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Outcomes of Early Versus Delayed Feeding in Patients Undergoing Intestinal Anastomosis

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ABSTRACT

Background: Historically, surgeons in the past have opted for delayed feeding after enteric anastomosis. The purpose of our study is to compare early feeding versus delayed feeding after gut anastomosis.
Objectives: The study aims to compare the outcomes of early feeding with delayed feeding after intestinal anastomosis including both small and large bowel surgeries.
Material and Methods: A total of 120 patients who underwent intestinal anastomosis, either elective or emergency procedures, were included in this randomized controlled trial. The study was conducted for 6 months starting from 1st January-2022 to 30th June-2022. In group A; early feeding started within 6 hours of surgery. In group B, feeding started after return of normal bowel movements usually after 72 hours.
Results: Mean age of patients in group Awas 42.06 with 46 (76.7%) males and 14 (23.3%) females. In group B, the mean age was 40.43 years with 39 (65.0%) males and 21 (35.0%) females.
The primary diagnosis was infections in 27 (45%) patients in group Aand 29 (48.3%) patients in group B. Mean time to pass the first flatus in group A was 2.70 days with standard deviation of 2.78 and in group B, it was 3.50 days with standard deviation of 3.33. Mean time to pass first stool in group Awas 3.67 days with a standard deviation of 2.44 and in group B was 4.97 days with a standard deviation of 3.65. Mean duration of hospital stay (HS) was 3.06 days with a standard deviation of 2.75 in group Aand in group B was 4.43 days with a standard deviation of 4.65. Number of patients (n = 60) being constant for both the groups.
Conclusion: Early oral feeding following elective intestinal anastomosis is safe and results in a quicker recovery of normal bowel movements, as well as shorter hospital stay.
Keywords: Conventional feeding, Early oral feeding, Intestinal anastomosis.

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INTRODUCTION

The postoperative management of patients who have undergone gastrointestinal (GI) surgery has historically involved of keeping them "nil by mouth" and providing gastric decompression through the use of a nasogastric tube (NGT) until the postoperative ileus has resolved and normal bowel function has been restored.[1] This management strategy has become common practice over the years due to the widely held belief that limiting oral intake allows the gastrointestinal tract more time to heal and recover, thereby lowering the risk of postoperative illness.[2] Studies have shown that both pre and postoperative fasting may lead to unnecessary starvation, resulting in adverse consequences on patient outcomes.[3,4]

To prevent these complications, the concept of early oral feeding has been introduced. Early feeding involves starting liquids within 6 hours of surgery. If tolerated well, semi-solid food is introduced after 24 hours, and by the 3rd day, the patient is transitioned to a normal routine diet.[5,6]

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Despite the availability of numerous studies, there is still an ongoing debate regarding the timing to start oral feeding after intestinal anastomosis. A recent Cochrane review failed to prove the superiority of early feeding over delayed feeding and emphasized the need for more randomized studies to evaluate whether early feeding is superior to delayed feedingor not.[7]

The aim of the present study is to compare the outcomes of early feeding with delayed (conventional) feeding after intestinal anastomosis. There is still insufficient evidence to decide which feeding technique is superior in promoting the early recovery of bowel functions in the post-operative period. Therefore, the results of the present study will determine which feeding protocol facilitates the early recovery of bowel functions in patients undergoing intestinal anastomosis.

