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Best evidence topic

# Oral feeding following laryngectomy: Early or delayed?

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ABSTRACT

A best evidence topic in otolaryngology was written according to a structured protocol. The question addressed was: In patients having undergone laryngectomy, does the timing of oral feeding lead to a higher post-operative complication rate? 172 papers were found using the described protocol. Five of these papers were chosen to describe the best evidence to address the question. The authors, date and country of publication, study type, patient group, outcomes and key results of these papers have been represented in a table. All of these studies demonstrate that initiation of early feeding in patients post-laryngectomy provides no increased risk of development of pharyngocutaneous fistulas than delayed initiation of feeding. One study demonstrated a statistically significant reduction in hospitalisation of patients after early post-operative feeding. Therefore despite problems with study design, the literature concludes that early feeding is as safe as delayed feeding and may reduce the hospitalisation period. Further powered studies are required before recommendations on explicit inclusion criteria and feeding regimen details can be made.



## 1. Introduction

A best evidence topic was constructed according to a structured protocol, as described in the International Journal of Surgery [1].

## 2. Clinical scenario

A 58-year-old man has undergone laryngectomy for stage IV carcinoma of the larynx. The operation was performed without complication and he has been taken back to the specialist ward from recovery. In his first post-operative week the patient becomes proficient at his tracheostomy care and both himself and nursing staff are enquiring whether oral feeding can commence, with the patient anxious to return home at the earliest safe opportunity. Senior clinical staff prefer to wait until the second week of recovery until commencing feeding due to the perceived risk of complications, such as a pharyngocutaneous fistula. You decide to assess the literature to resolve this question.

## 3. Three-part question

In [patients after laryngectomy], does the [timing of oral feeding] lead to a [higher post-operative complication rate]?

## 4. Search strategy

Search strategy using Medline from inception to June 2013: (((pharyngo-laryngectomy) OR (pharyngolaryngectomy) OR (laryngectomy) OR (pharyngectomy)) AND ((feeding) OR (enteral))).ti,ab. Titles and abstracts were scrutinized by two independent reviewers and full texts of related articles were retrieved. Only English language articles analysing the direct comparison between early feeding and delayed feeding in patients who have undergone laryngectomy were selected. Reference lists of key articles were cross-referenced to identify additional articles.

## 5. Search outcome

A total of 172 papers were identified using the reported search strategy. From these, 155 publications were excluded following screening of titles and abstracts. Full text reviews of the remaining 17 articles were performed with 12 subsequently excluded: 4 articles were retrospective case series with/without a lack of control group and 4 articles were non-English language. The remaining 4 exclusions were inappropriate for inclusion due to either the design of the study (e.g. questionnaire-based ($n = 1$), technical review ($n = 1$) or correspondence ($n = 1$)) or due to inclusion of partial laryngectomy only ($n = 1$). The remaining 5 articles directly compared early and delayed feeding and therefore were found to

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represent the best available evidence to answer the clinical question.

## 6. Results

3 randomized controlled trials, 1 retrospective and 1 prospective observational study were included in the BET article. These are tabulated in Table 1.

## 7. Discussion

Total laryngectomy remains an important operation in the head and neck surgeon's armamentarium against laryngeal cancer, whether for salvage surgery, large volume tumours or functional reasons [2]. However with thorough consideration of the consequences to the patient, any interventions to improve the patient's recovery and quality of life in the post-operative period, as well as shortening their time to discharge home, should be examined. The protracted time to oral feeding after laryngectomy has become an unwritten rule in surgery since the 1920s [3] despite a lack of evidence on the risk of earlier introduction other than anecdotal. Indeed some authors even recommended a longer delay than the traditional 7–10 days until initiating feeding [4] due to the feared complication of pharyngocuatneous fistula, which can significantly impact on a patient's recovery. The oft cited study [5] that demonstrated a high complication rate actually examined nasogastric feeding versus intravenous nutrition, together with suction drainage and therefore early oral feeding was not directly analysed. Most laryngectomy patients begin swallowing saliva within the first twenty-four hours postoperatively – this is as potentially harmful as clear fluids, and is alluded to in a number of the studies reviewed here.

