Journal of Paediatric Surgeons of Bangladesh (2019) Vol. 10 (1 & 2): 22-25
Official Journal of the Association of Paediatric Surgeons of Bangladesh

Journal of Paediatric Surgeons of Bangladesh

Original Article

Safety and advantages of early oral feeding after intestinal anastomosis in children: Our experience

Mahmud R[1], Hasan MS[2], Islam N[3], Sultana S[4], Hasan F[5], Rahman A[6]

Abstract

Background: Restoration of enteral feeding is believed to enhance recovery after surgery, but intestinal anastomosis is a matter of apprehension for surgeons to start enteral feeding early. Before 2022, our standard practice was to wait three to four days to begin oral feeding after intestinal anastomosis. Since 2022, we have allowed oral feeding to start within 24 hours of intestinal anastomosis. This study compares the safety and benefits of early oral feeding after intestinal anastomosis in children.

Methods: This retrospective study was done in the neonatal and paediatric surgery department, BSH&I, from January 2021 to December 2022. Children who received early oral feeding in 2022 compared with children who received oral feeding after three days in 2021. Children with duodenal anastomosis and anastomosis with a covering stoma were excluded. Demographic and clinical data were extracted from hospital records using a pre-defined questionnaire. Data were analyzed in SPSS 26, and a p-value <0.05 was considered significant.

Results: One hundred thirty-three children (90 in 2022 and 43 in 2021) underwent intestinal anastomosis. Fifty-nine (44.4%) children had small gut anastomosis, 62 (46.6%) children had large gut anastomosis, and 12 (9%) children had ileocolic anastomosis. There was no difference in gender and mean age at the surgery between the two groups. The mean time to start oral feeding was 19.9±0.59 hours in the case group and 79.1±13.9 hours in the control group (p<0.001). The mean time to full oral feeding was 61.05±4.5 hours in the case group and 125.67±25.51 hours in the control group (p<0.001). The mean hospital stay was 4.16±1.18 days in the case group and 7.06±1.96 days in the control group (p<0.001). The two groups had no significant differences in anastomotic and wound complications.

Conclusion: Early oral feeding after intestinal anastomosis is safe in children and reduces post-operative hospital stay without any added risk.

Keywords: Intestinal anastomosis, Early oral feeding, Anastomotic complication

Introduction

Intestinal anastomosis is a typical operation for digestive tract diseases in the paediatric age group. Enteral feeding initiation following intestinal anastomosis should be based on convenience, comfort, and what has been practiced for generations. The surgical procedure can cause temporary paralysis of the intestines, leading to complications and dysmotility[1].

Traditionally, after surgery, patients were not allowed to have anything by mouth until clinical signs of bowel function returned. Paediatric surgeons often delay oral feeding by 4-5 days to avoid complications with intestinal anastomosis. Although the traditional method of withholding enteral feeds after surgery has been practiced for a long time, there is a lack of scientific evidence to support its effectiveness. Moreover, the small bowel typically recovers normal function within

1. Dr. Refoyez Mahmud, Resident Medical Officer, Resident (Paediatric surgery), Bangladesh Shishu Hospital & Institute
2. Dr. Md Samiul Hasan, Associate Professor (Paediatric Surgery), Bangladesh Shishu Hospital and Institute
3. Dr. Nazmul Islam, Assistant Professor and Resident Surgeon (Paediatric Surgery), Bangladesh Shishu Hospital and Institute, Dhaka
4. Dr. Sadia Sultana, Resident (Paediatric Surgery), Bangladesh Shishu Hospital and Institute
5. Dr. Fahim Hasan, Resident (Paediatric Surgery), Bangladesh Shishu Hospital and Institute
6. Dr. Ashrarur Rahman, Professor (Paediatric and neonatal surgery), Bangladesh Shishu Hospital and Institute.

Correspondence to: Dr. Refoyez Mahmud, Resident Medical Officer, Resident (Paediatric surgery), Bangladesh Shishu Hospital and Institute, Dhaka. E-mail: sipummc@gmail.com
Accepted: 31 January 2024 **Published:** 27 March 2024

4-8 hours after surgery[2]. Conversely, not providing enteral feeds does not prevent endogenous fluids from passing through a water-tight anastomosis.

Prolonged fasting can cause the gut mucosa atrophy, leading to transluminal endotoxemia and bacteremia. In contrast, early oral feeding (EF) can help with gut development and regeneration of the intestinal mucosa. It can also help maintain the integrity of the gut barrier and prevent bacterial translocation[3].

Furthermore, providing nutrition soon after surgery can enhance the body's metabolic response, resulting in lower insulin resistance, reduced nitrogen losses, and less loss of muscle strength[4]. In the case of intestinal anastomosis, early oral feeding can help restore gastrointestinal function and prevent postoperative ileus[1]. However, the trauma caused by intestinal anastomosis poses a considerable challenge to the immature immune system or organs, and the feasibility of early feeding after the procedure should be evaluated in the paediatric age group.

