Laryngocele: A Case Report and Review of Literature
J Gulia, S Yadav, A Khaowas, S Basur, A Agrawal

Citation

Abstract
Laryngocele is a rare, benign dilatation of the laryngeal saccule which may be asymptomatic or they may present with cough, hoarseness, stridor, sore throat and swelling of the neck. The incidence of laryngocele is 1 per 2.5 million people per year. The clinical presentation, investigations and the surgical management is reviewed.

INTRODUCTION
The laryngeal ventricle of Morgagni is normally a small elliptical recess located between the false cords above and true vocal cords below. The antero-superior aspect of this recess ends in a blind pouch, which is called the appendix of the ventricle of Morgagni or saccule. A laryngocele is an abnormal saccular dilatation of the appendix of the laryngeal ventricle of Morgagni. It forms an air sac lined with pseudo-stratified ciliated columnar epithelium, which maintains its communication with the ventricle by means of a narrow stalk1.

Laryngocele are of three type’s namely internal, external and combined or mixed laryngocele according to their relationships with the thyrohyoid membrane2. When the ventricular appendage increases in size, it extends medial and superior to the thyroid cartilage till it reaches the thyrohyoid membrane. If this dilated sac does not pierce the thyrohyoid membrane it remains within the larynx and results in internal laryngocele. When this sac pierces the thyrohyoid membrane and protrudes through the thyrohyoid membrane in to the neck it becomes an external laryngocele. A laryngocele, both medial and lateral to the thyrohyoid membrane, is called combined or mixed laryngocele.3,4 A laryngocele is usually unilateral; however bilateral internal5 as well as bilateral external laryngocele6 has been reported.

CASE REPORT
A 40 year old male patient presented with three year history of swelling right side of the neck which has slowly increased in size. There was no history of hoarseness, dysphagia, sore throat or chronic cough. The patient was a smoker and laborer by profession. Past history was insignificant.

General physical examination of the patient was normal. Otorhinolaryngological examination revealed a non-tender soft and reducible swelling on right side in the upper one-third of neck which increased in size on Valsalva maneuver. Indirect laryngoscopic examination was normal. The patient was investigated and his haematological examination and X-ray chest were normal. X-ray soft tissues neck AP view and lateral view showed an air filled cavity on the right side of neck. Ultrasound of the neck also revealed similar findings. Computed tomography of the neck was done which showed air filled sac communicating with the larynx (Fig 1). A diagnosis of laryngocele was made.

Figure 1
Figure 1: Computed tomography neck showing a air filled sac communicating with the larynx
upper border of thyroid cartilage extending laterally up to
the anterior border of the sternocleidomastoid muscle. Skin
flaps including the platysma were elevated up to the hyoid
bone superiorly and down to the lower border of the thyroid
cartilage. The strap muscles were retracted laterally. The
fundus of the sac was defined and with blunt dissection, the
laryngocele was dissected up to its opening in the thyrohyoid
membrane and after ligation at its neck the sac was removed.
(Fig 2)

Figure 2
Figure 2: showing the dissected and exposed laryngocele
before its excision.

Thyrotomy and entry into the laryngeal lumen was avoided
and the wound was closed in layers with a negative suction
drain for 48 hours. Sutures were removed after 7 days and
the patient was discharged in a stable condition. After follow
up of 18 months the patient was symptom free.

DISCUSSION

Laryngoceles may be congenital or acquired and occur at
any age. Laryngocele have been reported to be five to seven
times more frequent in males, with a peak incidence in the
sixth decade of life.\textsuperscript{1,7,8} The estimated incidence of
laryngocele is 1 per 2.5 million people per year. Eighty-five
percent of laryngocele have been found to be unilateral
without any right or left side predominance.\textsuperscript{2,3}

The etiology of the laryngocele is unknown but certain pre-
disposing factors are associated with their development.
Congenitally, the laryngeal saccule may represent atavistic
remnants corresponding to the lateral laryngeal air sacs of
the higher anthropoid apes.\textsuperscript{9} Increased intralaryngeal
pressure may be brought about by many activities (like
lifting defecating), involving a strain which requires fixing
the diaphragm in forced expiration against closed larynx
resulting in increased glottis and ventricular pressure.
Increased intra-laryngeal pressure is also caused by activities
requiring a modified valsalva maneuver in which
intrathoracic pressure is increased during expiration and is
fixed against the lips. This mechanism causes increased
ventricular pressure in wind instrument players\textsuperscript{1,10,11}.

