SUMMARY

Background: Total laryngectomy is a radical surgery often performed for advanced laryngeal cancer, that alters the upper respiratory anatomy and quality of life. Although this type of radical surgery can be life-saving, the repercussions in the patients psychology due to loss of normal speech as well as loss of nasal breathing caused the cessation of airflow, thereby preventing stimulation of the olfactory epithelium.

Method: The European Organisation for Research and Treatment of Cancer Core Questionnaire Version 3.0 (EORTC QLQ-C30) in conjunction with the disease-specific Head & Neck Cancer Module (QLQ-H&N35) are used. The EORTC core module is a patient-based, self-administered modular instrument designed to assess the health-related QOL of a broad range of cancer patients (Aaronson et al, 1993). Reliability, validity and cross-cultural applicability have been confirmed (Aaronson et al 1991; Sherman et al 2000). In case of olfactory rehabilitation Polite yawning technique is one successful method.

Results: In the case of total laryngectomy, respiration is also affected due to the redirection of the trachea resulting in the elimination of an upper respiratory tract. The possibility of olfactory rehabilitation is an important factor in postoperative treatment, and positive results are very stimulating for patients and surgeons. To achieve a better quality of life for laryngectomised patients, olfactory rehabilitation should be undertaken as soon as possible, to re-establish nasal airflow (and with it, the sense of smell). Polite yawning technique is one successful method of olfactory rehabilitation. Upon completing rehabilitation, 46% (Hilgers et al.16) of patients had normosmic olfactometry results.

Discussion: Rehabilitation programmes that consider and aim to improve emotional and social functioning post total laryngectomy are essential. Providing adequate information about the long-term consequences of total laryngectomy in a timely manner -not just before the surgery- may help reduce such worries.

RÉSUMÉ

Introduction: La laryngectomie totale est une chirurgie radicale souvent effectuée pour le cancer du larynx avancé, qui modifie l'anatomie des voies respiratoires supérieures et la qualité de la vie. Bien que ce type de chirurgie radicale puisse sauver la vie, les répercussions sur la psychologie des patients en raison de la perte de la parole normale ainsi que la perte de la respiration nasale causent l'arrêt du flux d'air, empêchant ainsi la stimulation de l'épithélium olfactif.

Méthodes: Dans le cas d'une laryngectomie totale, la respiration est également touchée en raison de la réorientation de la trachée entraînant l'élémination d'une des voies respiratoires supérieures. La possibilité de réhabilitation olfactive est un facteur important dans le traitement post-opératoire, et les résultats positifs sont très stimulants pour les patients et les chirurgiens. Pour parvenir à une meilleure qualité de vie pour les patients laryngectomisés, la réhabilitation olfactive devrait être entreprise dès que possible, de rétablir le flux d'air nasal (et avec elle, le sens de l'odorat). La technique béant Polite est une méthode efficace de réadaptation olfactive. À l’issue de la réadaptation, 46% (Hilgers et coll. 16) des patients ont eu des résultats d’olfactométrie normosmique.

Discussion: Les programmes de réadaptation qui considèrent et visent à améliorer le fonctionnement après une laryngectomie totale affective et sociale sont essentiels. Fournir des informations adéquates sur les conséquences à long terme de la laryngectomie totale en temps opportun - non seulement avant la chirurgie - peut aider à réduire ces inquiétudes.

Mots clé: qualité de vie, laryngectomie totale, réhabilitation olfactive, réhabilitation vocale
BACKGROUND

Total laryngectomy is a radical surgery often performed for advanced laryngeal cancer. Although this type of radical surgery can be life-saving, the repercussions in the patient psychotology due to loss of normal speech as well as other functional difficulties, can severely affect the patient quality of life (functional disabilities as olfactory disorders, taste disorders, throat dryness, eating disorders, and not last, are affected oral communication skills).