Insufficient evidence supports the early initiation of EF after intestinal anastomosis surgery in young infants. Thus, the current recommendation is to resume oral intake as soon as possible post-surgery. The objective of this study was to compare the safety and efficacy of early feeding (within 24 hours following surgery) with traditional timing following paediatric intestinal anastomosis.

Methods

A retrospective study was conducted from January 2021 to December 2022 in the Dept. of Neonatal and Paediatric Surgery of Bangladesh Shishu Hospital and Institute (BSH&I).

This study included all patients who underwent intestinal anastomosis from January 2021 to December 2022 in the Department of Neonatal and Paediatric Surgery in BSH&I. Exclusion criteria were children with duodenal anastomosis (a trans-anastomotic feeding tube was used in every case) and anastomosis with a covering stoma.

The patients were divided into two groups. Group A was the early feeding group (Patients from January 2022 to December 2022 who received oral feeding within 24 hours of intestinal anastomosis). Group B: Late feeding group (Patients from January 2021 to December 2021 who received oral feeding after 72 hours of intestinal anastomosis).

Demographic and clinical data were extracted from hospital records using a pre-defined questionnaire. The outcome parameters studied included the location of anastomosis, time to start oral feeding after bowel anastomosis, time to establish full oral feeding, hospital stay, anastomotic complication, and wound complication.

Data were presented as percentages, medians, or averages, and the level of statistical significance was set at 0.05. SPSS 26.0 was used for statistical analysis, and the distribution of continuous variables was examined for normality. A t-test was applied for normally distributed data, and categorical variables were tested using the chi-square test.

Results:

A total of 133 children, ages ranging from (1 month to 14 years) with intestinal anastomosis were recruited for this study, including 90 (67.67%) patients with EF and 43 (32.33%) with LF (Figure 1).

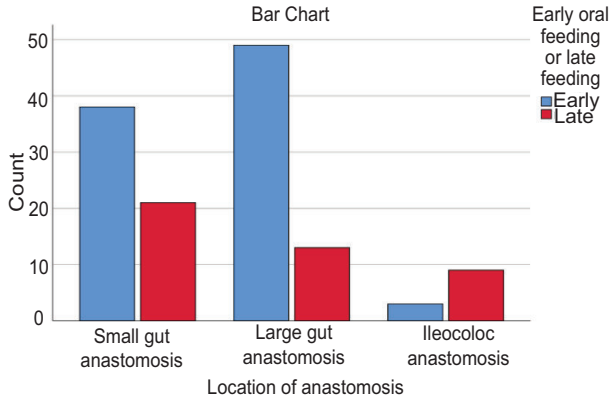

Figure 1: *Location of anastomosis in both groups*

Demographics of all patients are shown in Table 1. There were no significant difference in age, sex, and the distribution of spectrum anastomotic sites between EF and LF groups (Table I).

In the EF group who are exclusively breastfed or neonates, a liquid diet (1-2 ml of normal saline or breast milk in every 2 hours) followed by breast milk, and in infants and older children, a liquid diet (either breast milk or clear water) then a regular diet appropriate for age was given that was significantly earlier than those

Table 1: *Demographic data in both groups*

Parameters		EF group (90)	LF group (43)	P value
Age (mean±SD)		23.76±24.79	25.20 ± 29.55	0.089
Gender	Male	52 (57.78%)	25 (58.14%)	0.968
	Female	38 (42.22%)	18 (41.86%)	
Location of anastomosis	Small gut anastomosis	38 (42.22%)	21 (48.84%)	0.356
	Large gut anastomosis	49 (54.44%)	13 (30.23%)	
	Ileo-colic anastomosis	03 (3.33%)	09 (20.93%)	

Table II : *Gastrointestinal recovery parameters and postoperative complication*

Parameters	EF group (90)	LF group (43)	P value
Time to start oral feeding (hours)	19.9±0.59	79.1±13.9	<0.001
Time to full oral feeding(hours)	61.0±4.5(88)	125.6±25.5(42)	<0.001
Post-op hospital stay(days)	4.16±1.18	7.06±1.96	<0.001
Complications			
Anastomotic complication (%)	3 (3.3)	1(2.3)	NS
Wound complication (%)	3 (3.3)	5 (11.6)	NS

in the LF group (19.9±0.59 versus 79.1±13.9, respectively). 88/90 patients tolerated the early feeding and established full oral feeding substantially earlier than those in the LF group (61.0±4.5 versus 125.6±25.5, respectively). However, two patients in the EF group experienced vomiting after feeding and were unable to tolerate it.

Three patients in the EF group experienced anastomotic leakage following feeding. Two incidents occurred on the fourth postoperative day in patients who didn't tolerate feeding, while another occurred on the second day after discharge. Additionally, one case of anastomotic leakage occurred in the LF group. All cases were managed by re-laparotomy and diversion colostomy.

No statistical difference was found between the two groups regarding all the postoperative complications, including wound complications and anastomotic leakage. There was no mortality in either group. The postoperative hospital stays significantly differed between the two groups (4.16±1.18 versus 7.06±1.96, respectively); Table II.

