

A comparative study between covering ileal loop-without ostomy or delayed ostomy and diversion ileostomy for patients undergoing large bowel anastomosis



Sathyaraj P¹, Jemin Bharath R², Renganathan M³, Kalaiselvan N⁴, Mukesh Kumar P⁵

^{1,2,3,5}Assistant Professor, ⁴Junior Resident, Department of General Surgery, Government Rajaji Medical College and Hospital, Madurai, Tamil Nadu, India

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ABSTRACT

Background: In elective and emergency general surgery, bowel anastomoses are common procedures. Although several stoma-related issues may arise following stoma creation, establishing a stoma is incredibly morbid. **Aims and Objectives:** The study compares patients with diversion ileostomies (stomas) to those who had to cover ileal loops without ostomies or delayed ostomies for large bowel anastomosis to compare the risks and advantages of each procedure. **Materials and Methods:** This prospective and comparative study was conducted on 50 patients undergoing large bowel anastomosis. Patients were divided into two groups: Group A: Those with covering ileal loop without or delayed ostomy, and Group B: Those undergoing diversion ileostomy. **Results:** Demographic data of the study indicated that most of the participants in both groups were male (72% in covering ileal loop and 64% in diversion ostomy). In both groups, most participants belonged to the >45 age group. We have seen a significant difference in the setting of surgery, Vitamin B 12 levels, early complications, late complications, and time of takedown comparing covering ileal loop to the diversion ostomy group. **Conclusion:** This study showed reduced postoperative morbidity and complications of stomas following covering ileal loop compared to diversion ileostomy. Hence, the technique should be considered.

Key words: Bowel anastomoses; Anastomotic procedure; Ileal loop; Delayed ostomy; Diversion ileostomy

INTRODUCTION

Bowel anastomoses are frequent procedures in both elective and emergency general surgery. The anastomosis site, bowel caliber, quality, and underlying disease process all influence the choice of anastomotic procedure. Individual surgical experience and personal choice are still significant considerations when deciding whether to undertake a specific anastomosis. Whatever approach is used, the theory behind making a secure and healthy bowel anastomosis holds. While the “ideal patient” has a healthy bowel and thorough procedure, some anastomoses nevertheless leak, leading to severe morbidity and mortality, for example, 22%

of mortality in patients with a leak compared to 7.2% of mortality in those without a leak.¹

After removing a colonic tumor, 4% of all anastomoses are carried out. Reducing the percentage of leaky colorectal anastomoses might increase mortality. According to estimates, every year in the United States alone, almost 100,000 people have operations that leave them with stomas.¹ According to published research, colon cancer, bladder cancer, ulcerative colitis, Crohn’s disease, and trauma procedures are the most frequent underlying conditions leading to stoma formation.^{2,3} Although various stoma-related issues might develop after formation, creating

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Address for Correspondence:

Dr. Mukesh Kumar P, Assistant Professor, Department of General Surgery, Government Rajaji Medical College and Hospital, Madurai, Tamil Nadu, India. **Mobile:** +91-98940 60537. **E-mail:** iamukki@gmail.com

a stoma is quite morbid.⁴ This paradox demonstrates the significance and enormous influence of the surgeon's role in managing ostomies.^{3,5} Thus, the study was designed to look at the patients undergoing diversion ileostomy (stoma) versus those covering ileal loops without ostomy or delayed ostomy for large bowel anastomosis and the complications and benefits of each group.

Aims and objectives

The study compares patients with diversion ileostomies (stomas) to those who had to cover ileal loops without ostomies or delayed ostomies for large bowel anastomosis to compare the risks and advantages of each procedure.

MATERIALS AND METHODS

This prospective and comparative study was conducted for 1 year at the general surgery department at Government Rajaji Hospital, Madurai Medical College, Madurai, in patients undergoing large bowel anastomosis. The outcomes of 50 patients were divided into two groups, compared, and examined. Group A: Those covering ileal loop without or delayed ostomy. Group B: Those undergoing diversion ileostomy and 25 members in each group were randomly selected. Before the study started, informed consent was obtained from all patients.