There is a well documented association of laryngocele with
laryngeal carcinoma and the reported incidence varies from
one to ten percent. Supra-glottic carcinoma is the most
common laryngeal carcinoma reported to be associated with
laryngocele. It may result in a valve like closure at the neck
of the ventricular appendage, which allows the entrance of
air but prevents its exit. Hence a carcinoma must be ruled
out if a laryngocele is detected clinically or
radiologically.\textsuperscript{12-14} An association of laryngocele with other
laryngeal disease has been reported including papillomatosis
in children\textsuperscript{10}, amyloidosis\textsuperscript{8}, rheumatoid arthritis\textsuperscript{7} and
oncocystic cysts\textsuperscript{18}.

Laryngoceles commonly present with dysphonia or a
swelling in the neck which typically becomes more
prominent during Valsalva maneuver. The other symptoms
related to laryngoceles include cough, dyspnea, inspiratory
stridor, dysphagia, and foreign body sensation in the
throat\textsuperscript{1,2,11}.

Internal laryngocele presents with hoarseness of voice,
dyspnea and sensation of foreign body. On indirect
laryngoscopy a swelling/fullness of false vocal cords and
aryepiglottic fold region with normal overlying mucosa is
seen. External laryngocele presents as a mass evident in the
lateral aspect of the neck, which is round or ovoid, soft,
elastic, moveable, painless and covered by a normal skin. It
decreases in size by gentle palpation and pressure as the air
escapes in the larynx. Mixed laryngocele produces the
subjective symptoms of internal laryngocele and the
objective signs of an external laryngocele. Almost
pathogonomic of the mixed type of laryngocele is the rapid,
sudden worsening of symptoms, especially dyspnea
following compression of the external component. The
passage of air from the external to the internal part of the sac
results in sudden enlargement of internal component of
laryngocele and it may cause acute upper airway
obstruction\textsuperscript{1,2,10,11}.

Laryngoceles rarely may even result in death of the patients.
An external laryngocele can produce pressure and displace
the larynx causing obstruction and death\textsuperscript{19}. An external
laryngocele can cause sudden death by asphyxia from
spillage of muco-purulent material in to the trachea. The diagnosis of laryngocele is essentially a clinical. Plain X-rays soft tissue necks in anterior- posterior and lateral views are of value, especially if the Valsalva maneuver is performed. Ultrasound examination of neck is also useful. Computed tomography provides a cross-sectional image and superior contrast resolution and has replaced many conventional techniques and has become the initial radiographic method of evaluating the larynx and neck. It is also the useful investigation in cases with suspicion of concomitant laryngeal pathology. Uncomplicated laryngocele appear on CT as air filled structures lying in the para-laryngeal space (internal), lateral neck (external) or in both locations (mixed). Magnetic resonance imaging, because of its multiplanar capability provides high definition of soft tissues, offers detailed information on the boundaries of the air-filled sac and, is useful when laryngomucocoele or laryngopyocele are suspected. MRI is also helpful to distinguish obstructed mucus and inflammation from neoplastic disease.

Differential diagnosis of laryngocele includes, saccular cyst, branchial cyst, neck abscess and lympho-adenopathy.

Treatment of laryngocele is surgical. External surgery is preferred for large or external laryngocele, while endoscopic resection is favored for small, internal laryngocele. External approach provides an excellent exposure during the dissection of the plane between the neck of laryngocele and surrounding paraglottic tissue. Further this approach offers less recurrence rate, minimal morbidity, and negligible complications. Endoscopic resection with CO2 laser is the treatment of choice in patients with internal laryngocele. It requires lesser operation time and causes minimal damage to the endolarynx and vocal folds. The quality of voice and swallowing functions can be preserved.

The mixed laryngocele can be completely removed via an external cervical approach, however a combined external and endoscopic laser approach to ensure complete removal of the mixed laryngocele has been advocated.

References

Author Information

Joginder Singh Gulia
Professor, Department of Otolaryngology, Pt. B.D Sharma University of Health Sciences

S.P.S. Yadav
Senior Professor, Department of Otolaryngology, Pt. B.D Sharma University of Health Sciences

Ajoy Khaowas
Ex Resident, Department of Otolaryngology, Pt. B.D Sharma University of Health Sciences

Sukhdeep Kaur Basur
Postgraduate student, Department of Otolaryngology, Pt. B.D Sharma University of Health Sciences

Arpit Agrawal
Postgraduate student, Department of Otolaryngology, Pt. B.D Sharma University of Health Sciences