Aswani et al. [6] undertook a prospective cohort study comparing early feeding with conventional delayed feeding of patients following laryngectomy, with or without partial pharyngectomy. A group of 40 patients were included in the prospective early feeding group and subsequently compared to a retrospective historical control group of 39 patients who received delayed feeding of more than 7 days post-operatively. Details on the operative technique and the early feeding regimen are well

**Table 1**
Summary of all articles comparing evidence for early and delayed feeding post laryngectomy. Information on each study, key outcome measures and a brief critique are shown.

| Author, date and country, study type (level of evidence) | Patient group [days post laryngectomy] | Outcomes [PC:Pharyngo-cutaneous] | Key results | Comment |
|---|---|---|---|---|
| Aswani et al. 2009<br>J Laryngol Otol.<br>South Africa<br>Historically controlled study<br>(Level evidence 4) | 79 patients in total<br>Early feeding [day 2]: $n = 40$<br>• Prospective<br><br>Delayed feeding [day 7]: $n = 39$<br>• Historical controls | PC fistulae<br>Median hospital stay<br>Median fistula diagnosis day | 20% early vs. 15.4% delayed feeding ($p = 0.825$)<br>13 days early vs 14 days delayed feeding ($p = 0.153$)<br>Day 11 early vs day 14 delayed feeding ($p = 0.389$) | • No significant differences in outcomes between groups<br>• No associations between other potential risk factors<br>• Unmatched, historical controls with potential for selection bias<br>• Basic meta-analysis included but lacks weighting or testing of heterogeneity between studies |
| Medina et al., 2001<br>Laryngoscope<br>USA<br>Prospective cohort study<br>(Level evidence 3) | 73 patients in total<br>• Part 1: $n = 38$ early feeding [<48 h] ($n = 20$) vs delayed feeding [day 7–10] ($n = 18$).<br>• Part 2: $n = 35$ additional cohort of early feeding [<48 h] | PC fistulae<br>Pharyngeal stricture<br>Hospital stay | Combined results: 3.6% early vs 11% delayed feeding ($p > 0.4$)<br>5.5% early vs 11% delayed feeding ($p > 0.4$)<br>7 days early vs 11.8 days delayed feeding ($p < 0.0001$) | • No increased complications after early feeding with benefits to patient comfort and reduced hospital stay<br>• Haematological inclusion criteria likely to exclude higher risk patients<br>• Explicit surgical technique with leak test<br>• Lack of randomisation (sequential design) leading to non-matched groups<br>• Long delay until part 2 cohort and lack of second control group raises concerns about direct comparisons |
| Prasad et al., 2006<br>Ann Otol Rhinol Laryngol.<br>India<br>Prospective cohort study<br>(Level evidence 3) | 78 patients in total<br>• Early feeding: $n = 40$ [day 2]<br>• Delayed feeding: $n = 38$ [day 7–10] | PC fistulae formation | Patients: 1 vs 2 (2.5% vs 5.2%) | • Heterogenous collection of procedures although reasonably well matched between study groups<br>• Sequential patient selection<br>• Haematological inclusion criteria likely to exclude higher risk patients<br>• Explicit exclusion criteria including intra-operative observations (e.g. mucosa for reconstruction (<2.5 cm))<br>• Post-operative reflux prohylaxis<br>• No statistical analysis |
| Rodríguez-Cuevas et al., 1995<br>Eur Arch Otorhinolaryngol.<br>Mexico<br>Prospective randomised trial<br>(Level evidence 3) | 35 patients in total<br>• Early feeding:$n = 18$ [day 7]<br>• Delayed feeding:$n = 17$ [day 14] | PC fistulae<br>Median hospital stay | 5.7% early vs 0 delayed feeding ($p = 0.49$)<br>7 days early vs 14 days delayed feeding ($p = 0.01$) | • No significant differences in complications between groups<br>• Early feeding reduces hospital stay<br>• Well matched patient groups but no description of randomisation method<br>• Small sample size with limited power<br>• Timing of feeds markedly different from other reported studies. |
| Seven et al., 2003<br>Laryngoscope<br>Turkey<br>Randomised controlled Trial<br>(Level evidence 2) | 65 patients in total<br>• Early feeding: $n = 32$ [day 1]<br>• Delayed feeding: $n = 33$ [>day 7] | PC fistulae<br>Mean hospital stay | 6.2% early vs 9% delayed feeding<br>7.6 days vs 8.2 days (not significant) | • No significant difference in PC fistula development and hospital stay between the groups<br>• Only patients suitable for tracheoesophageal puncture included<br>• Well-matched and randomised patient groups<br>• However post-surgical allocation to feeding groups could lead to selection bias |