



OLFACTION REHABILITATION AFTER TOTAL LARYNGECTOMY MANUAL FOR SPEECH LANGUAGE PATHOLOGISTS

RIANNE POLAK, CORINA VAN AS, FRITS VAN DAM, FRANS HILGERS



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This digital manual is a practical addition to the book
“Olfaction regained, using the polite-yawning technique;
A book for speech pathologists and laryngectomees”

You can find more details in the updated digital version of this book,
which also contains several forms supporting the rehabilitation process
(brochure for laryngectomees, manual for manometer construction,
checklist, and registration and evaluation forms for the speech language
pathologist)

Besides, there is also a manual for laryngectomees (pages 60-67) that
you can find in this book and print out for the patient to take home.

THE ROLE OF THE SENSE OF SMELL/OLFACTION

Olfaction is an important sense for various aspects of daily life:

- It signals danger, such as fire, gas, spoiled food, and unpleasant body odors.
- It plays a role in digestion and saliva production, and odorous substances stimulate gastric and intestinal secretions.
- Odors perceived through the olfactory organ can influence a person's mood.
- Sexual behavior, e.g. sexual lust, expression of emotions, and changes in the endocrine system, is influenced by odors.
- The sense of smell plays a role in remembrance and thereby also in a person's learning capabilities.
- Taste is mainly determined by the sense of smell. If olfaction is disturbed, taste is also considerably impaired.

THE ROLE OF THE SENSE OF SMELL/OLFACTION

In laryngectomees, the sense of smell is impaired, because breathing through the stoma precludes nasal airflow. As shown in slide 10 and further, a nasal airflow can be re-established by using the polite-yawning technique, because that provokes a negative pressure in the nasopharynx. But before teaching this technique to the patient, it is advisable to test the sense of smell at baseline to be able to document the success of the method.

TESTING THE SENSE OF SMELL

There are several olfaction tests available. These allow assessment of the sense of smell and the way the patient tries to smell. Prior to starting olfaction rehabilitation, it is preferable to test the sense of smell several times. The results of these tests and other relevant data can be collected on the registration form. You find this and other forms in the digital version of the “Olfaction regained” book (pages 68-71) and print it out for filing.



THE LARYNX-BYPASS ALSO CALLED *SMELL TUBE*

When it is not immediately evident whether the sense of smell is only impaired because a nasal air flow is lacking, or that there may also be a perceptive or conductive impairment, a larynx-bypass can be a useful tool to establish this. This instrument connects the trachea with the mouth, so that the laryngectomee can breathe through the nose again. When he/she is not able to smell the test odors with this device, teaching the polite-yawning technique is often pointless. An Otolaryngologist will have to examine the patient first and possibly start treatment.

THE LARYNX-BYPASS



Larynx-bypass in stoma adhesive



Larynx-bypass via cap connected with the stoma

DEMONSTRATION OF THE USE OF THE LARYNX-BYPASS



TESTING THE SENSE OF SMELL WITH A SQUEEZE BOTTLE

Another way to assess the sense of smell of laryngectomees in case of doubt is to use a squeeze bottle. By squeezing this plastic bottle containing a tube and a nasal olive, the odor over the liquid in the bottle can easily reach the olfactory epithelium high up in the nose. This tool enables quick assessment of the olfactory acuity of a laryngectomee.



