SALVAGE PARTIAL LARYNGECTOMY AFTER NON SURGICAL TREATMENT FOR LARYNGEAL CARCINOMA

Meta-analytical Study

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in Otorhinolaryngology

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Abbreviations

HPV .....**H**uman **P**apilloma **V**irus

SPT .....**S**econd **P**rimary **T**umor

SCC.....**S**quamous **C**ell **C**arcinoma

UADT.....**U**pper **A**ero-**d**igestive **T**ract

IDL.....Indirect laryngoscopy

PES.....Pre-epiglottic space

PGS.....Paraglottic space

CT .....Computed tomography

MRI.....Magnetic resonance imaging

PET.....Positron emission tomography

FDG .....Fluorodeoxyglucose

FMN.....Flavin mononucleotide

VPL.....Vertical partial laryngectomies

SCPL-CHEP..... Supracricoid partial laryngectomy with cricohyoido epiglottopexy

SGL.....Supraglottic laryngectomy

TL.....Total laryngectomy

PL Partial laryngectomy

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Introduction

Laryngeal carcinoma is the second most common head and neck cancer after skin cancer and accounts for 3% of total cancer risk (Gallo et al., 2005).

Laryngeal carcinoma accounts for 10.000 of newly diagnosed cancer patients in USA per year and 1% of cancer related mortality. In Australia, 584 cases of laryngeal carcinoma were reported in 2001, of which 247 deaths were reported (Moore et al., 2005).

Optimal treatment of laryngeal carcinoma requires both tumor eradication and preservation of laryngeal function. In early laryngeal carcinoma (T1 and T2 lesions), both partial surgery and radiotherapy have a high degree of success with good functional results (Spriano et al., 1997).

Radiotherapy is a well-established treatment for early laryngeal carcinoma with good oncological and functional results. However, the recurrence rate after irradiation is 5% to 13% for T1 and approximately 25% to 30% for T2 carcinomas (Barthel and Esclamado, 2001).

Sewnaik and co-workers in 2005, reported that when recurrence is histologically confirmed, a surgical salvage procedure is the only chance of cure. This can be either a total laryngectomy or a partial laryngectomy, the latter through an external approach or an endoscopic procedure.

The treatment of laryngeal carcinoma has a great impact on a person's life. In particular, total laryngectomy affects crucial functions such as breathing, swallowing and speaking (Hilgers and Ackerstaff, 2000).

Relic and his colleagues in 2001, described another aspect that changes after a total laryngectomy which is the presence of a permanent tracheostoma. There is also a cosmetic aspect and some activities such as swimming, which cannot be easily done. Furthermore, after a total laryngectomy the sense of smell is lost. This is different after partial procedure.

Partial laryngectomy procedures have been introduced as an organ-preserving salvage option for patients who experienced recurrence with limited (rT1-rT2) disease (Spriano et al., 2002).

Unlike total laryngectomy, a partial laryngectomy is not a defined operation but merely a common denominator

for a variety of procedures all aimed at preserving part of larynx. These procedures include endoscopic laser resection, horizontal (supraglottic partial procedures), vertical (horizontal, frontolateral) partial laryngectomy, and Supracricoid procedures (cricohyoidoepiglottopexy, cricohyoidpexy) (Sewniak et al., 2005).

Aim of the Work

The aim of this study is to compare the loco-regional control and 5-year survival of conservation versus total laryngectomy for salvage of radio/chemotherapy failure in patients presented by laryngeal carcinoma.

Diagnosis of Laryngeal carcinoma

The diagnosis of these tumors is often delayed because they are asymptomatic in the early stages and because of the difficulty of visualizing the tumor directly, which leads to a poor prognosis. The commonest symptoms are hoarseness and respiratory difficulty that in many cases require an emergency tracheotomy. Either computed tomography (CT) or magnetic resonance imaging (MRI), both with contrast medium, allows for verification of the lower extent of the tumor, its invasion into the cricoid cartilage, its extralaryngeal spread, and the presence or absence of cervical node metastasis (Santoro et al, 2000).

1–History

As with all head and neck malignancies, the evaluation begins with a thorough history. This should include not only a careful review of the chief complaint but also an assessment of associated medical problems, social history (specifically amount and duration of tobacco and alcohol use), family history of all types of malignancies. Patients with a prior history of a head and neck malignancy have an approximately 14% chance of developing a second primary malignancy in the head and neck. Clinical pulmonary function assessment is critical in the choice of treatment since base line pulmonary reserve partly dictates the success of conservation laryngeal surgery (Eugene and Young, 2008).

2 –Examination

A. Clinical examination

Airway obstruction may be noted especially in subglottic tumors. Palpation of the neck discloses the presence location and fixation of cervical nodes. Fixation of the thyroid cartilage is an ominous sign (Kumar, 2005).

B. Laryngoscopy

Office based laryngoscope should answer several questions. First and foremost is to look for any lesions in the larynx. The critical sites to evaluate are base of tongue, valleculae, epiglottis, aryepiglottic folds, arytenoids, interarytenoid regions, ventricular bands, ventricles (if possible), vocal folds, subglottis (if possible), and some of the subsites of the hypopharynx. Assessment of vocal fold mobility is best clinically assessed during indirect laryngoscope by having the patient speak or breathe deeply, whereas arytenoids mobility is best assessed by having the patient cough gently. Impaired mobility from glottic carcinoma may be a result of superficial thyroarytenoid invasion or bulk on the surface of the vocal folds in an exophytic lesion (Zeitels and Vaughan, 1991).

