

Critically Appraised Topic (CAT)

This document summarises information gained from several Critically Appraised Papers (CAPs) on one topic. The relevant CAPs should be attached to this document

CLINICAL BOTTOM LINE: Limited and low level evidence indicates that the presence of a tracheostomy tube alone (cuff deflated, with no occlusion via cap or speaking valve) has no causal effect on the parameters of swallow function investigated. It is suggested that the patients underlying diagnoses and co morbidities are the cause of any apparent dysphagia. It is important to note that the literature critiqued indicates mixed results as to whether the manipulation of the tube (e.g. cuff up or down) and the presence of a speaking valve elevates the risk of aspiration. However, exploration of this issue was not within the scope of this CAT.

Background and Objectives: Anecdotally it is thought that the presence of a tracheostomy tube alters swallow function therefore increasing the risk of aspiration. However there is little evidence to support this claim. A thorough literature search and critical appraisal of the evidence aims to determine the impact of a tracheostomy tube on swallow function.

Clinical Question [patient/problem, intervention, (comparison), outcome]:
Does the presence of a tracheostomy tube impact swallow function?

Selection Criteria:

CAPs chosen addressed swallow function and the presence of a tracheostomy tube. One article was NH & MRC Level I – Systematic review (note: all papers reviewed were not RCTs), 4 articles were Level III, and 3 articles were Level IV evidence.

Results: All studies used objective swallow measures.

- Two studies reported that aspiration status did not change with and without tracheostomy tube insitu in 95% of cases (Leder & Ross 2000, Donzelli et al. 2005).
- One study reported 88% of participants exhibited either the same aspiration status or resolved aspiration pre versus post tracheostomy (Leder & Ross 2010).
- One study reported that where participants demonstrated aspiration, this was present in all conditions including trache tube present or absent and open or closed stoma post trache tube removal and trache tube removed with stoma covered (Leder et al, 2005).
- One article found no significant difference ($p>0.05$) in Penetration-Aspiration Scale (PAS), Swallow initiation Time (SIT) or White-out Time (WOT) based on tracheostomy tube presence or occlusion status (Brady et al. 2009).
- One study found no association between tracheostomy tube placement and the extent of aspiration or penetration in patients mostly with diseases of a cerebral origin. However there were methodological limitations of this study (Kang et al 2012).

Critically Appraised Topic (CAT) cont.

Results:

- One article found no significant difference ($p > 0.05$) in larynx to hyoid bone approximation or hyoid bone elevation, based on the presence of a tracheostomy tube, tracheostomy status or tube capping. No aspiration occurred under any condition (Terk et al. 2007).
- The systematic review reported varied results in regards to the impact of a tracheostomy tube on swallow function. Outcome measure was aspiration. (McMahon-Lesic 2003)

References:

- Brady, S. L., Wesling, M., & Donzelli, J. (2009) Pilot Data on Swallow Function in Nondysphagic Patients Requiring a Tracheostomy Tube. *Int. Journal of Otolaryngology* Vol 2009, Article ID 610849
- Donzelli, J., Brady, S., Wesling, M., & Theisen, M. (2005). Effects of the removal of the tracheostomy tube on swallowing during the fiberoptic endoscopic exam of the swallow (FEES). *Dysphagia*. 20: 283-289.
- Kang JY, Choi, KH, Yun, GJ, Kim, MY, Ryu JS. Does removal of tracheostomy affect dysphagia? A kinematic analysis. *Dysphagia*. 2012.
- Leder, S., Joe, J., Ross, D., Coelho, D., Mendes, J. (2005). Presence of a tracheostomy tube and aspiration status in early, postsurgical head and neck cancer patients. *Head & Neck*, September.
- Leder, S & Ross, D. (2010) Confirmation of no causal relationship between tracheostomy and aspiration status: A direct replication study. *Dysphagia* 25, 35-39.
- Leder, S. & Ross, D (2000) Investigation of the causal relationship between tracheostomy and aspiration in the acute care setting. *The Laryngoscope* 110:641-644.
- McMahon-Lesic (2003). Does the presence of a tracheostomy tube impede swallowing? A critical appraisal of the evidence. *Asia Pacific Journal of Speech, Language and Hearing*. Vol 8, 105-115.
- Terk, Alyssa R. Leder, Steven B. Burrell, Morton I (2007) Hyoid Bone and Laryngeal Movement dependent upon presence of a tracheostomy tube. *Dysphagia* 22:89-93

**Appraised By: NSW
Tracheostomy Discussion Group
Clinical Group:**

**Date: 20/12/2010
Date Reviewed: May 2013**