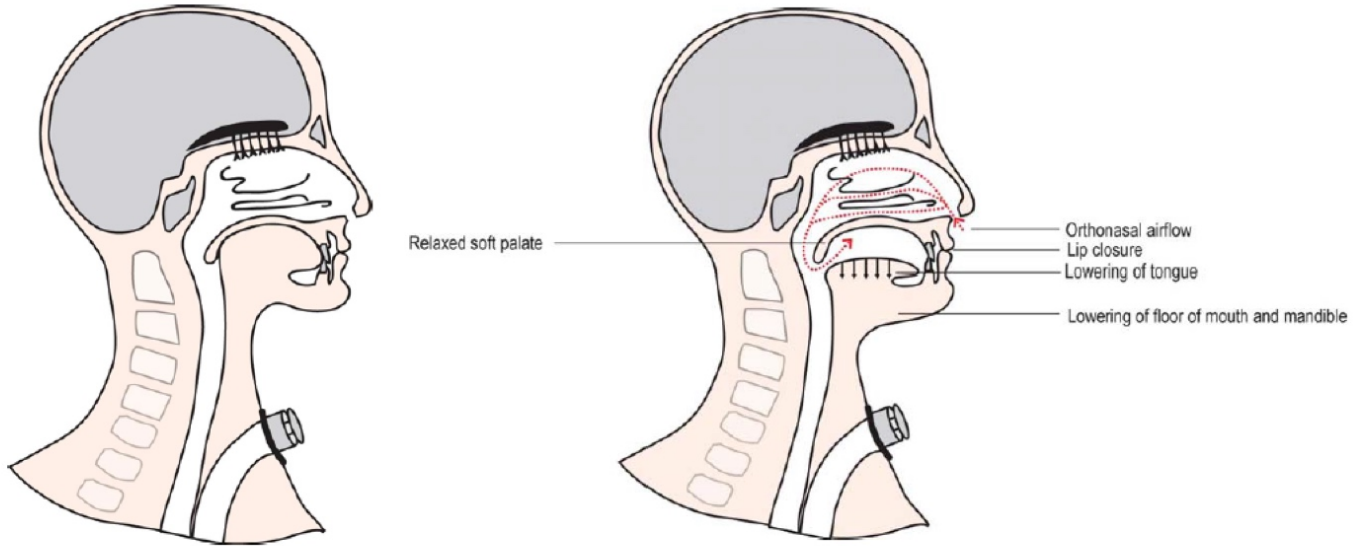
THE POLITE-YAWNING TECHNIQUE

Postoperatively, as mentioned, teaching the polite-yawning technique (in the medical literature also called the “Nasal Airflow Inducing Maneuver” or “NAIM”) should start with testing the sense of smell, which can be done at or around the time oral intake has resumed. The polite-yawning technique contains the following elements:

- The mandible and the floor of mouth must be moved downwards;
- The tongue must follow and descend downwards from the palate;
- The lips must stay closed;
- The movements must be exerted in a relaxed and repetitive way;
- Breathing should not be in sync with the movements, but should continue in a calm tempo, independent of tongue, floor of mouth, and mandible movements;
- The movements should be carried out with as little effort as possible.

You should make sure that the soft palate also stays relaxed during the movements, otherwise the nasal passage might be blocked and there is no chance of creating an orthonasal airflow.

VISUALISATION OF THE POLITE-YAWNING TECHNIQUE



TEACHING THE POLITE-YAWNING TECHNIQUE

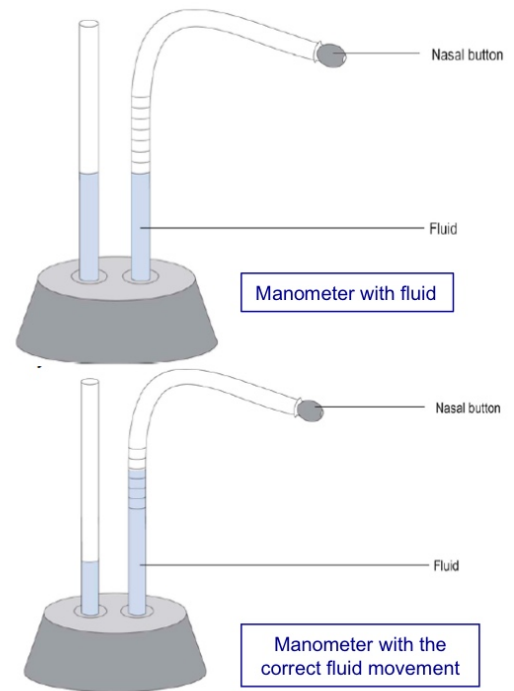
- First, explain the principles and the movements of the polite-yawning technique.
- Next, demonstrate the technique, name the various elements and let the laryngectomee imitate the movements.
- If that works well, exercising the technique can be continued while using the 'olfaction manometer' (see next slide).



Now we will see whether you can learn how to smell with the polite yawning method.

THE MANOMETER

To assess whether the polite-yawning technique is conducted correctly for creating an orthonasal airflow, a water manometer can be used. This device can be constructed in several ways, as described in the digital version of the book. After the manometer is filled with a (preferably colored) water, the nasal olive is placed in one of the nostrils. The other nostril must be closed with a finger. If the technique is conducted properly, the fluid will move towards the nose.



PRACTICE THE POLITE-YAWNING TECHNIQUE WITH THE MANOMETER

To give the laryngectomee the opportunity to get familiar with the polite-yawning technique, it is advisable to provide him/her with a manometer to practice at home.

Such a manometer can be easily made with the help of the manual provided in the [digital version](#) of the “Olfaction regained” book.

To make sure this independent home practicing will be optimal, you can provide a printed copy of the manual, “Brochure for laryngectomees”, which also can be found in this book (pages 60-67).

