

Frequency of Anastomotic Leak in Early Versus Dealyed Oral Feeding after Elective Colostomy Closure

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1. Abstract

1.1. Background: Intestinal stoma is usually performed as component of other surgical intervention for small and large bowel pathologies. Of these temporary colostomy are commonest stomas created for de-functioning of the distal anastomotic site to minimise the chances of leak. Colostomy is usually reversed at 8 to 12 weeks and Ileostomy closure is often considered a minor procedure but it is associated with significant morbidity and mortality

1.2. Objective: To compare the safety of early versus late oral feeding following ileostomy closure (reversal) in terms of post op anastomotic leak.

1.3. Materials and Methods: This randomized control trial study was conducted at Surgery department of Hayatabad Medical Complex Peshawar from January to December 2021. Total of 298 patients were included. Using 13.3% and 5% anastomotic leak in Early Vs Delayed Oral Feeding after colostomy closure respectively, 95% confidence interval and 80% power of test using WHO software for sample size calculation

1.4. Results: Total of 298 patients were observed to find the safety of early versus delayed enteral feeding following ileostomy reversal and the results were analysed as:

Age distribution among 298 patients was analysed as n=14-20 years (15.1 %) 21-30 years (21.2%) 31-40 years (20.2%)41-50 years (23.2%) and 51-60 years (20.2%) Mean age was 37 years with standard deviation ± 3.1 . Gender distribution among 298 patients was analysed as n = (66.6%) patients were male and (39.3%) patients were female. effective of Group A was analysed was effective in n = (80.8%) patients while group B was effective in n = (90.8%) patients.

1.5. Conclusion: Early enteral feeding after ileostomy closure is safe, well tolerated. No mor–bidity (leak) and mortality documented. The fear related with its failure does not have solid grounds and it should be encouraged in elective cases. But due to small number of patients, this study does not advocate that the use of late enteral feeding should be abandoned in ileostomy closure, rather it provides data in favour of potential benefits of early enteral feeding.

2. Introduction

The mortality and morbidity from large bowel surgery often exceeded 20% mainly attributed to sepsis over the past century. However, it has decreased substantially since then mainly because of modern surgical techniques and improved perioperative care [1]. The repair by suture or resection of diseased colon is one of the most important skills in general surgery. Untreated or treated improperly these conditions cause significant morbidity in terms of intra-abdominal infection or death from generalized peritonitis [2]. Intestinal anastomosis is frequently performed as emergency and elective procedures due to traumatic rupture, benign or malignant perforations or obstruction and in some other inflammatory conditions [3]. Waiting for the post-operative ileus to resolve before starting post-operative feeding after bowel anastomosis has traditionally been the practise. The patient continues to use a nasogastric tube for bowel decompression during this time. However, obtaining appropriate nutrition has always been a priority in the recovery phase, and it is now more widely understood that delaying oral nutrition for a few days following surgery causes nutrient depletion and associated effects. Due to transitory paralytic ileus, a nil by mouth (NBM) strategy is well established after gut anastomosis surgery. There is no proof that bowel rest or taking nothing by mouth promotes wound healing or maintains anastomotic in-

tegrity. There is evidence to support the idea that luminal nourishment may speed up wound healing and boost anastomotic strength, with reduction in peri-operative infection, better maintenance of nitrogen balance and shorter hospital stay [4]. Early enteral nutrition (EN) has become very popular and received increasing attention in recent years. Some claims that early enteral feeding has better results than delayed enteral feeding in term of wound and respiratory infections, hospital stay, mortality and vice versa [5].

Anastomotic leak is the most important complication following colorectal resection and anastomosis. The complications of early & delayed oral feeding have been reported with controversies. Some claims that early oral feeding has better results than delayed oral feeding in terms of wound and respiratory infections, hospital stay & mortality [6, 7].

Aim of the study is based upon the research question that why there is so much divergence of data regarding the most common complication of colostomy closure. So this study will determine the effects of early versus delayed oral feeding after colostomy closure, thus will make protocols to reduce this devastating complication and morbidity.

