Laryngocele

By B. S. Mehta* and M. K. Bhargava

Introduction

Laryngocele is a rare condition and the one requiring surgical excision is still rarer. In the past century not more than a hundred cases of this entity could be accounted for from the available literature. Twenty-nine cases of Holinger (1961), twenty-four cases of Freedman (1938), Glatz's case and eight cases cited by him (1961), five cases of Harrison (1950), three cases each of Lawson (1950) and Freeman (1952), two cases of Horowitz (1951) and a case each of Butler (1950) Clyne (1951), Black (1951), Mays (1954), Beautyman (1959) and W. S. Lund (1960). This condition was first recognized in 1829 when Larrey, surgeon in Napoleon's Army in Egypt noticed tumours in the neck of blind Muslim prophets (Butler, 1950). The first anatomical description of bilateral external laryngocele was published by Bannett in Dublin in 1865 (Horowitz, 1951). Virchow in 1867 was the first to introduce the term laryngocele while describing enlargement of the saccule of the ventricle (Mays, 1954). Laryngocele was observed accidentally at autopsy or in dissecting room without much attention (Freedman, 1938) while Glatz (1961) on the other hand, is of the opinion that now many authors are growing conscious of the existence of laryngoceles and hence more mention of it in the recent literature. This article deals with a case report of a unilateral external laryngocele treated surgically with review of literature on the subject and the only case met with by the author during the past eleven years.

Case Report

A male patient "B" aged 45 years, mill-hand by occupation, was admitted under my care in E.N.T. Department in M.Y. Hospital on *24 April 1963* with the following complaints:

1. Swelling right side of neck varying in size and present since 6 years, but irreducible since past 6 months.

2. Occasionally hoarseness of voice particularly during attacks of cold.

The swelling becomes larger on coughing and stooping but occasional hoarseness is complained off. He managed to reduce the swelling manually and it completely disappeared on pressure. While working at the loom he was very often required to suck the thread from the pipe. During all these years he was not required to consult a doctor, until recently when the swelling could not be reduced completely.

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On Examination. A healthy looking man who could speak normally.

Neck. It showed a rounded swelling in the right anterior triangle the size of a golf ball (Fig. 1). The skin over the swelling was not adherent. It was situated partly in front of sterno-mastoid and partly covered by it at the level of its middle third. The swelling increased to about twice its size on coughing and on auto-insufflation by Valsalva's technique. Surface was smooth and soft to touch and it moved on swallowing. It was tympanitic on percussion. Trans-illumination was present and it was obviously an air filled cyst.



(*a*) (*b*)

FIG. 1.

Case of unilateral external laryngocele; a mill-hand by profession. (*a*) Note a rounded swelling in the right anterior triangle, of the size of a golf ball, causing disfigurement of neck before operation. (*b*) Note the invisible scar 2 years after.

Laryngoscopy. There was fullness of right false vocal cord. The larynx was not displaced to the left of midline. The appearance and mobility of the true cords were normal. The remainder of ear, nose and throat examination revealed no abnormality.

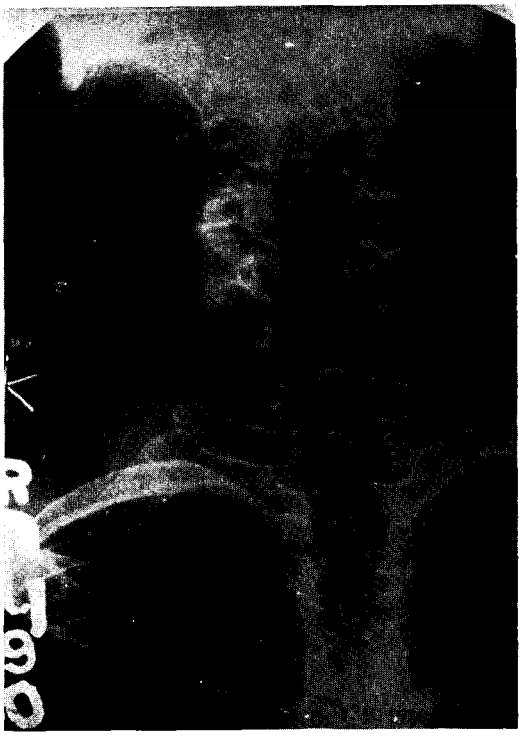
K.T. — Negative

B.P. — 130/86 mm. Hg.

X-ray Report. A loculated aerocele is well defined on the right side of the neck. The larynx and trachea were not displaced on the left side (Fig. 2).

Chest X-ray. Did not reveal any abnormality. The Ba-swallow did not reveal any abnormality of oesophagus. The operation was performed on *1 May 1963* under G.A. using a cuffed endotracheal tube.

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(*a*)



(*b*)

FIG. 2*a* and *b*.

Front view and lateral view. Radiograms of the case of unilateral external laryngocele. Note the shadow of a well defined loculated air-filled cyst on the right side which is typical of a laryngocele.

