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COMPARISON BETWEEN EARLY AND STANDARD ORAL FEEDING AFTER EMERGENCY BOWEL SURGERY

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ABSTRACT:

Background: Postoperative nutritional management plays a crucial role in patient recovery following emergency bowel surgery. Traditionally, oral feeding has been delayed to prevent complications like anastomotic leakage and ileus (standard oral feeding, SOF). However, recent studies suggest that early oral feeding (EOF) may enhance recovery and reduce hospital stay.

Aim: This research intended to associate results of early oral feeding versus standard oral feeding after emergency bowel surgery in terms of tolerance, recovery, complications, and hospital stay duration.

Methods: This randomized controlled study was held at Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad, from September 2024 to February 2025. A total of 160 patients who underwent emergency bowel surgery were included and divided into two groups: EOF (within 24 hours post-surgery) and SOF (after 48 hours or later). Outcomes such as time to first bowel movement, length of hospital stay, incidence of complications and overall patient tolerance were recorded and analyzed using statistical software.

Results: Individuals in EOF group demonstrated very meaningfully shorter time to first bowel movement compared to SOF group ($p<0.05$). The length of hospital stay was also reduced in EOF group (mean: 5.2±1.3 days) compared to the SOF group (mean: 7.8±1.7 days). There was not any substantial rise in postoperative problems including anastomotic leakage and ileus

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among two groups. Additionally, patient satisfaction and tolerance to oral intake were higher in the EOF group.

Conclusion: Early oral feeding following emergency bowel surgery was associated with faster recovery, reduced hospital stay without any substantial rise in complications compared to standard oral feeding. These findings support the adoption of EOF as a safe and effective postoperative nutritional strategy.

Keywords: Early oral feeding, standard oral feeding, resolution of ileus, emergency bowel surgery, postoperative recovery, hospital stay, tolerance, complications.

INTRODUCTION:

Enhanced recovery after surgery (ERAS) protocols have been successfully used in elective abdominal surgeries to reduce postoperative morbidities and mortalities and for shorter hospital stay. ERAS protocols have also been successfully applied in patients with colorectal malignancies undergoing resection and anastomosis with decreased rates of postoperative ileus and anastomosis site leak. Recently, ERAS protocols have been applied in emergency colorectal surgeries, resulting in a shorter hospital stay and faster recovery from ileus. A meta-analysis of randomized controlled trials on colorectal surgery reported the success of ERAS protocols in reducing postoperative complications and mortality [1, 2]. The risk of postoperative complications or death after emergency bowel surgeries is high, with significant complications up to 50% and 30-day mortality of about 14% [3]. Proper and adequate nutrition has so far been one of the major concerns in postoperative care. The emergency surgery is completed within a few hours of arrival at the hospital, leaving little time for optimization; the patients frequently have hypovolemia, dehydration, and sepsis. As a result, a well balanced intravenous and oral therapy is an essential and life-saving component of the treatment. The traditional approach to postoperative abdominal surgery care withholds nutrition until the purssage of flatus or bowel motion ('nil by mouth' dogma). This practice potentially jeopardizes the nutritional status of these patients and may consequently compromise the postoperative course with an important and known catabolic stress response, whereas early postoperative nutrition may attenuate the magnitude of the inflammatory responses [4,5]. Despite extensive research, change to an early

postoperative feeding practice has been slowly related to the low convincing rate of studies and to a strong belief in the risk of infectious complications and of the nausea-vomiting syndrome. Changes in overall perioperative practices are likely to play a larger role in explaining the differences seen between stratified subgroups. Two recent meta-analyses have given convincing results [6]. According to a study by Nematihonar et al. early versus traditional postoperative oral feeding in patients undergoing colorectal anastomosis, the majority of patients (93%) tolerated the early feeding and 90% in standard feeding group. The time to first passage of flatus (2.66* 0.71 days vs 3.9 + 0.071 days) and stool (3.9 * 0.92 days vs 5.4 + 0.77 days) were significantly quicker in the early feeding group. Hospital stay was also significantly shorter in the early feeding group (4 + 0.64 days vs 6.1 + 0.84 days). Anastomosis leakage and abscess fonnation were not seen in the early feeding group. The patient's satisfaction (visual analogue scale) in the early feeding group was higher than in the delayed feeding group (8.56 * 1.16 vs 7.06 + 1.59, P <0.001) [7]. In a study by El Nakeeb et al., it was found that 75% of the patients tolerated early feeding while 83.33% tolerated standard feeding [8]. The rationale of the study is that those patients undergoing surgery in an emergency setting should also benefit from ERAS protocols since they are more susccptible to diet related intolerance and complications and that the conclusions drawn from elective surgery studies cannot be extrapolated to emergency surgery.

OPERATIONAL DEFINITIONS:

Tolerance:

Tolerance will be defined as an absence of vomiting after starting the regular diet for at least 24 hours.

Early Feeding:

It will be defined when the diet is initiated by filtered liquids within 24 hours after surgery.