Office examination of the larynx may be performed via indirect mirror examination or fiberoptic examination. Stroboscopy and acoustic analysis may provide helpful information in some patients. Indirect mirror laryngoscopy

provides an excellent overview of the larynx and tongue base as well as excellent color and depth perception. However, it is often difficult to visualize the anterior commissure especially in patients with a strong gag reflex. Flexible fiber-optic laryngoscopy (FFL), possibly combined with stroboscopy, allows a closer look at individual areas and allows for video and photographic documentation of any visible pathology in a physiologic setting (Eugene and Young, 2008).

3–Imaging

Radiologic imaging is a critical part of the evaluation of a patient with a suspected laryngeal malignancy. When feasible, imaging is performed before operative endoscopy and biopsy to obtain images before potential edema and distortion from biopsy and manipulation of the larynx (Zinreich, 2002).

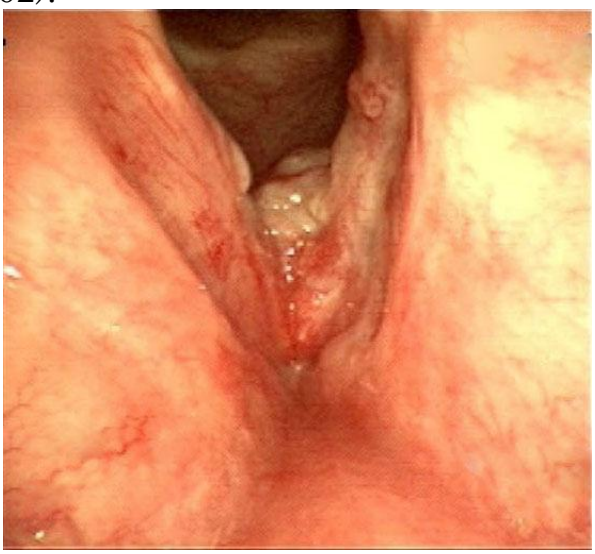

Figure 1: *Laryngoscopic appearance of subglottic cancer*

(Quoted form; http://www.massgeneral.org/)

A. Computed tomography (CT).

CT is the most commonly used radiological investigation in the evaluation of laryngeal carcinoma. CT is superior to MRI for imaging the bony structures such as ossified cartilages and calcification (Zinreich, 2002).

CT is the primary tool for the clinical routine evaluation of patients with suspected recurrence because of its availability and relatively low cost, despite its rather low sensitivity and specificity for the follow-up of tumors after radiotherapy (Arulampalam et al, 2001).

Figure 2: *Advanced glottic SCC. Axial contrast CT image shows a left local cord mass (thin white arrows) reaching anterior commissure (asterisk). Note the sclerosis of left thyroid lamina and left cricoarytenoid joint (thin black arrows)*

(Quoted from: Joshi et al, 2012)

CT demonstrates recurrence as an infiltrating slightly hyperattenuating mass with enhancement, with or without bone destruction (Offiah and Hal, 2011).

Tumor recurrence has attenuation similar to that of muscle. Therefore, if a suspected mass has lower attenuation than that of muscle, it is unlikely to be a malignancy and

often is related to edema (Som et al, 2011).

❖ Pitfalls of CT in diagnosis of recurrent laryngeal carcinoma

CT criteria for malignancy that are based on size, such as the presence of enlarged lymph nodes with a diameter of 15 mm or more, have been shown to represent an inaccurate estimate of tumor involvement (Buccheri and Ferringo,2001).

Fibrotic or necrotic tissue that develops inside a tumor mass after treatment cannot be differentiated by CT from a viable malignant tumor (Krestin et al, 1988).

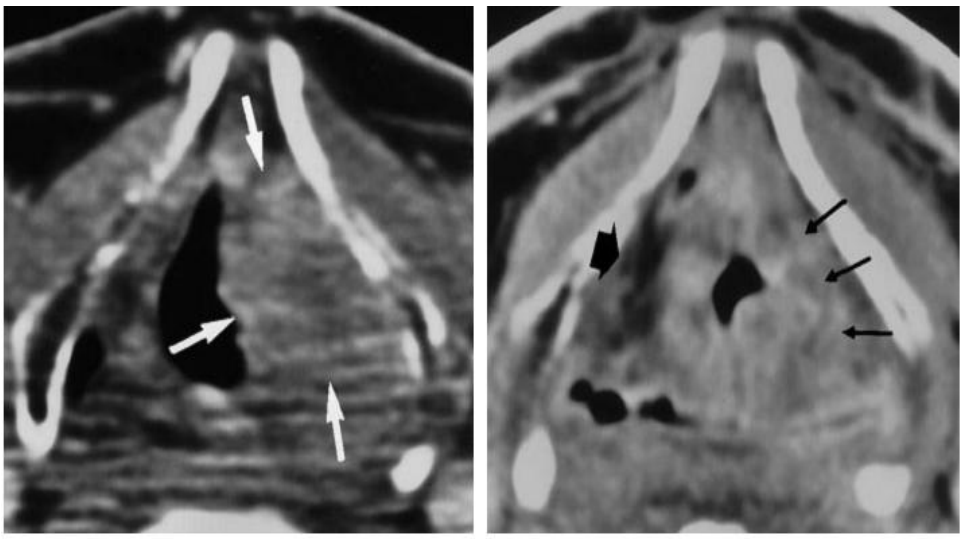

Figure 3: *Axial CT images in a patient with T3 supraglottic carcinoma. (a) Pretreatment image shows a mass (arrows) in the region of the left false vocal cord and paraglottic space. (b) Image obtained 21/2 months after radiation therapy shows that the tumor has regressed but also shows persistent obliteration of the paraglottic fatty tissue (thin arrows) on the left side, without focal mass. Compare this with the normal-appearing paraglottic fat (thick arrow) on the right side there was no clinical evidence of disease.*

(Quoted from: Joshi et al, 2012)