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A "Y" shaped incision with its horizontal arm 4 in. long and was made on the right side of neck as the sac was large and extended for 6 in. along the anterior border of sternomastoid. The dissection was carried out from the fundus and laryngocele was exposed down to its neck, where it was present under the thyrohyoid membrane at the junction of the posterior and middle third of thyroid cartilage. The walls of the sac were quite tough. The sac did not pass through the membrane, it was under the membrane and came out behind the lateral border of the thyroid cartilage. The neck of the sac was found to be narrow and fibrous. Having freed the laryngocele down to the neck of the sac it was clamped and divided as in appendicectomy and the stump tied and invaginated with the help of purse-string sutures. The capacity of the sac was 76·5 c.cm. The wound was closed and drained with a corrugated rubber dam. The patient was kept on antibiotics. He made an uneventful recovery and was discharged from the hospital on *14 May 1963* (Fig. 1b).

Definition, Embryology and Anatomy

An intense search of available literature has revealed an exhaustive review on this condition by Horowitz (1951) who had given an excellent anatomical description.

"Laryngocele is an anomalous air sac which develops from the saccule of laryngeal ventricle and communicates with the cavity of larynx."

Laryngocele is dilated to form an air sac in many of the higher apes and other mammals. These air sacs are expansile and it is believed that they are used for rebreathing of air at times of physical stress (Negus, 1929).

In man the presence of laryngocele indicates a morphological regression in the human larynx and is vestigial. The saccule develops as an outpouching of the laryngeal cavity towards the end of the second month of foetal life (Frazer, 1909).

It is always present and relatively of a large size in the newborn and it commences to regress at the age of 6 years.

The ventricle is present only in the larynx of mammals. It is formed by splitting of the common thyroarytenoid sphincter of primitive types into two parts. An internal or lower and an external or upper division. The upper division becomes the false cords, the lower becomes the true cords. Between the two divisions a recess is left and this excavation represents the ventricle.

The laryngeal ventricle was first described by Morgagni, 1741 and it bears his name Hilton (1837) carried out a series of dissections of this space and described it in detail. He drew attention to the anterior upward projection of the pouch of Morgagni to form in its anterior third a vertical blind pouch known as the laryngeal saccule or laryngeal appendix.

The laryngeal ventricle and its upward extension, the sacculus, are covered with ciliated columnar epithelium. Lymphoid cells, single and in bunches, are scattered in the stroma.

Aetio-Pathology

(A) *Predisposing factors:*

(a) Presence of congenitally long saccule.

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(b) Reversion to the presence of an air sac as in members of ape family.

(B) *Exciting Causes:*

Excessive increase of intralaryngeal pressure which may occur during coughing, playing musical wind instruments, misuse of voice, glass-blowing and extreme muscular effort.

Obviously these exciting factors being more prevalent in man the incidence of laryngocele is higher in males (Butler, 1950).

Laryngocele may be:

(i) Unilateral or

(ii) Bilateral.

In man such bilateral laryngoceles do not lead to fusion across the midline anteriorly unlike the phenomenon seen in the neck of apes.

Shambaugh and Lewis (1915), Harrison (1950) and Glatz (1961) have classified laryngocele as:

(A) *Internal.* Those lying medially to the thyroid cartilage within the laryngeal cavity.

(B) *External.* Presenting externally as a lateral swelling in the neck.

(C) *Mixed.* Which is combined internal and external.

According to Holinger (1961) the laryngoceles are of two types:

(1) One appears to have descended posteriorly from its origin in the sinus of Morgagni into the aryepiglottic fold and arytenoid region, it presents as rounded cystic mass distorting the contour of hemilarynx.

(2) The second type appears as an eventration of the ventricle.

Sign, Symptoms and Diagnosis

Laryngocele may appear at any age and has been reported in infants. Symptoms vary according to the size of cyst. Dyspnoea may be marked in the younger age group. It may lead to sudden obstruction and death.

Dysphagia when present indicates that the laryngocele is infected.

Pain is not a prominent feature.

Swelling is present in the neck in the region of upper border of thyrohyoid cartilage, it is reducible by pressure and its disappearance is characteristically accompanied by gurgling sounds. If the sac is infected then the swelling is hard, red, very painful and tender to touch.

If suppuration takes place the thick mucopurulent fluid may be discharged inwardly.

The swelling may disappear completely only to reappear again.

Disfigurement of neck may be a troublesome feature.

The patient may be able to distend the tumour voluntarily by forced expiration or coughing. Voice changes include an alteration in tone or hoarseness or a weakness progressing to aphonia.

Hoarseness is more marked during a respiratory infection.

The size of swelling in the neck varies from a nodule to a swelling reaching down as far as the clavicle or into the submaxillary space and even displacing the base of the tongue and part or whole of the larynx and trachea.

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Laryngoscopic appearance after inflation include a very marked swelling of the ventricular band hiding the vocal cords. The swelling interferes with the movement of the vocal cords. The swelling may fill the whole of one side of the ventricle and extend across to hide the other cord (Fig. 3).

