



A COMPARATIVE STUDY OF EARLY VERSUS DELAYED ENTERAL FEEDING AFTER GASTROINTESTINAL SURGERIES.

Surgery

J. A. Jayalal	Professor, Dept .of Surgery, Kanyakumari Govt Medical College, Asaripallam
S.Sumathi	Associate Professor, Dept .of Surgery, Kanyakumari Govt Medical College, Asaripallam
S. Yuvaraj	Assistant Professor, Dept .of Surgery, Kanyakumari Govt Medical College, Asaripallam
M. R.Vivek	Assistant Professor, Dept .of Surgery, Kanyakumari Govt Medical College, Asaripallam
Athulya Ramachandran	Postgraduate student, Dept. of Surgery, Kanyakumari Govt Medical College, Asaripallam

ABSTRACT

Background: As per routine protocol, patients undergoing major Gastrointestinal surgeries are kept nil by mouth till intestine starts functioning. But evidence from clinical studies suggests that initiating enteral feeding early is beneficial and advantageous to patient and reverses mucosal atrophy induced By starvation and also increases collagen deposition at the surgical sites, promoting wound healing. Finally, early enteral feeding may also reduce septic morbidity and improves postoperative outcome. **Aim:** This study was conducted to compare the feasibility, safety, efficacy, tolerability and outcome of early enteral feeding versus late oral feeding after elective and emergency gastrointestinal surgeries. **Methodology:** The prospective comparative study included 50 cases of major gastrointestinal surgeries operated at a tertiary care Hospital during 7 month period, from which randomly 25 patients were selected for conventional nil by mouth approach and rest of 25 patients were given early enteral feeding within 1st 24 hours post operatively. **Conclusion:** Compare to conventional nil by mouth approach, early enteral feeding significantly reduces the incidence of wound infection, paralytic ileus and pain in post operative patients undergoing major gastrointestinal surgeries, thereby reducing length of hospital stay, which suggest that early enteral feeding is safe, effective and feasible in post operative patients of major gastrointestinal surgeries.

KEYWORDS

Enteral feeding, Intestines, Paralytic Ileus, Postoperative Pain, Surgical Anastomosis, Wound Infection, Wound dehiscence.

INTRODUCTION

A period of starvation (nil orally) is a common practice after most Gastrointestinal surgeries. Postoperative dysmotility predominantly affects the stomach and colon, with the small bowel recovering normal function 4-8 hours after laparotomy. Malnutrition predisposes to postoperative complications: Increased incidence of infection and prolonged hospital stay. The rationale of —nil orally is to prevent postoperative nausea and vomiting and to protect the anastomosis repair, allowing time to heal before being stressed by food. But this worsens nutritional state of the patients. A dynamic ileus after abdominal surgery is characterized by absent motility caused by neuromuscular inhibition with sympathetic over activity. It occurs after all abdominal procedures, with motility returning typically in the small bowel within 24 hours, in the stomach within 48 hours, and in the colon within 3 to 5 days. Because of this, patients have been traditionally treated after surgery with nasogastric decompression until evidence that bowel function has returned, after which a liquid diet is initiated and advanced to a regular diet over 4-5 days. Gastrointestinal surgery is associated with postoperative morbidity such as wound infection, leak, intraabdominal sepsis and other extra intestinal complications. Malnutrition increases post- operative morbidity and rates, and duration and cost of hospital Stay. Delayed feeding has been practiced for fear of physical stress disrupting the anastomosis but GIT secretions present at the anastomotic site with a volume load of approximately 6-8 Liters per day irrespective of delayed or early feeding. Nausea and vomiting, however, occur more commonly after upper gastrointestinal surgery than resection of the small intestine and colon. There is no evidence that bowel rest and a period of starvation are beneficial for healing of wounds and anatomic integrity.

Indeed, the evidence is that luminal nutrition may enhance wound healing and increase anastomotic and perforation repair strength and with better rate of healing, particularly in malnourished patients. Pre-existing nutritional depletion, however, may not only be the nutritional factor associated with postoperative complications after gastrointestinal surgery. There is thus no evidence that early post-operative enteral feeding should be restricted to malnourished patients undergoing gastrointestinal surgery.

