University Journal of Surgery and Surgical Specialities

ISSN 2455-2860 2020, Vol. 6(1)

A RARE CASE OF MIXED LARYNGOCOELE

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Abstract : Laryngocele is a rare, benign dilatation of the laryngeal saccule which may be asymptomatic or they may present with hoarseness, swelling of the neck, cough, stridor and sore throat. We present a case of 33 yr old business man who presented with complaints of hoarse voice and neck swelling for 6 months. After detailed history, clinical and radiological investigations, he was diagnosed to have mixed laryngocoele on right side. Surgical excision by external approach was done.

Keyword : Laryngocoele, saccule, neck swelling, ventricular fold

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 Laryngocele is usually unilateral; however bilateral internal5 as well as bilateral external laryngocele6 has been reported. A case of mixed laryngocoele is being presented.

CASE REPORT

The patient, 45 year old business man, presented to our hospital with hoarse voice and neck swelling on the right side of the neck for past 6 months. Patient was apparently normal 6 months back when he started noticing change in his voice in the form of Progressive hoarseness of voice, At first only speaking in loud sounds and later on change was noticed in low sounds too. He had associated neck swelling on the right side which was the size of an average sized grape which progressively enlarged to the size of a gooseberry.(FIG 1) Swelling was soft and compressible. He had associated foreign body sensation in throat.

Figure 1 : External neck swelling seen

History of associated cough present, Dry cough, aggravated on supine position. He had associated difficulty in swallowing present Only to solid foods. There were no other relevant history. He did not smoke or had any disorder. During physical examination, a soft mass covered with normal skin was palpated over the level II and III on the right side of the neck. Bryce's sign was positive. The Valsalva maneuver produced the swelling to increase in size. (FIG 2)

Figure 2 : Increased size of swelling after Valsalva.

No pulsations could be felt and there were no vascular sounds on auscultation. Laryngoscopic examination with rigid and flexible laryngoscopy revealed a bulging that partially obscured the right true vocal fold, which seemed to be enough to a comfortable airway. Any obvious signs of malignancy or pathological lymph nodes in the neck were not detected. A laryngocele was suspected according to the physical and endoscopic examination results. Computed tomographic (CT) scan confirmed the diagnosis of laryngocele showing a massive lesion in the larynx communicating with the airway.(FIG 3,4)

Figure 3: Axial CT Scan showing both external and internal components

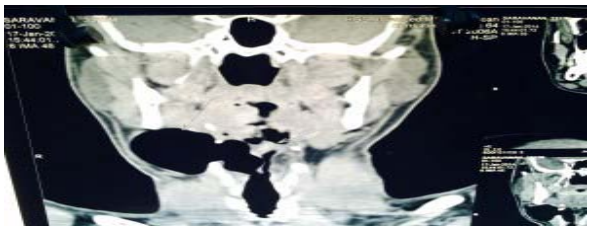

Figure 4: Coronal cut showing communication of the laryngocoele with the normal airway

Direct laryngoscopy confirmed that a smooth swelling, originated in the right ventricle, obscured the vocal cords and the laryngeal lumen partially. After the direct laryngoscopic examination to rule out malignancy, extirpation of the laryngocele was performed via external approach. A horizontal neck incision (6 cm) was made just below the level of superior aspect of the thyroid cartilage, in a skin crease (FIG 5).

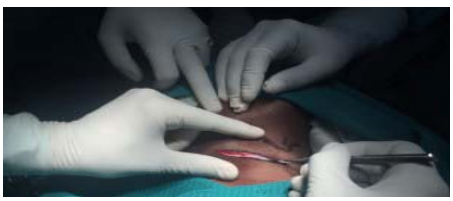

Figure 5: Skin incision

Subcutaneous tissue dissected and fascial layer around the cyst wall was dissected (FIG 6).

Figure 6 : Dissection of fascia around the cyst wall

The cyst was seen as a glistening mass , dissected all around superiorly, inferiorly and laterally paying careful attention to the carotid sheath (FIG 7)

Figure 7 : Cyst seen as a glistening mass

The lateral aspect of the laryngocele was defined by carefully excising the soft tissue covering on its surface, external component dissected completely all around and then followed through the thyrohyoid region (FIG 8).

Figure 8: External component completely dissected.

The laryngocele was retracted gently as blunt dissection before proceeding with dissection of the intralaryngeal component of the laryngocele .This is especially important posteriorly within the thyrohyoid membrane region, where the superior laryngeal nerve branch is immediately adjacent to the laryngocele. An inferiorly based flap was created from the outer perichondrium of the thyroid ala by incising at the superior border of the thyroid lamina and using a freer elevator for dissection (FIG 9).

Figure 9: Thyroid cartilage dissected using freer's elevator after incision.

A triangular section of the thyroid ala is marked out, with its base superiorly, and its apex at a point half way along the vertical distance of the thyroid lamina.9 This segment of cartilage was removed with a 15 blade. The inner perichondrium was then incised and removed from the triangular region, exposing the paraglottic space. Finally, the termination of the laryngocele was identified at the base of the saccule.(FIG 10)

Figure 10: Paraglottic space being entered , internal component dissected.

This corresponds with a point 3–5 mm posterior to the midline of the thyroid lamina at the midway point along its vertical height. The specimen was open for evaluation of the mucosa; signs of neoplastic lesion were absent. Tracheotomy was not required. The histopathologic report confirmed the diagnosis of laryngocoele. The

postoperative period was uneventful and the patient was discharged 4 days after surgery. The patient on follow up 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. (1,7,8) The estimated incidence of laryngocoele is 1 per 2.5 million people per year. Eighty-five percent of laryngocoele have been found to be unilateral without any right or left side predominance. 2,3 The etiology of the laryngocoele 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 anthopoid apes.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 players1,10,11.But in our case, he was a business man by occupation and no such activities were present. 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.12-14 An association of laryngocele with other laryngeal disease has been reported including papillomatosis in children15, amyloidosis16, rheumatoid arthritis17 and oncocystic cysts18. 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 throat1,2,11. 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 dysponea 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 obstruction1,2,6,10,11. Laryngoceles rarely may even result in death of the patients. An external laryngocele can produce pressure and displace the larynx causing obstruction and death19. An external laryngocele can cause sudden death by asphyxia from spillage of muco-purulent material in to the trachea.20 The diagnosis of laryngocele is essentially a clinical. Plain X-rays soft tissue necks in anteriorposterior 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 the also 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 multiplanner 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.21,22,23 Differential diagnosis of laryngocele includes, saccular cyst, branchial cyst, neck abscess and lympho-adenopathy.1,11,24 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 4,14,25. 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.14,25 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.14,25, 26

CONCLUSION

The diagnosis of Laryngocele should be kept in mind in cases of upper neck swelling. Radiological investigations such as Soft tissue neck and CT Scans help to confirm the diagnosis. Direct Laryngoscopy is essential to rule out malignancy before surgical excision of the laryngocele

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