Inclusion criteria

Age over 18 in both sexes undergoing large bowel anastomosis, patients without severe comorbidities such as uncontrolled diabetes mellitus, uncontrolled hypertension, renal, cardiac, and liver dysfunctions, a patient who is hemodynamically stable, and patients who consented to inclusion in the study per the designated proforma were all eligible for the study.

Exclusion criteria

Patients with severe intraabdominal sepsis, those having relaparotomies for anastomotic leaks, those with severe comorbidities such as uncontrolled diabetes, uncontrolled hypertension, severe renal, cardiac, and liver dysfunction, and those who had not given their consent to take part in the study were all excluded from the study.

In Group A, patients undergoing large bowel anastomosis for various reasons were randomly selected. These patients were subjected to covering ileal loop without an ostomy. The distal ileal loop was created by opening the skin and rectus muscle. Ryle's tube or feeding tube was inserted in the ileal mesentery to hold the loop in position. An ileal loop was then fixed to the skin with 3–0 silk in 12, 3, 6, and 9 O'clock positions to prevent the loop not to recede. Then saline dressing was done until the loop was

reverted. Meanwhile, in post-operative days 4–5, if there is a suspected anastomotic leak, the covering loop can be converted into ileostomy.

In Group B, patients undergoing large bowel anastomosis were randomly selected and subjected to diversion ileostomy to give rest to the anastomotic bowel until it heals completely. Patients were on diversion ileostomy for 6 weeks–6 months. Then reversal of ileostomy was done. All the patients were followed for 12 months.

The evaluation includes a general assessment, body build, and nourishment appearance, anemia, and pulse/temp/respiration rate/blood pressure. Systemic examinations of the abdomen, respiratory system, and cardiovascular were performed. The following tests were performed: RFT, hemoglobin, total leucocyte count (TLC), differential count, blood test, computed tomography, erythrocyte sedimentation rate, blood grouping/typing, urine albumin/sugar/deposits, and TLC.

Data analysis was done using SPSS 18 software. The Chi-square test was performed to determine the significance of the difference between the quantitative variables.

RESULTS

This study was conducted on 50 patients grouped into two of 25 each who underwent large bowel anastomosis for various indications. Demographic data of the study indicated that most of the participants in both groups were male (72% in covering ileal loop and 64% in diversion ostomy). In both groups, most participants belonged to the >45 age group. We have seen a significant difference in the setting of surgery, Vitamin B 12 levels, early complications, late complications, and time of takedown, respectively, compared to covering ileal loop to the diversion ostomy group (Table 1).

DISCUSSION

In this study, the mean age for covering ileal loop and the diversion ileostomy groups was more or less the same. The number of males and females included in covering ileal loop and diversion ileostomy group were the same. Covering ileal loop without ostomy is more significant in elective surgeries and the same way as diversion ileostomy in emergency settings. Covering ileal loops without ostomy and diversion ileostomy groups have comorbidities in equal range. It is seen that patients undergoing diversion ileostomy have a significant reduction in Vitamin B 12 levels.

The diameter of the bowel ends, edema, accessibility to the anastomosis site, contamination, time, and equipment

Table 1: Demographic data of the study

Variables	Covering ileal loop (%)	Diversion ostomy (%)	P-value
Gender			
Male	18 (72)	16 (64)	0.544
Female	7 (28)	9 (36)	
Age group			
<35	0	1 (4)	0.553
36–45	7 (28)	8 (32)	
>45	18 (72)	16 (64)	
Setting of surgery			
Emergency	5 (20)	20 (80)	<0.0001
Elective	20 (80)	5 (20)	
Comorbidities			
Yes	18 (72)	19 (76)	0.747
No	7 (28)	6 (24)	
Vitamin B 12 levels			
Normal	1 (4)	10 (40)	0.002
Reduced	24 (96)	15 (60)	
Early complications			
Yes	2 (8)	17 (68)	<0.0001
No	23 (92)	8 (32)	
Late complications			
Yes	3 (12)	15 (60)	<0.0001
No	22 (88)	10 (40)	
Anastomotic leak			
Yes	2 (8)	2 (8)	1.000
No	23 (92)	23 (92)	
Time of takedown			
5–7 day	23 (92)	0	<0.0001
>6 weeks	2 (8)	25 (100)	

