



A COMPARATIVE STUDY BETWEEN EARLY VS LATE ENTERAL FEEDING IN POST OPERATIVE PATIENTS UNDERGOING ELECTIVE LAPAROTOMIES IN AGMC & GBP HOSPITAL

General Surgery

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ABSTRACT

Introduction: In recent times, there has been a surge in popularity and interest towards early enteral nutrition (EN). In terms of wound and respiratory infections, hospital stays, and death, some argue that early enteral feeding produces better outcomes than delayed enteral feeding, and vice versa. Early enteral nutrition refers to any oral intake—such as supplemented oral feeding or registered oral intake—as well as any type of tube feeding—gastric, duodenal, or jejunal—that starts within 24 hours following surgery and has a caloric content. **Aim:** The study's objective is to examine the effects of early and late enteral nutrition after surgery in patients undergoing open cholecystectomy at Agartala Government Medical College's Department of General Surgery (AGMC). **Materials and methods:** One and a half years, or from January 2021 to June 2022, a prospective longitudinal study on one hundred patients who underwent elective laparotomy (open cholecystectomy) at AGMC & GBP Hospital was carried out in the department of General Surgery at AGMC. **Result:** Patients in the early enteral nutrition group were 35.14 years old on average, while those in the late enteral nutrition group were 36.84 years old on average. The ratio of female to male in the early enteral group is 13.33%, whereas in the late enteral group, it is 11.22%. In the early enteral nutrition group, feed tolerance was higher than in the late enteral nutrition group, with 43/54 (79.6%) versus 35/46 (76.08%). On post-operative day 4, 75.9% of the late enteral feeding group and 69.5% of the early enteral feeding group were released from the hospital. Normal peristaltic sounds were detected after two days following surgery in 90.19% of the early enteral feeding group and 63.2% of the late enteral feeding group, which was considerably less than the early fed group. **Conclusion:** According to a study, feeding early yields greater results than eating later. Patients accepted early feeding just as well, and it allows for a shorter hospital stay, which lowers treatment costs. To further validate the study findings, a bigger multi-centric investigation is necessary to show statistically significant variations in the outcomes.

KEYWORDS

Early enteral feeding, Delayed enteral feeding.

INTRODUCTION

In the past, the occurrence of flatulence or loose stools was seen as clinical proof to begin an oral diet following stomach surgery. It normally takes five days for postoperative ileus to resolve, as shown by the passing of flatus. [1]. The stomach and colon are the primary organs affected by postoperative dysmotility, but the small bowel returns to normal function. 8 to 9 hours following a laparotomy the use of nasogastric tubes and refraining from oral dietary or fluid intake until the postoperative ileus resolves have historically been part of the postoperative care of patients after abdominal surgery. It is now possible to minimize postoperative ileus effectively, and initiating oral nourishment as soon as possible after surgery may enhance recovery. [2]

All oral intakes (such as supplemented oral feeding and registered oral intake) and any type of tube feeding (gastric, duodenal, or jejunal) with a caloric content that starts within 24 hours after surgery are considered early enteral nutrition. [3]

A concerted attempt to integrate new evidence-based advancements in the contemporary care of surgical patients has led to the evolution of early oral feeding as a crucial component of fast track surgery. Enhanced recovery after surgery, often known as fast track rehabilitation, is a multimodal approach designed to improve postoperative recovery and result. [4]

Due to temporary paralytic ileus, a "nil by mouth" (NBM) method following gut anastomosis surgery has been well recognized for many years. The purpose of nil by mouth is to shield the anastomosis by allowing it time to heal before it is strained by food and to avoid postoperative nausea and vomiting. It is unclear, nevertheless, how long it is advantageous to postpone enteral feeding. [5].

In recent years, early enteral nutrition (EN) has gained a lot of

popularity and attention. Some argue that in terms of wound and respiratory infections, hospital stay, and mortality, early enteral feeding performs better than delayed enteral feeding, and vice versa. [6]

Following surgery, the body may produce more waste products that might impair immunity, weaken muscles, slow wound healing, lengthen recovery time, and increase morbidity overall. Increased intestinal permeability linked to sepsis, systemic inflammation, and bacterial translocation has been proposed as a reason for improvement following enteral nutrition in patients undergoing gastrointestinal surgery; however, this theory is still up for debate. Despite popular opinion, there is evidence from animal trials and human research indicating early eating is beneficial. [7]

