Periprosthetic leakage and Gastroesophageal reflux (GER)


Periprosthetic leakage because of an enlargement of the tracheoesophageal fistula might result in loss of phonation ability, and can lead to life-threatening aspiration. One of the potential causes for an enlargement of the tracheoesophageal fistula identified is pathological gastroesophageal reflux (GER). In this study it was investigated whether epithelial–mesenchymal transition, a process in which cells lose epithelial and gain mesenchymal characteristics, is correlated with the severity of reflux and the presence or absence of fistula enlargement. The epithelial–mesenchymal transition in biopsies from 44 patients with/without fistula enlargement were assessed. A correlation was found between epithelial–mesenchymal transition and the severity of GER and the presence of fistula enlargement. Treatment of the epithelial–mesenchymal transition by rigorous anti-reflux therapy seems successful, but only in early stages.

Periprosthetic leakage or severe fistula enlargement is present in approximately 30% of patients with voice prostheses within the first 4 years. Recent studies have demonstrated the important role of gastroesophageal reflux (GER) in this process, as this can lead to disturbance of the intercellular tight junctions. In this study biopsies of 44 patients were examined and these patients underwent 24 h pH monitoring. Patients with periprosthetic leakage showed a loss of membrane bound E-cadherin and β-catenin with an up-regulation of vimentin expression, depending on the severity of inflammation in the fistula tissue. The authors concluded that epithelial mesenchymal transition (EMT) plays a very important role in the development of fistula enlargement after total laryngectomy. Anti-reflux treatment could resolve EMT in patients with mild or no leakage. Patients without reduction of the fistula after anti-reflux treatment showed no reversal of EMT, which could explain treatment resistant fistula enlargement.
Biofilm and Provox ActiValve


Micro biofilm formation on the valve of a voice prosthesis is the main reason for transprosthetic leakage. It causes failure of the valve mechanism and sometimes also blockage and/or an increased airflow resistance. As the Provox ActiValve valve is made of fluoroplastic, it should be insusceptible to destruction by Candida-species. Thirty-three consecutive dysfunctional Provox ActiValve prostheses were collected and assessed with Illumina paired-end sequencing (IPES), fluorescence in situ hybridization (FISH) and confocal laser scanning microscopy (CLSM). Microbial diversity showed to be significantly lower on fluoroplastic. The authors concluded that the fluoroplastic material of Provox ActiValve appears insusceptible to destruction by Candida species, which could help improve the lifespan of voice prostheses.

Voice prosthesis and QoL


This study investigated the impact of tracheoesophageal puncture on quality of life, depression, self-esteem, anxiety and sexual function in laryngectomies. Thirty patients were asked to fill out WHO Quality of Life-BREF, Beck Depression Inventory, Beck Anxiety Inventory, Rosenberg Self-Esteem Scale, Arizona Sexual Experience Scale forms before and 3 months after the insertion of a Provox 1 voice prosthesis. The authors found that indwelling voice prostheses significantly improved quality of life and self-esteem, and decreased symptoms of depression and anxiety. Sexual dysfunction did not improve after surgery.
(Cost-)effectiveness of TheraBite


This study estimates the cost-effectiveness of the TheraBite device (TB) as part of the “Preventive Exercise Program” (PREP) compared to Speech Language Pathology (SLP) sessions as part of “Usual Care” (US) in patients with advanced head and neck cancer. The total health care costs per patient were estimated to amount to €5,129 for the TB strategy and €6,915 for the SLP strategy. Based on the current data, the TB strategy yielded more quality-adjusted life-years (1.28) compared to the SLP strategy (1.24).

Thus, the preventive use of swallowing and passive motion exercises with the TheraBite jaw mobilization device in a preventive exercise program for patients with advanced head and neck cancer is expected to be less costly and more effective.


This study compared 2 different jaw exercise devices by measuring improvement in mouth opening and patient-reported symptoms in patients with head and neck cancer with trismus. Fifty patients were randomized to jaw exercises with either the TheraBite or Engström jaw device in a 10-week exercise program. They found that structured intervention with a jaw exercise device effectively improved mouth opening capacity, led to pain relief, and less trismus-related symptoms in patients with head and neck cancer with trismus after radiation therapy. There was no statistically significant difference in objectively measured mouth opening (MIO) or in patient-reported symptoms between the 2 different jaw exercise devices used in this study. Both groups improved their mouth opening, 7.2 mm (22.9%) and 5.5 mm (17.6%) for TheraBite and Engström, respectively. Compliance to exercise and increase in mouth opening was highest during the 4 first weeks.