

Early Enteral Nutrition Via Feeding Jejunostomy Following Major Upper Gastrointestinal SURGERY - A Prospective Observational Study

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ABSTRACT

Background: Major upper gastrointestinal (UGI) operations are frequently followed by a period of reduced oral intake and increased nutritional demand. When adequate oral feeding is not expected, early enteral nutrition can provide nutritional support while maintaining gastrointestinal feeding. Feeding jejunostomy offers a post-pyloric route, although its invasive nature and access-related complications require careful patient selection.

Methods: This prospective observational study included 50 adult patients undergoing elective major UGI surgery-esophagectomy, gastrectomy, or pancreaticoduodenectomy-with an intraoperative feeding jejunostomy. Enteral feeding was commenced within 24–48 hours after surgery when the patient was clinically stable. The principal outcomes were successful establishment of early enteral feeding and feeding jejunostomy-related complications. Postoperative hospital stay, return of bowel function, and jejunostomy-attributable mortality were assessed as secondary outcomes.

Results: Early enteral feeding was successfully established in 42 of 50 patients (84.0%). Eight patients (16.0%) did not meet the predefined early-feeding endpoint. Feeding jejunostomy-related complications occurred in 8 patients (16.0%); tube blockage and local site infection were the predominant reported problems. All reported complications were managed conservatively. No bowel perforation, peritonitis, or jejunostomy-related reoperation occurred. Mean postoperative hospital stay was 10.2 ± 2.2 days. No mortality was attributed to the feeding jejunostomy.

Conclusion: In this prospective single-arm cohort, early enteral nutrition through feeding jejunostomy could be established in most patients after major UGI surgery. The observed complications were predominantly minor, although the procedure is not risk-free. Because there was no comparator group, the study demonstrates feasibility and describes safety outcomes but cannot establish a causal reduction in postoperative morbidity or hospital stay.

Keywords: Enteral Nutrition, Feeding Jejunostomy, Upper Gastrointestinal Surgery, Postoperative Nutrition, Esophagectomy, Gastrectomy, Pancreaticoduodenectomy, Postoperative Recovery.

INTRODUCTION

Major UGI surgery produces a substantial physiological stress response and is often accompanied by reduced oral intake. Patients

undergoing esophagectomy, gastrectomy, or pancreaticoduodenectomy may also enter the postoperative period with pre-existing weight loss, poor intake, or disease-associated

malnutrition. Prolonged inadequate intake may therefore compound nutritional deficits during recovery. Current perioperative nutrition guidance supports early oral feeding whenever it is safe and recommends nutritional therapy when oral intake is unlikely to meet requirements.^[1,2]

Enteral nutrition has advantages over prolonged exclusive parenteral support because nutrients are delivered through the gastrointestinal tract. After major UGI reconstruction, however, oral feeding may be delayed because of the operative anatomy, gastrointestinal tolerance, aspiration concerns, or an anticipated period of inadequate intake. A feeding jejunostomy can provide post-pyloric access in patients in whom supplemental enteral feeding is expected to be useful.

The placement of a jejunostomy is nevertheless an invasive step. Mechanical problems such as tube blockage or displacement and local problems such as infection may interrupt feeding. More serious complications, including bowel injury, obstruction, leakage, or peritonitis, have also been described. In a prospective cohort of 84 high-risk UGI surgical patients, 98% commenced jejunal feeding on postoperative day 1, with tube- and feeding-related morbidity reported in 12.9% and 20%, respectively.^[3] A prospective post-esophagectomy audit reported that 95% of patients could be fed exclusively through the jejunostomy, while catheter blockage occurred in 6%.^[4]

Other prospective studies have also reported that early jejunal feeding can be implemented after major abdominal or digestive surgery without frequent severe access-related events.^[5,6] At the same time, randomized evidence has not demonstrated a universal advantage of jejunostomy over less invasive enteral routes, supporting an individualized approach to nutritional access.^[7]

The present study was undertaken to assess the feasibility and safety of early enteral nutrition delivered through an intraoperatively placed feeding jejunostomy after elective major UGI surgery. The main outcomes were establishment of feeding within 24–48 hours and jejunostomy-related complications, with postoperative recovery measures assessed as secondary outcomes.

Aims and Objectives

- To determine the proportion of patients in whom enteral feeding could be established

within 24–48 hours through an intraoperatively placed feeding jejunostomy.