Early oral feeding has been demonstrated to have positive impacts on the length of hospital stay and the rate of infection complications in multiple prospective trials. [8]

After severe upper abdominal surgeries and in the context of multisystem trauma, enteral feeding is thought to greatly minimize septic complications, promote wound healing and immunity, and lessen stress response. Most likely, this happens by promoting enterocyte proliferation, which enhances the function of the mucosal barrier and reduces bacterial translocation. The theoretical basis for early postoperative enteral feeding is provided by motility studies that show the restoration of small bowel peristalsis within hours following laparotomy. [9]

Evidence from animal trials and clinical investigations, in contrast to popular belief, suggests that it is beneficial to start feeding early.

The small bowel returns to normal function 4–8 hours following laparotomy, with the stomach and colon being the primary sites of

postoperative dysmotility. After a laparotomy, feeding can begin as soon as the wound is healed and the food is absorbed. Patients who are malnourished are frequently undergoing intestinal surgery, which is known to increase morbidity in extreme cases. In contrast to feeding, which reverses the effects of starvation on mucosal atrophy and enhances anastomotic collagen deposition and strength, starving causes a decrease in the amount of collagen in anastomotic scar tissue and lowers the quality of healing in animals. Experimental evidence from both human and animal subjects indicates that enteral feeding is linked to improved wound healing. Lastly, following pancreatitis and abdominal injuries, early enteral feeding may lessen septic morbidity. [10]

Since the pancreas and stomach are known to release one or two liters of fluid per day, which the gut absorbs rapidly, patients who are not receiving a ryle's tube during the recovery phase can tolerate large amounts of fluid. Furthermore, within a day, hunger alters the body's metabolism by decreasing muscular performance and raising insulin resistance. According to a number of studies, wound healing following surgery is greatly aided by maintaining intestinal function and maintaining an ideal nutritional state. It has also been proposed that early oral intake reduces the incidence of sepsis because of a reduction in bacterial colonization and translocation into the bloodstream through abnormalities on the intestinal mucosa. The idea of stopping oral intake after surgery doesn't seem to make sense, which supports our findings.

MATERIALS AND METHOD

Study design: Prospective longitudinal study

Study type: Observational study

Study place: Department of General Surgery, Agartala Government Medical College, Agartala, West Tripura

Study period: One and half year from January 2021 to June 2022

Study population: All patients undergoing elective laparotomies (open cholecystectomy) in the Department of General Surgery Agartala Government Medical College and GB Pant Hospital, Agartala, West Tripura

Sampling technique: Consecutive sampling.

Sample size: 100 patients were selected fulfilling the inclusion and exclusion criteria.

Inclusion criteria

1. Surgeries involving elective laparotomies (open chole cystectomy)
2. Patients of 18-60yrs of age

Exclusion criteria

1. Patients below 18years and above 60yrs of age
2. emergency surgeries

OBSERVATIONS AND RESULTS

Based on whether enteral nourishment is started before or after 24 hours after surgery, 100 patients undergoing elective laparotomies (open cholecystectomy) are split into two groups.

- All patients were kept at least 12 hours nil per oral preoperatively.
- I.V antibiotic to cover enteric flora was given at the time of induction.
- All surgeries were performed under general anaesthesia or spinal anaesthesia.
- Post-operative enteral feeding was started either orally or via ryles tube as per the discretion of the surgeon
- Plain water, medication, tender coconut water, lemonade, tea/coffee, were not considered as enteral nutrition.
- Intravenous fluids were given adequately during the immediate postoperative period.
- If oral feeding was not tolerated (vomiting or abdominal distension) following intake, then the patient is put on nil per mouth and Ryle's tube reinserted. Then oral feed was again started after 12 hours as tolerated by the patient.
- Time to acceptance of first oral/tube feeds (residual diet) was noted down. Patients were classified into Early Enteral Nutrition or Late Enteral Nutrition groups based on whether time taken to start orals

was less or more than 24 hours.

- Patients were slowly upgraded from low residue to semisolid to normal diets per their tolerance.
- All cases were followed in the postoperative period till they were discharged and later followed in the Outpatient department. The following parameters were observed during the follow up in comparison between early and late feeding:

Length of hospital stay, time of starting orals and complications such as prolonged paralytic ileus, tolerance of oral feeding, and the results were analysed by Student t test to find significance of difference.