MATERIALAND METHODS

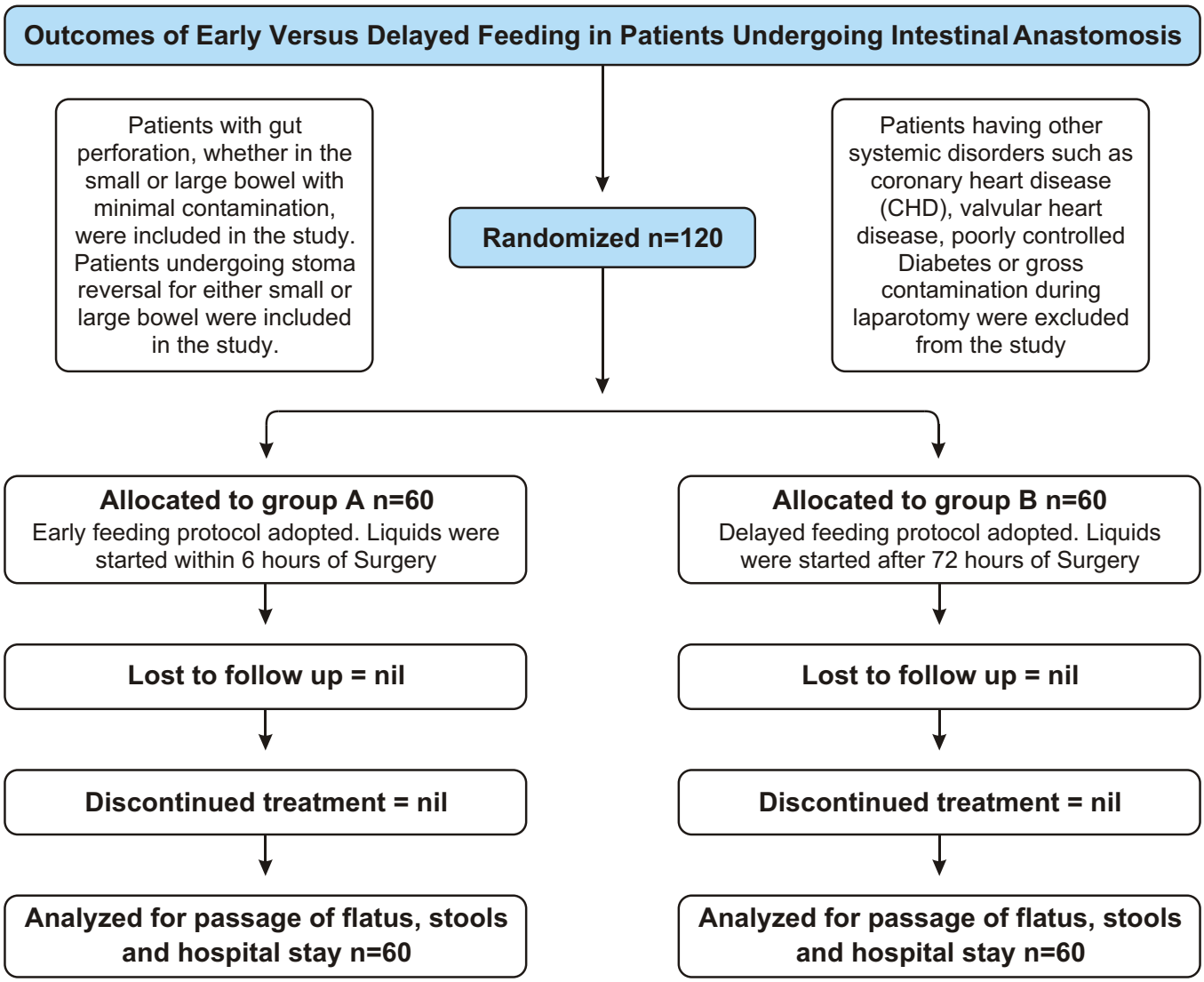
A total of 120 patients who were planned for intestinal anastomosis either elective or emergency were included. The study was conducted in Saidu teaching hospital, Swat, over a 6 months period of 6 months from January 1st 2022, to June 30th 2022. Patients with gut perforation, whether in the small or large bowel with minimal contamination, were included in the

study. Patients undergoing stoma reversal for either small or large bowel were included in the study. Patients having other systemic disorders such as coronary heart disease (CHD), valvular heart disease, poorly controlled Diabetes or gross contamination during laparotomy were excluded from the study. Written consent was taken from each participant after explaining them the objectives of the study. The study was conducted with the permission of the hospital ethical review board notification no. 67-ERB/2022.

Baseline data including age, gender, diabetes, hypertension and primary diagnosis was noted.

A total of 120 patients were selected and were randomly allocated to two equal groups, A and B, using randomization. In group A; early feeding protocol was adopted. In these patients, NGT was removed immediately after surgery. The liquids were started within 6 hours of surgery and if tolerated well then the semi-solid food was started after 24 hours and at 3rd day, normal routine diet was started. In group B; patients' solid diet was started only after return of normal bowel movements. Normal bowel movements usually take 72 hours to return after laparotomy. So, the NG tube was placed for 72 hours in these patients. Liquid diet was started after 72 hours in these patients. The wait for the return of normal bowel movements was a maximum period of five days. If not returned, a normal solid diet was started.

