

Case of the month

What a blow!

G KUMAR, FRCR, P J BRADLEY, FRCS and M L WASTIE, FRCR

Department of Radiology, University Hospital, Nottingham NG7 2UH, UK

Figures 1 and 2 are coronal and axial T_1 weighted images of the neck in a 22-year-old male. What is happening?

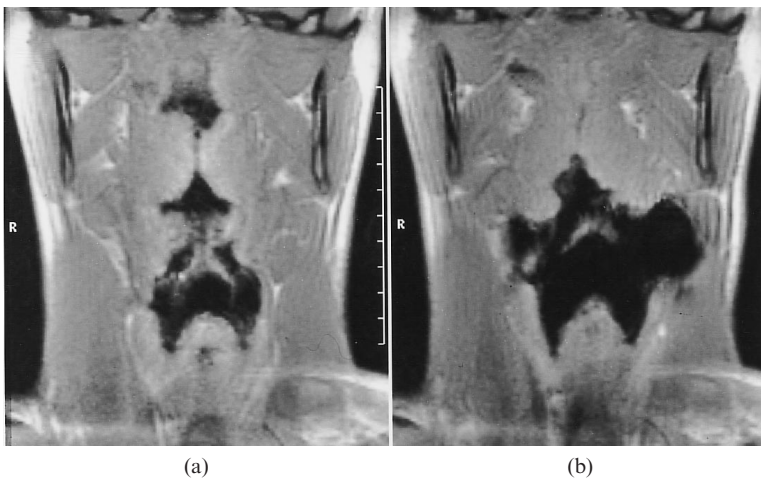


Figure 1. Coronal T_1 weighted images of the neck.

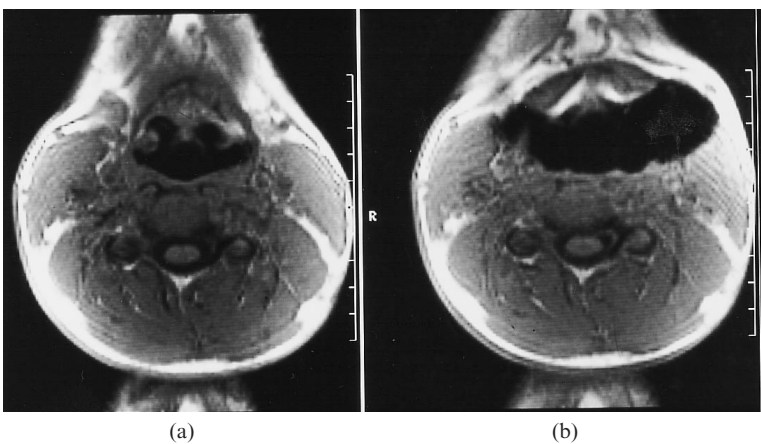


Figure 2. Axial T_1 weighted images of the neck.

Received 7 January 1997 and accepted 21 January 1997.

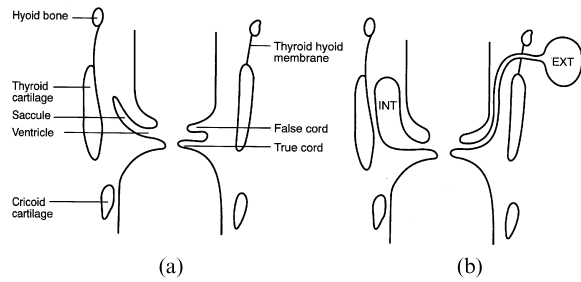


Figure 3. (a) Diagram of normal larynx. On the right side the saccule is unusually large. (b) Internal (INT) and external (EXT) laryngocoeles.

The patient has bilateral laryngocoeles. He is a professional trumpeter who complained of swelling of the neck when playing his instrument. Figures 1a and 2a were taken during shallow breathing. Figures 1b and 2b were taken while performing the Valsalva manoeuvre, when the laryngocoeles appeared.

A laryngocoele is a dilatation of the laryngeal saccule. The saccule is a narrow blind pouch arising from the anterior end of the laryngeal ventricle, extending superiorly into the paralaryngeal space and bounded laterally by the thyroid cartilage. A laryngocoele is defined as internal if it lies within the larynx or external if it protrudes through the thyrohyoid membrane. Mixed laryngocoeles, which are the commonest type, have both internal and external components (Figure 3). As the laryngocoele communicates with the larynx it normally contains air but may be filled with mucus or pus and become fluid filled.

There is diversity of opinion regarding the aetiology of laryngocoeles. A congenital predisposition is considered a likely possibility, a laryngocoele developing if the intraglottic pressure is raised such as occurs in glass blowers and brass instrument players [1]. However, this history is not present in many reports of laryngocoele and laryngocoeles are commonly unilateral.

The saccule is a vestigial structure in humans. Large lateral air sacs arise from the laryngeal ventricles in apes and are thought to enable the animal to rebreath while holding its breath [2, 3]. It has been postulated that laryngocoeles are phylogenetic remnants of these air filled sacs.

There is an association between laryngocoeles and carcinoma of the larynx [4, 5], the tumour obstructing the outflow of the saccule and causing retention of air or fluid. It is therefore important to investigate fully patients with laryngocoeles. Plain radiographs (Figure 4) linear tomography and contrast laryngography were previously performed [6]. CT is much superior to these methods, especially in fluid filled laryngocoeles [7]. Nowadays MRI, because of its multiplanar capability and superior soft tissue resolution, is the investigation of choice for showing the laryngocoele and any associated tumour.

The majority of laryngocoeles are asymptomatic,



Figure 4. Plain radiograph with the patient performing the Valsalva manoeuvre, showing the laryngocoeles as air filled sacs on either side of the neck.

usually presenting in the fifth decade. All patients with laryngocoeles should undergo direct laryngoscopy and biopsy of the ventricle because of the association with laryngeal cancer. Patients with asymptomatic laryngocoeles should be followed up by fiberoptic endoscopy for 2–3 years after initial evaluation. Patients may develop respiratory distress if the air filled pouch becomes blocked and develops into a mucus filled mass. This may become infected and become a laryngopyocoele.

Treatment of laryngocoeles is surgical excision of the sac by either endoscopic or open techniques. Hemi or total laryngectomy may be indicated in patients with a laryngocoele secondary to malignant disease.

Surgery was avoided in this patient because he changed his technique to avoid producing laryngocoeles when he played his trumpet.

References

1. Hubbard C. Laryngocoele—A study of five cases with reference to the radiological features. *Clin Radiol* 1981;38:639–43.
2. Stell PM, Maran AGD. Laryngocoele. *J Laryngol Otol* 1975;89:915–24.
3. Negus VE. The mechanism of the larynx. London: W Heineman, 1929:96–105.
4. Close GL, Merkel M, Deaton WC, Burns DK, Schaffer SD. A symptomatic laryngocoele: incidence and association with laryngeal cancer. *Ann Otol Rhinol Laryngol* 1987;96:393–9.
5. Harvey RT, Ibrahim H, Yousley DM, Weinstein GS. Radiological findings in a carcinoma associated laryngocoele. *Ann Otol Rhinol Laryngol* 1996;105:405–8.
6. Trapnell DH. The radiological diagnosis of laryngocoeles. *Clin Radiol* 1962;13:68–72.
7. Morgan NJ, Emberton P. CT scanning and laryngocoeles. *J Laryngol Otol* 1994;108:266–8.