Early versus delayed feeding after placement of a percutaneous endoscopic gastrostomy: a meta-analysis

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CRD summary
This review compared early versus delayed feeding after PEG placement. It showed that early feeding was associated with a higher incidence of significant residual gastric volume on the first day. The review contained several methodological limitations and its conclusions do not seem to be reliable.

Authors’ objectives
To compare early (≤4 hours) versus delayed or next-day feedings after a percutaneous endoscopic gastrostomy (PEG) placement in terms of complications and significant residual gastric volumes during the first day.

Searching
MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), DARE, HealthSTAR and CINHAL were searched up to 2006. Abstracts from conference proceedings of the Digestive Disease week and the American College of Gastroenterology National Meeting from 1993 to 2007 were handsearched. Search terms were reported. There were no apparent language restrictions.

Study selection
Randomised controlled trials (RCT) that compared early (≤4h) versus delayed or next-day feeding after PEG placement in adult patients (>18 years) were eligible.

Death within 72 hours, complications and the incidence of significant gastric residual volumes during day one represented the outcomes for inclusion. Types of complications were not defined. Significant residual volumes was defined as it appeared in each article.

Age of the participating patients ranged from 63 to 76 years. Time of early feeding ranged from less than one hour to four hours. Delayed feeding ranged from from 24 hours to next day. Significant volume definition varied from more than 60ml to 50% of the last volume administered. Length of follow-up was not described.

Two authors independently selected the articles after an initial examination. It was unclear how many authors were involved in the initial selection.

Assessment of study quality
Studies were assessed for description and appropriateness of randomisation, blinding and dropouts using the Jadad scale. It appeared that two reviewers independently evaluated study quality.

Data extraction
Two authors independently extracted data in a predefined review form. Differences were resolved by consensus.

The numbers of patients who experienced complications, died or had significant residual volumes were extracted to calculate odds ratios (OR).

Methods of synthesis
The pooled odds ratios and their corresponding 95% confidence intervals (CI) of each outcome were calculated using both fixed-effect and random-effects models. The results from the fixed-effect and random-effects models were consistent; only the random-effects model results were reported. Statistical heterogeneity was assessed using the $I^2$ test. An $I^2$ of 50% or more was considered significant.

Authors stated that publication bias was assessed using a funnel plot for the outcome all complications.
Results of the review
Six RCT were included in the review (n= 467). All selected studies were generally of poor methodological quality (Jadad score of 2 out of 5 possible points). The number of patients ranged from 41 to 112.

Complications: Five studies reported this outcome (367 patients). Observed complications described in the studies included local infections, diarrhoea, bleeding, gastro-oesophageal reflux, fever, vomiting, stomatitis, leakage and death. Overall complications were similar between groups, with only 25 in the early feeding group (four deaths) and 29 in the delayed feeding group (eight deaths) (OR 0.86, 95% CI 0.47 to 1.58, p>0.05).

Death within 72 hours: Four articles reported this outcome. There were no statistically significant differences between groups (OR: 0.56, 95% CI 0.18 to 1.74, p>0.05).

Gastric residual volumes during day one: Five articles reported this outcome. Early feedings had significantly more episodes of increased gastric residual volumes than delayed or next-day feedings (OR 1.8, 95% CI 1.02 to 3.19, p<0.05). Funnel plot analysis for this outcome did not show significant publication bias.

Heterogeneity was not statistically significant for any outcome.

Authors' conclusions
Early feeding after PEG placement appeared to be safe and a well-tolerated alternative to delayed feedings.

CRD commentary
This review addressed a broadly defined question in terms of patients, interventions and outcomes. Relevant databases were searched. Efforts to minimize errors and biases were made by independently extracting data and using predesigned extraction forms.

The analysis had some limitations. One of the outcomes analysed included both severe and minor complications that were pooled as a single outcome, which did not seem to be clinically meaningful. Significant residual volumes was not previously defined, which could be a source of bias.

The authors acknowledged limitations of the review; however, given the low quality of selected studies and low number of included patients, their conclusions may not be reliable.

Implications of the review for practice and research
Practice: The authors stated that if early feeding was implemented in clinical practice, it may result in decreased hospital stay and healthcare costs for patients who underwent PEG placement; none of these issues were addressed in the review.

Research: The authors did not state implications for further research.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.