



Large Internal Laryngocele Excised Endoscopically

Mehmet Güven*, Ahmet Eyibilen*, İbrahim Aladağ*, Doğan Köseoğlu**

*Associate Professor in Gaziosmanpaşa University Faculty of Medicine, Department of ORL

**Department of Pathology

Aim: A patient with large internal laryngocele managed with endoscopic microsurgical excision is discussed.
Subject: Laryngocele are rare abnormal dilatations of the laryngeal saccule. A variety of surgical treatments have been proposed. The large internal laryngocele has traditionally been managed through an external approach. We endoscopically excised with partial vestibulectomy a large internal laryngocele using suspension microlaryngoscopy and cold blade, similar to the technique of laser excision of laryngocele.
Result: Endoscopic microsurgery appears to be an acceptable treatment even for large internal laryngoceles.

Key Words: Internal laryngocele, Endoscopy, Partial vestibulectomy

Endoskopik Olarak Eksize Edilen Büyük İnternal Laringosel

Amaç: Endoskopik mikrocerrahi ile tedavi edilen büyük internal laringoselin literatür bilgileri eşliğinde tartışılması.
Konu: Laringosel laringeal sakkül bölgesinin nadir görülen anormal genişlemesidir. Günümüze kadar bir çok cerrahi tedavi yöntemi önerilmiştir. Büyük internal laringoseller geleneksel olarak eksternal yaklaşım yoluyla tedavi edilmektedir. Büyük bir internal laringoseli suspansiyon mikrolaringoskopi ile laser eksizyon tekniğine benzer olarak endoskopik olarak soğuk bıçak ile eksize ettik.
Sonuç: Endoskopik mikrocerrahi internal laringoseller için kabul edilebilir bir tedavi yöntemidir.

Anahtar Kelimeler: İnternal laringosel, Endoskopi, Parsiyel vestibulektomi

A laryngocele is a rare abnormal dilatation of the laryngeal saccule that extends superiorly between the false vocal fold and the inner aspect of the thyroid cartilage. It is lined with pseudostratified epithelium and maintains its communication with the laryngeal lumen.

Laryngoceles have been classified as internal, external or mixed types according to their relation to thyrohyoid membrane.¹ Internal laryngoceles are localized within the larynx and do not penetrate the thyrohyoid membrane, but may extend posterosuperiorly into the aryepiglottic fold and false vocal folds. External laryngoceles pass through the thyrohyoid membrane via the opening for the superior laryngeal nerves and vessels and extend into the subcutaneous tissues of the neck. The mixed laryngoceles exhibit both internal and external components. Half of laryngoceles are mixed, 30% are external and 20% are internal. There is an equal frequency between the right and left sides and most

of the laryngoceles are unilateral, as only 15% of the cases present bilaterally.²

Treatment of laryngoceles is surgical and varies with the size and type of lesion. The approach may be endoscopic or external through the neck. Endoscopic approach is usually performed with the assistance of laser in small internal laryngoceles. This case report presents a patient with large internal laryngocele managed with endoscopic microsurgical excision.

CASE REPORT

A 53-year-old man presented to our clinic with a 3 year history of dyspnea and hoarseness. He had no dysphagia, neck swelling or other relevant otorhinolaryngological symptoms. He was a tradesman and denied no activity that would specifically elevate intralaryngeal pressure. His medical story included atherosclerotic heart disease and hypertension. He reported a history of smoking 1

pack of cigarettes per day for the past 38 years. On flexible fiberoptic laryngoscopy; a marked, smooth swelling in the right vestibular fold, which completely obscured the glottic chink on expiration and inspiration, was observed. The mass pushed the epiglottis and the laryngeal inlet to the right side, though arytenoids were bilaterally mobile (Fig. 1). No other abnormalities were detected on otorhinolaryngologic examination. A computed tomographic scan of the neck demonstrated an air filled structure, measuring 3x4 cm on the right aryepiglottic fold – false vocal fold region without any extension through the soft tissues of the neck (Fig. 2).

The patient underwent endoscopic microsurgical excision of internal laryngocele using suspension laryngoscopy and cold blade. The intralaryngeal portion of the laryngocele was removed. It was necessary to partly remove the false vocal fold (partial vestibulectomy) for complete dissection of the sac. Blood loss was negligible and there was no need for tracheotomy. The postoperative period was uneventful. Reassessment of the airway with flexible fiberoptic stroboscopy was performed on the third postoperative day which showed partly excised right false vocal fold, complete glottic closure with slightly decreased amplitude. The histopathologic report confirmed the diagnosis of laryngocele with pseudostratified epithelium and underlying seromucous glands in fibrous stroma. There was no evidence of neoplasia or any other coinciding laryngeal disease.