- To describe the frequency and nature of feeding jejunostomy-related complications.
- To assess postoperative recovery, including return of bowel function and postoperative hospital stay.
- To document mortality attributable to the feeding jejunostomy.

MATERIALS AND METHODS

Study Design and Setting

This was a prospective observational study conducted at a tertiary referral center over an 18-month period. Adult patients undergoing elective major UGI surgery with an intraoperative feeding jejunostomy were included.

Participants

Fifty adult patients undergoing esophagectomy, gastrectomy, or pancreaticoduodenectomy were included. The available study material does not provide the exact operation-wise distribution, baseline nutritional measurements, or individual demographic variables; these details have therefore not been added.

Feeding Jejunostomy and Enteral Feeding

A feeding jejunostomy was placed during the planned UGI operation. Enteral nutrition was started within 24–48 hours after surgery when the patient was clinically stable and no contraindication to enteral feeding was present. Feed delivery was advanced according to clinical tolerance and routine postoperative monitoring.

Outcome Measures

The primary outcomes were successful establishment of early enteral feeding and feeding jejunostomy-related complications. Complications included mechanical or local events such as tube blockage and insertion-site infection, as well as serious events including bowel perforation, peritonitis, or reoperation. Secondary outcomes were postoperative morbidity, return of bowel function, postoperative hospital stay, and jejunostomy-attributable mortality.

Statistical Analysis

Continuous variables are presented as mean $\pm$ standard deviation where supplied, while

categorical variables are expressed as numbers and percentages. The study was single-arm and observational; therefore, the analysis is descriptive and no causal comparison with another feeding route was performed.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of Mysore Medical College and Research Institute. Written informed consent was obtained from all participants.

RESULTS

The cohort consisted of 50 patients. Early enteral feeding within the planned 24–48-hour period was successfully established in 42 patients (84.0%), whereas 8 patients (16.0%)

did not achieve the predefined early-feeding endpoint.

Feeding jejunostomy-related complications were recorded in 8 patients (16.0%). The available study information identifies tube blockage and local site infection as the predominant events. All reported complications were treated conservatively. No bowel perforation, peritonitis, or reoperation related to the jejunostomy was reported.

Mean postoperative hospital stay was 10.2 ± 2.2 days. Earlier return of bowel function was reported, but an exact time-to-event comparison or control-group value was is available. No mortality was attributed to the feeding jejunostomy.

Outcome	n	%
Total cohort	50	100
Early enteral feeding successfully established	42	84.0
Not successfully established within defined period	8	16.0

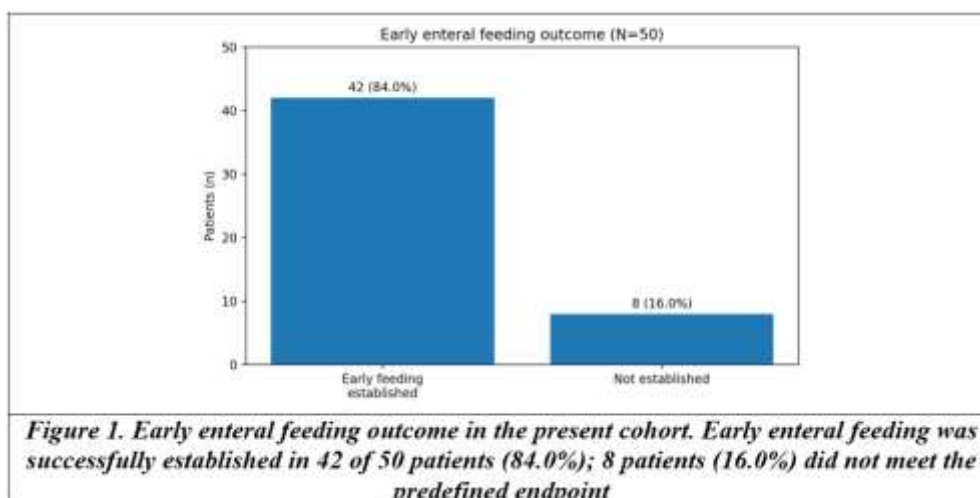
Table 1. Feasibility of early enteral nutrition