Routinely patients undergoing major Gastrointestinal surgeries (Elective and Emergency) are kept nil by mouth for various reasons. Idea behind nil by mouth is to prevent post-operative nausea and vomiting. Post- operative dysmotility mainly affects stomach and colon but small intestine recovers within 4-8 hours after surgery.

Hence feeding within 24 hours after surgery is very well tolerated.

Evidence from clinical studies suggests that initiating feeding early is advantageous and reverses mucosal atrophy induced starvation and also increases collagen deposition at the surgical sites, promoting wound healing. Finally, early enteral feeding may also reduce septic morbidity.

Materials and Methods:

STUDY DESIGN:

Study Design: Prospective Comparative Study.

Study Population: Age more than 18 years and below 60 years undergoing Elective and Emergency Gastrointestinal Surgeries.

Sample Size: 25 in Each Group.

Study Period: June 2023 TO December 2023

Inclusion Criteria:

All patients with age more than 18 years and less than 60 years which are undergoing gastro intestinal surgery (Elective and Emergency) and were hemodynamically stable patients with ready to sign an informed written consent were included.

Exclusion Criteria:

Age less than 18 years and more than 60 years, hemodynamically unstable patients & incompetent to provide informed written consent were excluded.

All patients undergoing major gastrointestinal surgeries (Elective and Emergency

through nasogastric tube, feeding Jejunostomy or by mouth –within 1st 24 hours post-operatively.

6. Patients in the control group were kept nil by mouth with nasogastric decompression until evidence that bowel function has returned, after which a liquid diet is initiated and advanced to a regular diet over 4-5 days.

OBSERVATION AND ANALYSIS

Table- 1: Distribution of Study Population according to Gender

Gender	Early enteral feeding		Late enteral feeding		Fisher exact Value	Significance
	No	%	No	%		
Male	21	84	22	88	0.166	0.6835
Female	4	16	3	12		

There is no difference in sex between the two groups

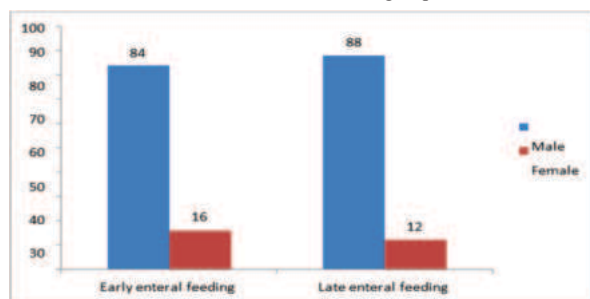


Table 2: Distribution of study population according to age group

Age group (yrs)	Early enteral feeding		Late enteral feeding		Fisher exact Value	Significance
	No	%	No	%		
<30	6	24	4	16	5.245	0.345
31-40	8	32	3	12		
41-50	4	16	6	24		
51-60	4	16	6	24		
61-70	3	12	4	16		
>70	0	0	2	8		

There is a statistically significant equal distribution of study population in both groups

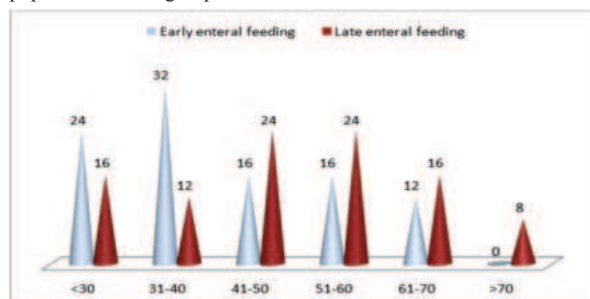


Table 3: Distribution of study population according to procedure done

Procedure done	Early enteral feeding		Late enteral feeding		Chisquare Value	Significance
	No	%	No	%		
Closure	18	72	19	76	0.104	0.74
Anastomosis	7	28	6	24		