Table 1: Age distribution (N= 100)

Age in years	Number of participants	Early Enteral Nutrition	Late Enteral Nutrition
18-20	6	4	2
21-30	30	14	16
31-40	34	19	15
41-50	22	10	12
51-60	8	4	4

Table 2: Sex distribution (N 100)

Sex	Early Enteral Feeding	Late Enteral Feeding
Female	28	27
Male	21	24
Sex Ratio	13.33	11.22

Table 3: Feed tolerance (N 100)

Feed Tolerance	Early Enteral Feed	Late Enteral Feed	Total Number
Tolerated	43	35	78
Non Tolerated	11	11	22

Table 4: Duration of hospital stay (N 100)

Days	Early Enteral Feed	Late Enteral Feed	Total
3	32	6	38
4	14	41	55
5	0	7	7

Table 5: Duration of paralytic ileus (N 100)

Duration in Hours	Early Enteral Feed	Late Enteral Feed	Total
24-36	46	31	77
36-48	5	18	23

In the Early Enteral Nutrition Group, patients' average age was 35.14 years. Standard deviation of 10.8, with a standard error of -1.5. In the Late Enteral Nutrition group, the average age of the patients was 36.84 years. Standard error = -1.4, standard deviation = 9.9. In the early enteral group, the female to male sex ratio is 13.33%, while in the late enteral group, it is 11.22%. In the Early Enteral Nutrition group, feed tolerance was higher than in the Late Enteral Nutrition group (P value = 0.86), with 43/54 (79.6%) versus 35/46 (76.08%). When enteral nutrition was not tolerated, the patient experienced nausea, vomiting, or distension in the abdomen after eating, which made it necessary to stop oral feedings. Sixty-five percent of the early enteral feeding group were released on the third postoperative day. On post-operative day 4, 75.9% of the late enteral feeding group were released (p = 0.86). Normal peristaltic sounds were heard after two days following surgery in 90.19% of the early enteral feeding group (p = 0.96), and in 63.2% of the late enteral feeding group—a considerably smaller percentage than the early fed group—normal peristaltic sounds were heard within two days following surgery.

DISCUSSION

The most typical procedure that many surgeons still adhere to is feeding patients after gastrointestinal surgery afterward. There is no evidence to support the claims that fasting and colon rest are good for anastomotic integrity and wound healing. Early feeding has the benefits of shortening hospital stays, promoting quicker healing, and lowering the risk of problems including wound infections. The focus of the discussion is mostly on two points: (1) it does not appear to be clearly advantageous to keep patients on nil by mouth following elective gastrointestinal surgery, and (2) early feeding may be helpful in these patients. Patients in the Early Enteral Nutrition Group had a mean age of 35.14 years, with a standard deviation of 10.8, a standard error of 1.5. In contrast, the Late Enteral Nutrition group's mean patient age was 36.84 years, with a standard deviation of 9.9 and a standard

error of -1.4. In the early enteral group, the female to male sex ratio is 13.33%, but in the late enteral group, it was 11.22%. Sixty-five percent of the early enteral feeding group were released on the third postoperative day. On post-operative day 4, 75.9% of the late enteral feeding group was released from the hospital. In the early enteral nutrition group, feed tolerance was higher than in the late enteral nutrition group, with 43/54 (79.6%) versus 35/46 (76.08%). When enteral nutrition was not tolerated, the patient experienced nausea, vomiting, or distension in the abdomen after eating, which made it necessary to stop oral feedings. [11]

Early enteral meal enhances intestinal mucosa blood flow, reduces intra-mucosal acidosis and permeability problems, and removes the need for stress ulcer prophylaxis. It also stimulates the splanchnic and hepatic circulation. Despite the literature's proof of the advantages of early enteral feeding, there is strong opposition to its use. Early patient recovery has been considerably facilitated by developments in pain management and intensive care, as well as by the quick development of contemporary nutritional supplements by alternate channels. As a result, in recent years, EEf and improved recovery programs have gained traction. It is safe to say that early electroencephalography (EEF) following major gastrointestinal surgery has additional benefits. [12]

CONCLUSION

The results of the current study indicate that early enteral feeding following an elective laparotomy (open cholecystectomy) has better outcome than delayed feeding. Patients accepted early feeding just as well, and it allows for a shorter hospital stay, which lowers treatment costs. To further validate the study findings, a bigger multi-centric investigation is necessary to show statistically significant variations in the outcomes.

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