
How I Do It

Bilateral Pharyngocele Surgery Under Local Anesthesia: Let the Patient Help the Surgeon

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INTRODUCTION

A pharyngocele, also called a lateral pharyngeal diverticulum, represents a lateral pharyngeal outpouching that is increased when the intrapharyngeal air pressure is raised. This entity is well described but seems to be easily underdiagnosed or misdiagnosed as a laryngocele.¹ Acquired pharyngoceles are more frequent than congenital ones and arise from the piriform sinus, in an area of weakness at the junction between the middle and inferior pharyngeal constrictor muscles.² They manifest often in the fifth and sixth decades with a male predominance (male-to-female ratio 3:1).³ When symptomatic, they cause local pain and sometimes dysphagia, and surgical treatment is sometimes proposed.

We report the case of a healthy young man playing a wind instrument and presenting with bilateral symptomatic pharyngoceles and emphasize the importance of a surgical procedure under local anesthesia.

CASE REPORT

A 26-year-old professional oboist presented with a complaint of painful bilateral cervical swelling appearing only when he was blowing his instrument. The growths increased progressively in size over the past 2 years. The pain was felt mostly on the left side and presented after the first notes, obliging him to stop playing his oboe, thus restricting his career progression. He specifically denied aspiration, food regurgitation, hoarseness, or dyspnea.

Neck examination was completely normal at rest but revealed bilateral soft and compressible cervical protrusions above the thyroid cartilage during forced expiration with closed mouth and nasopharynx (trumpet or chipmunk maneuver) (Fig. 1). Flexible nasopharyngolaryngoscopy was completely normal. A computed tomography (CT) examination (Figs. 2 and 3) was obtained both during quite respiration and while the patient performed the trumpet maneuver. During quiet respiration, the CT images failed to show any upper airway abnormality (Fig. 2), but the images obtained during the trumpet maneuver clearly demonstrated bilateral pharyngoceles (Fig. 3).

As the patient requested treatment, we were puzzled about how to visualize the pharyngoceles intraoperatively, as well as how to determine the exact amount of pharyngeal mucosa to resect. Surgery under local anesthesia appeared to be a potential solution. The left pharyngocele, being bigger and more symptomatic, was operated on first. After subcutaneous injection of lidocaine hydrochloride combined with 2% epinephrine, a horizontal skin incision and subplatysmal dissection was performed to expose the hyoid bone and the lateral aspect of the thyrohyoid membrane. The patient was asked to blow, allowing the protrusion of a large pouch to emerge between the greater cornu of the hyoid bone and the superior border of the thyroid cartilage (Fig. 4). The neck of the pouch and the pouch itself were dissected and resected using an endoscopic stapler (TSB 35; Ethicon Endosurgery, Cincinnati, OH). The platysma, subcutaneous tissue, and skin were closed. Normal diet was given postoperatively.

Two months after the intervention, the patient was able to play the oboe again without any pain. However, 6 months later the right cervical pouch became painful. CT with trumpet maneuver showed that the right bilobed pharyngocele had increased in size, and there was no pharyngocele recurrence on the left (Fig. 5). The surgical procedure described above was then performed

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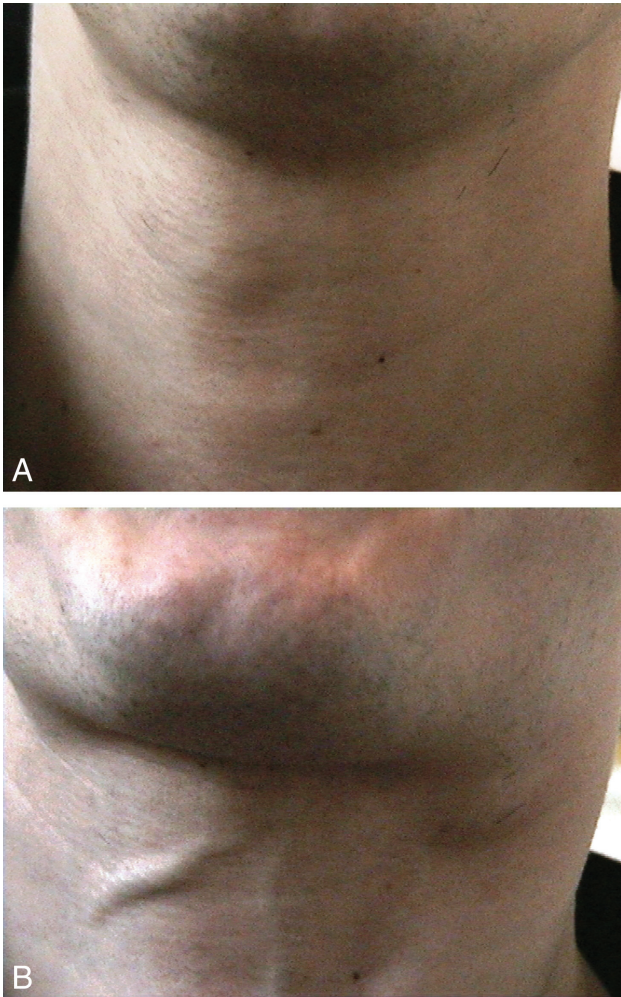