Follow-up examination was carried out at three months and videolaryngoscopy revealed an apparently normal supraglottic area (Fig. 3). There were no airway problems or recurrence.

Fig. 1. Preoperative flexible fiberoptic laryngoscopy examination.

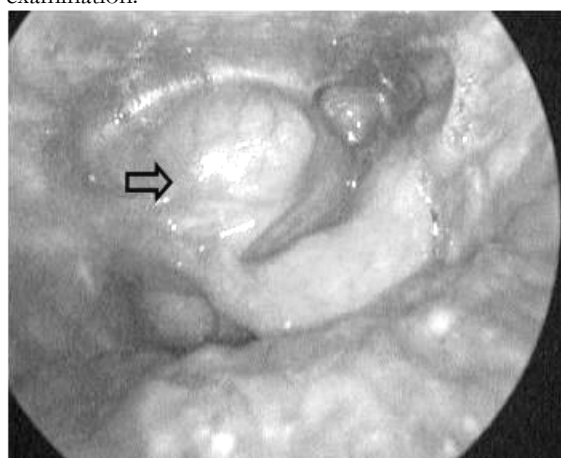


Fig. 2. Preoperative computerized tomographic scan of the larynx. Arrow shows the laryngocele.

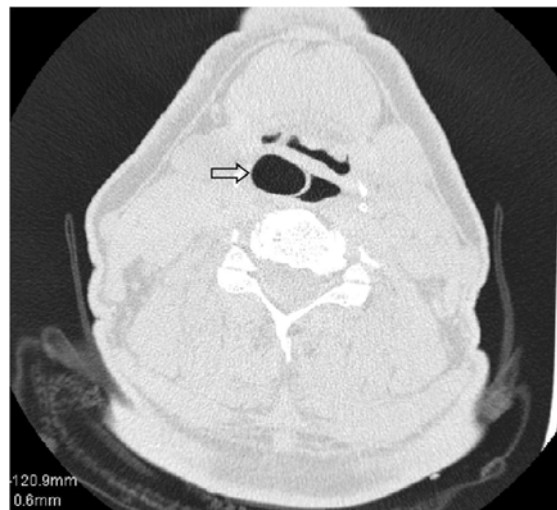
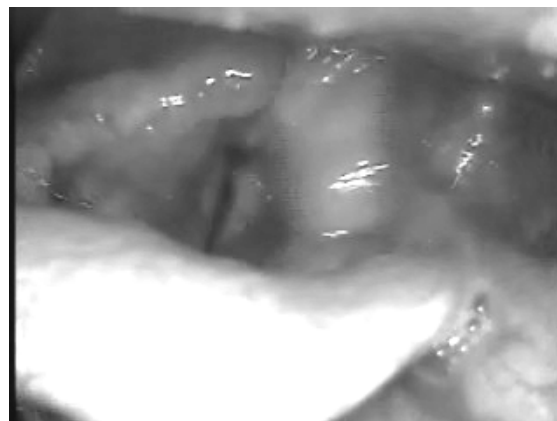


Fig. 3. Postoperative third month videolaryngoscopy.



Voice Evaluation. On the basis of perceptual evaluation by using a 1-3 scale, the patient preoperatively showed +3 hoarseness, +2 harshness, +2 strain/struggle and -1 loudness. He was unable to produce sounds in the lower and higher registers. However, the phonational range did not assessed preoperatively. Acoustic analysis revealed moderate to severe dysphonia (table 1). Two weeks after the operation the patient was re-evaluated. Hoarseness and harshness were resolved and loudness was slightly improved, whereas strain/struggle remained +1. Mean fundamental frequency and intensity were increased, jitter and shimmer values were decreased. An obvious improvement in harmonic to noise ratio

was also determined in postoperative reassessment (Table 1).

Table 1. Preoperative and postoperative acoustic analysis parameters.

Acoustic analysis parameters	Pre-operative	Post-operative
Fo (Hz)	94	123
Intensity (dB)	68	74
Jitter (%)	1.9	0.2
Shimmer (%)	8.08	3.1
MPT (Sn)	8	16
Noise to Harmonic Ratio	14	23

DISCUSSION

Laryngoceles are uncommon clinical entities and many of them are diagnosed incidentally when rays of the neck are taken or laryngoscopes are performed for any purpose. Laryngoceles are developed predominantly in males in the fifth to seventh decades of life.^[3] The incidence is estimated to be 1 per 2.5 million population per year.⁴ It is currently believed that formation of laryngoceles depend on two factors; the presence of a congenital long saccule and the prolonged periods of increased intralaryngeal pressure.