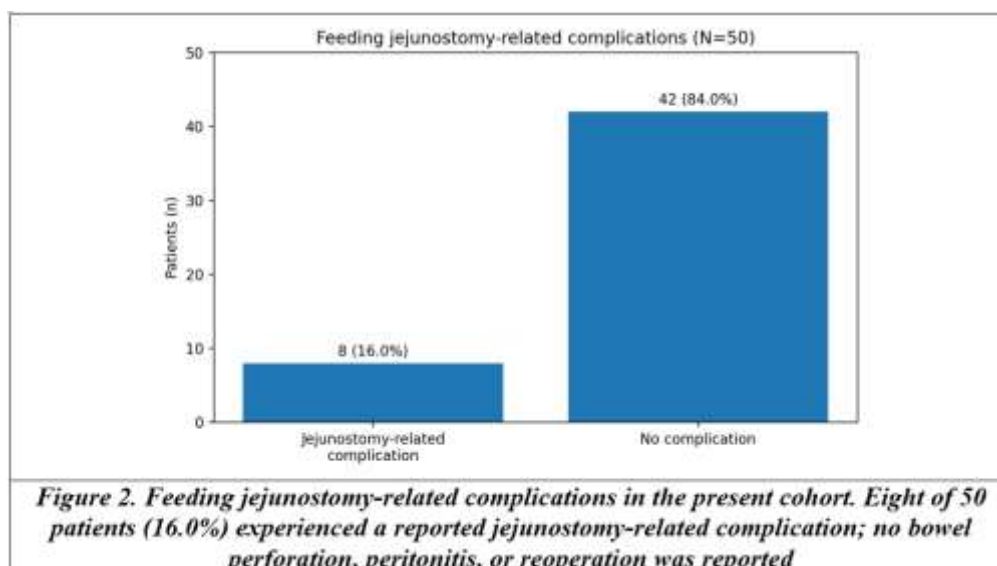
Outcome	n	%	Management
Any jejunostomy-related complication	8	16.0	Conservative
Tube blockage	Not separately supplied	—	Conservative
Local site infection	Not separately supplied	—	Conservative
Bowel perforation	0	0	Not applicable
Peritonitis	0	0	Not applicable
Reoperation	0	0	Not applicable

Table 2. Feeding jejunostomy-related complications

Outcome	Result
Mean postoperative hospital stay	10.2 ± 2.2 days
Return of bowel function	Earlier return reported; exact comparator data not supplied
Jejunostomy-attributable mortality	0
Major jejunostomy-related events	No perforation, peritonitis, or reoperation reported

Table 3. Secondary postoperative outcomes





Comparison with Selected Published Evidence

Study	Design / Population	Key Result
Present study	50 major UGI operations; prospective observational	84.0% early feeding; 16.0% access complications
Bozzetti et al. ^[3]	84 high-risk UGI patients; prospective cohort	98% started feeding on day 1; 12.9% tube morbidity
Ryan et al. ^[4]	205 esophagectomy patients; prospective audit	95% exclusively fed via jejunostomy; 6% catheter blockage
Major UGI surgery study ^[5]	167 patients; prospective	No major complications/deaths from tube or early feeding
Gianotti et al. ^[6]	650 major digestive cancer operations; prospective	91.1% achieved nutritional goal; severe jejunostomy complications uncommon
Torres et al. ^[7]	Randomized UGI surgery trial	Early enteral therapy: 71% nasogastric vs 62% jejunostomy

Suggested Postoperative Enteral Feeding Pathway

Time	Management
0–24 h	Assess clinical stability, tube position/patency, and contraindications
24–48 h	Start low-rate enteral feeding when clinically appropriate
Following days	Advance feeds according to tolerance and nutritional targets
Throughout	Monitor tube function, abdominal findings, fluid/electrolyte status, and feed delivery
Transition	Progress oral intake when safe; continue jejunostomy supplementation when required

Feeding Jejunostomy Safety Checklist

Domain	Monitor
Tube	Patency, displacement, leakage, blockage
Insertion site	Pain, redness, discharge, cellulitis
GI tolerance	Distension, pain, vomiting, diarrhea
Nutrition	Volume delivered, calories/protein, interruptions
Metabolic	Fluid balance and electrolytes
Red flags	Peritonitis, obstruction, or suspected bowel injury

DISCUSSION

The main observation from this cohort is that early enteral feeding could be established in 42 of 50 patients (84.0%) after major UGI surgery. Jejunostomy-related complications

were observed in 8 patients (16.0%), with the available data indicating predominantly minor access-related problems and no reported perforation, peritonitis, or reoperation. These findings support the technical feasibility of

using a feeding jejunostomy when postoperative enteral support is clinically indicated.

