

Preventing the formation of mucus plugs after total laryngectomy

Ebersole B, Moran K, Gou J, Ridge J, Schiech L, Liu JC, et al. Heat and moisture exchanger cassettes: Results of a quality/safety initiative to reduce postoperative mucus plugging after total laryngectomy. *Head Neck*. 2020 May 23 [Epub ahead of print].

An adverse effect of insufficient air moisturization in total laryngectomy (TL) patients is the formation of mucus plugs, which can cause severe obstructions to the airways. This retrospective comparative cohort study compares the occurrence of mucus plugs between TL patients with external tracheal humidification (ETH; n=12) and patients using heat and moisture exchangers (HMEs; n=28) during the postoperative hospitalization period. A secondary aim of the study was to investigate whether HME use in the immediate postoperative period improved long-term patient adherence to HME use.

The results showed a significantly lower occurrence of mucus plugs in patients using HMEs (Provox XtraMoist) compared with those having ETH (0.13 and 0.38 per 10 inpatient days,

respectively, $P = .02$). There was also a significantly lower proportion of patients with one or more mucus plugs among the HME users compared to ETH ($p=0.01$). Moreover, the long-term adherence to HME use (assessed at 1-year post-surgery appointment) was higher among patients using HMEs (90%) compared to ETH (70%) during the postoperative hospitalization, however, the difference was not significant ($p=0.3$).

The findings indicate that HMEs are more efficient than ETH in preventing the incidence of mucus plugs following total laryngectomy and the authors therefore recommend that hospitals consider using HMEs in the immediate postoperative care of total laryngectomy patients.

The relationship of functional and participation issues with patient QoL

Leemans M, van Sluis KE, Van Son R, Van den Brekel MM. Interaction of functional and participation issues on quality of life after total laryngectomy. *Laryngoscope Investig Otolaryngol*. 2020 [Epub ahead of print].

This study is based on questionnaire data from 1705 total laryngectomy (TL) patients in 9 countries, which was collected by ReD Associates and the Netherlands Cancer Institute (NKI). The questionnaire included 26 questions which covered demographics, use of medical products, health, independence and experienced functional and participation issues.

The data was used to analyze the relationships between different themes of functional and participation issues (e.g. pulmonary issues, social issues, esthetics issues) with patients' demographics (e.g. sex, age, time since TL, education level and country of residence) and with patients' reported quality of life (r-QoL). The analyses showed that sex, age and time since TL was associated with most themes of functional and participation issues, and more issues were reported by women, younger patients (<60 years) and patients who had a TL

within the last two years. Moreover, the study showed that r-QoL was particularly influenced by issues related to the themes "experienced limitations in daily activities" and "avoiding social activities". However, it was also observed that pulmonary issues were correlated with most of the other functional and participation issue themes, indicating that pulmonary issues are an underlying cause of many limitations experienced by TL patients.



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Treating the dysfunctional larynx with laryngectomy

Farlow JL, Birkeland AC, Hardenbergh A, Lyden T, Brenner JC, Shuman AG, et al. Speech and swallowing outcomes after laryngectomy for the dysfunctional irradiated larynx. *Eur Arch Otorhinolaryngol.* 2020 Jan 27 [Epub ahead of print].

Long-term radiation therapy of laryngeal squamous cell cancer can cause a dysfunctional larynx resulting in impaired voice, recurrent aspiration pneumonia, and dependence on both tracheostomy and tube feeding. This study investigates functional outcomes related to speech and swallowing of 43 patients (70% males, mean age of 61 years) that underwent laryngectomy as a treatment for dysfunctional larynx caused by radiotherapy.

The results showed a significant decrease in the number of patients that required enteral tube feeding at 1-year follow-up after laryngectomy compared with 1-year prior to surgery (31 and 81% respectively, $p=0.0003$). It was also observed that among patients that had reconstructive surgery using free tissue transfer, fewer required tube feeding compared with

those having locoregional flaps, however, the association was not significant in a multivariable regression model. Furthermore, 81% of the patients managed functional tracheoesophageal speech at the 1-year check-up and there was a positive association between successful speech and having cricopharyngeal myotomy at the time of laryngectomy ($p=0.04$), however, the authors did not present any information regarding the patients' speech capacity prior to surgery for comparison.

The authors discuss that although laryngectomy may improve some aspects of quality of life for patients with dysfunctional larynx, the procedure also involves considerable risks and therefore requires careful consideration and patient counseling.