Hoarseness and dyspnea, as in our case, are the main presenting symptoms of laryngoceles followed by cough, stridor and visible mass in the neck.^{5,6} According to Fant's acoustic theory, three mechanisms contribute to voice production; glottal sound source, vocal tract filtering and resonating characteristics.⁷ Laryngoceles may hinder the filtering and resonating components via changing the shape and size of the vocal tract. Supraglottic influence on voice quality may also be adversely affected. Laryngoceles may disrupt the glottal sound source, hence act as a noise producer in larynx and predispose the development of functional voice disorders. However, hoarseness as in hyperfunctional voice disorder, may itself lead to formation of laryngocele.

The management of laryngocele, when symptomatic, is excision, and it has traditionally been performed through an external approach. Thome et al.⁸ reported on seven different surgical techniques of the external approach to the excision of laryngoceles either by way of thyrotomy or by way of thyrohyoid membrane

dissection. These investigators reported better visibility and access to the paraglottic space during dissection, which ultimately lead to less recurrence, morbidity, and complications with lateral thyrotomy approach. But, this technique may be a more invasive and complex procedure for many laryngoceles.

Currently, there appears to be less controversy in the literature regarding endoscopic treatment for internal laryngoceles particularly after the development of the microspot CO₂ lasers. Myssiorek and Persky⁹ and Komisar¹⁰ have described successful use of laser endoscopic resection of internal laryngoceles and/or saccular cysts. All of these investigators identified the importance of complete laryngocele excision because of higher risk of recurrence that is found when marsupialization is performed without entire laryngocele removal. Internal laryngoceles can be excised endoscopically with or without assistance of CO₂ laser. As CO₂ laser is an expensive clinical tool, in the developing countries, like our country, laryngocele excision can be performed via cold blade even without the assistance of laser. We carried out a partial vestibulectomy similar to the technique used in laser excision, thus minimize the recurrence possibility.

Excision of laryngocele has resulted in improvement of the symptoms; cough, dyspnea, foreign body sensation and sore throat as well as hoarseness. On examination the patient presented in this report was found to have severely harsh and hoarse voice with relatively low frequency phonation and loudness. He tolerated the endoscopic excision procedure well and at two weeks follow-up, was speaking with a perceptually and acoustically normal voice.

The objective of laryngocele treatment is to maximally preserve the voice, airway, swallowing, as well as to reduce morbidity. In the presented case, a large internal laryngocele was excised with endoscopic technique using cold blade. This surgical technique, when combined with partial excision of false vocal fold, provides a reliable method for entirely removal of laryngocele.

REFERENCES

1. De Santo LW, Devine KD, Weiland LH. Cyst of the larynx classification. *Laryngoscope* 1970;80:145-76
2. Verret DJ, DeFatta RJ, Sinard R. Combined laryngocele. *Ann Otol Rhinol Laryngol.* 2004;113:594-6.
3. Amin M, Maran AGD. The etiology of laryngocele. *Clin Otolaryngol* 1988;13: 267-72.
4. Stell PM, Maran AGD. Laryngocele. *J Laryngol Otol* 1975;89:915-24.
5. Devesa PM, Ghufoor K, Lloyd S, Howard D. Endoscopic CO₂ Laser management of laryngocele. *Laryngoscope* 2002;112:1426-30.

Güven ve ark.

6. Galliven KH, Gallivan GJ. Bilateral mixed laryngoceles: simultaneous stroboscopy and external video examination. *J Voice* 2002;16:258-66.
7. Stemple JC, Glaze LE, Klaben BG. *Clinical Voice Pathology Theory and Management* 3rd ed. San Diego, CA; Singular Publishing 2000:27-8
8. Thome R, Thome DC, De la Cortina RAC. Lateral thyrotomy approach on the paraglottic space for laryngocele resection. *Laryngoscope* 2000;110:447-50.
9. Myssiorek D, Persky M. Laser endoscopic treatment of laryngoceles and laryngeal cysts. *Otolaryngol Head Neck Surg* 1989;100:538-41.
10. Komisar A. Laser laryngoscopic management of internal laryngocele. *Laryngoscope* 1987;97:368-9.

Corresponding Author:

Mehmet GÜVEN
Associate Professor in Gaziosmanpasa University
Faculty of Medicine,
Department of ORL
Tokat, TURKEY
Tel-fax: 356 213 31 79
E-mail : Guvenmehmet28@yahoo.com