

Pyolaryngocele: Management of an Unusual Cause of Odynophagia and Neck Swelling

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Abstract: We present a case of 82 years old female with two-week history of neck swelling, odynophagia, hoarseness and cough. There was a tender, fluctuant swelling below the mandible on right side. An urgent C.T scan showed it to be a pyolaryngocele. High dose intra venous antibiotic, analgesia and nasogastric feeding resolved the acute infective episode. The residual laryngocele was treated by an excision via an external approach.

A pyolaryngocele is a rare complication of laryngocele that becomes secondarily infected. It can cause feeding and respiratory compromise because of its compression symptoms. A CT is helpful for prompt diagnosis and for planning definitive surgical management.

The aim of this paper is to highlight the need to recognise and then treat these cases aggressively. The best treatment option is to remove the laryngocele in-toto to prevent recurrence.

Keywords: pyolaryngocele, laryngopyocele, laryngocele, larynx, management, surgery

Case Report

An 82-year-old female presented to our hospital with a short duration of hoarseness, odynophagia, productive cough and a tender neck swelling for two weeks. The past medical history included chronic obstructive pulmonary disease. She was a life long smoker. A thorough ENT examination revealed a tender 3 × 4cm fluctuant swelling in the right side of neck at level III region, adjacent to the thyroid cartilage lamina. Flexible laryng-pharyngoscopy demonstrated a large swelling in larynx, involving the right aryepiglottic fold with pooling of saliva in the right pyriform fossa and post-cricoid area of the hypopharynx. The patient was noted to be aspirating. She was admitted and a nasogastric tube was passed to provide a portal for feeding, hydration and analgesia. High-dose intravenous Metronidazole and Cefuroxime were commenced. A fine needle aspiration assessment was performed on the neck swelling. This produced 35ml of frank pus that was submitted for microscopy, culture and sensitivity testing. An urgent CT scan of the neck Figure 1 showed a large right-sided laryngeal abscess, with extension laterally into the anterior triangle of the neck. Intravenous antibiotic therapy was continued for five days. The condition of the patient improved steadily as the laryngeal and subcutaneous neck infections subsided and she was discharged ten days after admission. However, to our great surprise the neck swelling recurred after one week, but without the classic signs of infection. She was readmitted and a repeat needle aspiration of the swelling was performed on two separate occasions, three days apart, but only air was aspirated. Repeated Flexible laryngoscopy showed a persistent aryepiglottic swelling in the larynx. A further CT scan was performed to elucidate the nature of the swelling Figure 2. This scan showed a large right-sided laryngocele, approximately 5cm in size extending through the thyrohyoid membrane (Fig.) to the submandibular gland postero-superiorly, to the carotid sheath laterally and the sternocleidomastoid muscle posteriorly. Given the age and co-morbidities of our patient, the options for management included long-term nasogastric or gastrostomy feeding and watchful waiting, a short surgical procedure to marsupialise the laryngocele accepting the risk of recurrence, or a longer anaesthetic and surgical procedure, with their inherent risks, to excise the laryngocele to its neck with a section of the right thyroid cartilage lamina. The patient elected to have a definitive surgical procedure to excise the laryngocele in-toto. Under general anaesthetic, at first a panendoscopy was performed and

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Figure 1. C.T scan of the neck showing a large right-sided mixed Pyolaryngocele with air fluid levels (white arrows).