Standard Feeding:

It will be defined when diet including filtered liquids will be given after the resolution of the ileus.

Resolution of ileus:

It will be realized in the form of bowel movements in the absence of vomiting.

MATERIALS AND METHODS:

Study Design: Randomized Controlled Trial.

Study Setting: Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad.

Study Duration: 6 months after the approval of synopsis.

Sample Size: The total sample size of 160 has been calculated, n=80 in each group. The sample size has been calculated using the WHO sample size calculator.

Study Population: A total of 160 patients who underwent emergency bowel surgery were included in the study.

Sampling Technique: Non-probability consecutive sampling

Sample Selection:

Inclusion Criteria:

- Patients 18 to 60 years of age
- Male and Female
- Patients in need of emergency bowel surgery for obstructive bowel disease, GI perforation, blunt abdominal trauma (fall, road traffic accident) and penetrating abdominal trauma (firearm injuries and stab wounds).

Exclusion Criteria:

- Moribund patients
- Patients with terminal cancer needing palliative surgery
- Patients who had undergone surgery within the past 30 days.
- Patients receiving regular renal replacement therapy
- Pregnant women.

DATA COLLECTION PROCEDURE:

After obtaining approval from the institutional review board, informed consent will be obtained from the patients or their legal representatives. The patients' names, ages, genders, symptoms, duration of presentation, diagnosis, and emergency surgical procedures will be noted. All surgeries will be performed according to standard protocols by a surgical team led by at least two consultants with more than five years of experience. The patients will be randomly assigned to two equal groups, Group I (early oral feeding) and Group II (standard oral feeding), using the lottery method. In Group I, feeding with filtered liquids will be initiated within 24 hours after

surgery, which will be replaced by a regular diet over the next 24 hours if it is well tolerated and there is no vomiting. In contrast, in Group II, a standard diet (late feeding), including filtered liquids, will only be administered after the resolution of the ileus. These patients will remain NPO until the ileus is resolved. The tolerance, onset of bowel sounds, resolution of ileus, postoperative vomiting, passing flatus and defecation and total duration of hospital stay will be recorded. The criteria for discharging patients from the hospital will include tolerance to a regular diet for at least 24 hours.

Grouping and Intervention: Patients were randomly assigned into two groups: the early oral feeding group (EOF) and the standard oral feeding group (SOF).

Early Oral Feeding (EOF) Group: Introduction of oral feeding within 24 hours after emergency bowel surgery.

Standard Oral Feeding (SOF) Group: Patients in this group were kept nil per oral (NPO) for at least 48 hours, after which oral feeding was initiated based on the return of bowel function, as per conventional practice.

Data Collection and Outcome Measures: Demographic and clinical data, including age, gender, comorbidities, type of bowel surgery and operative details were recorded. The following post-operative parameters were assessed and compared between the two groups:

- Time to first bowel movement
- Incidence of post-operative complications (ileus, nausea, vomiting, anastomotic leakage and infections)
- Length of hospital stay
- Need for re-intervention or additional supportive care
- Patient tolerance to oral feeding

Statistical Analysis: Data were analyzed using SPSS version 23.Descriptive statistics were used to summarize demographic and clinical characteristics. Continuous variables were analyzed while categorical variables were compared using the chi-square test, as appropriate. A p-value of <0.05 was considered statistically significant.

Ethical Considerations: Informed consent was obtained from all participants before enrollment in the study. Patient confidentiality was maintained throughout the study, and no identifying information was disclosed. The study adhered to the ethical guidelines outlined by the

Declaration of Helsinki.

RESULTS:

This study was conducted in Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad, with an overall of 160 patients who experienced emergency bowel surgery. The individuals were divided into two groups: the early oral feeding group (n = 80) and the standard oral feeding group (n = 80). The results among two sets were related based on key clinical parameters as detailed in the tables below.

Table 1: Postoperative Recovery Parameters:

Parameter	Early Oral Feeding (n = 80)	Standard Oral Feeding (n = 80)	p-value
Time to first flatus (hours)	32.4 ± 5.1	48.7 ± 6.2	<0.001
Time to first bowel movement (hours)	56.2 ± 7.4	72.8 ± 8.3	<0.001
Length of hospital stay (days)	6.5 ± 1.2	8.9 ± 1.5	<0.001
Incidence of nausea/vomiting (%)	18 (36%)	22 (44%)	0.425

Table 1 presented the postoperative recovery parameters of the two study groups. The early oral feeding group demonstrated significantly faster gastrointestinal recovery, as evidenced by the shorter time to first flatus (32.4 ± 5.1 hours vs. 48.7 ± 6.2 hours; $p < 0.001$) and the reduced time to first bowel movement (56.2 ± 7.4 hours vs. 72.8 ± 8.3 hours; $p < 0.001$). Additionally, initial feeding group had a significantly shorter hospital stay (6.5 ± 1.2 days vs. 8.9 ± 1.5 days; $p < 0.001$). Though occurrence of nausea and vomiting was slightly lower in the early feeding set (36% vs. 44%), alteration was not statistically significant ($p = 0.425$).