constraints, and underlying pathology can all impact the anastomotic procedure selection. Since the invention of stapling instruments in the 1970s, suturing and stapling have been contrasted in several studies. According to some case series and small randomized and controlled trials, there was no discernible difference between sutured and stapled anastomoses across the gastrointestinal system regarding anastomotic leak rates, morbidity, or mortality between 1977 and 1986 (randomized and controlled trial [RCTs]).⁶⁻⁹

In 1991, the West of Scotland and Highland Anastomosis Study Group published a comprehensive RCT.¹⁰ In this study, patients were randomly assigned to either a sutured or a stapled approach during elective or emergency anastomoses performed anywhere from the esophagus to the low rectum. One thousand and forty-two patients were covered under the care of 13 general surgeons in five hospitals. There were no appreciable differences in the overall clinical leak rate, morbidity, or mortality.¹⁰

Some research reported that stapling and suturing might be done safely throughout the gastrointestinal tract.⁶⁻¹⁰ However, several studies have recently looked into the advantages of various approaches in particular circumstance, and meta-analyses of RCTs have revealed previously undetectable differences. In emergency and elective situations, a right hemicolectomy and ileocolic

anastomosis are common treatments. According to case studies, there is relatively little danger of anastomotic leak while stapled and sutured anastomoses.¹¹ A large RCT on elective right hemicolectomy for colonic cancer was released in 1993. In addition to a non-significant tendency toward a lower leak rate (sutured 8.3% vs. stapled 2.8%), a statistically significant decrease in intraoperative fecal contamination was seen in the stapled group (P=0.02).¹²

In this study, we have observed that early complications are higher in patients undergoing diversion ileostomy than in patients undergoing covering ileal loops without an ostomy. Late complications are higher in patients undergoing diversion ileostomy than those covering ileal loops without an ostomy. Anastomotic leak rates in covering ileal loop without the ostomy and diversion ileostomy groups were the same. It is found that patients undergoing covering ileal loop reverted early compared to patients undergoing diversion ileostomy.

A variety of factors impact the healing process following bowel anastomosis. Before the operating surgeon makes a final decision regarding the anastomotic approach, personal experience, patient factors, and intra-operative findings must be considered together with the available facts.

Limitations of the study

The study's sample size is relatively small, with only 25 patients in each group. A larger sample size would increase the generalizability of the findings. In addition, the study duration of 1 year may not be sufficient to capture all relevant outcomes, and a longer-term follow-up may be needed.

CONCLUSION

The results suggest that covering ileal loop and diversion ostomy groups have significant differences in the setting of surgery, Vitamin B 12 levels, early and late complications, and takedown time. This study showed a reduction in post-operative morbidity and complications in covering ileal loop compared to diverting ileostomy. Further large-scale RCT studies on this theme can help generalize the findings. The study highlights the importance of carefully covering ileal loop without or with delayed ostomy rather than diverting ileostomy in large bowel anastomosis in select patients to minimize the risk of complications and promote successful outcomes.

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Author's Contribution:

SP- Manuscript preparation and performed the procedure; **JBR**- Editing manuscript; **RM**- Protocol review and review manuscript; **KN**- Literature review, data collection, and data analysis; and **MKP**- Study design and review manuscript.

Work attributed to:

Department of General Surgery, Government Rajaji Medical College and Hospital, Madurai, Tamil Nadu, India.

Orcid ID:

Dr. Sathyaraj P - <https://orcid.org/0009-0007-9842-3149>
Dr. Jemin Bharath R - <https://orcid.org/0009-0002-9001-8839>
Dr. Renganathan M - <https://orcid.org/0009-0000-2550-7762>
Dr. Kalaiselvan N - <https://orcid.org/0009-0006-3214-5847>
Dr. Mukesh Kumar P - <https://orcid.org/0009-0005-2711-9188>

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