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Early Enteral Nutrition After Emergency Gastrointestinal Surgery: Impact on Postoperative Recovery

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Abstrak. Background. Traditional postoperative management after emergency gastrointestinal surgery frequently delays oral or enteral intake until the return of bowel sounds or passage of flatus. Contemporary perioperative concepts increasingly support earlier nutritional support in appropriately selected patients. Objective. To evaluate the influence of early enteral nutrition on postoperative recovery after emergency gastrointestinal surgery. Materials and methods. A comparative observational model included 164 adult patients who underwent emergency gastrointestinal operations. The numerical dataset was constructed for manuscript development and must be replaced or verified using primary clinical records before scientific submission. Eighty-six patients received oral or enteral nutrition within 24 hours after surgery, while 78 patients received conventional delayed feeding. Time to bowel recovery, postoperative nausea and vomiting, infectious complications, anastomotic complications, and hospital stay were analyzed. Results. Early nutrition was associated with earlier passage of flatus, earlier first defecation, and shorter hospitalization. Postoperative vomiting occurred somewhat more frequently during the initial feeding period, but the difference was not accompanied by higher rates of aspiration or major morbidity. Surgical-site infection was less frequent in the early-feeding group, while anastomotic leakage and intra-abdominal abscess rates were comparable. Conclusion. Early enteral nutrition is feasible after selected emergency gastrointestinal operations and may accelerate functional recovery without increasing major postoperative complications.

Keywords: early enteral nutrition; emergency gastrointestinal surgery; postoperative recovery; enhanced recovery; postoperative ileus; emergency laparotomy.

Relevance. Vascular Introduction. Postoperative nutritional management is an important component of recovery after gastrointestinal surgery. For many years, routine practice after emergency abdominal operations was based on bowel rest, nasogastric decompression, and delayed oral intake until clinical evidence of restored gastrointestinal motility appeared [1]. This approach was largely intended to protect intestinal anastomoses and reduce nausea, vomiting, and aspiration. However, accumulating evidence has challenged the assumption that prolonged postoperative fasting is routinely beneficial [2].

Modern enhanced recovery principles consider nutrition part of active perioperative treatment rather than a passive step introduced after recovery has already occurred. The ESPEN practical guideline on clinical nutrition in surgery identifies early oral feeding as the preferred nutritional strategy for most surgical patients and recommends early enteral nutrition when oral intake cannot be initiated or is expected to remain inadequate [3]. The ERAS Society recommendations for emergency laparotomy similarly support proactive postoperative nutrition and indicate that feeding within the first postoperative day can be safe in selected emergency surgical patients [4].

Emergency gastrointestinal surgery differs from elective surgery because patients often present with peritonitis, intestinal obstruction, sepsis, bowel ischemia, or significant physiological disturbance.

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These conditions may limit immediate feeding in some cases [5]. Nevertheless, prolonged fasting may contribute to negative nitrogen balance, loss of lean body mass, impaired immune function, delayed mobilization, and prolonged hospitalization. The clinically relevant question is therefore not whether every emergency surgical patient should be fed early, but which patients can safely benefit from an early nutritional strategy [6].

The aim of this study was to compare postoperative recovery and complication rates in patients receiving early enteral nutrition and conventional delayed feeding after emergency gastrointestinal surgery [7].

Materials and Methods. The study was designed as a comparative observational analysis of 164 adult patients undergoing emergency gastrointestinal surgery. The modeled cohort included operations for perforated gastroduodenal ulcer, small-bowel obstruction requiring operative treatment, intestinal perforation, strangulated hernia with bowel involvement, and other emergency gastrointestinal conditions. Patients with persistent hemodynamic instability, uncontrolled shock, suspected ongoing bowel ischemia, complete postoperative intestinal obstruction, high-output fistula, or another contraindication to enteral nutrition were excluded from the early-feeding pathway.

Patients were divided into two groups according to postoperative nutritional strategy. Group I included 86 patients in whom oral fluids or enteral nutrition was initiated within 24 hours after surgery, provided that hemodynamic stability and the operative findings permitted feeding. The initial volume was small and was progressively increased according to individual tolerance. Group II consisted of 78 patients managed by a conventional strategy in which oral intake was delayed until clinical evidence of bowel function, typically passage of flatus or stool.

Both groups received standard postoperative treatment including analgesia, antimicrobial therapy when indicated, fluid and electrolyte management, thromboprophylaxis, respiratory care, and early mobilization as clinically feasible. Nasogastric tubes were removed according to clinical indication rather than maintained routinely in all patients.

The primary outcomes were time to passage of flatus and postoperative hospital stay. Secondary outcomes included time to first defecation, postoperative nausea and vomiting, surgical-site infection, intra-abdominal abscess, anastomotic leakage in patients with gastrointestinal anastomoses, and reoperation. Continuous data were compared using Student's t-test or Mann–Whitney U test as appropriate, while categorical variables were compared using the chi-square or Fisher exact test. A p value <0.05 was considered statistically significant.

Results. The early-feeding group consisted of 86 patients and the conventional group of 78 patients. Baseline demographic characteristics and the distribution of major emergency diagnoses were broadly comparable in the modeled dataset. Gastrointestinal resection with primary anastomosis was performed in 52 patients in Group I and 45 patients in Group II [8].

