

A COMPARATIVE STUDY BETWEEN EARLY AND DELAYED ILEOSTOMY CLOSURE

General Surgery

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ABSTRACT

Background: An ileostomy is a procedure in which the lumen of the ileum, part of the small bowel, is brought through the abdominal wall via a surgically-created opening called a stoma. The purpose of an ileostomy is to evacuate stool from the body via the ileum instead of the usual route via the anus (1). Stomas are also used as a temporary or permanent diversion of the faecal stream from distal pathology or a healing anastomosis. A temporary stoma is commonly a loop stoma that can be closed without a major laparotomy when it is no longer required. An end stoma is preferable when permanence is anticipated. **Aim And Objective:** To compare the morbidity & mortality incidence of early & delayed ileostomy closure. **Conclusion:** From our working experience with both methods, early closure of temporary loop ileostomy within 4-5 weeks shows no significantly increased morbidity and mortality. Patients with temporary loop stomas to early closure could improve patient's wellbeing.

KEYWORDS

Ileostomy, Small bowel resection, Early relaparotomy.

INTRODUCTION

An ileostomy is an external opening constructed between the small intestine and the abdominal wall, usually by using distal ileum, but sometimes more proximal small intestine. Ileostomies can be of various types. The most common has been the end ileostomy, using a technique popularized by Brooke and Turnbull. A stoma may be fashioned as an alternative outlet to the gastrointestinal tract after excision of all distal bowel or when restoration of continuity after a resection is contraindicated. Stomas are also used as a temporary or permanent diversion of the fecal stream from distal pathology or a healing anastomosis. A temporary stoma is commonly a loop stoma that can be closed without a major laparotomy when it is no longer required. An end stoma is preferable when permanence is anticipated.

A loop stoma may be left as a permanent stoma, but is more prone to complications. An end stoma has a single opening into the proximal bowel, and the epithelial continuity is between the skin and the whole circumference of the bowel mucosa. A loop stoma is formed by an enterotomy on the antimesenteric border of a loop of bowel that has its continuity maintained by an intact mesenteric border. There are two openings, one into the proximal bowel and one into the de functioned distal bowel. The epithelial continuity is between the skin and the mucosa around the edge of the enterotomy(2). The problems experienced by ileostomy patients involve odour and gas control, because there is no sphincter in the ileostomy. The patients usually can manage these problem by paying attention to foods and medications ingested, by using various deodorant products, and by maintaining meticulous personal hygiene.

There are some complications related to site of ileostomy itself which includes parastomal hernia, stoma prolapse, retraction of stoma, local skin excoriation etc. Most of these conditions require immediate attention and even revision surgery. Stoma is a burden for both the patient and society. It has got a very poor physiological and psychological impact with frequent social consequences. Patients with stoma must adjust to a changed body image (perception of own body), changes in daily routines, changes in lifestyle and social standing (4).

The closure of the stoma though thought to be a minor surgical procedure, yet it may be associated with appreciable morbidity. The traditional concept of timing of closing a temporary ileostomy has been a matter of debate for some time now. (5). The rationale of this study is thus to create or determine the optimal time of closure of this temporary ileostomy in order to achieve an improved effect on the outcome of patients with temporary ileostomy.

MATERIAL AND METHODS:

The study area was the Department of General Surgery, Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, India. Patients admitted through outpatient department and emergency who underwent laparotomy/planned procedure who required temporary ileostomy. Study was carried out on total 100 patients. 40 patients underwent early ileostomy closure group and 60 underwent delayed ileostomy closure group. This Study was conducted between March 2021 to December 2023.

Study Design: A single blinded prospective randomized controlled trial (RCT).

Study Technique: Enrollment protocol followed for this study.

Inclusion Criteria

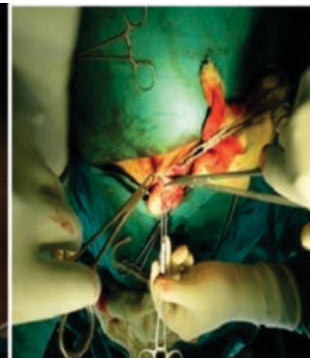
- *Patients with a temporary ileostomy of diverse etiology.
- *Patients who are physically & mentally fit to undergo surgery within 4-5 weeks.
- *Patients with clinical Stage-I to Stage-III peritoneal contamination during primary surgery.