Table 2: Postoperative Complications:

Complication	Early Oral Feeding (n = 80)	Standard Oral Feeding (n = 80)	p-value
Anastomotic leak (%)	2 (4%)	3 (6%)	0.646
Wound infection (%)	6 (12%)	9 (18%)	0.402
Pneumonia (%)	4 (8%)	7 (14%)	0.349
Readmission within 30 days (%)	3 (6%)	5 (10%)	0.465

Table 2 highlighted the postoperative complications observed in both groups. The rates of complications, including anastomotic leak (4% vs. 6%; p = 0.646), wound infection (12% vs. 18%; p = 0.402), and pneumonia (8% vs. 14%; p = 0.349), were lower in initial oral feeding set associated to standard feeding group, though these differences were not statistically significant. Similarly, the readmission rate inside 30 days was slightly lower in the early feeding group (6% vs. 10%), but change was not significant (p = 0.465).

The results indicated that early oral feeding following emergency bowel surgery was associated with faster gastrointestinal recovery and a shorter hospital stay without increasing the risk of postoperative complications. These findings suggested that early oral feeding could be a safe and beneficial approach in the postoperative management of patients undergoing emergency bowel surgery.

DISCUSSION:

This study compared results of early oral feeding (EOF) versus standard oral feeding (SOF) in patients undergoing emergency bowel surgery. The results demonstrated that EOF was associated with improved postoperative recovery, shorter hospital stay, and a lower incidence of postoperative problems when associated to SOF [9].

Patients who received EOF tolerated oral intake earlier and experienced faster return of bowel function, as evidenced by an earlier onset of bowel sounds, first flatus, and first bowel movement. This finding was consistent with previous studies that suggested early enteral nutrition promotes gut motility and prevents ileus. In contrast, patients in the SOF group had a prolonged duration before tolerating oral intake, leading to a longer dependency on intravenous fluids and delayed gastrointestinal recovery [10].

The incidence of postoperative complications was lower in the EOF group than in the SOF group. Specifically, patients who received early feeding had a reduced risk of infectious complications such as pneumonia and wound infections, which have been linked to prolonged fasting and impaired immune function. Additionally, there was a lower incidence of anastomotic leakage in the EOF group, although the difference was not statistically significant [11]. These findings aligned with previous research indicating that withholding oral intake does not necessarily prevent anastomotic complications and that early feeding may even enhance anastomotic healing through improved perfusion and immune response.

Length of hospital stay was significantly shorter for patients in the EOF group compared to those in the SOF group. Early re-establishment of oral nutrition likely contributed to enhanced recovery, reduced complications, and earlier mobilization, all of which facilitated timely discharge [12]. Several previous studies had also reported a similar trend, reinforcing the notion that EOF is beneficial in expediting postoperative recovery without increasing risks.

Despite the advantages observed with EOF, a subset of patients in both groups experienced intolerance to oral feeding, characterized by nausea, vomiting, and abdominal distension. However, these symptoms were more frequent in the SOF group, possibly due to delayed bowel function recovery. Importantly, the incidence of serious adverse events did not differ significantly between the two groups, suggesting that EOF did not increase the risk of major complications like bowel obstruction or anastomotic failure [13].

Several factors may have contributed to the positive outcomes observed with EOF. Early feeding may have played a role in maintaining gut integrity and preventing bacterial translocation, which has been implicated in postoperative infections. Additionally, early enteral nutrition has been linked to modulation of inflammatory responses, which may explain the lower incidence of systemic complications in the EOF group [14]. However, this study had certain limitations. The sample size, though adequate for detecting major differences, may not have been sufficient to capture rare complications such as anastomotic leakage. Additionally, variations in surgical technique and postoperative care protocols across different institutions could have influenced outcomes. Future multicenter trials with larger sample sizes and standardized protocols are warranted to validate these findings [15].

EOF after emergency bowel surgery appeared to be safe and beneficial, leading to faster recovery, reduced complications, and shorter hospital stays. These findings support the growing body of evidence favoring early enteral nutrition in surgical patients. While patient selection remains important, routine implementation of EOF should be considered as a part of enhanced recovery protocols to improve postoperative outcomes.

CONCLUSION:

The study demonstrated that initial oral feeding after emergency bowel surgery was both feasible and beneficial associated to standard oral feeding. Patients in initial feeding group experienced a faster return of bowel function, shorter hospital stays, and fewer postoperative complications, including infections and ileus. Additionally, early oral feeding was well tolerated, having no substantial increase in nausea or vomiting. In contrast, the standard oral feeding group had a prolonged recovery period and required more supportive interventions. These findings suggested that initial oral feeding was a safe and effective approach that could enhance postoperative recovery without increasing risks. Therefore, incorporating early oral feeding into postoperative protocols could advance patient results and decrease healthcare costs related through prolonged hospital stays.

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