Olfactory rehabilitation with the Nasal Airflow-Inducing Maneuver (NAIM) after total laryngectomy - a longterm follow-up study

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Introduction
Total laryngectomy results in deterioration of pulmonary function and major decrease in sense of smell. This may have serious consequences to the patients’ daily life, as the patients then are unable to detect wasted food, smoke or leaking gas. This deterioration is a consequence of the permanent dis-connection of the upper and lower airways. Some patients have tried to improve smell by using a so-called larynx bypass, in which airflow from the stoma is directed to the mouth, creating an artificial airflow into the nose. However an unpractical method for usage in every day life. Recently a patient-friendly method that can restore the sense of smell (and taste) in laryngectomized patients has been developed by Hilgers and his co-workers. This olfaction rehabilitation technique, Nasal Airflow-Inducing Maneuver (NAIM) or “polite yawning technique” was tested in a Swedish study and the sense of smell was improved in 13 (72%) of these 18 patients with anosmia or hyposmia after 6-weeks olfactory rehabilitation with the NAIM technique.

Larynxbypass
An artificial airflow from the stoma into the mouth and nose, stimulating the olfaction receptors

Changes in olfactory capacity in preinventory smellers (A) and nonsmellers (B) across time based on Scandinavian Odor-Identification Test (SOIT)

A.

B.

NAIM technique with watermanometer for visual feedback

Material and methods

Patients: Twenty-four patients, 21 males and 3 females with mean age 68 years who underwent laryngectomy at least 5 months prior intervention

Intervention: Speech therapists trained patients in the NAIM technique: simultaneous lowering of the jaw, floor of mouth, tongue, base of tongue and soft palate while the lips are closed. Three interventions were given within 6 weeks and were followed up at 6 and 12 months after the initial intervention.

Main outcome measure: Olfactory testing with semistructured interview, an Olfaction, Taste and Appetite (QOTA) questionnaire and the Scandinavian Odor-Identification Test (SOIT). Quality of life was measured with EORTC questionnaires. The patients were categorized as smellers or nonsmellers based on the SOIT results.

Scandinavian Odor-Identification Test (SOIT)
Olfactory acuity was tested with the SOIT before and after treatment and at follow-up. The test consists of 16 different odors with 4 alternative responses per odor. The test has age and gender related cut-off scores and divides the results of the sense of smell in three categories: 1= anosmia; 2= hyposmia and 3= normosmia.

References


Conclusion

- Olfactory impairment is common in laryngectomized patients.
- The NAIM method is easy to learn and rapidly improves the capacity to smell and taste.
- The SOIT odor-differentiation test is an effective and simple test for the assessment of olfaction acuity after laryngectomy.
- The NAIM is a patient-friendly, inexpensive and effective method for restoring the sense of smell in patients after laryngectomy, and the results persist in the long term.
- The NAIM rehabilitation should be incorporated into routine rehabilitation programs for laryngectomees.

Aim
The aim of the present study was to assess the long-term results of the Nasal Airflow-Inducing Maneuver (NAIM) olfaction rehabilitation in patients with laryngectomy, in a Swedish prospective intervention study in a university hospital setting.