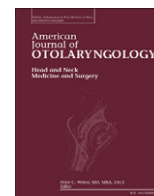




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## Lateral cervical approach for supracricoid partial laryngectomy<sup>☆</sup>

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### ABSTRACT

**Introduction:** The supracricoid partial laryngectomy has been described for the treatment of T3 laryngeal glottic and supraglottic tumors as well as upfront and salvage surgery. Good oncological and functional outcomes are expected, while the post-operative rehabilitation can be quite difficult for the patient. Early and late complications can occur especially in salvage surgery. Neck dissection according to the T stage is often associated with the resection of the primary tumor.

**Objective:** To verify the feasibility of a minimally invasive procedure for supracricoid partial laryngectomy by adopting the lateral cervical approach.

**Methods/results:** A 61-year old man affected by a cT3N0 glottic cancer already treated 10 years prior with radiotherapy for oropharyngeal cancer underwent supracricoid laryngectomy using the lateral approach. The key point of the procedure was a subfascial dissection with the harvesting of anterior cervical flap including skin, fat, platysma, fascia superficialis, anterior jugular veins, homo- and sterno-hyoid muscles.

**Conclusion:** Supracricoid laryngectomy by a lateral approach is feasible and safe; it allows to perform a simultaneous neck dissection and the removal of the entire laryngeal specimen preserving ample healthy tissue compared to the classic anterior approach.

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### 1. Introduction

The supracricoid partial laryngectomy (SCPL) was proposed over 40 years ago [1] for tumors involving the glottis or the supraglottis without extra-laryngeal extension staged as T3 in order to preserve the laryngeal function. This procedure has widely been used in France [2], Italy [3,4,5] and other countries [6,7,8] resulting in good oncologic and functional outcomes. More recently, transoral laser microsurgery (TLM) [9,10] and radiotherapy (RT) [11] have been preferred for the treatment of primary and recurrent T3 laryngeal cancer [12,13,14]. A recent paper published by our group reported a higher local control of the disease compared to RT data of the literature for the T3 laryngeal cancer [5], providing new enthusiasm in favor of the external approach.

Recently, minimally invasive techniques for total laryngectomy have been described as new surgical approaches aiming to reduce tissue damage not involved by the disease [15,16], while, to the best of our knowledge, minimally invasive techniques adopting the external approach for SCPL have never been reported. The purpose of the present study was to describe a new lateral cervical lateral approach for SCPL preserving healthy tissues.

### 2. Methods and materials

A 61 year-old male, smoking 52 packs/cigarette/year and drinking 40 ml of alcohol/day with ECOG-PSR classified as 1 [17] affected by cT3N0 laryngeal cancer presented persistent dysphonia. Four years prior, he was affected by oropharyngeal cancer (left base of the tongue) and underwent resection of the tumor through a transmandibular approach combined with a modified radical neck dissection and reconstruction via a fascio-cutaneous free flap. The final pathology report showed squamous cell carcinoma staged as pT2N2a with nodal extracapsular spread and a post-operative concurrent chemo-RT (CRT) followed by adjuvant treatment. Direct laryngoscopy showed a lesion of the right vocal cord with fixation of the hemi-larynx but preserved motility of the arytenoids. CT-scan with contrast enhancement showed a neoplasia of the right vocal cord infiltrating the paraglottic space and the anterior aspect of the left arytenoid. Tumor was staged as cT3N0M0 in accordance with the UICC 2017 classification [18]. Biopsy was carried out confirming the diagnosis of malignancy (squamous cell carcinoma-G3). Swallowing and respiratory evaluation did not contraindicate SCPL as a surgical option.