Fig. 1. (A). Normal neck examination at rest. (B) Protrusion of bilateral cervical protrusion during forced expiration with closed mouth and nasopharynx (trumpet maneuver).

under local anesthesia on the right side. Follow-up 6 months after the second procedure showed a good functional result without any pain.

DISCUSSION

Clinical differentiation between pharyngocele and laryngocele can be challenging given that both entities appear as lateral cervical, unilateral, or bilateral bulging.^{4,5} Laryngoceles are exaggerated dilatations of the laryngeal saccule and penetrate the thyrohyoid membrane to extend in the neck in the submandibular area.^{4,6} Like laryngoceles, pharyngoceles can be either congenital or acquired. Congenital pharyngoceles are rarely reported and attributed to a branchial cleft remnant, which opens in the lower pole of the tonsillar fossa in the case of a second branchial sinus or in the piriform sinus in the case of a fourth branchial sinus.^{2,7}

Acquired pharyngoceles arise from a dilatation of piriform sinus mucosa through a weakness between the middle and inferior pharyngeal constrictor muscles.³ Similar to laryngoceles, they enter the neck through the thyrohyoid membrane.

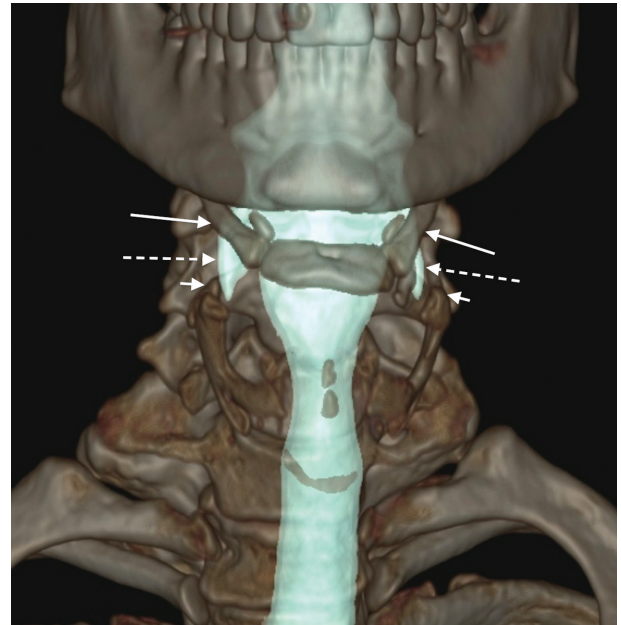


Fig. 2. Three-dimensional volume rendering of the computed tomography dataset of the pharynx and airways obtained during quiet respiration. Note the normal aspect of the piriform sinuses (dashed arrows), which are only partially filled with air. The thyrohyoid membrane is located between the hyoid bone (long arrows) superiorly and the cranial border of the thyroid laminae (short arrows).

Two factors appear to be relevant in the development of a pharyngocele: the loss of constrictor muscle and subcutaneous elasticity with age, and an increased intraluminal air pressure. Woodwind players are