Consort Flow Chart



Method of bowel anastomosis involve purely hand-sewn techniques. All surgeries were performed by consultants, including both small bowel repair and large bowel repair cases. The study encompassed both primary repair of the gut following perforation and stoma reversal cases. Bowel anastomosis was done in single layer, interrupted, extra-mucosal fashion. Suture material used was vicryl 3/0.

A couple of patients who underwent stoma reversal of small bowel and who were started early feeding got anastomosis leak and they underwent re-formation of stomas on third to fourth post-operative day.

No anal stretch was performed in either primary repair cases or stoma reversal cases in both the groups.

All patients were discharged from the hospital if they were found to have tolerated oral feeding.

Fortunately, only a couple of patients got anastomosis leak in group a and since leak can occur in both the groups, that's why it was not considered as primary outcome variable.

Data regarding time to pass first flatus, stool and hospital stay (HS) was noted for each patient. Time to pass first flatus was defined as the time from shifting the patient to the recovery unit the time the patients passed first flatus. Time to pass first stool was defined as the time to pass first stool after shifting the patient from the recovery unit. Hospital stay was defined as the time from the day of surgery to the time of discharge of patient from the hospital.

Data analysis was conducted using SPSS v25 software. A t-test was Why has anastomosis leak not defined as primary outcome variable as the success of anastomosis is determined by only this variable applied to compare the means of both groups for time to pass first flatus, time to pass first stool, and hospital stay. A P-value =0.05 was considered significant.

RESULTS

In Group A (n_1 = 60), there were 46 (76.7%) males and 14 (23.3%) females, with a mean age (x_1) of 42.06 and a standard deviation (s_1) of 35.554. Group B (n_2 = 60) comprised 39 (65.0%) males and 21(35.0%) females, with a mean age (x_2) of 40.43 and a standard deviation (s_2) of 37.568. The t-value for the difference in mean age (x_1 - x_2) was 0.044, with degrees of freedom $n_1 + n_2$ 2 = 118.

The p-value for t = 0.044 and with degree of freedom (d.f) = 118 was close to 1.0, suggesting no significant difference between the groups (null hypothesis).

ASA-I was assessed in 16 (26.7%) patients in both groups, while ASA-II was assessed in 38 (63.3%) in group A and 36 (60%) patients in group B. ASA-III was assessed in 06 (10%) patients in group A and 08 (13.3%) patients in group B. The primary diagnosis was Infections in 27 (45%) patients in group A and 29 (48.3%) patients in group B, primarily Enteric fever, Tuberculosis and Diverticulitis.

Comparison of study outcomes revealed significant differences in mean time to pass the first flatus (t = -6.114 with a p-value of 0.000). The p-value is extremely small (close to 0), which means group A and B are extremely different or significant. Also having a Confidence Interval of (-0.80 ± 0.396) or (-1.20 to -0.40).

Mean time to pass the first stool; in group A and B having a t-calculated value of -2.344, with a p-value of 0.021 (which is less than 0.05), indicating that the difference between the two groups is statistically significant at a 95% Confidence Level. Also on calculating the t-test for Confidence Interval for difference of means, we have (-1.3 ± 1.122) or (-2.422 to -0.18).

Now comparing both group A and B for hospital stay (HS), we have a t-calculated value of -1.397, with a p-value of 0.166 (which is greater than 0.05). So, the p-value is greater than 0.05, which indicates that the difference between the two groups is statistically insignificant at a 95% Confidence Level. On calculating the Confidence Interval for the difference of means for both groups using t-statistics, we have (-1.37 ± 1.944) or (-3.314 to 0.554).

The above results are shown in table 01 below.

Table 01. Comparison of Study Outcomes.

Study Outcome		Study Group		t-value	P-value	Remarks
		Group A (N=60)	Group B (N=60)			
Time to pass first flatus	Means	2.70 2.78	3.50 3.33	-6.114	0.000	Significant
Time to pass first stool	Means	3.67 2.44	4.97 3.65	-2.344	0.021	Significant
Hospital Stay	Means	3.06 2.75	4.43 4.65	-1.397	0.166	Insignificant