Laryngocele is clear on transillumination.

Diagnosis

Radiographic appearance of an air containing tumour is obvious. Further confirmation of the diagnosis can be obtained after the injection of contrast medium into the air cyst.

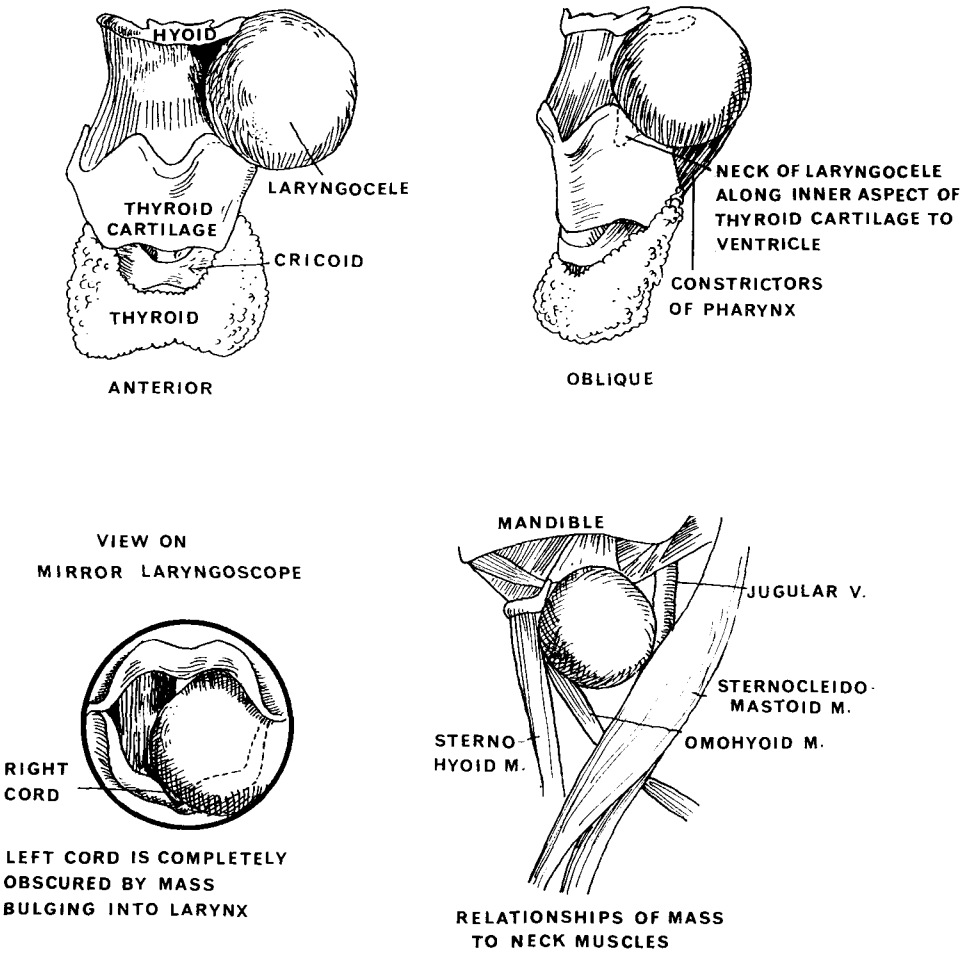


FIG. 3.

Shows relationship of laryngocele to structures in the neck and also its view on mirror laryngoscope.

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In Differential Diagnosis

A branchogenic cyst and cyst of a thyroglossal duct can be taken into consideration, but neither of these communicates with the larynx.

Discussion

The enlargement and extension of laryngocele is helped by the gap between the medial and lateral thyrohyoid ligaments as well as due to the dehiscence between the edges of middle and inferior constrictor muscles.

In the authors' case the sac did not pierce the membrane, but passed lateral to it. The neck of the sac was short, narrow and terminated in the laryngeal orifice of Morgagni's ventricle.

In the author's case the chief complaint was the appearance of a lateral swelling in the neck. The swelling could be reduced completely by external pressure indicating that the ventricular orifice did not exert a valvular action against the emptying capacity of the sac. The sac was not infected. A fluctuant sac in the neck is a positive proof of infection in the sac and demands prompt treatment for fear of laryngeal obstruction, particularly in infants. The pyoceles respond to intensive antibiotic treatment by discharging their contents through the ventricular ostium into the larynx and at times effect a spontaneous cure.

Treatment

The only effective treatment is surgical removal, when indicated. But the operation is not required often unless the sac is infected or it is of large size, irreducible and causing disfigurement. In author's case disfigurement of the neck was the important symptom.

The presence of such sacs in all probability in author's view is homologue with the lateral air sac of anthropoid apes, particularly, so in cases of external laryngocele (Butler, 1950).

Conclusion

Laryngocele is an extremely rare condition.

A case of unilateral external laryngocele requiring surgical excision on account of its large size is presented.

Acknowledgment

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