After total laryngectomy, the loss of sense of smell is of less importance than the loss of speech or the presence of ‘the hole’ (tracheostoma) on the neck.11,12 In the past, rehabilitation of laryngectomised patients focused primarily on vocal rehabilitation. Once artificial speech was learned and the new situation was accepted, the patients realised that sense of smell had been lost. Sense of smell tends to be appreciated only when patients realised that it has been lost. The inability to detect smoke or dangerous gases increases feelings of fear and danger. The inability to perceive one’s own body odour increases social insecurity. Appetite, libido, sexual activity and the level of good mood generally decrease. (6) Introducing olfactory rehabilitation as an integral part of the post-laryngectomy rehabilitation programme improves patients’ quality of life and adaptation to their new situation. (6)

Total laryngectomy is a surgical procedure that considerably alters the upper respiratory anatomy and quality of life of the operated patient. The resulting loss of nasal breathing in laryngectomised patients causes the cessation of airflow, thereby preventing stimulation of the olfactory epithelium. The majority of the medical community currently accepts the reduced nasal airflow theory as the cause of post-laryngectomy hyposmia and anosmia. (1)

The possibility of olfactory rehabilitation is an important factor in postoperative treatment, and positive results are very stimulating for patients and surgeons. To achieve a better quality of life for laryngectomised patients, olfactory rehabilitation should be undertaken as soon as possible, to re-establish nasal airflow (and with it, the sense of smell).

The polite yawning technique (PYT) is the method of choice for the olfactory rehabilitation of laryngectomised patients. (2) The objective of polite yawning technique is to induce nasal airflow by creating negative pressure in the oral cavity and oropharynx. Identifying the minimum airflow and air volume required to stimulate the sense of smell would make polite yawning technique movements appear less prominent and improve the resocialisation of laryngectomised patients. At the same time, successful olfactory rehabilitation after total laryngectomy will make this particularly mutilating surgery more acceptable for patients and their families. (3)

MATERIALS AND METHODS

Quality of Life Measures

The European Organisation for Research and Treatment of Cancer Core Questionnaire Version 3.0 (EORTC QLQ-C30) in conjunction with the disease-specific Head & Neck Cancer Module (QLQ-H&N35) are used. The EORTC core module is a patient-based, self-administered modular instrument designed to assess the health-related QoL of a broad range of cancer patients (Aaronson et al, 1993). Reliability, validity and cross-cultural applicability have been confirmed (Aaronson et al 1991; Sherman et al 2000).

The EORTC-QLQ was used to assess QoL outcomes. The EORT Quality of Life Questionnaire-Core 30 (QLQ-C30) incorporates 30 items and consists of 5 functional scales (physical, role, cognitive, emotional, and social functioning), 3 symptom scales (fatigue, pain, and nausea/vomiting), a global QoL scale, and 6 single items (dyspnea, insomnia, appetite, constipation, diarrhea, and financial impact). (7) The EORTC Quality of Life Questionnaire-Head and Neck 35 (QLQ-H&N35) is a supplement module to the QLQ-C30 and consists of items used for assessing QoL for head and neck cancer patients. (8) It incorporates 35 questions making up 7 multiple-item symptom scales (pain, swallowing ability, taste/smell, speech, social eating, social contact, and sexuality) and 11 single-item scales, which assess the presence of symptomatic problems related to the teeth, mouth opening, dry mouth, sticky saliva, coughing, feeling ill, use of painkillers, use of nutritional supplements, feeding tube, weight loss, and weight gain. All scales pertaining to the EORTC QLQ-C30 and QLQH&N35 range from 0 to 100. A high score for a functional or global QoL scale represents a relatively high/healthy level of functioning or global QoL, whereas a high score for a symptom scale indicates a higher level of symptoms or problems.

Olfactory evaluation and rehabilitation

Polite yawning technique

With polite yawning technique, the patient makes a yawning movement with lips securely closed, simultaneously lowering the jaw, tongue and soft palate. (2) The movements must be repeated rapidly several times to achieve the maximum effect. The theory of polite yawning technique was explained to the participants in a 10-min session during group meetings. After the introduction, an individual 5-min practical session was held with each patient. After the education session, examinees practiced the technique at home for 2 weeks. Insufficiently rehabilitated examinees practised the technique for two and a half months.

Active anterior rhinomanometry

Rhinomanometry is an objective method for measuring
naso airflow, pressure and resistance in the nostrils. The curves and flows of the inhaled air are observed on the rhinomano metric monitor, providing immediate feedback. Active anterior rhinomanometry measures the pressure difference between the nasal vestibule and the choanae. The measurements are used to evaluate the effect of polite yawning technique on nasal airflow rate.

