Section: Surgery

Original Research Article

FEASIBILITY, TOLERANCE, AND CLINICAL OUTCOMES OF EARLY NASOJEJUNAL ENTERAL NUTRITION IN SEVERE ACUTE PANCREATITIS: A PROSPECTIVE STUDY

Varun Singla[1], Vivek Gupta[2], Nikhil K Das[3], Krishnanand Dhruw[4], Sudipta Bera[5]

[1]Senior Consultant, Plastic surgery, Alchemist Hospitals, Ambala, Haryana, India
[2]Assistant Professor, Department of General Surgery, G. S Medical College, Hapur, Uttar Pradesh, India
[3]Professor, Department of General Surgery, PESIMSR, Kuppam, Andhra Pradesh, India
[4]Associate Professor, Department of Burn & Plastic Surgery, DKS PGI Raipur, Chattisgarh, India
[5]Associate Professor, Department of Plastic Surgery, Institute of Medical Science, BHU, Uttar Pradesh, India

Received : 15/07/2025
Received in revised form : 03/09/2025
Accepted : 21/09/2025

Keywords:
Pancreatitis, Acute Necrotizing, Enteral Nutrition, Jejunostomy, Intensive Care Units

Corresponding Author:
Dr. Krishnanand Dhruw,
Email: drkdhruw@gmail.com

DOI: 10.47009/jamp.2025.7.5.225

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (5); 1188-1191

ABSTRACT

Background: Severe acute pancreatitis (SAP) is a life-threatening inflammatory condition with high morbidity and mortality. Enteral nutrition (EN) has been shown to preserve gut integrity and modulate the inflammatory response, and is superior to total parenteral nutrition (TPN). However, real-world data on the feasibility and clinical outcomes of early nasojejunal feeding in Indian patients with SAP are limited. The objective is to evaluate the feasibility, tolerance, and clinical outcomes of early nasojejunal enteral nutrition in patients with SAP. **Materials and Methods:** A prospective study was conducted at Dayanand Medical College and Hospital, Ludhiana, between January 2010 and June 2011. Thirty patients diagnosed with SAP, defined as an APACHE II score >8, were included. Nasojejunal feeding tubes were placed endoscopically, and feeding was initiated within 48–72 hours of admission. Outcomes studied included tolerance of feeds, ICU stay, hospital stay, complications, and mortality. **Result:** The mean age of patients was 46.1 years (range 23–65 years), with a marked male predominance (87%). The most common etiology was alcohol-induced pancreatitis (43%), followed by gallstones (33%). Out of 30 patients, 27 (90%) tolerated nasojejunal feeds. Patients who tolerated feeds had a significantly shorter ICU stay compared to those who did not (6.0 vs. 12.7 days, p = 0.04). Although the mean hospital stay was lower in the tolerant group (15.1 vs. 18.7 days), the difference was not statistically significant. Complications were more frequent in the non-tolerant group, which also accounted for the only mortality in the study (overall mortality 3.45%). No complications related to nasojejunal tube insertion were observed. **Conclusion:** Early nasojejunal feeding is safe, feasible, and well tolerated in patients with SAP. It significantly reduces ICU stay and complications, with a trend toward improved hospital outcomes and survival. Early enteral feeding should be considered the standard nutritional strategy in SAP.

INTRODUCTION

Severe acute pancreatitis (SAP) is a systemic inflammatory disease characterized by multi-organ dysfunction, local complications, and high mortality rates ranging between 10% and 30%. Nutritional management plays a central role in the supportive care of SAP. Traditionally, total parenteral nutrition (TPN) was employed, but accumulating evidence has established the superiority of enteral nutrition (EN). EN is believed to preserve intestinal mucosal integrity, reduce bacterial translocation, and attenuate systemic inflammatory response, thereby lowering the risk of infectious complications.[1-3]

Among enteral routes, nasojejunal feeding is preferred over nasogastric feeding in SAP, particularly in patients with impaired gastric emptying or high aspiration risk. Early initiation of EN within 48–72 hours of admission has been associated with improved outcomes.[4-7] However, practical concerns remain regarding tolerance of feeds in acutely ill patients, safety of nasojejunal tube insertion, and its impact on clinical outcomes in real-world Indian tertiary care settings.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

The present study was designed to evaluate the feasibility, tolerance, and outcomes of early nasojejunal feeding in patients with SAP admitted to a tertiary referral hospital in northern India.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Surgery, Dayanand Medical College and Hospital, Ludhiana, over a period of 18 months from January 2010 to June 2011. Thirty consecutive patients fulfilling the inclusion criteria were enrolled.