Discussion

This study provides evidence that early feeding after intestinal anastomosis in paediatric patients is well-tolerated and can reduce the duration of ileus. It can help to shorten the time needed for full feeds and decrease the length of postoperative hospital stay. These benefits can be achieved without increasing the risk of postoperative complications. Previous clinical reports have also suggested the feasibility of early postoperative feeding[5,6].

According to studies by Sangkhathat et al. and SJ et al., early feeding following intestinal anastomosis resulted in shorter hospital stays and quicker achievement of full feeds compared to the traditional practice of fasting. This approach not only reduced the stress for both the patient and the caregivers but also lowered the overall cost of treatment[7,9].

A relatively surprising reduction in complication rates, particularly concerning anastomotic leakage, was observed in the early feeding group, which was unexpected[8]. The occurrence of anastomotic leakage was not attributed to early feeding but rather to factors like distal obstruction, malnutrition, sepsis, and suboptimal surgical techniques, which can lead to

tension at the anastomosis site and inadequate blood supply to the connected bowel segments[1,7].

This study found no significant difference regarding anastomotic leakage in either group. In all instances, patients underwent re-laparotomy, and a stoma was created due to distal obstruction resulting from post-operative band adhesions.

The present study has made an important observation that the group receiving early feeding experienced lower rates of postoperative septic complications. This could be attributed to the immune boost following early feeding and a shorter hospital stay, which reduced the risk of hospital-acquired infection. The reduction in complication rates can explain this observation, and it is possible that early feeding led to a faster return of gastrointestinal function[9].

There are a few limitations to this study that need to be taken into account. The primary limitation is that retrospective data collection methods were used, which can result in missing variables, difficulty establishing cause and effect, and variations in the quality of information recorded by medical professionals. It would have been better to compare similar anastomosis (ileostomy Vs. ileostomy) with similar diseases to obtain more precise results.

Conclusion

Early feeding after an intestinal anastomosis is both safe and beneficial. It helps alleviate the patient's post-surgical stress and aids their recovery without posing additional risks. The most significant benefit of early feeding is reduced postoperative hospital stays, leading to a substantial decrease in healthcare costs and resources.

Conflict of interest: Not applicable

References

1. Fujii, T., Morita, H., Sutoh, T., Yajima, R., Yamaguchi, S., Tsutsumi, S., Asao, T., &Kuwano, H. Benefit of Oral Feeding as Early as One Day After Elective Surgery for Colorectal Cancer: Oral Feeding on First Versus Second Postoperative Day. *International Surgery*, 2014;*99*(3): 211–215. https://doi.org/10.9738/INTSURG-D-13-00146.1
2. Dag, A., Colak, T., Turkmenoglu, O., Gundogdu, R., & Aydin, S. A randomized controlled trial evaluating early versus traditional oral feeding after colorectal surgery. *Clinics (Sao Paulo, Brazil)*, 2011;*66*(12): 2001–2005. https://doi.org/10.1590/s1807-59322011001200001
3. Melnyk, M., Casey, R. G., Black, P., &Koupparis, A. J. Enhanced recovery after surgery (ERAS) protocols: Time to change practice? *Canadian Urological Association Journal = Journal De l'Association Des Urologues Du Canada*, 2011;*5*(5):342–348. https://doi.org/10.5489/cuaj.11002
4. Behera, B. K., Misra, S., & Tripathy, B. B. Systematic review and meta-analysis of safety and efficacy of early enteral nutrition as an isolated component of Enhanced Recovery After Surgery [ERAS] in children after bowel anastomosis surgery. *Journal of Paediatric Surgery*, 2022;*57*(8):1473–1479. https://doi.org/10.1016/j.jpedsurg.2021.07.020
5. Mangesi, L., & Hofmeyr, G. J. Early compared with delayed oral fluids and food after caesarean section. *Cochrane Database of Systematic Reviews*, *2010*(1). https://doi.org/10.1002/14651858.CD003516
6. Johnson Casto, C., Krammer, J., & Drake, J. Postoperative feeding: A clinical review. *Obstetrical & Gynecological Survey*, 2000;*55*(9): 571–573. https://doi.org/10.1097/00006254-200009000-00022
7. Sangkhathat, S., Patrapinyokul, S., &Tadyathikom, K. Early enteral feeding after closure of colostomy in paediatric patients. *Journal of Paediatric Surgery*, 2003;*38*(10): 1516–1519. https://doi.org/10.1016/S0022-3468(03)00506-2
8. Yadav, P. S., Choudhury, S. R., Grover, J. K., Gupta, A., Chadha, R., &Sigalet, D. L. Early feeding in paediatric patients following stoma closure in a resource limited environment. *Journal of Paediatric Surgery*, 2013;*48*(5): 977–982. https://doi.org/10.1016/j.jpedsurg.2013.02.013
9. Lewis, S. J., Egger, M., Sylvester, P. A., & Thomas, S. Early enteral feeding versus "nil by mouth" after gastrointestinal surgery: Systematic review and meta-analysis of controlled trials. *BMJ*, 2001;*323*(7316):773–773. https://doi.org/10.1136/bmj.323.7316.773