
Percutaneous endoscopic gastrostomy versus nasogastric tube feeding for patients with head and neck cancer: a systematic review

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CRD summary

This review concluded that nasogastric tube and percutaneous gastrostomy feeding were similarly effective in maintaining nutritional status in patients with head and neck cancer but was unable to definitively identify the optimal method of enteral feeding. The inconsistency and poor quality of included evidence and inconsistent reporting of results mean that the results of the review may not be reliable.

Authors' objectives

To compare the effectiveness of percutaneous gastrostomy and nasogastric tube feeding in patients with head and neck cancer.

Searching

PubMed, MEDLINE, EMBASE, The Cochrane Library and Wiley databases were searched from inception to 2013 for relevant full-length publications in English. Search terms were reported. Reference lists of reviews and retrieved studies were searched for further relevant evidence.

Study selection

Randomised controlled trials (RCTs), cohort studies and case-control studies that compared percutaneous gastrostomy – including percutaneous endoscopic gastrostomy (PEG) and percutaneous fluoroscopic gastrostomy (PFG) – with nasogastric tube feeding in patients with head and neck cancer were eligible for inclusion. The authors did not state how many reviewers selected the studies for inclusion.

Included studies were conducted in Australia, UK, India, Pakistan and France. Where reported, mean patient age ranged from 47 to 64 years. Most studies included patients with squamous cell carcinoma of various stages. Patients received various treatment combinations of surgery, radiotherapy and chemotherapy.

Assessment of study quality

Studies were rated on the nine-point Newcastle-Ottawa scale for selection and comparability of groups and for exposures and outcomes. Studies with five or more points were classed as good methodological quality. The authors did not state how many reviewers assessed study quality.

Data extraction

Two reviewers independently extracted data on study characteristics and numbers of events for dichotomous outcomes. Disagreements were resolved by discussion or by consultation with a third reviewer.

Methods of synthesis

For most outcomes, studies were combined in a narrative synthesis. Pooled estimates and 95% confidence intervals (CI) for survival, infection, tube dislodgement and dysphagia outcomes were calculated using fixed-effect or random-effects meta-analyses. Statistical heterogeneity was measured using the I^2 statistic.

Results of the review

Eight studies (818 participants) were included in the review: four studies were retrospective and four were prospective; one prospective study was an RCT. Studies scored from 5 to 9 points on the quality assessment scale.

Nutrition status was measured in seven of the eight included studies. Using various measures, two studies found significant signs of better nutrition status for gastrostomy than nasogastric feeding, four studies found no significant difference and one reported mixed results.

Infection rate was not significantly different between feeding methods in the four studies that reported this outcome

(relative risk 1.13, 95% CI 0.08 to 16.43; $I^2=92\%$). Tube dislodgement was found to be more likely with nasogastric tube feeding in the four studies that reported this outcome (relative risk 0.17, 95% CI 0.07 to 0.40; $I^2=36\%$). Dysphagia at six months after radiotherapy was significantly more common with percutaneous gastrostomy in the two studies that reported this outcome (relative risk 3.62, 95% CI 1.48 to 8.87; $I^2=0\%$). Other complications were reported in a minority of studies.

Survival was reported in three studies at different time points. When pooled, these suggested no significant difference between feeding methods (relative risk 0.45, 95% CI 0.10 to 2.06; $I^2=97\%$).

Duration of feeding was longer with nasogastric tube in six studies (data not shown).

Three studies reported no obvious differences between groups in terms of radiotherapy delay and three studies suggested higher incidence of pain with gastrostomy tubes in the first week of insertion. More patients reported altered body image with a nasogastric tube.

Authors' conclusions

Nasogastric tube and percutaneous gastrostomy feeding have both been found to be effective in maintaining nutritional status in patients with head and neck cancer. However, due to the limited scope and small number of eligible studies available, this review was unable to definitively identify the optimal method of enteral feeding for patients with head and neck cancer.

CRD commentary

This review appeared to use appropriate methods to identify and select evidence to address the proposed research question but it was not clear whether efforts were made to minimise errors in the selection and assessment of this evidence.

Despite being classed as good methodological quality by the review authors, the included studies appeared to be of poor quality; problems with baseline comparability of treatment groups were particularly common. For some outcomes, study estimates were too variable for a pooled value to be meaningful. The authors noted uncontrolled factors (method of tube insertion, different operators, stages of disease) that might have contributed to this variability.

For some outcomes, the pooled values reported in text and figures of this review differed substantially from one another. It is not clear why this was the case.

Given the inconsistency and poor quality of included evidence and inconsistent reporting of results, the results of the review may not be reliable.

Implications of the review for practice and research

Practice: The authors stated that baseline nutritional assessment should be carried out by a dietitian for patients who receive tubes before treatment or at the time of diagnosis, taking into consideration the estimated time of tube feeding and psychological factors. Decisions should be made on an individual basis.

Research: The authors stated a need for larger scale methodologically rigorous studies that specify the operation technique and the background and experience of the professionals involved.

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