



Failed Video Laryngoscope Guided Intubation In A Patient With Vallecular Cyst: Direct Laryngoscope To The Rescue

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Abstract

Vallecular cysts in adults are largely asymptomatic and rare cause of difficulty in intubating the trachea. Sometimes, it is an incidental finding during laryngoscopy and poses an airway challenge. We describe the failure of the video laryngoscope while securing the airway; further, intubation was made successful by the direct laryngoscope. Though there were different airway tools available for the management of difficult airway, sometimes it results in failure. Nonetheless, the knowledge of the physics of the airway equipment could help in the immediate switch of appropriate airway tools during such scenarios. In our case, despite the direct laryngoscope providing a limited angle of view to the video laryngoscope, it provided a three-dimensional view which resulted in successful airway management in a difficult situation. Thus, we wanted to emphasize that different airway equipment may not be available in all places, hence the fallacies of all should be kept in mind.

Keywords: Cyst, airway obstruction, laryngoscopy, bronchoscope

Introduction

Vallecular cysts are largely asymptomatic and can present as an incidental finding during laryngoscopy and intubation. It can either be a non-infectious cyst with pressure symptoms or an infectious cyst with epiglottitis or abscess formation leading to airway compromise.¹ Complications during the airway management could be inability to ventilate or intubate, rupture or bleeding from the cyst, or aspiration and laryngospasm.¹ Hence the management should involve a multidisciplinary approach during the perioperative period.² Herewith, we report the management of an adult patient with a vallecular cyst posted for trans-oral robotic-assisted (TORS) cyst excision.

A 23-year-old male patient presented with dysphagia for two months and was diagnosed as a case of vallecular cyst. There was no clinical feature suggestive of airway obstruction. Preoperative indirect laryngoscopy revealed cystic swelling in the vallecula measuring 4.3*3.2 cm, pushing the epiglottis posteriorly with adequate visualization of the cords. Other airway examination findings were within normal limits. Informed written consent was obtained from the patient. The patient was premedicated with anti-aspiration prophylaxis and anti-sialogogues. The difficult airway cart was kept ready. Standard monitors like electrocardiogram, non-invasive blood pressure measurement, and pulse oximetry were attached. Since TORS being an intraoral surgery, nasotracheal intubation was

preferred. The patient was pre-oxygenated with 100% oxygen for 3 mins, induced with intravenous Fentanyl 2 mcg/kg, Propofol 2 mg/kg, and Succinylcholine 2mg/kg was administered after confirming bag and mask ventilation. The first attempt was made with C mac video laryngoscope (Karl Storz) with 4 size blade and the entire screen of the video laryngoscope was obscured by the cyst. This is because the camera in VLS was obscured by the cyst, thus resulting in the failure of visualisation of cords. The Videolaryngoscope was withdrawn and patient was ventilated with 100% oxygen. The second attempt was done by the senior anaesthesiologist using a direct laryngoscope with an idea that this might provide direct view of the glottis when compared to the indirect glottic view obtained from video laryngoscopy. With direct laryngoscopy, the tip of the blade was used to displace the cyst and a Cormack Lehane grading of 2 was achieved. The patient was successfully intubated and bilateral air-entry was confirmed along with capnogram in the monitor. Throughout the procedure, the patient was maintained with air: oxygen mixture, and isoflurane up to 1- 1.2 MAC. Surgery was uneventful, and the patient was extubated on the table without any complications.

Discussion:

The vallecular cyst has a bimodal distribution affecting the infantile age group with airway obstruction symptoms or presentation in 6th decade of life with hoarseness, dyspnea, dysphonia, foreign body sensation, obstructive sleep apnea, and sometimes abscess formation.² Vallecular cyst for transoral robotic surgery (TORS) has several anesthetic challenges which includes turning the patient 180° away from the anesthesia machine, placement of DaVinci surgical cart in the vicinity of the patient's head with intraoral robotic arms and placement of suspension laryngoscopy, common airway shared by anesthesiologists and surgeons, lengthier circuits and the risk of airway fire.

Currently, video laryngoscopy plays a vital role in difficult airway management scenarios, but there was a failure in visualizing the vocal cords in our case. This is because, difficulty was anticipated during indirect visualisation and lifting of the epiglottis. In direct laryngoscopy, to expose the glottis, two things need to be performed simultaneously i.e. alignment

of the three airway axis and elevation of the epiglottis. In contrast, the location of camera in the VLS is present at the pharynx level, and the alignment of axis is also not important. Since the DL scopy incorporate the light source at the tip of the blade, we expected that the simultaneous alignment of the airway axis along with the combined upward movement of the tongue and vallecula together with the cyst might provide some space for lifting the epiglottis and passage of the tube. And, VLS has both a digital camera and a light source mounted very closely at the tip of the video laryngoscope (2-3 cm). Moreover, the angle of view obtained was much wider, i.e., the C-Mac Size 4 blade provides an angle of view of about 80° (Karl Storz). Yet the anterior view was restricted by the tip of the blade itself to 60 degrees. In our case, since the cyst arises from the vallecula the whole screen of VLS was occupied by the cyst itself. Although the classic laryngoscope provides a 15-degree angle of view, the advantage is attributable to the versatility of the human head and eyes' ability to travel rapidly across three-dimensional space from a variety of vantage points.³ Other limitations with the video laryngoscope could be a rapid deterioration of the display in the presence of swelling or secretions.⁴ Hence, there is no ideal airway approach that solves every difficult airway and the airway management should be tailored to each patient.⁵

While doing direct laryngoscopy, one should avoid placement of the tip of the blade over the cyst which can result in rupture of the cyst. Additional laryngoscopy devices recommended by the American Society of Anaesthesiologists and Canadian Airway Focus Group guidelines, includes bronchoscopy-aided intubation through LMA, and fiberoptic intubation to avoid such complications.

An incidentally identified vallecular cyst may limit the applicability of difficult airway algorithms in events of difficult ventilation, necessitating a lower threshold for emergent invasive airway access. Because sometimes even the fiberoptic bronchoscope becomes unsuccessful necessitating the role of invasive airway access in such patients.² Depending on the ventilation status, controlled decompression using a needle aspiration technique to improve laryngoscopy may also be possible; but, once the airway is secured, cyst excision is preferred because it provides the more definitive treatment of vallecular

cysts.² Hence the management of vallecular cysts should be based on a case-wise approach with the application of a particular airway tool to secure the airway in such patients.

References:

1. Walshe CM, Jonas N, Rohan D. Vallecular cyst causing a difficult intubation. *Br J Anaesth.* 2009;102(4):565.
2. Vorobeichik L, Hare GMT, Zirkle M, Garavaglia MM. Airway Management of Incidental Vallecular Cysts in Adults. *A&A Case Reports.* 2015;5:223–7.
3. A. van Zundert, B. Pieters, V. Doerges, S. Gatt. Videolaryngoscopy allows a better view of the pharynx and larynx than classic laryngoscopy. *British Journal of Anaesthesia.* 2012;109(6):1014–1015.
4. Saracoglu KT, Eti Z, Gogus FY. Airtraq optical laryngoscope: Advantages and disadvantages. *Middle East Journal of Anaesthesiology.* 2013; 22:135-141.
5. Gupta A, Gupta N. Failed videolaryngoscopy in an infant with giant vallecular cyst managed successfully with a ‘three-person technique’ of fibre-optic intubation. *BMJ Case Reports CP.* 2019;12:e231035.