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A prospective study comparing early versus late enteral feeding in gastrointestinal surgeries

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ABSTRACT

Objectives: The objective of this study is to analyze early versus late enteral feeding in gastrointestinal procedures in emergencies.

Material and Methods: Thirty patients were included in the current study and were split into two groups for study. Early postoperative enteral feeding was started in group A within 48 hours after the procedure. Depending on each patient's tolerance, the feeding was gradually increased to 100 milliliters per hour from the starting rate of around 50 milliliters per hour. Patients who responded well to this treatment plan went on to drink clear juice and then a semi-solid meal. For those who could not handle the early feeding, oral fluid intake was stopped for 12 hours, and then feeding was resumed at a reduced speed. Enteral feeding in group B was administered according to standard protocol, starting as soon as patients demonstrated the return of intestinal sounds, the absence of distention in the abdomen, and the passing of either stool or flatus. An assessment was conducted on both groups to compare the results of early and late enteral feeding. Clinical factors included in this evaluation included the time at which audible intestinal sounds were heard, the passage of flatus or stool, the occurrence of symptoms such as nausea, vomiting, or distention in the abdomen (as a whole considered as postoperative well-being), surgical wound infections, re-explorations due to anastomotic leaks, and the length of hospital stay.

Results: There was no discernible difference in the genders of the 30 patients— 16 were men and 14 were women. The incidence of surgical site infection in the cases group was 6%, while it was 46% in the controls, indicating a significant difference between the two groups. The cases group had a fever incidence of 20%, whereas the controls had a fever incidence of 46%. This represents a significant difference between the two groups. The feeling of well-being (Postoperative nausea, vomiting, suture site pain, and abdominal distension considered) differs significantly, i.e., cases 53%; controls 26%.

Conclusion: In this study, there was a noteworthy distinction between the two groups: the early feeding group experienced a decreased incidence of fever, well-being feeling and surgical site infections, length of hospital stay.

Keywords: Anastomotic leak, Dyselectrolytemia, ERAS, Gastrointestinal emergencies, Reexploration

INTRODUCTION

About 30% of surgeries by a general surgeon are GI surgeries that include perforation repairs/ stomas/ anastomoses. For early recovery after GI surgery, enteral nutrition is most favored.[1] NBM+RTA primarily manages cases of intestinal obstruction/perforations. This helps in bowel decompression and prevents peritonitis. Insufficient nourishment reduces the amount of collagen deposited, which further retards the healing of wounds in the rectus, anastomoses,

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or skin.[2,3] Enteral feeding is delayed >72 hrs. Assuming that it compromises the integrity of the intestinal mucosa. Manipulation of the intestine in open GI surgeries can cause gut dysmotility for a certain period. The period is variable for different bowels (stomach 24–48 hrs, small bowel 6–8 hrs, and large bowel 24–36 hrs). So, post GI Surgery, enteral feed can be started at 48 hours. This study considers the advantages of early enteral feed in the post-op period as against delayed/IV supplementation/TPN.

Aim of the Study

In order to give medical professionals evidence-based insights, this comparative study evaluates the benefits and drawbacks of early versus late enteral feeding in gastrointestinal anastomosis procedures. To improve patient outcomes and provide guidance for clinical decision-making, the study explores a number of parameters, such as postoperative complications, length of hospital stay, nutritional condition, and general patient well-being. The research aims to provide the medical community with useful information by thoroughly examining the complexities of enteral nutrition timing. This will enable professionals to make well-informed decisions, maximize patient care, and enhance postoperative interventions in this crucial surgical area. The ultimate goal is to significantly influence the level of care provided to patients having gastrointestinal procedures in emergencies.

Objectives

The objective of this study is to analyze early versus late enteral feeding in gastrointestinal procedures in emergencies.

MATERIAL AND METHODS

This is a prospective study carried out for a duration of 18 months between November 2022 to May 2024. A sample size of 30 cases – males and females with gastrointestinal anastomosis surgeries between the ages of 17 to 60 were included in the study.

Exclusion criteria

- Under the age of 17.
- Those with co-morbid conditions such as renal, hepatic, diabetes, hypertensive, or cardiac problems; individuals with autoimmune diseases.
- Patients who had undergone revisional anastomosis surgery.
- Patients who had significant peritoneal cavity contamination before surgery, patients who had pre-anastomotic diversion (colostomy, gastrostomy, or enterostomy).

Table 1: Selected variables and their outcome details.

Sl. No.	Variable	Early enteral feed < 48 hours (cases-15)	Late enteral feed (controls-15)
1	Fever	3 (20%)	7 (46%)
2	Dyselectrolytemia	3 (20%)	11 (70%)
3	Passage of stools/ flatus (on average)	2.5 days	5 days
4	Feeling of well being	10 (66%)	4 (26%)
5	Uneventful recovery	5 (33%)	2 (%)
6	Avg. fluid per day in liters	1.5–2	4–5
7	Re exploration	1 (6%)	4 (26%)
8	Surgical site infection	1 (6%)	7 (46%)
9	Hospital stay (average)	8 days	11 days
10	Pulmonary complications	3 (20%)	8 (53%)
11	Death	1 (6%)	4 (26%)

- Patients who were critically unstable or polytraumatized with accompanying spinal fractures.

