Frontiers in Medical Case Reports, ISSN: 2582-8142

Progressing Airway Obstruction with A Simple Vallecular Cyst-Definitive Airway Challenge

Priyadharshini P | Krishna Prasad T* | Jagan G | Dhinesh Kumar C

***Correspondence:** Prof. Dr. Krishna Prasad. T

Address: Shri Sathya Sai Medical College and RI, Sri Balaji Vidyapeeth (deemed to be a university), Ammapettai, Kanchipuram, India

E-mail ✉: drkrishna86@gmail.com

Received: 18 September 2024; **Accepted:** 11 October 2024

ABSTRACT

Vallecular cysts, though uncommon, can lead to severe complications in an anesthetised patient if airway management is mishandled. We present a case of challenging intubation in a 65-year-old man with a vallecular cyst and outline the techniques and strategies employed to achieve successful awake intubation using a fiberoptic bronchoscope.

Keywords: *Awake Intubation, Fibreoptic Intubation, Difficult Airway, Vallecular Cyst*

Introduction

Difficult airway management in anesthesiology is a critical aspect of anaesthetic practice, dealing with the challenges that arise when a patient's airway is difficult to access or secure. This can occur due to anatomical variations, pathological conditions, or complications that challenge standard intubation and ventilation techniques. Vallecular cysts, a type of laryngeal cyst, are specifically of the ductal variety. They develop due to the obstruction of the submucous duct. The vallecular space, rich in lymphoid and glandular tissue, is prone to blockage, making vallecular cysts relatively common in adults (Takahara *et al*., 2022).

Direct laryngoscopy can be challenging with a vallecular cyst due to the anatomical changes it causes. The cyst may obstruct the view of the vocal cords and trachea, increasing the risk of trauma to surrounding structures, such as the cyst itself, vocal cords, and mucosa, potentially leading to bleeding and swelling. The distortion of anatomy also complicates laryngoscopic manoeuvres, making tube placement difficult. Fiberoptic bronchoscopy is often preferred as it navigates around obstructions and provides better visualization, minimizing the risk of soft tissue injury. Our goal was to enhance and build upon both current and previous clinical experiences, enabling us to effectively address the various challenges that may arise when treating supraglottic mass.

DOI: http://dx.doi.org/10.47746/FMCR.2024.5505

Case Report

A 65-year-old man, weighing 55 kg with no comorbidities, presented with a two-month history of dysphagia and hoarseness of voice. Over the past month, he had developed progressive shortness of breath and frequent choking episodes during sleep. Additionally, he experienced a persistent cough and snoring. On examination, the patient was vitally stable, with a pulse rate of 82 beats per minute, a respiratory rate of 16 breaths per minute, a blood pressure of 112/90 mmHg, and an oxygen saturation of 96% on room air. A computed tomography (CT) scan of the head and neck revealed a well-defined 1.9 × 2.4 cm hypodense cystic lesion with a thin enhancing wall, expanding the left epiglottic vallecula and closely abutting the base of the tongue. During the preoperative anaesthetic evaluation, the patient exhibited good mouth opening with Mallampatti class II; however, neck movement was limited to the left side due to pain. The second plan for awake intubation using a fiberoptic bronchoscope was discussed with the patient and also outlined a backup plan for proceeding with a surgical tracheostomy under local anaesthesia infiltration if the fiberoptic intubation was unsuccessful.

The patient was transferred to the operation theatre and positioned head up. Standard American Society of Anesthesiologists (ASA) monitors were attached to ensure continuous monitoring. A nasal decongestant of 2 drops was applied on each nostril to reduce the incidence of bleeding and improve the ease of tube passage through the nasal airway. A bilateral superior laryngeal nerve block was administered using 2 mL of 2% lignocaine on each side at the greater cornue of the hyoid bone, followed by an intratracheal injection of 2% lignocaine. Before the fiberoptic bronchoscope (FOB) insertion, two puffs of 10% lignocaine spray were applied to the posterior pharyngeal wall. And we did a check scopy after the airway block. As the cyst was big we couldn't visualize any glottic view and could not manipulate it further because of the risk of rupturing the cyst.

The fiberoptic bronchoscope (FOB) was checked, and a 7 mm internal diameter cuffed endotracheal tube (CETT) was threaded onto it (Fig. 1) . The bronchoscope was then gently inserted into the right nostril, navigating through the upper airway and vocal cords until the trachea was accessed and the carina visualized. The endotracheal tube (ETT) was then carefully guided over the bronchoscope into the trachea, without manipulating the walls of the cyst. Proper placement was confirmed by direct fiberoptic visualization of the tube tip within the trachea, the patient's inability to vocalize, and the presence of end-tidal carbon dioxide. The patient tolerated the procedure well.

Figure 1: Technique of fob in the right nostril.

Anaesthesia was induced using propofol at a dose of 2 mg/kg and vecuronium at 0.1 mg/kg and was maintained with a combination of sevoflurane and fentanyl. The patient parameters were monitored throughout the procedure. An excision was done on the vallecular cyst (Fig. 2). The patient was planned for delayed extubation given the edema of the epiglottis and surrounding structures. The patient was shifted postoperatively to the intensive care unit and continued ventilation till the oedema subsided. The patient was maintained with infusions of vecuronium, Fentanyl. Steroidal therapy with dexamethasone and hydrocortisone was administrated for 24 hours. After checking the fibreoptic scope under sedation, as oedema was reduced well, we extubated the patient spontaneously.

