



50 Studies Every Intensivist Should Know (1)

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CHAPTER

34 Early versus On-Demand Nasoenteric Tube Feeding in Acute Pancreatitis

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Abstract

This study evaluated whether starting nasojejunal tube feeding within 24 hours of presentation would reduce the rate of death or major complications in patients with acute pancreatitis. This strategy was compared to allowing patients to take an “on demand” oral diet and only initiating nasojejunal tube feeding if there was poor oral intake by 96 hours after presentation. There was no difference between the two groups in any of the measured outcomes, though the study may have been underpowered. We conclude it is acceptable to allow an on-demand oral diet and reserve nasoenteric feeding for patients who have not achieved adequate nutrition by 96 hours after presentation. It is not necessary or beneficial to start nasojejunal tube feeds in the first 24 hours.

Keywords: acute pancreatitis, necrotizing pancreatitis, infected pancreatic necrosis, infection prevention, nutritional support, tube feeds, enteral nutrition, nasojejunal feeding

Subject: Primary Care, Anaesthetics, Critical Care

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“This trial did not show the superiority of early nasoenteric tube feeding as compared with an oral diet after 72 hours, in reducing the rate of infection or death in patients with acute pancreatitis at high risk for complications.”

—BAKKER ET AL.

Research Question:

Can rates of major infection and death in patients with severe acute pancreatitis be reduced by starting nasojejunal tube feeding within 24 hours?¹

Sponsor:

The Netherlands Organization for Health Research and Development

Year Study Began:

2008

Year Study Published:

2014

Study Location:

6 university medical centers and 13 large teaching hospitals in the Netherlands

Who Was Studied:

p. 205 Patients with a first episode of acute pancreatitis at any of the 19 teaching hospitals affiliated with the Dutch Pancreatitis Study Group. Patients were required to be at high risk of complications based on meeting any ¹ of the following criteria: (1) an Acute Physiology and Chronic Health Evaluation (APACHE) II score of 8 or higher, (2) an Imrie or modified Glasgow score of 3 or higher, or (3) a C-reactive protein level over 150 mg/L.

Who Was Excluded:

Patients with post ERCP pancreatitis, malignancy-induced pancreatitis, patients with enteral or parenteral nutrition at home, pregnant patients, patients evaluated more than 24 hours after presentation to the emergency department, and patients presenting to the emergency department more than 96 hours after symptom onset were excluded.

How Many Patients:

208 patients were enrolled.

Study Overview:

See Figure 34.1 for an overview of the study design.

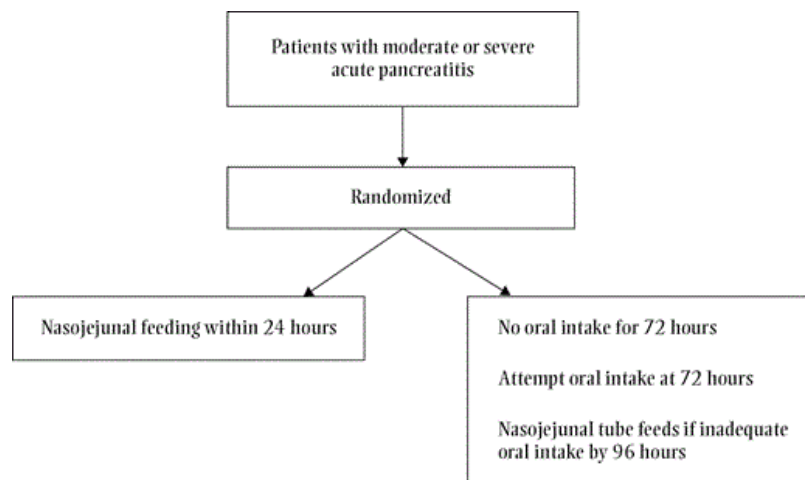


Figure 34.1 Summary of the study design.

Study Intervention:

Once patients were found to be eligible and consented, they were randomized to either the “early tube feeding” group, or the “on-demand tube feeding” group. The early tube feeding group underwent nasojejun tube placement followed by initiation of nasojejun tube feeding within 24 hours of randomization. The on-demand tube feeding group was started on an oral diet after 72 hours. If an oral diet was not tolerated by 96 hours, then a nasojejun tube was placed and tube feeding was initiated.