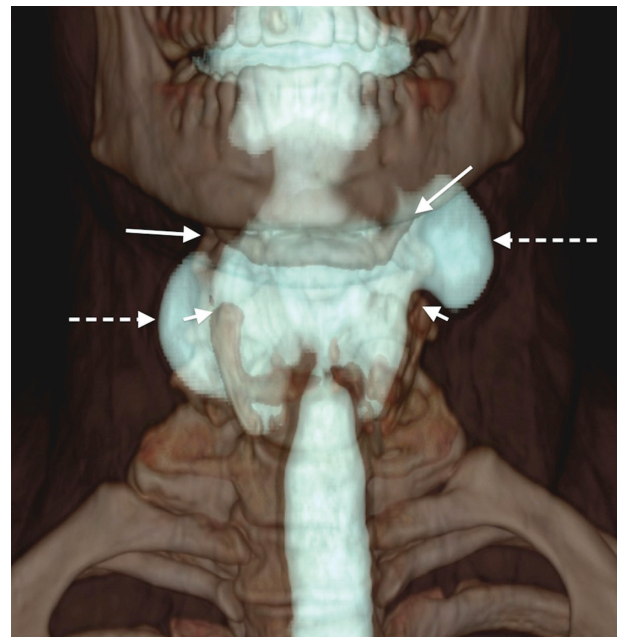


Fig. 3. Computed tomography obtained during the trumpet maneuver. Note that bilateral air-filled pouches arising from the piriform sinuses (dashed arrows) are seen bilaterally. The air-filled pouches extend through the thyrohyoid membrane into the neck. The hyoid bone is indicated with long arrows, whereas the cranial border of the thyroid laminae is indicated with short arrows.

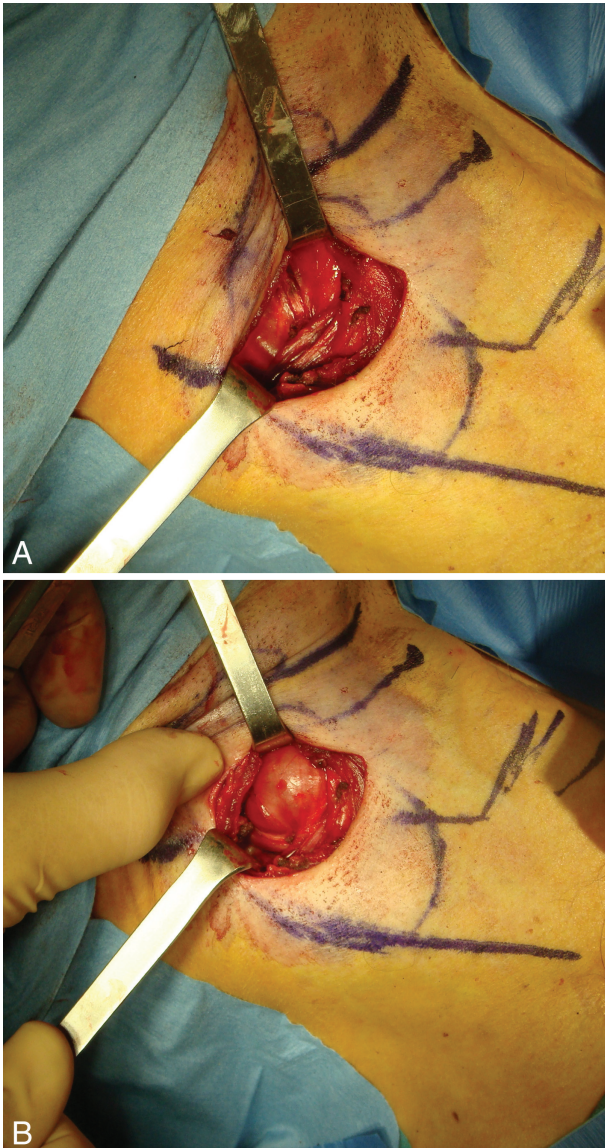


Fig. 4. (A) Right cervicotomy under local anesthesia, after skin and platysma incision. (B) The patient is asked to perform a trumpet maneuver allowing the protrusion of the pharyngocele.

particularly at risk for acquired laryngeal or pharyngeal herniations due to increased intraluminal pressure during their performances. An overall review of the reported cases⁸ show that pharyngoceles in brass and woodwind players appear in younger patients, as in our 26-year-old patient. The air pressure stress applied to the pharyngeal wall during wind instrument playing is considerable. Fuks and Sunberg⁹ recorded blowing pressures in the mouth cavity of players of different woodwinds. They demonstrate that with the double-reed instruments (oboe and bassoon), air pressure tends to be increased continuously with loudness and pitch until reaching considerably high values (124 cm H₂O). In comparison, normal air pressure during normal speaking reaches a maximum of 7 cm H₂O. For these reasons, special attention must be paid to adapt correct expiration techniques and posture.⁵

