

## ARAŞTIRMA / RESEARCH ARTICLE

# Transoral supraglottic laryngectomies

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### Transoral supraglottic larenjektomiler

**Amaç:** Benign ve erken evre seçilmiş malign supraglottik larinks patolojilerinin transoral yolla tedavisini vurgulamak.

**Yöntem:** Kasım 1997-Mart 2006 yılları arasında kliniğimizde malign ya da benign larinks patolojileri nedeni ile supraglottik larenjektomi yapılan 25 hasta retrospektif olarak değerlendirildi. Bir tanesi kadın olmak üzere 25 hastanın preoperatif görünümleri ve biyopsi sonuçları gözetilerek transoral yolla cerrahileri planlandı. Hastaların sosyokültürel düzeyleri, mevcut sistemik problemleri ve malign patolojilerde kür oranları gözetildi.

**Bulgular:** Hastalardan 4 tanesi benign, 21 tanesi malign patoloji nedeniyle opere edildi. Postoperatif solunum, yutma fonksiyonları ve nüksler açısından takipleri yapıldı. 3 hastaya nüks nedeniyle total larenjektomi uygulandı. 25 hastanın 22 tanesi en az 5 ay, en çok 108 aylık takip süreleri ile izlendi (ortalama 53 ay).

**Sonuç:** Supraglottik larinksin malign lezyonlarının geç semptom vermesi nedeniyle ileri evrede tespit edilmeleri ve yaygın lenfatik drenaj nedeniyle parsiyel larenjektomi ile kür şansını yitirmesine rağmen, sınırlı epiglot ve ariepiglotik fold tümörleri ve benign patolojilerde, hastanın postoperatif morbiditesi de gözetildiğinde transoral yolla supraglottik larenjektomi ile kür sağlanabilmektedir.

**Anahtar Sözcükler:** Supraglottik larenjektomi, supraglottik karsinom, transoral cerrahi.

### Abstract

**Objectives:** To emphasize that benign and early supraglottic malignant laryngeal pathologies can be treated with transoral surgery.

**Methods:** Twenty-five patients that supraglottic laryngectomy was performed for benign and malignant laryngeal pathologies between November 1997 and March 2006 were evaluated retrospectively. Transoral surgery was planned for 25 patients (24 male, 1 female) according to preoperative radiological evaluation and biopsy result. The sociocultural status, systemic problems of the patients and the cure ratios in the malignant pathologies were considered.

**Results:** Four of these patients were operated for benign pathology and 21 of them were operated for malignant pathology. We followed up the patients about respiration, swallowing functions and recurrences. Recurrences were detected at 3 patients and total laryngectomy was performed to these patients. The follow up period was between 5 and 108 months (average 53 months).

**Conclusion:** Although the cure rate of supraglottic malignant lesions with partial laryngectomy is low because of late onset of symptoms and rich lymphatic drainage of this region, limited epiglottic and aryepiglottic fold tumors and benign pathologies can be treated with transoral supraglottic laryngectomy.

**Key Words:** Supraglottic laryngectomy, supraglottic carcinoma, transoral surgery.

Türk Otolarengoloji Arşivi, 2007; 45(4): 224-227

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Turk Arch Otolaryngol, 2007; 45(4): 224-227

## Introduction

Supraglottic region is the part of larynx including arytenoid, aryepiglottic fold, false vocal cords, ventricle and epiglottis formed by a line the lower border of which passes through ventricle.<sup>1</sup> False vocal cords and ventricles are covered by pseudostratified ciliated columnar epithelium and the other parts of supraglottic regions are covered by nonkeratinized stratified squamous epithelium. Glands are present at ventricle and vallecula. Supraglottic region differs from other parts of larynx with its embryological development and lymphatic drainage.<sup>2</sup>

Symptoms of patients with benign or malignant supraglottic region lesions do not appear at early period as it early appears in glottic lesions. Sometimes feeling of having some material in throat may be the only symptom. Otagia, stridor, mass in the neck, dysphagia and in transglottic tumors also hoarseness may be seen once the lesion starts to get bigger. Vegetative tumors of epiglottis or their cysts may cause hot potato voice.<sup>3</sup> For this reason only a few patients can be detected at an early stage. 80-90% of the patients can be diagnosed at the 3rd or 4th stage and most of the patients have been subjected to total laryngectomy. Only a few patients with this location of tumors undergo epiglottectomy as a conservative operation. The remaining patients who have a choice of partial laryngectomy undergo supraglottic horizontal partial laryngectomy.<sup>4</sup>

## Materials and Methods

Supraglottic larynx pathology was detected after endoscopic, radiographic (computed tomography, magnetic resonance imaging) and histopathologic examinations and supraglottic laryngectomy was performed to 25 patients that admitted to our clinic with complaints of hoarseness, dyspnea and feeling of having some material in throat. Histopathologi-

cally 4 patients (%16) were reported as benign pathology and 21 (84%) indicated malignancy. Those with benign character were flapping epiglottis, cyst of epiglottis and monomorphic adenoma of epiglottis. 9 of 21 patients with malignancy underwent only epiglottectomy without neck dissection and they have been followed without any complication with follow up periods between 5 months and 108 months (average 53 months). 3 patients (12%) had local recurrence within 3-6 months and total laryngectomy with bilateral functional neck dissection was performed. 9 of remaining 12 patients underwent bilateral, the other 3 patients ipsilateral functional neck dissection in one séance (Table 1). Only 1 patient who underwent ipsilateral neck dissection was died due to local recurrence in the neck 16 patients and 5 patients in epiglottis malignant tumors were identified as T1 and T2, respectively.