A new protocol for olfactory perception rehabilitation

Longobardi Y, Parrilla C, Di Cintio G, De Corso E, Marena ME, Mari G, et al. Olfactory perception rehabilitation after total laryngectomy (OPRAT): proposal of a new protocol based on training of sensory perception skills. *Eur Arch Otorhinolaryngol.* 2020 Mar 21 [Epub ahead of print].

Loss of smell and taste following a total laryngectomy can have a large impact on patients' quality of life and has been linked to depression. This article presents a new protocol for olfactory rehabilitation in total laryngectomy patients based on the Nasal Airflow Inducing Maneuver (NAIM) method presented by Hilgers et al. in 2000. The new protocol, which compared to NAIM includes more sessions (5 sessions, one session/week) and odors, and follows all levels of sensory perception, was evaluated on 17 patients. Changes in olfactory, chemosensory complaints and quality of life (QoL; University of Washington Questionnaire, version 4) between baseline assessment (pre-rehabilitation) and at different time points after olfactory rehabilitation was evaluated and compared to a control group of 16 patients which did not receive any treatment. The results showed a significant increase in average olfactory identification score immediately after

rehabilitation. The proportion of patients that could be categorized as smellers increased from 36% at baseline to 100% after rehabilitation. At 10-month follow-up, the rehabilitation group had significantly higher identification threshold than the control group. Moreover, the chemosensory complaints decreased progressively after rehabilitation and the average total complaint scores (smell and taste) obtained 3, 6, and 10 months after the end of treatment were significantly lower than that obtained at baseline. Finally, QoL scores differed between groups in post-treatment assessments only for physical subscales which improved progressively over time following rehabilitation. The success rate of 100% for olfactory rehabilitation observed in this study is higher than what has been achieved in other studies, and the effect was also better maintained over time, suggesting that described protocol is more efficient than previous methods.

Can physical activity help prevent laryngeal cancer?

Nocini R, Sanchis-Gomar F, Lippi G. Physical activity and laryngeal cancer. *Ann Transl Med.* 2019 Dec;7(23):791.

There is emerging evidence that physical activity (PA) may prevent head and neck cancer in general but whether PA influences development of laryngeal cancer specifically is not clear. This review investigates the relationship between physical activity and laryngeal carcinogenesis based on published data from 6 epidemiological studies.

The article demonstrates an inconsistency in results between studies; four studies showed an association/trend between PA and reduced risk of laryngeal cancer (16-50%) but it was only significant for two of the studies. In contrast, two studies showed no trend between PA and decreased risk of laryngeal cancer; instead one of the studies showed increased risk of laryngeal cancer with high physical activity. The authors also discuss potential mechanism that could mediate an influence of PA on the development of laryngeal cancer such as occurrence of metabolic syndrome, synergy between

low PA and smoking, inflammation status and risk of gastroesophageal reflux disease.

The authors conclude that although the impact of PA on laryngectomy cancer is not straightforward, the promotion of an active life style with moderate exercise may have an advantageous influence on both risk of laryngeal cancer and quality of life of cancer survivors.



Maintaining swallowing function and QoL over time

Karsten RT, van der Molen L, Hamming-Vrieze O, van Son R, Hilgers FJM, van den Brekel MWM, et al. Long-term swallowing, trismus, and speech outcomes after combined chemoradiotherapy and preventive rehabilitation for head and neck cancer; 10-year plus update. *Head Neck.* 2020 Feb 29 [Epub ahead of print].

Chemoradiotherapy (CRT) treatment of head and neck cancer can cause toxicity that damages structures involved in swallowing. In this study the long-term (10 years) effects of preventive swallowing rehabilitation on functional outcomes and quality of life (QoL) was assessed and compared to results from a previous assessment of the same patient at 6-years after rehabilitation. The study included 55 patients at baseline who underwent CRT and preventive swallowing rehabilitation involving exercises performed with or without the TheraBite Jaw Motion Rehabilitation System (Atos Medical). At the 6- and 10-year follow-ups, patients (n=22 and 14, respectively) were assessed for functional outcomes and QoL.

The results showed a minor increase in pharyngeal dysphagia between the two follow-ups,

however, none of the patients required tube-feeding or modified diet. Although no patients suffered from trismus, median mouth opening decreased from 51 to 41 mm between assessments and there was also a small decrease in patients' voice quality. It was also observed that although there was an increase in problems related to swallowing (assessed by the Dutch version of the Swallowing Quality-of-Life questionnaire, SWAL-QoL), the general QoL improved between the two follow-ups. Overall, the results indicate that swallowing function and QoL is relatively well maintained over a 10-year period among head and neck cancer patients that have undergone CRT together with preventive swallowing rehabilitation.