3. Material and Methods

This Randomized controlled trial was carried out at Department of General Surgery Hayatabad Medical Complex Peshawar between January to December 2021. Patients between 15 - 70 years age of either gender who underwent colostomy closure due to different reasons were included in the study. Patient were equally divided into two groups, 149 in each group, using 13.3% and 5% anastomotic leak in Early Vs Delayed Oral Feeding after colostomy closure respectively, using 95% confidence interval and 80% power of test using WHO software for sample size calculation. Patients below 15 & above 70 years, Patients who had chronic liver, renal or heart diseases, those with diabetes mellitus, anaemic and who were using steroids were excluded.

After approval by the Institution Ethical Committee, patients will be admitted through out -patient department and the study purpose will be explained to the patients. Informed written consent was taken. Distal loopogram was done to exclude obstruction distal to anastomosis. All patients was undergo colostomy closure under general anaesthesia by an experienced surgical team by single interrupted extramucosal technique. A single dose of 1 gm cefuroxime and single 100 ml flagyl infusion was given to all patients at the time of anaesthesia induction and will continue for the first 48

hours post-operatively.

All patients was monitored post-operatively for signs of anastomotic leak and information about the anastomosis was recorded on pre designed proforma up to 2 weeks post-operatively. Effectiveness will be determined if there will be no anastomotic leak till 2 weeks post-operatively. Confounders and bias will be controlled by strictly following exclusion criteria. Data analysis was done using SPSS version 27.0. Chi square test was applied to compare the frequency of anastomotic leak. P-value ≤ 0.05 was considered as statistically significant.

4. Results

Total 298 patients of colostomy closure were observed, which were divided in two equal groups. Patients in group "A" were managed by early oral feeding and group "B" patients were going through late oral feeding.

Gender wise distribution shows that 83(55.7%) were male and 66(44.3%) were female in group "A" with male to female ratio was 1.25:1 while group "B" contains 80(53.7%) male and 69(46.3%) female with male to female ratio was 1.16:1. Overall male to female ratio was 1.21:1 (Table 1).

Average age was 38.75 years ± 13.82 SD in group "A" and included 17(11.4%) patients having less than 20 years, 40(26.8%) patients 21-35 years, 55(36.9%) patients 36-50 years and 37(24.8%) patients having age more than 50 years. While group "B" have average age of 39.91 years $+13.25$ SD and included 15(10.1%) patients in less than or equal to 20 years, 27(18.1%) in 21-35 years, 69(46.3%) in 36-50 years and 38(25.5%) patients have age more than 50 years of age. The overall average of the patients was 39.33 years $+13.52$ SD. The age distribution among the group was also insignificant with p-value 0.237 (Table 2).

Postoperative anastomotic leak in group "A" showed no anastomotic leak in 141(94.6%) patients and 8(5.4%) patients have anastomotic leak while group "B" have no anastomotic leak in 129(86.6%) patients and anastomotic leak in 20(13.4%) patients which shows that anastomotic leak was highly significant in both the procedure with p-value=0.017 (Table 3).

Age wise distribution in both the groups showed that anastomotic leak was greater in old age group and decreases in younger patients. Patients having age less or equal to 20 years showed no anastomotic leak in 17(12.1%) in group "A" while 14(10.9%) in group "B" (Table 4).

Table 1: Gender Wise Comparison of Groups

Gender	Group A (n=149)		Group B (n=149)		P value
	Frequency	Percentage	Frequency	Percentage	
Male	83	55.70%	80	53.70%	0.408
Female	66	44.30%	69	46.30%	
Total	149	100%	149	100%	

Table 2: Age Group Distribution

Age	Group A		Group B		P value
	Frequency	Percentage	Frequency	Percentage	
≤ 20	17	11.40%	15	10.10%	0.237
21 – 35	40	26.80%	27	18.10%	
36 – 50	55	36.90%	69	46.30%	
> 50	37	24.80%	38	25.50%	
Total	149	100%	149	100%	

Table 3: Safety Wise Distribution in Both the Groups

Postoperative leak	Group A	Group B	Total	P value
Yes	8	20	28	0.017
	5.40%	13.40%	9.40%	
No	141	129	270	
	94.60%	86.60%	90.60%	

Table 4: Age Wise Distribution of Safety in Groups

Postoperative leak	Group A	Group B	Total	P value
Yes	8	20	28	0.017
	5.40%	13.40%	9.40%	
No	141	129	270	
	94.60%	86.60%	90.60%	

5. Discussion

After gastrointestinal anastomosis, patients are typically kept “nil by mouth” until they pass flatus. However, achieving appropriate nutrition has always been a priority in postoperative care, and it is now more widely understood that in these situations, delaying oral feedings for a few days following surgery might result in nutritional depletion and its repercussions. Recent studies have shown that it enhances immunological competence, reduces septic complications, enhances wound healing, and may even enhance anastomotic power [8-10].