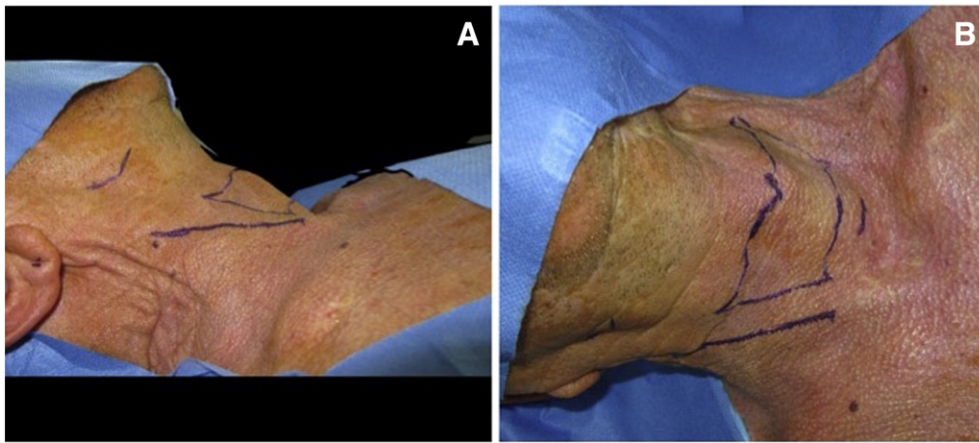
#### 2.1. Surgical technique

The patient was placed in the head extension position (Fig. 1A–B). The surgical procedure was performed under general anaesthesia, with orotracheal intubation. Naso-gastric feeding tube (NGFT) was

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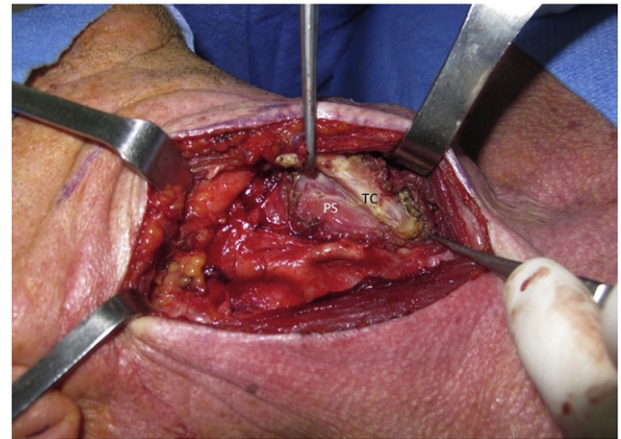
**Fig. 1.** Pictures of the lateral skin incision along the anterior margin of the sterno-cleido-mastoid muscle in lateral (A) and frontal (B) view.

inserted. Monolateral 8-cm neck incision was made at the level of the anterior border of the sterno-cleido-mastoid muscle. An anterior myo-cutaneous (AMC) flap including skin, subcutaneous tissue, platysma, anterior jugular veins, homo- and sterno-hyoid muscle was elevated from the underlying sterno-thyroid and thyro-hyoid muscles, realizing

a working space between these two layers of muscles (Fig. 2). Subsequently, a selective monolateral right neck dissection (levels II–IV) was accomplished by adopting this approach. At this point, the larynx was skeletonized, detaching the sterno-thyroid muscles from the hyoid bone, keeping the insertion of the sterno-hyoid muscles in place.



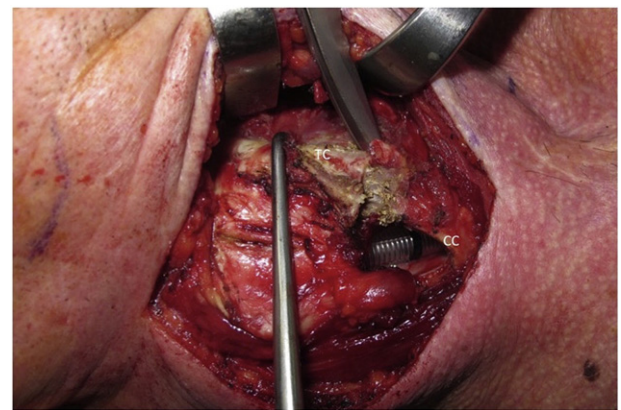
**Fig. 2.** Anterior myo-cutaneous (AMC) flap is harvested detaching the sterno- and homo-hyoid muscles from the sterno-thyroid and the thyro-hyoid muscles. The selective neck dissection (levels II–IV) is performed through the same lateral incision of the neck. Legend: - Homo-hyoid muscle: H - Thyro-hyoid muscle resected: T - Anterio Myo-Cutaneous flap: AMC.



**Fig. 4.** The superior cornu and the posterior border of the thyroid cartilage are exposed after dissection of the pharyngeal constrictor muscles, allowing the release of the larynx. - Thyroid cartilage: TC - Mucosa of the pyriform sinus: PS.



**Fig. 3.** The superior laryngeal pedicle is identified on the right side. - Superior laryngeal pedicle: S - Sterno-hyoid muscle: \*.



**Fig. 5.** The larynx is rotated 90° on the vertical axis in order to expose the contralateral side. - Contralateral border of thyroid cartilage: TC - Superior border of cricoid cartilage: CC.

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