

Rigid endoscope-assisted tracheal intubation in a case of epiglottic cyst

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Abstract

Epiglottic cysts are of particular interest to both surgeons and anaesthetists because of the way in which they encroach on the airway. An epiglottic cyst in a 29-year-old woman was scheduled for endoscopic excision. It was located at the vallecula, and measured around 3 x 4 cm. As a fibre-optic bronchoscope was not available in our institution, endotracheal intubation was achieved with the help of a rigid endoscope and video-camera system.

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Introduction

Laryngeal cysts are classified as being saccular, ductal or thyroid cartilaginous. Due to occlusion of the ducts, ductal cysts develop in the submucous glands. Cysts of the larynx may be found in the vocal cords (55%), ventricular bands (25%), or in the epiglottis (20%).¹ Epiglottic cysts are most commonly located in the vallecula.²

Epiglottic cysts are usually an incidental finding during laryngoscopy and intubation. Congenital cysts are symptomatic in early childhood due to airway obstruction. In adults, small cysts are asymptomatic, whereas large cysts cause dysphagia, hoarseness or complete airway obstruction. The incidence of large cysts is very rare (1 in 4 200-5 000).¹ Some cysts may present as acute epiglottitis.

The possibility of an ectopic lingual thyroid nodule should always be considered as part of the differential diagnosis for any midline swelling arising in the posterior one-third of the tongue. Other swellings which arise in vallecula are thyroglossal cysts, myxolipoma of the larynx, dermoid cysts, and squamous cell carcinoma.³ There is also a reported case of actinomycosis of the larynx presenting as a vallecular swelling.⁴

Common modalities practised for the treatment of epiglottic cysts are endoscopic excision, endoscopic laser resection, aspiration, and marsupialisation. Very large cysts may be excised by external resection through the neck.⁵

Case study

A 29-year-old woman presented with dysphagia, a muffled voice and a sensation of obstruction in her throat.

The symptoms had lasted for six weeks. She had no difficulty in breathing. General examination did not reveal any abnormality. The modified Mallampati classification was grade 1. On oral examination with the tongue protruded, a smooth cystic swelling was seen, arising from the base of the tongue.

Indirect laryngoscopy revealed a 3 x 4 cm cystic swelling arising from the vallecula. Vocal cords were visible and were mobile. Neither a neck X-ray, nor computed tomography (CT) neck, was performed.

The patient was advised to undergo surgical excision of the cyst. Routine investigations and an electrocardiogram revealed no abnormalities. Since the extent of the swelling was not known, awake intubation was planned.

The procedure was explained to the patient. Written informed consent was obtained and adequate fasting duration was ensured. The patient was premedicated with glycopyrrolate 0.2 mg intravenously. In the operating theatre, the patient's heart rate, oxygen saturation and blood pressure were monitored. An intravenous infusion of Hartmann's solution was administered. All the equipment necessary for difficult intubation was kept at the ready.

Two drops of oxymetazoline (0.05%) were instilled in both nostrils. Four puffs of lignocaine 10% (1 puff = 10 mg) were delivered to anaesthetise the base of the tongue and tonsillar pillars. With the patient sitting upright, the airway was anaesthetised with nebulised lignocaine 4% (160 mg). Bilateral superior laryngeal nerve blocks were given with 1.5 ml each of 2% lignocaine. 2% lignocaine 2 ml was injected transtracheally. It was ensured that the total dose of lignocaine did not exceed the maximum allowable dose for airway topicalisation (9 mg/kg).⁶ Midazolam 1 mg was given intravenously to relieve anxiety.

The head was placed on a head ring to give an elevation of around 7 cm. A cuffed endotracheal tube (6.5 mm internal diameter) was lubricated with 2% lignocaine jelly. The tube was introduced through the more patent left nostril. The sidestream capnograph was connected to the endotracheal tube. The 30° rigid endoscope (4 mm external diameter, 30° nasal), connected to a light source with an endovision camera, was passed orally by the surgeon. As soon as the endoscope reached the uvula, a modified Cormack and Lehane score 1 view of the glottis was displayed on the video monitor.