DISCUSSION

Postoperative treatment has traditionally placed a significant emphasis on providing adequate nutrition to its patients. Due to the risk of developing ileus, early oral feeding following abdominal surgery is typically discouraged and routine nasogastric decompression is often performed in its place. [6,8] After abdominal surgery, the traditional clinical proof necessary for beginning an oral diet was the passage of flatus or bowel motions, which demonstrates that postoperative ileus has been resolved.[8] On the other hand, recent research has revealed that the use of a NGT following colorectal surgery might not be required in all cases.[9]

In the postoperative care of abdominal surgery, the traditional methods included the use of a NGT, fasting, and the administration of IV solutions. In contrast, during the past few decades, there has been a shift towards patients who have undergone stomach surgery, the ability to eat earlier. It has already been demonstrated that there is no benefit of doing a standard decompression via the nasogastric tube after abdominal or colorectal surgery.[10]

In many centers, the ability to tolerate oral eating is measured by the patient's ability to pass flatus. The physiology of postoperative ileus, on the other hand, revealed that such a strategy is overly cautious. It has been demonstrated that paralysis of the small intestine is only temporary. The paralysis of the stomach lasts for 24 hours, whereas the paralysis of the colon lasts for 4872 hours.[11]

Our study compared the outcomes of early oral feeding with conventional feeding protocol after elective or emergency open abdominal colorectal procedures. In our study, we found early time to pass flatus, time to pass first stool and lower HS in patients undergoing intestinal anastomosis who received early feeding.

A study by Nematihonar et al. on outcomes of early versus delayed feeding in patients undergoing colorectal anastomosis containing 60 patients (age 46.8 ± 13.6 years, 35 male and 25 female patients) reported that the use of early feeding is superior to delayed feeding protocol. They reported mean time to pass first flatus 2.66 ± 0.71 days in early feeding versus 3.9 ± 0.071 days in delayed feeding, time to pass first stool 3.9 ± 0.92 days in early feeding versus 5.4 ± 0.77 days in delayed feeding. HS was also shorter in the early group (4 ± 0.64 days) in comparison to conventional group (6.1 ± 0.84 days).[12]

While a study by Fanaie & Ziaee containing 110 patients (69 male and 41 female patients), did not find any significant difference in the outcomes of early versus delayed feeding. They reported mean time to pass first flatus 1.7 ± 0.7 days in early feeding versus 1.6±0.8 days in delayed feeding groups, however, they did not compare mean hospital stay and time to pass first stool between the groups.[13]

According to Aslanabadi et al., early feeding patients spent significantly less time in the hospital than late feeding patients (p 0.001), supporting our findings.[14] Enteral nutrition was started after 1624 hours in a different study on 125 patients at the Dhaka Shishu Children Hospital who had their colostomies reversed following Hirschsprung's illness and anorectal malformation. There was no difference in complications between the two groups, and postoperative HS for patients in the early feeding group (4.14±0.5 days) and delayed feeding group (8.09±2.75 days).[15] Other studies have also demonstrated that early postoperative

feeding following non-gastrointestinal surgery shortens hospital stays.[16,17]

The advantages of early nutrition were demonstrated by Marik and Zaloga's meta-analysis of prospective, randomized experiments contrasting early vs. late enteral feeding.[18] The best feeding location for enteral nutrition is still up for debate.[19,20] Despite this, Seenu demonstrated that the majority of patients can tolerate early oral feeding following elective colorectal surgery.[21]

Similar to this, Difronzo et al.[22] showed that early postoperative oral feeding following elective open colon resection was well tolerated (86.5 percent). These researches did not only focus on colorectal surgery. Early oral feeding following gastrectomy is safe, according to research by Suehiro et al,[23] both groups experienced an equal number of problems such as anastomosis leaks and wound infections.

CONCLUSION

Early oral feeding following elective intestinal anastomosis is safe and can be tolerated by the majority of patients. Early oral feeding has been linked to an earlier recovery of normal bowel movements as well as a shorter length of time spent in the hospital.

Ethical Consideration

This study was approved by the ethical board of Saidu Medical College / Saidu Teaching Hospital, Swat, Pakistan.

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Conflict of Interest

Authors declare no conflict of interest

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DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data is not publicly available due to privacy or ethical restrictions.

AUTHOR'S CONTRIBUTION

The following authors full fill authorship criteria as per ICMJE guidelines;

Akbar F, Ahmad N:	Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Din MU, Abbas S:	Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Khan N:	Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Iqbal N:	Analysis and interpretation of data, critical revision,final approval, agreed to be accountable for all the work.

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