Thirty patients were included in the current study and were split into two groups for the study:

Early postoperative enteral feeding was started in group A within 48 hours after the procedure. Depending on each patient's tolerance, the feeding was gradually increased to 100 milliliters per hour from the starting rate of around 50 milliliters per hour. Patients who responded well to this treatment plan went on to drink clear juice and then a semi-solid meal. For those who could not handle the early feeding, oral fluid intake was stopped for 12 hours, and then feeding was resumed at a reduced speed.

Enteral feeding in group B was administered according to standard protocol, starting as soon as patients demonstrated the return of intestinal sounds, the absence of distention in the abdomen, and the passing of either stool or flatus.

An assessment was conducted on both groups to compare the results of early and late enteral feeding.

Clinical factors included in this evaluation included the time at which audible intestinal sounds were heard, the passage of flatus or stool, the occurrence of symptoms such as nausea, vomiting, or distention in the abdomen (as a whole considered as postoperative well-being), surgical wound

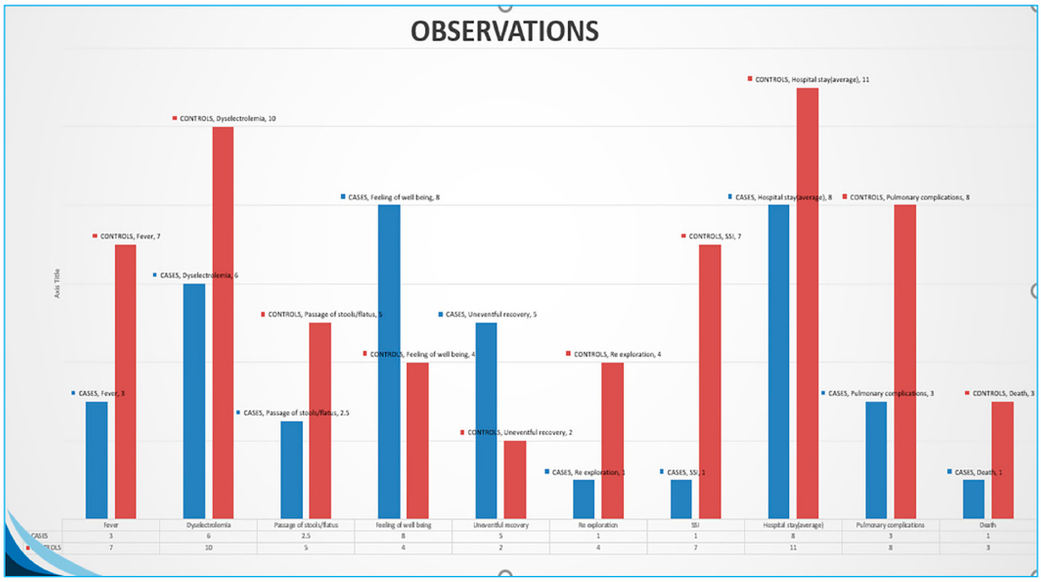

Figure 1: Graph showing observation results between the study group and control group.

Table 2: Comparing the variables with their p values.

Sl. No.	Variable	Early enteral feed < 48 hours (cases-15)	Late enteral feed (controls-15)	Chi Square and P-value (if applicable)
1	Fever	3 (20%)	7 (46%)	5.002 0.025
2	Dyselectrolytemia	3 (20%)	11 (70%)	8.571 0.003
3	Passage of stools/flatus (on average)	2.5 days	5 days	NA
4	Feeling of well being	10 (66%)	4 (26%)	4.825 0.028
5	Uneventful recovery	5 (33%)	2 (%)	3.968 0.046
6	Avg. fluid per day in liters	1.5–2	4–5	NA
7	Re exploration	1 (6%)	4 (26%)	2.159, 0.0416
8	Surgical site infection	1 (6%)	7 (46%)	6.136, 0.0132
9	Hospital stay (average)	8 days	11 days	NA
10	Pulmonary complications	3 (20%)	8 (53%)	3.588 0.049
11	Death	1 (6%)	4(26%)	2.159 0.0416

infections, re-explorations due to anastomotic leaks, and the length of hospital stay.

Measures of potassium and sodium were among the laboratory evaluations.

The measure of daily fluid requirement in liters.

An extensive examination of the effects of early vs. late enteral feeding was provided by carefully comparing each of these parameters between the two groups.

In comparing two qualitative groups with predicted counts in a cell less than 5, the Chi-square test was used.