Follow-Up:

6 months

Endpoints:

The primary endpoint was a composite endpoint of major infection (infected pancreatic necrosis, bacteremia, or pneumonia) or death. Secondary endpoints included the development of necrotizing pancreatitis and the development of organ failure after randomization.

Results

There was no difference between the groups with regard to the primary or secondary outcomes (Table 34.1).

Table 34.1. Summary of the Study's Key Findings

Outcome	Early Tube Feeding	On-Demand Tube Feeding	P Value
Major infection	25%	26%	0.87
Death	11%	7%	0.33
Multiple organ failure	10%	8%	0.77

Criticisms and Limitations:

- The study may have been underpowered to demonstrate significant differences based on nutritional strategy. Although the investigators tried to select patients at risk for significant complications of acute pancreatitis, only about 1/3 developed organ failure and an even lower percentage developed necrosis. Since the benefits of early feeding for reducing the risk of death or infectious complications in pancreatitis would be expected to be most pronounced in the sickest patients, dilution of the study population with patients having lower severity of illness might mask the benefit.
- Existing guidelines recommended using nasogastric tube feeding for patients with acute pancreatitis receiving enteral nutritional supplementation, reserving nasojejunal feeding for patients who do not tolerate nasogastric feeding. This guideline was not followed in this study²
- The timing of enteral nutrition initiation differed only modestly between the groups, with initiation occurring within 24 hours for the “early tube feeding” group versus 72 hours for an oral diet or 96 hours for tube feeding in the “on-demand tube feeding” group. This difference may have been too small to impact outcomes.

Other Relevant Studies and Information:

p. 207 The most recent guidelines from the American Pancreatic Association and International Association of Pancreatology, published after this trial, recommend feeding with either nasogastric or nasojejunal tube feeding.³ The guidelines do not recommend a hard time or exact criteria for initiating enteral tube feeding, but cite a randomized controlled trial showing improved outcomes when enteral nutrition was begun within 48 hours of presentation compared to after 7 days of fasting.⁴ It is already known that “on demand” feeding even with a regular diet initiated as soon as pain and inflammatory markers are improving is safe and can reduce length of stay in mild pancreatitis.⁵

Summary and Implications:

There appears to be no benefit to routine early initiation of nasojejunal tube feeding compared to a strategy of waiting 72 hours and attempting oral intake. This may be particularly true in less severe acute pancreatitis when there is some expense and discomfort to tube feeding and there may be no benefit. Overall this study and the preponderance of data from other studies support an “on-demand” feeding strategy rather than early tube feeding, and to initiate this “on demand” oral feeding regimen somewhere within the 24–72-hour window. Initiating tube feeding by 96 hours in patients with inadequate oral intake is reasonable.

Early feeding and any resulting improvement in gut mucosal integrity may not be as important as previously thought for reducing infection and death in acute pancreatitis.

Clinical Case: Nutrition in Acute Pancreatitis

Case History:

A 55-year-old woman presents to the emergency department with epigastric pain, nausea, and vomiting. Serum amylase and lipase are elevated to greater than 10 times normal and C-reactive protein is 200 mg/L. She is hemodynamically stable and is admitted to the hospital ward for pain control, fluid resuscitation, and clinical observation. What is the best nutritional strategy for this patient?

Suggested Answer:

Based on this trial we should not place a nasojejunal tube and begin administering tube feeding within 24 hours. As a negative trial, it does not explicitly support the alternative study strategy either—denying oral or enteral nutrition for 72 hours before allowing on-demand feeding. Based on this study and the other available data discussed previously, the currently recommended nutritional strategy would be to wait until pain and markers of inflammation have begun to improve, and initiate an on-demand oral feeding regimen at that point. In patients not meeting nutritional goals by 96 hours after presentation, nasoenteric feeding should be begun. Parenteral nutrition should be reserved for patients not meeting nutritional goals by an enteral route 7 days after presentation.

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