Epiglottis is pulled outside with forceps after it is directly viewed transorally with a microscope in all patients and it is then incised on the lingual side of epiglottis or rather on the healthier side by using either electrocautery or laser under general anesthesia by using as possible as the thinnest intubation tube Lesion is exposed once the epiglottis is released and turned like the pages of a book over. Then lesion is excised totally by direct visualization. The dissection is then accomplished by starting from hyoepiglottic ligament passing through preepiglottic area and extending to the base of epiglottis and even extending the incision up to

**Table 1.** Distribution of the patients according to pathology and operation.

Benign pathology: 4 (16%)	Malignant pathology:	21 (84%)
	Only epiglottectomy	9
	Epiglottectomy + Bilateral FND	9
	Epiglottectomy + Ipsilateral FND	3
	Total Laryngectomy + Bilateral FND (due to local recurrence)	3

(FND: Functional neck dissection)

aryepiglottic ligament and false vocal cord if necessary. Bleeding is controlled by using cautery or laser and control biopsies are routinely taken from the borders of the lesion. In one patient we performed temporary tracheotomy postoperatively and it was closed after 3 weeks.

The patients were hospitalized and followed for about 1 to 7 days postoperatively due to aspiration problems and laryngeal edema. They were fed by using naso-gastric tubes early postoperative period and they were asked to practice speaking and swallowing. The patients were discharged from the hospital after they could swallow liquids without any aspiration problem. All patients took corticotherapy, antibiotherapy, nonsteroidal antienflammatory and mucolytic agents for 10 days and underwent antireflux treatment for 4 weeks. During the first 6 months of follow up period patients were invited monthly, then per 2 months and after 2 years the patients without any problem were invited per 3-6 months for control visits.

## Discussion

Transoral supraglottic laryngectomy could be performed with satisfactory results in T1 and T2 selective tumors of epiglottis, aryepiglottic fold and ventricle, and could also be performed in the cases that cause airway obstruction like radiotherapy, cysts and benign neoplasms into consideration of previous head and neck region operation, deglutition problems due to neurologic complication, pulmonary problems and cervical metastasis.<sup>5,6</sup>

Supraglottic tumors rarely extend down to involve glottis or invade thyroid cartilage, but preepiglottic area is frequently invaded. Even in this case supraglottic horizontal partial laryngectomy will be sufficient.<sup>7,8</sup>

Such as thyroid cartilage invasion, interarytenoid and postcricoid involvement, systemic problems, glottic involvement with ventricle and anterior commissure invasion, invasion of paraglottic space and

limited cord mobility; poor exposure is also an important contraindication of supraglottic laryngectomy.<sup>9</sup> If the surgeon has suspicions frozen section must be done intraoperatively. For safe margins, resection must be done beyond the healthy tissue. Resection should be increased in proportion where the submucosal tissue thickness and lymphatics are increased. The safe margin should be at least 2-3 mm away from the tumor at glottic region and 5 mm at subglottic and supraglottic region where the submucosa is thicker.<sup>10</sup>

Postoperative aspiration is important complication for patients with pulmonary problem and especially gastroesophageal reflux since wound healing will take a long time. For this reason nasogastric feeding according to the size of resection as well as anti-reflux treatment, swallowing therapy should be planned.<sup>11,12</sup> Nasogastric feeding tube was used for 3 of our patients. These patients have T2 stage epiglottic cancers and nasogastric tubes were left at on average 5 of days. All of our patients were utilizing anti-reflux treatment.

Incidence of regional metastasis in supraglottic cancers is 25-50%, histopathologic metastasis in the absence of lymphadenopathy is 20-30%.<sup>13</sup> Elective neck dissection is recommended to have 15-20% false negative ratio.<sup>14</sup> Neck dissection was performed 15 (71.4%) of our patients, 12 of them were done at same séance and the other 3 were performed for nodal recurrence after the postoperative period. One of our patients was died after transoral supraglottic laryngectomy and ipsilateral neck dissection because of early nodal recurrence.

## Conclusion

Supraglottic laryngectomy is a preferable treatment method at selected cases when we consider the advantages such as no need to tracheotomy, low cost, short operation time, not require neck incision, no risk of pharyngo-cutaneous fistula and early deglutition rehabilitation. Another advantage

is that it also offers the choice of postoperative radiotherapy for patients who subjected to such procedures.

As in the other areas of larynx, treatment for supraglottic cancers should be planned by a team made of experienced head and neck surgeon, medical oncologist, psychotherapist, speech expert and also according to the age, general conditions, social lifestyle of the patient and the location of tumor.

As a result, transoral endoscopic and microscopic cautery or laser excision, of benign and malign lesions at the epiglottis that are limited and can be visualized totally, is a safe treatment modality.

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#### Conflict of interest statement:

No conflicts declared.

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