**Smell Diskettes Olfaction test – Olfactometry**

The Smell Diskettes Olfaction test (SDOT) (Novimed, Dietikon, Switzerland) is a fast and effective screening test that assesses olfactory function. The test consists of eight diskettes with different odours (coffee, vanilla, peach, grass, pineapple, rose, chocolate and fish) and a questionnaire. Odour concentration is far greater than the olfactory threshold value. (4)

**Results**

Rehabilitation programmes that consider and aim to improve emotional and social functioning post total laryngectomy are essential. There are morbidities associated with all treatment modalities primarily affecting voice and swallowing: components that can impact on quality of life (Woodard et al. 2007). In the case of total laryngectomy, respiration is also affected due to the redirection of the trachea resulting in the elimination of an upper respiratory tract. Post-operative recovery therefore includes physical, psychological and social adjustments: Armstrong et al. (2001) found in their longitudinal study that there were long term and persistent difficulties with speech and swallowing after total laryngectomy, as well as with social/emotional adjustment.

Measures of quality of life (QOL) following head and neck cancer tend to be health related, i.e. primarily focus on the impact of disease on the patient’s life and tend to incorporate physical, emotional and social domains (Bullinger et al., 1993). Vileseca et al. (2006) found that long-term QOL does not seem to decrease after total laryngectomy when it is measured with general health instruments and compared with the normal population. However impairment on physical aspects of QOL is found when disease-specific questionnaires are included.

In the head and neck cancer literature, measurement of quality of life tends to reflect functional outcomes and is dependent on the timing of completion of the QOL surveys. There is evidence that patient-reported QOL changes over time (Jones et al 1992; Murphy et al 2007), and that for total laryngectomy, although there are early postoperative issues reported for voice, in the long term patients report that their general health is the same or better compared with the year prior to the diagnosis of cancer (Deleyiannis et al., 1999). More recent studies indicate that social support is a more important determinant of quality of life and psychological adjustment than the physical sequelae of total laryngectomy (Ramirez et al 2003). Other studies suggest that although in the long term voice is no longer such a major issue, due to the advances in surgical voice restoration (Singer & Haymaker 1998), QOL is reported to be lower (De Santo et al 1995; Palmer & Graham 2004). One longitudinal QOL study (de Graeff et al 2000), found that treatment generally resulted in short-term physical and psychological deterioration most of which resolved within a year.

A study by Katusic’ et al., 19 patients showed that atrophy of the nasal mucosa is indicated in all laryngectomised patients 3 months postoperatively.

Polite yawning technique is one successful method of olfactory rehabilitation. Upon completing rehabilitation, 46% (Hilgers et al. 16) of patients had normosmic olfactometry results. In spite of the unquestionable effectiveness of the polite yawning technique method, unnatural and awkward movements (which are accompanied by acoustic phenomena at the beginning of rehabilitation) create problems for patients. (6) The advantage of polite yawning technique is that a patient controls the volume of nasal airflow by making conscious movements that are unrelated to physiological breathing.

Rhinomanometric measurement of the minimum amount of airflow and air volume required to stimulate the sense of smell and ensure successful olfactory rehabilitation can help the patient’s understanding of polite yawning technique. As a result, the technique is utilised more and the polite yawning technique movements appear less prominent and deliberately. The resulting normalisation of polite yawning technique movements can improve the resocialisation of laryngectomised patients and may motivate patients to adapt to the technique as an integral part of their lives.

**Conclusions**

QoL refers to “global well-being,” including physical, emotional, mental, social, and behavioral components. The assessment of QoL in cancer patients has become an increasingly important issue in oncology. In the last few years, a number of informative and valid QoL tools has become available to measure health-related QoL. General QoL instruments assess the overall impact of patients’ health status on their QoL and can be used for all types of cancer patients; on the other hand, cancer-specific instruments assess the impact of a specific cancer on QoL. (9)

Rehabilitation programmes that consider and aim to improve emotional and social functioning post total laryngectomy are essential. Providing adequate information about the long-term consequences of total laryngectomy in a timely manner – not just before the surgery – may help reduce such worries. Efforts to promote social integration and maximise social support, particularly for those who rate theirs as low, may improve outcomes for this population.

Finally, quality of life is multi-factorial and is affected by the complex combination of characteristics that make each individual unique (Brown & Doyle, 1999). With this in mind, it becomes increasingly apparent that there is a need to consider each individual patient’s perspective, opinions and needs in all types and stages of treatment.

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REFERENCES