

13 years of prosthetic voice rehabilitation in the Netherlands

Petersen JF, Lansaat L, Timmermans AJ, van der Noort V, Hilgers FJM, van den Brekel MWM. Postlaryngectomy prosthetic voice rehabilitation outcomes in a consecutive cohort of 232 patients over a 13-year period. *Head Neck*. [Accepted for publication June 2018]

A retrospective cohort study was performed at the Netherlands Cancer Institute with the aim to evaluate voice rehabilitation in a cohort of 232 patients, laryngectomized between 2000-2012. Main outcome measure was median device lifetime of various voice prostheses (VPs). The influence of several factors on device life were assessed, including patient and treatment characteristics, as well as indications for device-related and tracheoesophageal puncture tract (TEP)-related VP replacement. The median device lifetime of the standard Provox2 (64 days) and Vega (68 days) was significantly shorter than that of the problem solving ActiValve Light (143 days) and Strong (191 days). The median device life of the standard VPs, excluding the

patients requiring an ActiValve, was significantly longer (91 days). Transprosthetic leakage was indicated for 70% of the VP replacements. Almost half of the patients (48%) experienced TEP-related problems, and this concerned 12% of all VP replacements during the study period. Salvage total laryngectomy (TL) and TL for a dysfunctional larynx were associated with a shorter device lifetime compared to primary TL. A longer driving time to the hospital was associated with a significant longer device lifetime. The shorter device life found in this study, compared to the historical cohort (Op de Coul et al. 2000), could be explained by the increased number of salvage TL as well as the ease of replacement.

Provox ActiValve and Biofilm formation

Galli J, Calo' L, Meucci D, Giuliani M, Lucidi D, Paludetti G, Torelli R, Sanguinetti M, Parrilla C. Biofilm in voice prosthesis: a prospective cohort study and laboratory tests using sonication and SEM analysis. *Clin Otolaryngol*. 2018 May 16. [Epub ahead of print]

The aim of this study was to compare the effect of biofilm on medical grade silicone derived from Provox 2 and the teflon-like material derived from Provox ActiValve. The authors first conducted a prospective cohort study analyzing biofilm on Provox 2 prostheses that had been removed from patients due to device failure (n=15, mean device life 4.4 months). The sonication process used for culture examination showed colonization by mixed bacterial flora (Staphylococci 13%, Streptococci 9%, and H. influenzae 5%) and by yeasts (Candida albicans 12%). In the laboratory based second part of the study, new (unused) Provox 2 and Provox ActiValve pros-

theses were artificially colonized by Candida albicans. Examination using a scanning electron microscope revealed a different distribution of biofilm layers in Provox ActiValve (22.56%) compared to Provox 2 (56.82%). The authors concluded that the teflon-like material limits both the physical and chemical effects of biofilm colonization. This confirms that Provox ActiValve is less subject to in-vitro colonization by Candida, has a higher clinical resistance to biofilm and a longer lifespan.



Primary vs Secondary TEP

Luu K, Chang BA, Valenzuela D, Anderson D. Primary versus secondary tracheoesophageal puncture for voice rehabilitation in laryngectomy patients: a systematic review. *Clin Otolaryngol.* 2018 May 16. [Epub ahead of print]

The objective of the present study was to evaluate differences in outcomes between primary versus secondary tracheoesophageal puncture (TEP) in terms of success rate, voice outcomes and major complication rates. Evaluation through a systematic review of current English literature identified 82 full text papers comparing primary and secondary TEP outcomes. Of these papers, 11 retrospective cohort studies with a total of 722 participating patients were included for review. Success rates and voice outcomes were overall similar between primary and secondary TEP,

although two studies suggested that success rate was higher with primary TEP. Complication rates were divided into TEP site related, infectious, and stenosis. No difference between primary and secondary TEP was found in all but one study which showed a higher rate of pharyngocutaneous fistula in the primary TEP group in salvage laryngectomy patients. The authors concluded that both primary and secondary TEP are feasible options for voice rehabilitation, with similar success rates and voice outcomes.

Psychosocial factors and communication outcome

Eadie T, Faust L, Bolt S, Kapsner-Smith M, Pompon RH, Baylor C, Futran N, Méndez E. Role of Psychosocial Factors on Communicative Participation among Survivors of Head and Neck Cancer. *Otolaryngol Head Neck Surg.* 2018 March. [Epub ahead of print]

In this cross-sectional study the contribution of psychosocial factors to communicative participation among adult survivors of head and neck cancer (HNC) was examined. Eighty-eight adult survivors of HNC completed questionnaires and patient-reported outcome measures regarding perceived social support, depression and resilience to communicative participation. Self-rated speech severity, cognitive function, laryngectomy status, and time since diagnosis together significantly predicted 46.1% of the variance in communicative participation. However, psychosocial factors such as perceived social support, depression, resilience, and interactions together accounted for an additional 12.1% of the unique variance. The authors concluded



that these results demonstrate that beyond voice and speech severity, psychosocial factors are important considerations when assessing communication outcomes among survivors of HNC.

Esophageal dysmotility after TL

Zhang T, Maclean J, Szczesniak M, Bertrand PP, Quon H, Tsang RK, Wu PI, Graham P, Cook IJ. Esophageal Dysmotility in Patients following Total Laryngectomy. *Otolaryngol Head Neck Surg.* 2018 Feb;158(2):323-330.

Esophageal high-resolution manometry (HRM) was performed in 23 laryngectomized patients to investigate the occurrence and characteristics of possible esophageal dysmotility, and the possible relationship with tracheoesophageal (TE) prosthesis dysfunction. The HRM showed that esophageal dysmotility was a relatively common phenomenon, with only one patient having a completely normal esophageal motility. Dysmotility patterns included achalasia, esophagogastric junction outflow obstruction, diffuse esophageal spasm, and other major (30%) and minor (50%) peristaltic disorders. No association was found between dysmotility and poor quality of the tracheoesophageal voice, but TE puncture leakage might be associated with poor esophageal clearance. The authors



recommend to consider esophageal dysmotility in laryngectomized patients with persisting dysphagia or leaking TE puncture.

Tracheoesophageal whispering

Searl J. Whispering by Individuals Using Tracheoesophageal Speech. *J Voice.* 2018 Jan;32(1):127.e1-127.e13.

The authors wanted to evaluate differences between whispered and spoken sentences produced by individuals using tracheoesophageal (TE) speech compared with individuals with a larynx. Comparisons were based on listener judgments, visual-perceptual assessment of spectrograms, and measures of the acoustic signal. The auditory-perceptual listening test indicated that about one third (29%) of the participants using TE speech could generate sentences in a whisper, while most others (71%) were perceived to be speaking during their whispering attempts. The acoustic

measures showed that TE speakers made larger changes in temporal aspects of the sentences when attempting to whisper, while the laryngeal speakers made larger changes in dB sound pressure levels, suggesting that the TE participants alter their speech differently than the laryngeal participants. The authors concluded that whispering is possible for some TE speakers and might be considered a therapeutic target if it is of importance to an individual.