A pharyngocele appears as a lateral cervical mass and is usually associated with various symptoms including cervical pain, odynophagia, otalgia, regurgitation, globus sensation, and dysphonia.^{3,10} On physical examination, no abnormality or swelling is apparent at rest. However, with exaggerated intrapharyngeal air pressure, an air-filled bulge appears in the lateral neck. It is particularly important to show the patient (if not a wind instrument player) how to increase intraluminal air pressure with the chipmunk or trumpet maneuver; after a maximal inspiration, the subject expires air against the closed mouth and nasopharynx. The latter maneuver has to be distinguished from the Valsalva maneuver, in which the air pressure is raised below closed vocal folds. Diagnosis can be confirmed by different radiological studies, including barium swallow, CT, or magnetic resonance imaging (MRI).^{5,10,11} Independent of the choice of imaging modality, it is essential to ask the patient to make the trumpet maneuver during the examination, otherwise the lesion may be missed. Differentiation between a pharyngocele and a laryngocele is straightforward on CT or MRI images.⁶ In laryngoceles, an air- or fluid-filled pouch is seen arising from the dilated laryngeal ventricle, whereas in pharyngoceles, cross-sectional imaging clearly depicts the communication of the pouch with the piriform sinus. The relationship of the pouch to the hypopharynx and larynx is best seen using three-dimensional volume rendering reconstructions with multiple layers that allow simultaneous depiction of laryngeal cartilages, airways, and bony structures, as seen in the current case.

Treatment of pharyngoceles depends on the severity of symptoms. In asymptomatic cases or when discomfort is mild, a conservative treatment is proposed consisting

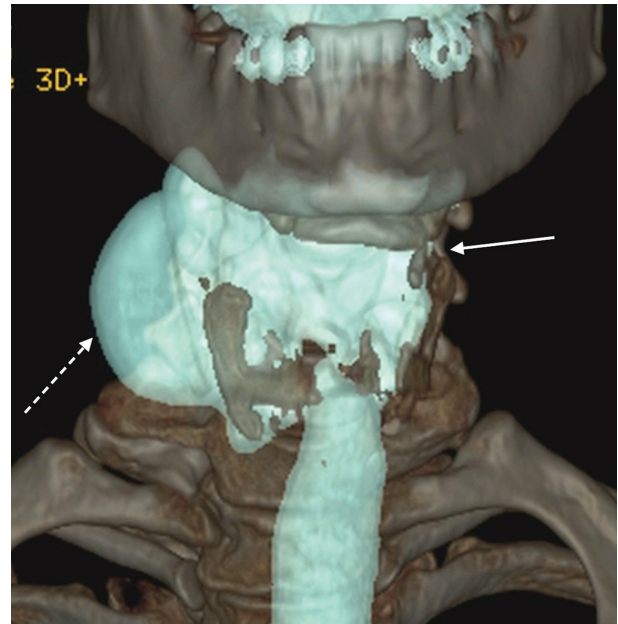


Fig. 5. Computed tomography (CT) obtained during the trumpet maneuver 8 months after the first surgical procedure. The air-filled pharyngocele on the right (dashed arrows) has increased in size as compared to the first CT (Fig. 3). No pharyngocele is seen on the left (solid arrow).

of avoidance of increases in pharyngeal pressure. In patients with severe symptoms, surgical excision might be considered. In the literature, very few cases of surgically treated pharyngoceles are reported, most of them being resected through an external neck approach under general anesthesia.^{10,12-14} The main issue in such surgery is identifying the pouch and its complete resection to avoid a postoperative recurrence. The introduction of a catheter into the pouch by direct laryngoscopy to identify the pharyngocele prior to approaching the neck has been proposed.^{10,13} Huang and Scher¹² report an endoscopic stapling of the common wall between the pouch and the pharynx with a technique derived from Zenker's diverticulum endoscopic management. In 1962, Fowler¹⁵ described an approach similar to ours to facilitate diverticulum identification, in which the patient was asked to forcibly exhale, thus allowing improved identification of the pharyngeal pouch under local anesthesia. Complete pharyngocele resection was subsequently completed under general anesthesia.¹³

CONCLUSION

Acquired bilateral pharyngocele is a rare condition, occurring mostly in brass and woodwind players due to the high pharyngeal air pressure deployed. Diagnosis is made by neck examination and confirmed with radiological imaging, along with asking the patient to perform a trumpet maneuver. In cases of severe symptoms, a surgi-

cal excision under local anesthesia, again using a trumpet maneuver, is efficient and well tolerated.

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