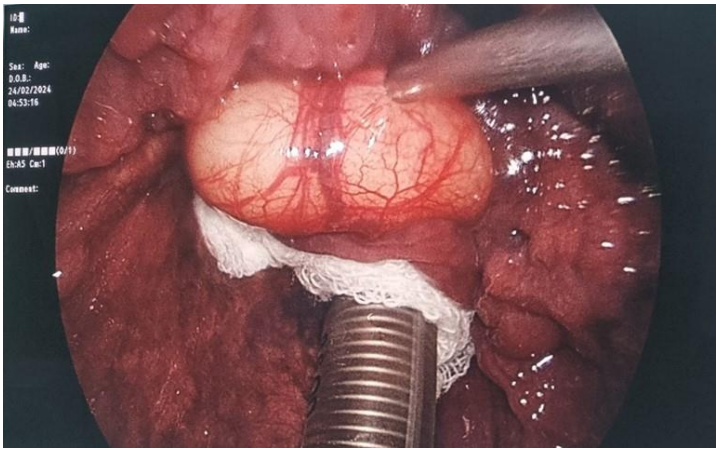

Figure 2: Intraoperative views of vallecular cyst after securing the Endotracheal tube.

Discussion

Vallecular cysts produce airway obstruction by a mass effect in the hypopharynx as well as inferior and posterior epiglottic displacement, which can result in supraglottic obstruction. In these cases, the safest

course of action is to intubate the trachea using fiberoptic bronchoscopy to establish the patient's airway while they are conscious (Abou Zeid *et al*., 2006). Various methods have been attempted for intubation in supraglottic masses.

In the case of diagnosed vallecular cyst, awake FOB is recommended because the cyst might slip over the glottic aperture after induction of anaesthesia, leading to difficult bag and mask ventilation and intubation (Jayaram *et al*., 2015).

Zhang, *et al*. (2023) highlighted the use of the paraglossal straight blade technique to visualize the glottis in cases involving vallecular or laryngeal cysts. While this approach could have been considered in this case, it posed a risk of rupturing the cyst. Additionally, the paraglossal laryngoscopy would have required a deep level of anaesthesia with muscle relaxation.

In a study conducted by Alharbi, *et al*. (2023) an undiagnosed pedunculated vallecular cyst was detected during intubation of a middle-aged patient scheduled for excision of a symptomatic vallecular cyst. They had aspirated the cyst under direct laryngoscopy which was proceeded by uneventful tracheal intubation an alternative to fibreoptic intubation. We recognized the potential risk of cystic content aspiration into the airway, which could lead to irritation and further airway compromise. The safest approach is to perform aspiration in a controlled environment (Alharbi *et al*., 2023; Varathan *et al*., 2023).

In the supine position the mass occupied the entire oropharynx as a result there was no space to manoeuvre the fibreoptic scope to visualize the larynx. A small left-sided tilt of the table displaced the mass to one side which created an adequate space to pass through the fibreoptic scope (Wagh, 2014).

According to a study by Jain, *et al*. (2019) recommends that anaesthetists should be proficient in performing airway blocks and awake fiberoptic bronchoscopy (FOB) intubation without relying on conscious sedation. In cases involving a pedunculated mass originating from the base of the tongue, tongue protrusion can be employed to facilitate successful FOB and endotracheal tube (ETT) insertion.

Conclusion

Awake fiberoptic intubation is a safe and effective technique for managing airway obstruction caused by vallecular cysts. Its ability to maintain spontaneous respiration while providing precise visualisation of the airway makes it particularly valuable in cases where traditional intubation methods may pose risks, such as cyst rupture or further airway compromise.

DOI: http://dx.doi.org/10.47746/FMCR.2024.5505

Declaration of Patient Consent

We certify that we have obtained all appropriate patient consent forms. The patient had given his consent for his photograph and other clinical information to be reported in the journal for academic purposes only. The patient understands that his name and initials will not be published and due efforts will be made to conceal his name and identity.

Financial Support and Sponsorship: Self-funded.

Conflicts of Interest: We declare there were no conflicts of interest.

Take Home Message: Keep in mind that any growth in the upper airway, can restrict the glottis and complicate patient ventilation. The cyst can migrate in response to changes in outside pressure, and as the patient loses consciousness and their neck muscles relax, it can obstruct the glottis. Fiberoptic visualisation not only prevents injury to the cyst but also guides in safe intubation.

References

Abou Zeid HA, Arab SA, Al-Ghamdi AM, Al-Qurain AA, Mokhazy KM. Airway management of a rare huge-size supraglottic mass. *Saudi Med J* 2006; 27: 711-713.

Alharbi SM, Alahmari M, Al Hamoud M, Al Malwi K, Abujamilah H. Successful Management of a Symptomatic Vallecular Cyst in an Adult: A Case Report. *Cureus* 2023; 15: e41829.

Jain A. Improvised Anesthetic Management of a Large Pedunculate Mobile Growth At The Base Of Tongue: A Unique Scenario. *J Anesth Surg Care* 2019; 1: 1-3.

Jayaram K, Gurajala I, Diddi S, Ramachandran G. Unrecognized epiglottic cyst: Cause of difficult mask ventilation. *J Anaesthesiol Clin Pharmacol* 2015; 31: 566-567.

Takahara Y, Tanaka T, Nojiri M, Shinomiya S, Yamada S, Mizuno S. Laryngeal papilloma-induced chronic airway obstruction: A case report. *Respir Med Case Rep* 2022; 36: 101607.

Varathan V, Mat Baki M, Kalimuthu S. A Case Report of an Unusual Presentation of Epiglottic Cyst Causing Airway Obstruction in an Adult. *Cureus* 2023; 15: e35863.

Wagh HD. Successful anesthetic management of a large supraglottic cyst. *Saudi J Anaesth* 2014; 8: 432-433.

Zhang Q, Zhang C, Yin Y. Emergency treatment of airway obstruction caused by a laryngeal neuroendocrine tumor: A case report. *Medicine (Baltimore)* 2023; 102: e33081.