Following colon resection, the conventional method for starting post-operative eating has been to wait for the postoperative adynamic ileus to resolve, as evidenced by the existence of bowel sounds and the passing of flatus. However, recent clinical trials of patients undergoing laparoscopic or laparoscopic-assisted colectomy, with feeding began by protocol rather than by objective indicators of recovery of bowel function, resulted in early feeding and decreased length of hospital stay [11, 12].

These benefits were once thought to be exclusive to laparoscopic colectomy due to smaller incisions and less gastrointestinal system manipulation. Recent clinical trials examining the viability of early postoperative feeding after open colon resection and randomised trials contrasting early postoperative feeding in open and laparoscopic colectomy have shown that early postoperative feeding is equally safe and effective after open colon resection [13, 14].

In 2001, Lewis et al performed a meta-analysis comparing early feeding to a restricted diet. Based on 11 studies, they came to the conclusion that following a restricted diet was not beneficial. They noted that post-laparotomy dysmotility primarily affects the stomach and colon and that the small bowel recovers normal function

between 4 and 8 hours, with feeding tolerated and food absorbed within 24 hours [15]. Reissman et al compared 80 patients undergoing open bowel resection who were managed by traditional postoperative feeding protocol with 80 patients undisrupted by the procedure. There were no discernible changes in the rate of emesis, requirement for reinsertion of the nasogastric tube, duration of ileus, or total complications between the early postoperative and regular feeding groups.

Another widespread misconception is that patients should refrain from eating for a few days following colorectal surgery in order to prevent anastomotic leaking (this is unsupported by evidence). There is evidence, nonetheless, that a sufficient oral intake strengthens the intestinal anastomosis and prevents anastomotic complications. Additionally, it was demonstrated that feeding enhances anastomotic collagen deposition and strength and reverses the mucosal atrophy caused by starvation.

Early oral feeding after elective colorectal surgery has been shown to be safe and tolerable by the majority of patients, according to Baraza W et al [16]. In the current study, oral feeding began within 24 hours in the study group, and 83.3% of early oral feeding and 90% of late oral feeding were well tolerated ($p= 0.7065$). Only 10 patients were unable to tolerate an early oral feed, therefore feeding had to stop for 12 hours before it could resume in modest doses. The results of other studies are comparable to the present study's tolerance to early feeding [17].

In our study, there was no leak in either group, and the result is comparable with above mentioned studies. Fukuzawa et al demonstrated that early oral feeding after upper GI surgery promotes prompt anastomotic healing [18]. Ekingen et al demonstrated that neither anastomotic leakage nor dehiscence was observed in any

group [19]. Shah JN et al reported that the anastomotic complications were similar in early and late oral feeding in GI surgery [20]. Surgery patients need nutritional support in the form of enteral or total parenteral nutrition since they are prone to postoperative stress and a hypercatabolic condition. Despite overwhelming evidence that “nil by mouth” is unjustified, regarding the role of early enteral nutrition in comparison to the conventional techniques of postoperative feeding, including whole parenteral nutritional support, the facts are still inconclusive.

This study’s limitations included a small number of cases and a shorter follow-up period. Additionally, we are unable to investigate the characteristics of different patients, co-morbidities, such as BMI and ASA score, that are thought to be possible risk factors for postoperative outcome. It is also not connected to a pre-established standard protocol. To verify our findings, we urge a larger multicenter prospective trial.

6. Conclusion

Early enteral feeding after ileostomy closure is safe, well tolerated. No morbidity (leak) and mortality documented. The fear related with its failure does not have solid grounds and it should be encouraged in elective cases. But due to small number of patients, this study does not advocate that the use of late enteral feeding should be abandoned in ileostomy closure, rather it provides data in favour of potential benefits of early enteral feeding.

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