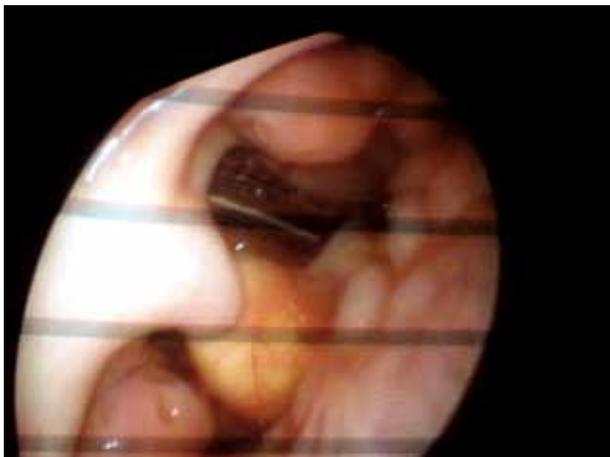


Figure 1: visualisation of the epiglottic cyst by video camera

While continually watching the monitor, the tube was slowly advanced towards the vocal cords. The tube first came into contact with the left pyriform recess. It was withdrawn into the oropharynx, and rotated towards the right, to bring it into the midline. The cuff was inflated with 10 ml air and the tube was slowly reintroduced using visual surveillance. Once the tube had entered the laryngeal inlet, the cuff was deflated and pushed into the trachea during inspiration. The tube position was confirmed through observation of satisfactory chest expansion, auscultation and capnography.

General anaesthesia was induced with propofol 2 mg/kg and neuromuscular blockade was achieved with

atracurium 0.5 mg/kg. Fentanyl 2 µg/kg was given for pain relief. Maintenance of anaesthesia was achieved with nitrous oxide in 33% oxygen and halothane (0.2-1%). Three incremental doses of atracurium 5 mg were given. The throat was packed and a Boyle-Davis mouth gag was inserted to enable visualisation of the cyst. The cyst was removed using the 30° nasal endoscope. Haemostasis was established.

Residual neuromuscular block was reversed with neostigmine 0.05 mg/kg and glycopyrrolate 6 µg/kg. Extubation was performed after the patient was fully awake, with sustained head lifting for five seconds. She was observed in the post-anaesthesia care unit for two hours, before returning to the ward. The patient was followed up two weeks later, and the raw area in the vallecula had healed well.

Discussion

Epiglottic cysts are of particular interest to both surgeons and anaesthetists because of the way in which they encroach on the airway. They are usually an incidental find during laryngoscopy. When the cysts are perceptively large, it is mandatory to conduct a preoperative CT scan to confirm the extension. The incidence of large cysts causing respiratory embarrassment is very rare (1 in 4 200-5 000).¹

Our patient had a cystic swelling (3 x 4 cm) arising from the vallecula, involving both lingual and epiglottic surfaces. The patient had complained of dysphagia and a muffled voice, and of having the sensation of an obstruction in the throat. She was not obese, and the predictors of difficult intubation such as thyromental distance, inter-incisor gap and Mallampati classification were within normal limits.

However, conventional laryngoscopy and endotracheal intubation were impossible as the cyst was located in the vallecula, precisely where the tip of the laryngoscope rests during laryngoscopy. Fibre-optic-assisted intubation would have been the ideal chosen procedure to manage the airway in this patient, but the equipment is expensive and unavailable in many developing countries. Bronchoscopy proficiency demands extensive training and ongoing experience. Due to the unavailability of a fibre-optic bronchoscope in our department, an alternative approach for airway management was necessary. The 30° lateral illumination of the rigid endoscope provided an excellent visual of the larynx. The oral introduction was atraumatic, and did not require additional skills to view the larynx. The field of vision had suitable magnification and resolution. The dynamics of the tracheal tube insertion were continually observed on the screen.

Ravishankar et al have reported using a rigid endoscope with a video camera system for intubation in infants with Pierre-Robin syndrome.⁷ Tracheal tube inflation has been used as an aid to blind nasal intubation.^{8,9} Van Elstrate et al showed that with the cuff inflated, blind nasal intubation was successful during the first attempt in 95% patients.⁸ We found this technique to be useful in our treatment of the patient.

The use of a rigid endoscope with a video camera system facilitates a safe, fast and efficient intubation. This approach can be used as an alternative for fibre-optic intubation in selected situations where the recommended instrument or expertise is unavailable.

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