Both the groups are more or less equal with respect to procedure done

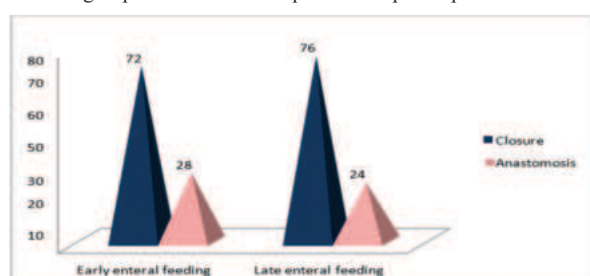


Table 4: Association between early enteral feeding and late enteral feeding groups with respect to Paralytic ileus

Paralytic ileus	Early enteral feeding		Late enteral feeding		Chisquare exact Value	Significance
	No	%	No	%		

Damage to the body tissues by surgery induces a stress responses characterized by hyper metabolism, impaired protein synthesis, and catabolism. Patients who have undergone surgery might have an underlying disease, such as typhoid fever, tuberculosis, peptic ulcer, malignancy which affects his nutritional status adversely. The patient is thus exposed to a very high risk of morbidity and mortality. The decreased whole body protein synthesis and increased catabolism results in a net protein loss. This can quickly cause protein calorie malnutrition, which is associated with the organ dysfunction. A subclinical multiple organ dysfunction syndrome evolve, which increases the patient's risk of septic complications. Acute protein malnutrition is also known to adversely affect both humoral and cell mediated immunity. Traditional practice has been to delay nutritional support until the gut has resumed the peristaltic activity. If, at this stage a complication develops and oral intake is not possible, total parenteral nutrition (TPN) is initiated. This practice does not, in theory, affect the critical period of protein loss and the development of organ dysfunction.

The gut is the major interface between the host and environment and is metabolically and immunologically active in the stressed patient. Luminal nutrients are important for intestinal mucosal metabolism and integrity, regardless of the general nutritional status. The enteral nutrition stimulates gall bladder contraction, maintains gut the associated lymphoid tissue, and stimulates immune function and the pancreatic secretions. It also maintains gut integrity, as evidenced by a decreased risk of perforation and better healing of gut anastomosis. Except for the depression of cellular immunity, the bacteria translocation is the most probable reason of infection after the operation.

Keeping the integrity of gut barrier is important to decrease the morbidity and mortality after operation. Enteral nutrition could protect the gut barrier remarkably, the rational mechanisms were:

- 1) The stimulation on the bowel wall may increase the blood perfusion.
- 2) The stimulation on the bowel wall may accelerate the secretion of pancreas and biliary duct to prevent shrinking of gut mucosa.
- 3) Enteral nutrition supplies the substrate of intestinal mucosal cell metabolism directly.

The stomach, even when not stimulated by oral intake, secretes 0.5 to 1 litre of gastric juice each day. This in turn stimulates secretion of another 0.5 to 1 litre of pancreatic juice. Thus, one to two litres of fluid are presented to the small bowel each day, even though the patient is taking no fluids orally. Most of this is readily absorbed by the small intestine, and very little reaches the colon. This shows that even oral nutrition can be handled by the gut. If one examines the natural history of postoperative ileus, neither the presence of bowel sound nor even passage of flatus determines if the patients will tolerate the oral intake. Therefore, it is not rational that these be the criteria used to decide when to feed a postoperative patient. Recent research in the area of gastrointestinal physiology and motility further indicates that current criteria for determining when to feed postoperative patients are not rationally based. The myoelectric and motor activity of the stomach, as evaluated by electrogastrography and impedance gastrography is not grossly disturbed by intra-abdominal surgery.