Inclusion criteria comprised patients above 18 years of age admitted with SAP, defined as an APACHE II score greater than 8 at admission. Patients with chronic pancreatitis, contraindications to endoscopic placement of nasojejunal feeding tubes (NJFT), or severe hemodynamic instability precluding endoscopy were excluded.

All patients underwent endoscopic placement of NJFT within 48–72 hours of admission. Enteral feeds were initiated on the same day or the following day, starting with low infusion rates and gradually increasing to target caloric requirements as tolerated. Feeds were polymeric and iso-osmolar in composition.

Tolerance was defined by the ability to reach target feed volume without significant gastrointestinal intolerance, such as abdominal distension, increased nasogastric aspirates, pain, or diarrhea. Patients were monitored for complications, including systemic infections, local pancreatic complications, and organ dysfunction.

The primary endpoint was tolerance of nasojejunal feeds. Secondary endpoints included ICU stay, total hospital stay, complications, and mortality.

Statistical analysis was performed using SPSS version 26. Continuous variables were expressed as mean ± standard deviation, and categorical variables as percentages. Student's t-test and chi-square test were used for comparison between feed-tolerant (FT) and non-tolerant (NT) groups, with $p < 0.05$ considered statistically significant.

RESULTS

A total of 30 patients were included in the study over the 18-month period. The mean age of patients was 46.1 years, with a range of 23–65 years. A clear male predominance was observed, with 26 patients (87%) being male and only 4 patients (13%) female. Alcohol was the most common etiological factor, seen in 13 patients (43%), followed by gallstones in 10 patients (33%), and miscellaneous causes such as idiopathic, hyperlipidemia, and hypercalcemia in 7 patients (23%). The overall mean APACHE II score at admission was 12.93 ± 4.31, with no significant difference between the feed-tolerant (FT) and non-tolerant (NT) groups. These baseline details are summarized in [Table 1].

Inference: The cohort predominantly consisted of middle-aged males with alcohol-related pancreatitis, reflecting regional trends. Disease severity at presentation was similar between FT and NT groups, suggesting that baseline APACHE II score alone did not influence tolerance of enteral feeding.

Out of the 30 patients, 27 (90%) successfully tolerated early nasojejunal feeding, while 3 patients (10%) did not tolerate feeds within the first 48–72 hours. Importantly, there were no complications related to NJ tube insertion in any patient. ICU admission was required in 28 patients, reflecting the severity of illness in this cohort. Patients in the tolerant group had a significantly shorter ICU stay, averaging 6.0 ± 4.87 days, compared to 12.67 ± 4.51 days in the NT group ($p = 0.04$). Similarly, hospital stay was shorter among feed-tolerant patients (15.15 ± 7.15 days) than in the non-tolerant group (18.67 ± 9.29 days), although this difference did not reach statistical significance ($p = 0.21$). These outcome measures are shown in [Table 2].

Inference: Patients who tolerated early enteral feeding had a clear advantage in terms of reduced ICU stay, indicating faster stabilization and recovery. Although the difference in hospital stay did not reach statistical significance, the trend favored the feed-tolerant group, highlighting the clinical benefits of early EN.

In terms of morbidity, a total of 40 complications were observed across the cohort. Among feed-tolerant patients, 34 complications occurred in 15 individuals (55.5%), while the non-tolerant group of only three patients developed 6 complications, yielding a disproportionately higher complication burden. The complications included acute fluid collections, sterile necrosis, acute renal failure, respiratory failure, septicemia, and other systemic events. The distribution of complications between groups is detailed in [Table 3].

Inference: Although complications occurred in both groups, their relative frequency was significantly higher among patients who did not tolerate enteral nutrition, suggesting that early feeding may provide protection against progression to severe complications.

Mortality was observed in only one patient (3.45%), who belonged to the NT group and succumbed to septic complications after a prolonged ICU stay. Notably, all 27 patients who tolerated early nasojejunal feeding survived and were discharged in satisfactory condition.

