

Endoscopic management of internal laryngopyoceles presenting with acute airway obstruction

Aishwarya Anand¹, Anand Veluswamy¹, Asheesh Dora Ghanpur^{2*}

¹Consultant, MCV Memorial Trust Hospital, Pollachi, Coimbatore

²Assistant Professor, Department of ENT, Osmania Medical College, Hyderabad, Telangana

*Corresponding Author:

Asheesh Dora Ghanpur, Assistant Professor, Department of ENT, Osmania Medical College, Hyderabad, Telangana

E-MAIL: ent.asheesh@gmail.com

Date of Submission: 24/03/2023

Date of Review: 22/05/2023

Date of Acceptance: 08/08/2023

ABSTRACT

Introduction: A laryngocele is an abnormal dilatation of the laryngeal saccule. It is asymptomatic most of the time so its true incidence is unknown. Depending on the site, symptoms may vary from a lump sensation in the throat to breathing difficulty. Radiologic confirmation of the diagnosis is a must.

Report: A 50-year-old diabetic gentleman presenting with acute airway obstruction was evaluated and found to have an internal laryngopyocele which was managed with IV antibiotics and an endoscopic approach (draining and marsupialization) after securing the airway by tracheostomy. A review of the literature reveals that there is no consensus to manage such patients due to the rarity of the problem. The patient was decannulated in 5 days and made a good recovery.

Conclusion: We advocate an endoscopic approach for internal laryngopyocele in emergency situations as it can expedite recovery due to less morbidity when compared to an external approach.

KEYWORDS: Laryngopyocele, Endoscopic approach to Ventricles, marsupialization

INTRODUCTION

Laryngocele is a rare laryngeal disease, where there is an abnormal cystic dilatation of the saccule of the laryngeal ventricle [1]. It can be external, where the cyst expands laterally and breaches the thyrohyoid membrane presenting as a neck mass, internal, where it expands medially entering the supraglottic space, or mixed, where there is a combination of the two presentations. When the opening of the saccule is cut off from the endolarynx, the mucus pent up inside will result in a laryngomucocele or a saccular cyst. The inspissated mucus gets infected leading to the formation of a laryngopyocele, which is a potential space-occupying lesion [2]. We report a case of an internal laryngopyocele, probably quiescent for a long time, that presented as an emergency with acute airway compromise. Preliminary tracheostomy

was done and subsequent endoscopic incision, drainage, and marsupialisation of the cyst.

CASE REPORT:

A 59-year-old man, with difficulty in breathing for 2 days and presented to our hospital in acute stridor. There was no history of hoarse voice/throat pain/fever. On arrival, he was stridulous and in respiratory distress. He received immediate airway management with one millilitre of Adrenaline mixed with four millilitres of normal saline nebulised and 200 milligrams of Hydrocortisone intravenously. On examining his larynx with a rigid 90-degree endoscope, a limited view of the glottis was obtained secondary due to a supraglottic swelling with minimal slough over supraglottis and narrow glottic chink. Figure 1 There were no signs of systemic sepsis although his initial haematological and biochemical investigations revealed nonspecific inflammation with elevated levels of C-reactive protein (25.6 mg/L) and erythrocyte sedimentation rate (48 mm/h). He was a known diabetic and sugars were controlled with insulin and oral hypoglycemic agents. He was sent for a Computed Tomograph of the neck with contrast that revealed an ill-defined peripherally enhancing hypodense lesion measuring 3 x 2.8 x 2.8 cm in the right-side laryngeal ventricle. Posteriorly the lesion was extending up to retropharyngeal space and inferiorly it was extending up to the right true vocal cord. Laterally no extra laryngeal extension or cartilage erosion was seen. Figure 2 A diagnosis of right laryngopyocele was made and IV Amoxicillin clavulanic acid and Metronidazole were started.

A tracheostomy was done under local anaesthesia and the patient was then induced and GA was given. Direct laryngoscopy revealed oedema over the right aryepiglottic fold, the glottic area which was almost completely obscuring the laryngeal inlet. The laryngopyocele was deroofed using long laryngeal biopsy forceps, and 5 ml of frank pus was immediately aspirated from the area. The excess mucosa comprising the remaining bulk of the lesion was excised and sent for histopathological examination. It revealed necrotic and inflamed tissue. The pus aspirated from the cavity grew *Staphylococcus aureus* sensitive to Penicillin and Flucloxacillin. He recovered swiftly with iv antibiotics. The

airway was assessed on post-operative day 5 and the patient was decannulated. On reviewing his larynx in the clinic four weeks later, the inflammation appeared to be resolving and there was also significant subjective improvement in the voice quality. Figure 3



Figure 1: Preoperative endoscopic picture of Larynx showing right supraglottic swelling with slough and narrow airway



Figure 2: Cronal CT image revealing the laryngopyocle in the right side ventricle with extensions