For the comparison of two quantitative groups with parametric and non-parametric distributions, independent t-tests and Mann-Whitney tests were utilized, respectively.

The statistical analysis adopted a 95% confidence interval with a 5% margin of error, and P values less than 0.05 were considered significant.

There were 16 males and 14 females involved in the study. Of these 30 cases, 16 were due to benign etiology, 6 due to malignant etiology and 8 due to traumatic causes.

RESULTS

There was no discernible difference in the genders of the 30 patients—16 were men and 14 were women. The incidence of surgical site infection in the cases group was 6%, while it was 46% in the controls, indicating a significant difference between the two groups [Figure 1 and Table 1]. The cases group had a fever incidence of 20%, whereas the

controls had a fever incidence of 46%. This represents a significant difference between the two groups. The feeling of well-being (postoperative nausea, vomiting, suture site pain, and abdominal distension considered) differs significantly, i.e., cases 53%; controls 26%. There is a significant difference between the two groups: the cases group's median time for stools and flatus to pass is 2.5 days and 5 days, respectively. The stay of the cases group, which had early feedings, and the controls group, which received late feedings, differ significantly from one another—they are 8 days and 11 days, respectively [Table 2].

DISCUSSION

This study compared early and late enteral feeding to evaluate hospital stay, recovery duration, and complications following gastrointestinal surgery.

In this study, 30 patients undergoing different emergency GI surgeries were compared, aiming to assess both early and late enteral feeding following gastrointestinal procedures.

In this study, the postoperative BMIs of both groups were comparable. According to Hortencio et al.,[4] there is no connection between malnutrition, as determined by BMI and mineral issues. BMI indicates dietary status but not recent weight loss, which is associated with mineral deficiencies. Variations in weight among hospitalized patients were mostly due to fluid balance associated with hemodynamic and inflammatory problems rather than energy balance.

In this study, hospitalization for early feeding increased statistically significantly for 8 days and for late feeding for 11 days. Arif et al.[5] observed that hospital stay was short in the early feeding group, being 19 ± 1.95 hours versus 29 ± 6.7 hours (p-value 0.03) in the delayed feeding group. A total of 5.8 days were spent in the postoperative hospital after early feeding, and 7.01 days were spent after late feeding. Early feeding was observed by Negi et al.[6] to shorten hospital stays. While the late feeding group spent 71.00 ± 73.99 hours in the hospital, the early feeding group spent 52.58 ± 54.71 hours. The research group's hospital stay was shortened by early feeding, whereas the control group may have had greater complications and a longer hospital stay (pneumonia, upper respiratory tract infection).

Feeling of well-being (vomiting, nausea, and stomach distension) did vary substantially between early and late feeding in this experiment.[7] Abdominal distension was 20% during early feeding and 45% during late feeding. Fifty percent of those fed early and 65% of those fed later puked. Fever from early feeding was 20%, and from late feeding, 46%. A study reported a discernible difference in vomiting or stomach distension between early and late feeding.[8] Although there was little stomach distension in both groups, 10% of the early eaters puked. Marwah et al.[9] in contrast found no significant difference in distention rates across groups.

In this study, surgical site infection occurs 6% early and 46% late in feeding, and reexploration (due to anastomotic leaks) occurs 6% early and 26% late. Marwah et al.[9] found four (16%) early feeders and seven (28%) late feeders developed wound discharge. After surgery, anastomotic leaks occurred in two (8%) of the early feeders and three (12%) of the late feeders. In the current study, feeding timing did not substantially affect anastomotic leakage or surgical site infection rates, with a 6% occurrence of surgical site infection in the early feeding group and 46% in the late feeding group. Anastomotic leaks were reported in 6% of early feeders and 26% of late feeders. In contrast, Tanaka et al.[10] investigated anastomotic leakage in rectal surgery without finding statistically significant risk factors, except for a higher occurrence in male patients. However, the overall rate of anastomotic leakage in their study was low, suggesting that efforts to preserve good blood flow and prevent tension and pressure on the anastomosis during surgery may have contributed to favorable outcomes. While the studies differ in focus and methodology, both contribute valuable insights into factors influencing anastomotic leakage, emphasizing the complexity of outcomes influenced by multiple variables in surgical practice.[11,12]

Limitations

The current study includes a small sample size (n = 30) conducted within eighteen months at a single medical institute, limiting generalizability. The non-uniform surgical approaches, allowing surgeons to use their preferred methods, and variations in antibiotic prescriptions based on individual patient status introduce potential confounding factors, affecting the internal validity of the study.

CONCLUSION

Following gastrointestinal anastomosis surgeries, early enteral feeding leads to a better postoperative outcome.

The substantial reduction in hospital stay duration, along with a decrease in postoperative infections and improved potassium levels, underscores the advantages of early feeding.

These findings support the inclusion of early enteral feeding as a useful practice in postoperative treatment and demonstrate its potential advantages for enhancing patient outcomes following gastrointestinal anastomosis procedures.

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