Exclusion Criteria.

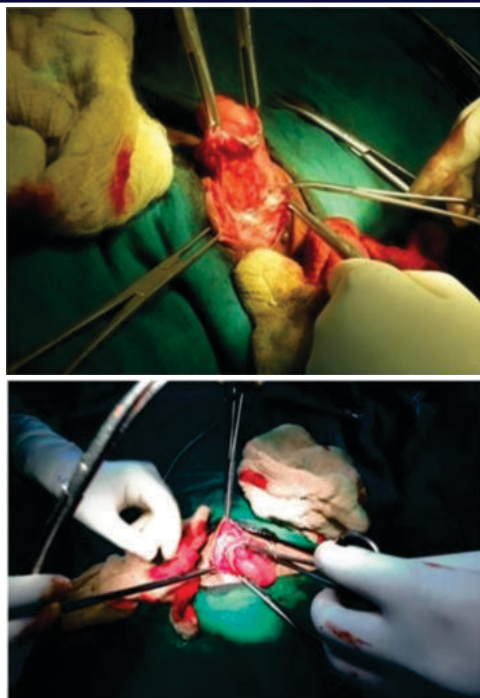
- *Patients whose stoma is not reversible.
- *Patients who developed abdominal wall dehiscence after primary operation.
- *Patients with tubercular perforation.
- *Patients with HIV infection.
- *Circumferential dissection.



Loop ileostomy



Mobilisation of interstinal loop circumferentially



Dissection continued until peritoneal cavity is entered.

Closure of the ileostomy was done using 2-0 PDS suture. After closure of the ileostomy, the rectus sheath was closed with a 1-0 vicryl suture. All the wounds were primarily closed with a 2-0 non absorbable monofilament synthetic suture preferably nylon. These patients, in the postoperative period were observed in the general wards. Nasogastric decompression using a nasogastric tube was used routinely to decompress the abdomen in post operative days.

All the patients were given intravenous fluids and antibiotics (3rd generation cephalosporins and Metronidazole). Oral allowance and oral medication was soon added instead of parenteral medication with resumption of bowel peristalsis, with a sign of presence of bowel sound and passage of flatus by the patient. All complications diagnosed within the first 30 days after surgery were included in the present study as morbidity, including those specifically related to the operative procedure.

Statistical Analysis

The record of complications occurring during & after completion of ileostomy closure as reported in patients' record were noted on datasheets and analyzed by using Chi Square(χ^2) test and Unpaired t test. All of the statistical analyses were performed using SPSS 10.0 software.

RESULTS

Table1: Age distribution of the patients studied:

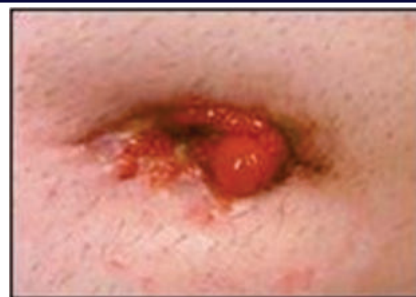
Age groups(years)	Frequency	Percentage
15-25	04	4.0
25-35	18	18.0
35-45	20	20.0
45-55	30	30.0
55-65	22	22.0
65-75	06	6.0
Total	100	100.0

Comment: A total of 100 patients were included in the study. The maximum number of patients were in the age group of 45-55 yrs (30.0%).

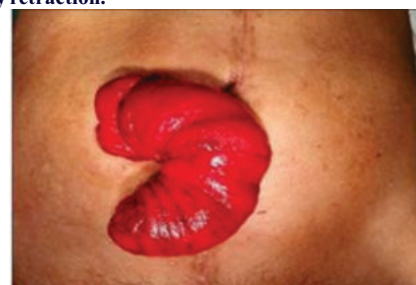
Table 2: Sex distribution of the patients studied

Sex	Frequency	Percentage
Male	64	64.0
Female	36	36.0
Total	100	100.0

Comment: Of the total 100 patients included in the study, 64 were male patients and 36 were female patients.



Ileostomy retraction.



Ileostomy prolapsed.