DISCUSSION

A laryngocele is an abnormal dilatation of the laryngeal saccule, first described in the early 19th century by Virchow. Following that, there have been multiple accounts of laryngoceles in the literature although the condition remains fairly rare. It can be asymptomatic so its true incidence is very difficult to calculate. It is estimated that about 2.5 per million symptomatic laryngoceles occur per annum in the United Kingdom.^[3] Most commonly, it is a congenital abnormality, but it has been demonstrated to arise in people with prolonged periods of increased laryngeal pressure such as glass blowers and wind instrument players.^[4, 5] Laryngoceles can be internal, external, or mixed. An association of laryngoceles with squamous cell carcinoma of the larynx has been well established, necessitating a high index of suspicion for malignancy when present.^[6] Symptoms of laryngoceles depend on the subtype. External laryngoceles usually present as a neck mass, which varies in size according to how much air is in the saccule.

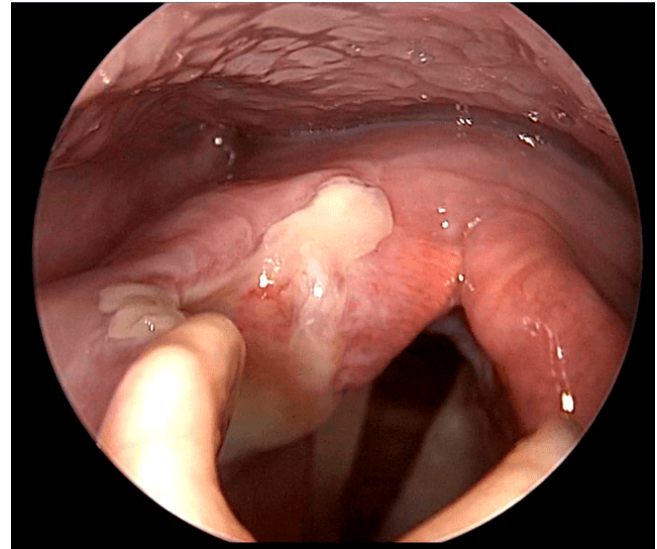


Figure 3: Post operative Rigid Laryngoscopic image of larynx showing good airway and resolving supraglottic edema

Internal laryngoceles present with laryngeal symptoms such as hoarse voice, foreign body sensation, sore throat and airway obstruction. Very rarely, a laryngocele can become infected and turn into a laryngopyocoele. It is estimated that about 8% of laryngoceles turn into Laryngopyocoeles^[7] but only 50 cases have been reported so far in the literature.^[8, 9] The most common organisms isolated were *Staphylococcus aureus* & *Haemolytic Streptococci*.^[10] When the opening of the saccule is cut off from the endolarynx it gets filled with mucus and continues to enlarge. When that mucus collection gets infected, a laryngopyocoele forms. An external laryngopyocoele will present with an infected neck mass and will be managed accordingly. Internal laryngopyocoeles are exceedingly rare, with only a handful of cases reported in the literature.^[11] They usually prove very challenging to diagnose and manage. They often present in extremes of age, and a very unstable airway due to the nature of the disease. A review of the current literature reveals that there is no consensus on how to manage such patients, due to the rarity of the presentation. As it is evident, securing an airway is paramount in every case, and, the patient is managed with an urgent tracheostomy and resection of the laryngocele via an external approach.^[2, 12] There have been cases in the literature where a laryngopyocoele has been managed with an initial ultrasound-guided aspiration of the pus-filled cyst to relieve the acute symptoms with formal excision of the laryngocele at a later stage.^[13] However, despite the fact that an endoscopic approach to noninfected internal laryngoceles has been established with very good results, there have not been any reports of laryngopyocoeles being managed endoscopically.^[14, 15]

In our case, we managed the laryngopyocoele via an endoscopic approach after a tracheostomy. This provided an

effective way of making a diagnosis in an otherwise complex situation and secondly managing the problem definitively by draining, marsupialising and excising the laryngopycoele during the same anaesthetic episode. Notably, the patient did not experience any complications; he did not develop any pneumonia/pneumonitis, which is always a worry when dealing with intralaryngeal abscesses. He was given antibiotic therapy for 5 days and made a very good recovery.

CONCLUSION

We advocate the approach of endoscopic resection of laryngopycoeles in emergency situations, as it can expedite the patients' recovery by effectively diagnosing and managing such conditions. Moreover, with advancements in endoscopic approaches to Larynx, endoscopic resection offers a better alternative to the old approach of external resection of laryngoceles and prevents the associated surgical morbidity like injury to Superior Laryngeal Nerve and Vessels.

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How to cite this article: AA, AV, Ghanpur AD. Endoscopic management of internal laryngopycoele presenting with acute airway obstruction. *Perspectives in Medical Research*. 2023;11(2):71-73
DOI: [10.47799/pimr.1102.14](https://doi.org/10.47799/pimr.1102.14)