Patients receiving early enteral nutrition demonstrated faster recovery of gastrointestinal function. Mean time to passage of flatus was reduced by approximately 14 hours, while first defecation occurred approximately one day earlier. Hospital stay was also shorter in the early-feeding group [9].

Outcome	Early feeding (n=86)	Delayed feeding (n=78)	p value
Time to first flatus, h	38.6±14.2	52.7±17.5	<0.001
Time to first defecation, h	61.4±20.7	84.9±26.3	<0.001
Postoperative vomiting, n (%)	13 (15.1)	7 (9.0)	0.232
Surgical-site infection, n (%)	7 (8.1)	15 (19.2)	0.038
Intra-abdominal abscess, n (%)	4 (4.7)	5 (6.4)	0.734
Anastomotic leak*, n (%)	2/52 (3.8)	3/45 (6.7)	0.660
Reoperation, n (%)	3 (3.5)	5 (6.4)	0.476
Hospital stay, days	7.1±2.8	9.3±3.7	<0.001

Table 1. Postoperative outcomes according to nutritional strategy. *Calculated among patients with gastrointestinal anastomoses.

Postoperative vomiting was numerically more frequent after early feeding, particularly during the first attempts at oral intake, but the difference was not statistically significant. Symptoms were generally managed by temporary reduction or interruption of intake followed by gradual reintroduction. No modeled case of aspiration pneumonia was directly attributed to the feeding strategy [10].

Surgical-site infection occurred less frequently in the early-feeding group. Deep intra-abdominal infectious complications and anastomotic leakage did not differ significantly. Reoperation was required in 3 patients in the early group and 5 patients in the delayed group. The pattern of outcomes therefore suggested that earlier gastrointestinal recovery and shorter hospitalization were not achieved at the expense of increased anastomotic or intra-abdominal complications [11].

Discussion. The present analysis suggests that early enteral nutrition can be incorporated into postoperative management after selected emergency gastrointestinal operations. The principal benefits observed in the modeled cohort were earlier return of bowel function and shorter hospitalization. Importantly, these advantages were not accompanied by a significant increase in anastomotic leakage, intra-abdominal abscess, or reoperation [12].

These findings are consistent with contemporary nutritional concepts in surgery. ESPEN recommends restoration of oral intake as early as possible after surgery and identifies early enteral nutrition as particularly relevant when adequate oral intake cannot be achieved [13]. The guideline also emphasizes that the amount of intake should be adapted to gastrointestinal function and individual tolerance rather than advanced according to a rigid schedule. This distinction is important in emergency surgery, where operative pathology and physiological reserve vary substantially between patients [14].

The ERAS Society consensus for emergency laparotomy specifically notes that early feeding may be beneficial even in emergency settings. The guideline summarizes randomized evidence showing that feeding within 24 hours after emergency abdominal surgery did not increase overall complications, postoperative ileus, or length of stay compared with a traditional strategy, although vomiting was more common. This pattern resembles the present modeled results, in which early feeding was associated with a modest increase in vomiting without an increase in major morbidity [15].

Earlier passage of flatus and defecation should not be interpreted solely as evidence that feeding mechanically stimulates recovery. Early nutrition is generally delivered within a broader postoperative strategy involving mobilization, rational fluid therapy, avoidance of unnecessary nasogastric decompression, opioid-sparing analgesia, and correction of electrolyte disturbances. These interventions collectively influence gastrointestinal motility. Therefore, early feeding should be regarded as one component of multimodal recovery rather than an isolated treatment.

A particularly important concern is anastomotic safety. Traditional delayed feeding was partly based on the belief that withholding luminal nutrition protects gastrointestinal sutures. Contemporary evidence has not demonstrated a routine benefit of prolonged fasting after many gastrointestinal procedures. ESPEN guidance indicates that early oral or enteral nutrition can be used after gastrointestinal surgery, including in patients with anastomoses, when there is no specific contraindication.

Early feeding should nevertheless not be applied indiscriminately. Severe shock, ongoing intestinal ischemia, mechanical obstruction, high-output fistula, and severe gastrointestinal bleeding are recognized situations in which enteral nutrition may be inappropriate or require delay. In emergency surgery, repeated clinical reassessment is therefore more important than adherence to an arbitrary postoperative hour.

The lower modeled rate of surgical-site infection in the early-feeding group may reflect improved nutritional support and faster recovery, but this finding should be interpreted cautiously. SSI is influenced by contamination, diabetes, operative duration, antimicrobial prophylaxis, and numerous other variables. A causal protective effect cannot be established from the present observational design.

Conclusion. Early oral or enteral nutrition within 24 hours after emergency gastrointestinal surgery appears feasible in appropriately selected patients. In the modeled cohort, it was associated with earlier recovery of bowel function and shorter hospitalization without an increase in anastomotic leakage, intra-abdominal abscess, or reoperation. Initial feeding intolerance, particularly vomiting, requires individualized adjustment rather than automatic abandonment of the strategy. Early nutrition should be incorporated into a broader multimodal recovery pathway and withheld when specific gastrointestinal or hemodynamic contraindications are present.

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