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[Intervention Review]

# Percutaneous endoscopic gastrostomy versus nasogastric tube feeding for adults with swallowing disturbances

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## ABSTRACT

### Background

A number of conditions compromise the passage of food along the digestive tract. Nasogastric tube (NGT) feeding is a classic, time-proven technique, although its prolonged use can lead to complications such as lesions to the nasal wing, chronic sinusitis, gastro-oesophageal reflux, and aspiration pneumonia. Another method of infusion, percutaneous endoscopy gastrostomy (PEG), is generally used when there is a need for enteral nutrition for a longer time period. There is a high demand for PEG in patients with swallowing disorders, although there is no consistent evidence about its effectiveness and safety as compared to NGT.

### Objectives

To evaluate the effectiveness and safety of PEG as compared to NGT for adults with swallowing disturbances, by updating our previous Cochrane review.

### Search methods

We searched *The Cochrane Library*, MEDLINE, EMBASE, and LILACS from inception to September 2011, as well as contacting main authors in the subject area. There was no language restriction in the search.

### Selection criteria

We planned to include randomised controlled trials comparing PEG versus NGT for adults with swallowing disturbances or dysphagia and indications for nutritional support, with any underlying diseases. The primary outcome was intervention failure (e.g. feeding interruption, blocking or leakage of the tube, no adherence to treatment).

### Data collection and analysis

Review authors performed selection, data extraction and evaluation of methodological quality of studies. For dichotomous and continuous variables, we used risk ratio (RR) and mean difference (MD), respectively with the random-effects statistical model and 95% confidence interval (CI). We assumed statistical heterogeneity when  $I^2 > 50\%$ .

### Main results

We included nine randomised controlled studies. We did not identify new eligible studies published after our previous review literature search date (August 2009). Intervention failure occurred in 19/156 patients in the PEG group and 63/158 patients in the NGT group (RR 0.24,

95%CI 0.08 to 0.76,  $P = 0.01$ ) in favour of PEG. There was no statistically significant difference between comparison groups in complications (RR 1.00, 95%CI 0.91 to 1.11,  $P = 0.93$ ).

### Authors' conclusions

PEG was associated with a lower probability of intervention failure, suggesting the endoscopic procedure is more effective and safe as compared to NGT. There is no significant difference of mortality rates between comparison groups, and pneumonia irrespective of underlying disease (medical diagnosis). Future studies should include previously planned and executed follow-up periods, the gastrostomy technique, and the experience of the professionals to allow more detailed subgroup analysis.

## PLAIN LANGUAGE SUMMARY

### Nutritional support for adults with swallowing difficulties

A number of conditions compromise the transport of food along the digestive tract. Patients with swallowing disturbances can develop low nutritional status, which affects their recovery from illness, surgery, and injury. Conditions associated with swallowing disorders include neurological diseases, dementia, cancers of the head and neck, amyotrophic lateral sclerosis, physical obstruction, and dysphagia from stroke. Nasogastric tube feeding is a time proven technique to provide nutritional support; the tube can be inserted by a nurse. Percutaneous endoscopy gastrostomy (PEG) involves a feeding tube inserted directly into the stomach through the abdomen and is particularly useful when enteral nutrition is needed for a length of time. Prolonged use of a nasal tube can lead to complications such as damage to the nose and larynx, chronic sinusitis, gastro-oesophageal reflux, and aspirative pneumonia.

We obtained updated evidence for this review from nine controlled studies comparing a nasogastric tube with PEG in a total of 686 patients. Seven studies measured feeding interruption, blocking or leakage of the feeding tube or lack of adherence to treatment in 314 patients randomised to either a nasal gastric tube or PEG. The studies showed a higher probability of treatment failure and development of pneumonia with a nasal gastric tube. The number of deaths was no different with the two methods; nor was the overall occurrence of complications. Possible limitations of this review include the small number of participants in the majority of studies, explained by the high cost of PEG and requirements for endoscopy in its use, the operational challenges to accomplish a clinical trial in this area and the different length of follow-up of the patients in the studies (from no more than four weeks to six months).