Perioperative nutrition guidance favors early oral intake when feasible and early nutritional support when adequate oral intake is not expected.^[1,2] In selected patients undergoing esophagectomy, total gastrectomy, or pancreatoduodenectomy, an intraoperatively placed jejunostomy can therefore be considered when prolonged supplemental feeding is anticipated.

The 84.0% early-feeding rate in the present cohort is broadly consistent with previous prospective experience. Bozzetti and colleagues reported postoperative day-1 jejunal feeding in 98% of 84 high-risk UGI patients, with tube-related morbidity of 12.9%.³ A specialist-unit audit of 205 esophagectomy patients found that 95% were successfully fed exclusively through the jejunostomy and that catheter blockage occurred in 6%.^[4]

Other prospective work has similarly shown that jejunal feeding can be introduced early after major UGI or digestive surgery without a high frequency of severe tube-related events. A 167-patient study reported no major complications or deaths attributable to tube placement or early feeding.⁵ In a larger nine-year experience involving 650 patients undergoing major digestive cancer surgery, 91.1% achieved the nutritional target, while severe jejunostomy-related complications were uncommon.⁶ The absence of bowel perforation, peritonitis, and reoperation in the present cohort is therefore reassuring, although the sample is too small to exclude uncommon serious complications.

The 16.0% overall complication rate also demonstrates that jejunostomy is not risk-free. Tube blockage and local infection may interrupt nutritional delivery and require clinical attention. Published series have reported variable rates of catheter-related and gastrointestinal complications, reflecting differences in patient selection, operative technique, definitions, and duration of follow-up.^[3,4,8]

The optimal feeding route should remain patient-specific. A randomized comparison of nasoenteric feeding and jejunostomy after major UGI operations did not demonstrate a universal superiority of jejunostomy, and early oral feeding is increasingly emphasized when it can be undertaken safely.^[1,2,7] Thus, the expected

duration of inadequate oral intake, nutritional risk, aspiration risk, operative anatomy, and local expertise should all contribute to the decision to place a feeding jejunostomy.

The mean postoperative stay in this cohort was 10.2 ± 2.2 days. Although earlier bowel recovery was reported, the study design does not permit a causal conclusion that jejunostomy feeding shortened hospitalization. Length of stay is influenced by anastomotic events, pulmonary complications, pain control, mobilization, oral intake, discharge pathways, and other perioperative factors.

Another limitation is that successful initiation of enteral feeding is not equivalent to achievement of nutritional requirements. Future prospective studies should record calories and protein delivered, the proportion of estimated requirements achieved, interruptions to feeding, feed intolerance, and duration of jejunostomy use. Such measures would provide a stronger assessment of nutritional effectiveness.

The study's strengths include its prospective design, clinically relevant endpoints, and inclusion of major UGI procedures in which postoperative enteral support may be required. Important limitations are the small sample size, single-center setting, observational single-arm design, lack of a comparator group, and incomplete availability of operation-specific and baseline nutritional data. The complication rate should also be interpreted in the context of the definitions and follow-up used in this study.

Clinical Implications

- Feeding jejunostomy can provide post-pyloric enteral access when oral intake is expected to be delayed or inadequate.
- Early enteral feeding was successfully established in 42 of 50 patients (84.0%) in this cohort.
- Tube-care and feeding protocols are important for minimizing mechanical and local complications.
- The decision to place a jejunostomy should be balanced against expected oral feeding, alternative enteral routes, and the patient's nutritional risk.
- Although no severe access-related event was reported in this cohort, the possibility of serious complications should be addressed during informed consent.

CONCLUSION

Early enteral nutrition through feeding jejunostomy was successfully established in 42 of 50 patients (84.0%) undergoing major elective UGI surgery in this prospective observational cohort. Jejunostomy-related complications occurred in 8 patients (16.0%) and were predominantly minor, with no reported bowel perforation, peritonitis, reoperation, or jejunostomy-attributable mortality. Mean postoperative hospital stay was 10.2 ± 2.2 days. The findings support the feasibility of feeding jejunostomy in appropriately selected patients, but the single-arm design does not establish that jejunostomy independently improves postoperative morbidity or hospital stay.

DECLARATIONS

Ethics Approval

The study was approved by the Institutional Ethics Committee of Mysore Medical College and Research Institute.

Consent to Participate

Written informed consent was obtained from all participants.

Conflict of Interest

The authors declare no conflict of interest.

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