CONCLUSION

Out of a total of 50 patients, that were included in the study, 25 patients were in the early enterally fed group (study group) and the remaining 25 patients were in the late enterally fed group (control group). In our study, it was found that the incidence of paralytic ileus, wound infection, wound dehiscence, and pain in post operative patients undergoing major gastrointestinal surgeries, thereby reducing length of hospital stay was significantly less in the study group as compared to the control group. The average length of hospital stay in the study group was 6 days while that in the control 10 days and the results are statistically significant. Finally, there was no death in both groups. From the above results it is concluded that early feeding is feasible, safe and well tolerated by patients undergoing gastro intestinal surgery. It is also associated with very good postoperative outcome and early recovery of the patients.

REFERENCES

1. Bhavesh Vaishnani, Jatin Bhatt, Rahul Singh*, Iliyas Juneja, A Prospective Comparative Study Of Early Versus Traditional Oral Feeding After Gi Surgeries Int J Res Med. 2016; 5(1):28-31.
2. Lewis SJ, Egger M, Sylvester PA, Thomas S. Early enteral feeding versus —nil by

- mouth after gastrointestinal surgery: systematic review and meta-analysis of controlled trials. *BMJ* 2001.
3. Carr CS, Ling KD, Boulos P, Singer M. Randomized trial of safety and efficacy of immediate postoperative enteral feeding in patients undergoing gastrointestinal resection. 4. Hartsell, Richard, J Blake Harrison. Early postoperative feeding after elective colorectal surgery; *Archives of Surgery*, May 1997; 132:518-520
5. Reissman P, Teoh TA, Cohen SM, Weiss WG, Noguera JJ, Wexner SD. Is early feeding safe after elective colorectal surgery? A prospective Randomized trial. *Annals of Surgery* 1995 Jul; 222: 73-77 BIBBufo AJ, Feldman S, Daniels GA, Lieberman RC. Early postoperative feeding. *Diseases of Colon Rectum* 1994; 37:1260-1265
6. Heslin MJ, Latkany L, Leung D, Brooks AD. A prospective randomized trial of early enteral feeding after resection of upper GI malignancy. *Annals of Surgery* 1997; 226:567-80
7. Keele AM, Bray MJ, Emery PW, Duncan HD, Silk DB. Two Phase randomized controlled clinical trial of postoperative oral dietary supplements in surgical patients. *Gut* 1997 Mar; 40:393-9
8. James Watters, Susan Krickpatrick. Immediate postoperative enteral feeding results in impaired respiratory mechanics And decreased mobility. *Annals of surgery*; 226:369-80.
9. Singh G, Ram RP, Khanna SK. Early postoperative enteral feeding in patients with non-traumatic intestinal perforation and peritonitis. *Journal of the American college of Surgeons* 1998 Aug; 187:
10. Fabio Pacelli, Maurizio Bossola. Enteral versus parenteral nutrition after major abdominal surgery. *Archives of surgery* 2001; 136:933-936
11. Mathur AK, Malhotra A, Gupta S. Early enteral nutrition after surgical treatment of gut perforations: A prospective randomized study. *Journal of postgraduate medicine* 2004; 50:102-103
12. Jenish Y Sheth, Miteshkumar R Trivedi, Jitendra R Darshan, Early Enteral Feeding Versus nil by Mouth after Intestinal Resection and Anastomosis: A Study of 60 Cases, *International Journal of Scientific Study* June 2015 | Vol 3 | Issue 3
13. Goodlad RA, Al Mukhtar MY, Ghatei MA, Bloom SR, Wright NA. Cell proliferation, plasma enteroglucagon and plasma gastrin levels in starved and refed rats. *Virchows Arch B Cell Pathol Incl Mol Pathol*. 1983; 43:55-62
14. Moss G, Greenstein A, Levy S, Bierenbaum A. Maintenance of GI function after bowel surgery and immediate enteral full nutrition. I. Doubling of canine colorectal anastomotic bursting pressure and intestinal wound mature collagen content. Clinical experience, with objective demonstration of intestinal absorption and motility. *J Parenter Enteral Nutr*. 1980; 4:535-8.
15. McCarter MD, Gomez ME, Daly JM. Early postoperative enteral feeding following major upper gastrointestinal surgery. *J Gastrointest Surg*. 1996; 1:278-85.
16. Moss G. Maintenance of gastrointestinal function