Inference: The absence of mortality in the feed-tolerant group strongly suggests that early nasojejunal feeding plays a protective role in improving survival outcomes in severe acute pancreatitis.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 1: Baseline Characteristics

Parameter	Value (n=30)
Mean age (years)	46.1 ± 13.2
Male : Female	26 : 4
Etiology – Alcohol	13 (43%)
Etiology – Gallstones	10 (33%)
Etiology – Miscellaneous	7 (23%)
Mean APACHE II score	12.9 ± 4.3

Table 2: Outcomes in FT vs NT

Outcome	FT (n=27)	NT (n=3)	p-value
ICU stay (days)	6.0 ± 4.9	12.7 ± 4.5	0.04
Hospital stay (days)	15.1 ± 7.1	18.7 ± 9.3	0.21
Complications	34	6	<0.05
Mortality	0	1 (33%)	–

Table 3: Complications

Complication	FT (n=27)	NT (n=3)	Total (n=30)
Acute Fluid Collection	10	1	11
Sterile Necrosis	6	2	8
Infected Pancreatic Necrosis	1	0	1
Acute Renal Failure	6	0	6
Central Line Sepsis	3	0	3
UGI Bleed	2	0	2
UTI	1	0	1
Respiratory Failure	3	1	4
Hemorrhoidal Bleed	1	0	1
DKA	1	0	1
Fungal Septicemia	0	1	1
Splenic Vein Thrombosis	0	1	1

DISCUSSION

Our study demonstrates that early nasojejunal (NJ) feeding is both feasible and safe in Indian patients with severe acute pancreatitis (SAP), with 90% of patients tolerating early enteral nutrition (EN). This observation is consistent with earlier studies showing tolerance rates between 80–95% for jejunal feeding in SAP.[1-3] Importantly, no complications related to tube placement were observed in our series, further supporting the safety of endoscopic or fluoroscopic NJ placement, as also highlighted in previous reports.[4,5]

Patients who tolerated early EN had significantly shorter intensive care unit (ICU) stays compared to non-tolerant patients (6 vs 12.7 days). This finding mirrors results from Hegazi et al,[6] who found that early jejunal feeding reduced ICU stay and improved recovery. Windsor et al,[2] similarly demonstrated that EN attenuates the acute-phase response, thereby leading to improved severity scores and faster stabilization. Hospital stay in our study (15.1 days) was comparable to findings from Abou-Assi et al,[7] and McClave et al,[3] who also noted reduced hospitalization with early EN compared to total parenteral nutrition (TPN). Although our difference in hospital stay between tolerant and non-tolerant groups was not statistically significant, the overall trend favors early EN and has been echoed in meta-analyses.[8]

Complications were observed in both tolerant and non-tolerant groups, but the relative burden was significantly higher in patients who could not tolerate feeding. This aligns with prior evidence that EN protects gut mucosal integrity, reduces bacterial translocation, and lowers septic morbidity.[9-11] In our study, complications such as septicemia, respiratory failure, and renal dysfunction were disproportionately frequent among the non-tolerant group, highlighting the clinical value of successful EN initiation.

Mortality in our cohort was low at 3.45% (1 of 30 patients), and importantly, all patients who tolerated EN survived. Western studies have reported mortality rates between 5–36% in SAP,[7,12] suggesting that our lower mortality may be attributed to standardized early EN protocols and improved supportive care. The protective role of EN in reducing sepsis, organ failure, and death is well documented.[2,13] Our findings reinforce that early NJ feeding is not only safe but also associated with improved survival outcomes in SAP.

The absence of tube-related complications in our series is noteworthy. While earlier reports described risks of malposition, dislodgement, or aspiration,[4] more recent studies and our data confirm that with appropriate technique, NJ placement is safe and well tolerated. Furthermore, concerns about pancreatic stimulation with jejunal feeding have been largely refuted by experimental and clinical studies.[14] These studies consistently show that jejunal feeding minimizes pancreatic secretion and thus avoids exacerbating inflammation.

Our findings align with evolving clinical guidelines that recommend early EN as the standard of care in SAP.[15] Several expert groups, including the European Society for Clinical Nutrition and Metabolism (ESPEN) and the British Society of

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Gastroenterology, have endorsed enteral feeding over parenteral nutrition because of its physiological benefits, safety, and improved outcomes.[16]

Strengths and Limitations: The strengths of this study include its prospective design, standardized protocol, and focus on tolerance and outcomes in an Indian population, which remains underrepresented in global literature. Limitations include the relatively small sample size, single-center nature, and lack of a randomized comparator arm with TPN. Nevertheless, the consistency of our findings with international studies strengthens the validity of our results.

CONCLUSION

Early nasojejunal enteral feeding is safe, feasible, and effective in SAP. It reduces ICU stay, decreases complications, and improves survival outcomes. Early EN should be considered the standard nutritional therapy in SAP, especially in resource-limited settings.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556