DIFFICULTIES WITH CONDUCTING THE TECHNIQUE

For many laryngectomees, acquiring the polite-yawning technique can be more difficult than expected. Several aspects of the technique can create problems. On the following pages, examples of some of these difficulties are shown. These examples are accompanied with short descriptions of what can be done to improve the execution of the movement.

- Deep inhalation;
- No fluid movements in the manometer;
- The fluid moves in the wrong direction in the manometer.

DEEP INHALATION

Obviously, prior to the operation laryngectomees were used to smell while inhaling. During deep inhalation, the under-pressure in the thorax and esophagus can be strong enough to still create a nasal airflow, despite the disconnection of upper and lower airways. This way of smelling, however, is not advisable, because of hyperventilation risks.

One way to 'cure' this inhalation is to occlude the stoma for a moment.



NO FLUID MOVEMENTS IN THE MANOMETER

If the movement of the tongue is not sufficiently large or not powerful enough, there also will be no movement of the fluid in the manometer. With every 'polite yawn', the tongue must move downwards away from the palate, making it a kind of pumping movement.

Moreover, the execution of the 'polite yawn' should be done in a relaxed manner, because otherwise the soft palate also might be tense, which would block the nasal passage. Besides, the laryngectomee probably will not use the technique when it is hyperkinetic, because that will make it uncomfortable.

Exercising in front of a mirror can be helpful, as is thinking the movement is a kind of a chewing movement.

In cases like this, one also should consider the possibility there is a conductive olfaction problem. In case of doubt, use a larynx-bypass.

NO FLUID MOVEMENTS IN THE MANOMETER



THE FLUID MOVES IN THE WRONG DIRECTION

If the laryngectomee emphasizes the upward movement of the tongue, mandible and floor of mouth, there will be a positive pressure in the nasopharynx. This results in a fluid movement away from the nose. Obviously, in this way no smell sensation will be possible. Teaching the correct movement of the tongue can be built up, for instance, from starting with tongue-clacking.



AFTER THE MANOMETER

If the fluid in the manometer moves correctly and also breathing does not cause problems anymore, the next step in the olfaction rehabilitation program is the actual application of the technique.

During the treatment, this can be done by practicing with different odorous products used in daily life, and/or by using small bottles with ethereal oils.

At home, it is easier to continue practicing with the 'daily life' odors and he/she should regularly try to smell odorous products present in their own environment.

SMELLING PRACTICE ODORS

Both for SLP and laryngectomee it is important to know that naming a practice odor in most instances is very difficult. That is obviously the same for non-laryngectomees. When using practice odors, it suffices if the laryngectomee can indicate he/she is smelling something and maybe can add what type of odor he/she is perceiving (e.g. something sweet).

Besides, it is good to clarify that smelling never will be 'passive' again, like it was before the laryngectomy. The polite-yawning technique must always be applied before anything (actively) can be smelled. Even with more intensive practicing this will never change. By applying the polite-yawning technique frequently and regularly, and at any change of environment, ultimately smelling will become an 'automatism' again.

SMELLING PRACTICE ODORS



TRANSFER AND STABILIZATION

After the exercising period, the laryngectomee should apply the polite-yawning technique as frequently as possible and at various events during the day to really benefit from it in daily life. Also application at regular intervals can be helpful to stabilize the technique.

Only by frequent application, the polite-yawning technique can be transferred into an automatism, improving the following 'functions' of olfaction:

- Warning function;
- Role in digestion;
- Influence on mood;
- Influence on sexual behavior;
- Role in remembrance;
- Role in taste perception.

USING THE POLITE-YAWNING TECHNIQUE



DOT THE I'S

Finally, you can work on the refinement of the polite-yawning technique. In this advanced technique the movement of the mandible is omitted and only the floor of mouth and the base of tongue are moving. This 'smaller' movement makes the polite-yawn less conspicuous. For some laryngectomees this technique might be too difficult to master, though.

In the following videos you can see the difference between the regular and the refined polite-yawning technique, both in regular video images and in X-ray recordings.

DIFFERENCE BETWEEN THE POLITE-YAWNING AND THE REFINED POLITE-YAWNING TECHNIQUE

Polite-yawning technique



Polite-yawning technique



Polite-yawning technique



Refined polite-yawning technique



Refined polite-yawning technique



Refined polite-yawning technique



EVALUATION AND ROUNDING OFF

After working on making the polite-yawn smaller, the treatment can be rounded off.

First, the olfaction test should be repeated for comparison with the test results of the earlier assessments. In this way, it is possible to establish whether the training was successful and to what extent.

To round off the rehabilitation program, advise the laryngectomee once more about every day application of the technique.



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