Review of Literature

Although the history of colostomy dates back to the early 1700s, the ileostomy is a much more recent event. The first reported creation of an ileostomy was by Baum in Germany in 1879. Baum performed a diverting ileostomy in the treatment of an obstructing right colon cancer.

In 1883 Mayd of Vienna, the inventor of the colostomy rod, performed the first successful ileostomy in combination with colonic resection.

Six years later, J.M.T.Finney described the flush-loop ileostomy for the treatment of small bowel obstruction in association with appendiceal abscess(4). Severe skin irritation resulted, and the procedure never gained any popularity.

The widespread use of ileostomy was a result of the work of John Young Brown (1865–1919), a St. Louis surgeon. Minor improvements occurred in the 1930s and 1940s. Rankin of the Mayo Clinic described creating an ileostomy in a separate wound in the right lower quadrant. The use of skin grafting around the stoma to prevent serositis gained some brief popularity. However, subsequent stenosis of the grafted skin led to ileostomy obstruction and dysfunction, and therefore the idea was abandoned. No significant advances occurred until the 1950s, when Crile and Turnbull of the Cleveland Clinic described ileostomy dysfunction and Bryan Brooke of the University of Birmingham in London described the now famous Brooke ileostomy.

DISCUSSION

Since the first report of this procedure by Turnbull in 1966 loop ileostomies gained increased popularity because of its technical simplicity, lack of odor, liquid discharge, decreased rates of stoma related complications.

Loop ileostomy can be a lifesaving procedure in the emergency setup. In colorectal surgery, a temporary loop ileostomy is often constructed to protect a distal anastomosis. The loop ileostomy is favored by most surgeons because it is easy to construct.

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.

There is debate as to the interval between primary surgery and closure. If attempted too early, patients may not have cured adequately from primary surgery and the stoma will still be edematous. If however, closure is carried out too late, there may be difficulty with adhesions and the patients quality of life will be affected by a larger period with a stoma.

A prospective study in 2003 showed that earlier reversal of the stoma

(11 days rather than 2-3 months) was not associated with increased morbidity or mortality

Overall complication rates after ileostomy closure have been reported to be in the range of 10 to 30%. Some authors have reported a higher morbidity after ileostomy closure associated with restorative proctocolectomy than that associated with low colorectal or coloanal anastomoses. Perez et al in their study confirm the same thing. Complication rates for the reports by Van de Pavoordt et al and Phanget al were 17 and 28% respectively.

In the present study, most of the complications in two groups were statistically insignificant. Stoma related complications were seen more commonly among delayed ileostomy closure group e.g. stoma prolapse seen in 13% of patients of DC group in comparison to none in EC group, stoma retraction seen in 4% patients of DC group in comparison to none in EC group although the difference recorded were statistically insignificant. Among intraoperative parameters intraoperative adhesion was significantly higher in delayed ileostomy closure group (40%) with a p value of 0.0096. Operative time for stoma closure was marginally high in delayed closure group (mean 78min) compared to early closure group (mean 76.12min), 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 ($p=0.0226$). The frequency of ileostomy wound closure site infection was slightly more in early ileostomy closure group (25.0%), but it was not statistically significant. In a study conducted by Alves et al in the early closure group frequency of wound infection was published higher (17%). Incidence of anastomotic leak in this study was 5%, all of which were promptly diagnosed & intervened. Unfortunately, one patient expired due to sepsis. Other parameters like incidence of wound dehiscence, fecal fistula & intestinal obstruction were all studied among post operative morbidity. In the present study, all parameters were slightly higher in delayed closure group. Mean length of hospital stay was found to be longer in the delayed closure group than in the early closure group. The difference between two groups was statistically significant. ($p<0.0001$). These figures may vary results from other parts of the world. Whether, the disease process or the lack of technique could alter the outcome following closure of these stoma can be debated.

CONCLUSION

In conclusion, from reports of our limited experience with both methods early closure of temporary loop ileostomy within 4 weeks shows no significantly increased morbidity except increased wound infection. Routine allocation of patients with temporary loop stomas to early closure could improve patient wellbeing.

The routine practice of reserving patients to prolonged stoma care should be individualized and future studies on comparison of disease specific outcomes of closure are warranted.

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