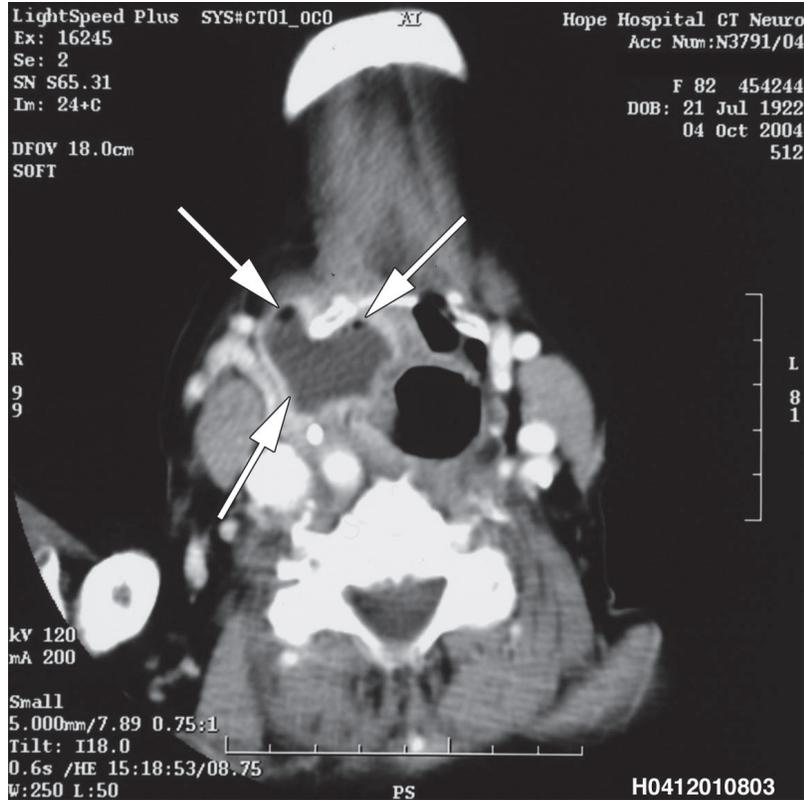


Figure 2. C.T scan image showing a large mixed right-sided Laryngocele opening into laryngeal ventricle (white arrow) and a lateral expansion through the thyrohyoid membrane to the submandibular triangle (black arrow).

primary laryngeal malignant lesion was excluded as a possible aetiological focus for laryngocele. subsequently, the laryngocele was excised in toto from neck along with a part of lamina of thyroid cartilage of larynx. The patient had an uncomplicated postoperative recovery. She commenced oral feeding 3 days after the surgery. She was reviewed recently in the outpatient department 6 months after surgery and remains well.

Discussion

Morgagni first described the ventricle of the larynx in 1741.^[1] This is a fusiform orifice extending from the thyroid notch to the arytenoid cartilage bounded above and below by the true and false vocal cords respectively. The anterior roof of the ventricle leads to a blind pouch called the saccule. It is lined by pseudo-stratified ciliated epithelium. It contains numbers of mucous containing glands. Mucous produced with the contraction of skeletal muscles of larynx, lubricates the vocal folds.^[2,3]

In some cases the saccule dilates excessively forming a laryngocele. The dilatation forms an air sac that remains in communication with the laryngeal lumen.^[4] Aetiological factors remain controversial. They occur more commonly in males in the 5th and 6th decade of life. They are presumed to be more common amongst glass blowers, musicians who play wind instruments, singers and hawkers. It has been postulated that the raised intraglottic pressure created in these professionals, while blowing, forces air into the ventricles, thus dilating the saccule. There evidence for this is scant, however.^[5] Age-related laxity of laryngeal tissue may also contribute to their pathogenesis.^[6]

Laryngoceles are rare entities, occurring in only one per 2.5 million populations per year in the U.K.^[7] Laryngoceles can be classified as internal (20%), external (30%) and mixed-types (50%). Internal laryngoceles extend in a postero-superior direction towards the false cords and aryepiglottic folds, but tend to remain within larynx. External laryngoceles extend superiorly, herniate through the thyrohyoid membrane of larynx and become extra-laryngeal. They present as a mass in the side of neck. A mixed variety contains both internal and external components.

Laryngoceles are usually asymptomatic. Occasionally, they present with hoarseness of voice or a smooth swelling on the antro-lateral part of neck.

It is of paramount importance to rule out an underlying carcinoma. Pathological studies of resected laryngeal carcinomas have revealed up to 18% containing laryngoceles.

A pyolaryngocele may develop in approximately 8% of laryngoceles.^[7] This occurs if a pre-existing laryngocele develops into a laryngomucocoele as a consequence of stasis of glandular secretions that become secondarily infected.^[4] The most common bacteria isolated from laryngopyocele are haemolytic *Streptococcus*, *Escherichia coli*, *Staphylococcus aureus*, and *Pseudomonas Aeruginosa*.^[8]

Pyolaryngocele present with pain, odynophagia, aspiration and in worst cases, respiratory compromise. Pyolaryngocele can also present with a tender swelling in the antro-lateral triangle of the neck, as with our case. The initial management may require intubation or tracheostomy to protect the airway. Although, the conservative management of symptomatic pyolaryngocele has been described,^[10] however, generally, they need to be treated aggressively with broad-spectrum antibiotics, steroids and aspiration of purulent material to decompress the sac.

Pyolaryngoceles are rare complication of laryngoceles. They can present with rapid and alarming obstruction of the airway. They must be included in the differential diagnosis of hoarseness and odynophagia with a lateral neck mass. A CT scan is vital in determining the nature and site of the lesion.^[11] Aggressive antibiotic therapy, analgesia, consideration of hydration and feeding, and aspiration of the purulent content can avert the need for an emergency tracheostomy. Endoscopic examination followed by surgical excision is the definitive management of these lesions.

Conflicts of Interest

None.

Financial Interests

None.

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