase in associated morbidity as in above case, hence these patients have overall better outcome. Even though many studies have been conducted in relation to ostomy closure most of the studies were conducted on loop ostomy closure, they have focussed on various aspects and effects of the ostomy closure, but we have focused only on termination of end ostomies constructed for emergency conditions. We tried to determine the ideal time for End ostomy closure based on primary aetiology for which it was constructed. Various authors in their studies found that there is increased incidence of adhesions formation in patients in whom the infective and inflammatory diseases were the primary aetiology [4,5,8].

Even though most of the authors in their studies expressed that early closure of ostomies gives comfort and good quality of life for the patients [10] their studies were limited to the loop ostomies where formal laparotomy and adhesionolysis, mobilisation of bowel is not required. But other authors found that delayed closure of the ostomy is safe and reduces the morbidity and mortality related to procedure [9]. Ostomy constructed for malignancy invariably go for delayed closure mostly after chemotherapy almost all authors have expressed similar findings [4].

## Conclusion

Our retrospective study revealed that end ostomies constructed for infective and inflammatory aetiology associated with dense adhesions formation hence these patients should undergo end ostomy closure at a late stage at least 16 weeks and above after primary surgery. Whereas ostomies constructed for traumatic causes associated with flimsy or no adhesions hence they can undergo end ostomy closure at early stage after 8 weeks. even though this study determines the time duration for end ostomy closure based on primary aetiology for which it was constructed, study group is small and randomisation was not possible because it is a retrospective study, hence a larger prospective randomised study is required which is under progress.

## Limitations of the Study

Small study group, Randomisation was not possible, it is a retrospective study.

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