

## Managing Airway in an Adult with Vallecular Mass: A Case Report

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### Abstract

**Background:** Vallecular cysts are a rare cause of difficult tracheal intubation. We report a case of difficult endotracheal intubation in an adult with symptomatic vallecular mass for surgical resection. The anesthetic plan was to carry out awake intubation under airway blocks and sedation with adequate maintenance of spontaneous respiration and also keeping tracheostomy as a standby option.

**Case description:** In this case, laryngoscopy was challenging due to the size and extent of the vallecular mass to the lingual surface of epiglottis, thus necessitating gentle laryngoscopy to prevent catastrophic cyst rupture and pulmonary aspiration. The glottis was not visualized using flexible fiberoptic bronchoscope and video laryngoscope, which made intubation difficult. Endotracheal intubation was finally obtained by the help of an ENT surgeon using ENT rigid laryngoscope. At the end of surgery, the surgeon decided to proceed with tracheostomy due to risk of airway edema, bleeding and aspiration. Histopathology of epiglottic mass revealed that of a pleomorphic adenoma.

**Clinical relevance:** Patients with vallecular or epiglottic mass are more likely to have difficult airways after induction of anesthesia. Anaesthesiologist should give paramount importance to pre-operative airway assessment, anticipating and handling difficult airway and intubation failure, and making prompt and correct choices in ensuring patient safety.

**Keywords:** Difficult airway; Vallecular cyst; Awake intubation; Airway blocks; Pleomorphic adenoma of epiglottis

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## INTRODUCTION

The valleculae are essentially potential spaces seen anteriorly to epiglottis which contains mainly lymphoid or glandular tissue. Vallecular cysts are quite a rare cause of difficult tracheal intubation. It constitutes about 5% of benign lesions of the larynx. Other rare causes of benign vallecular masses can include conditions such as thyroglossal cysts, lingual thyroid cysts and mass lesions or tumors arising from base of tongue, minor salivary glands, lipoma, hemangiomas, schwannoma, lymphangioma, epidermoid and dermoid.<sup>1</sup>

Adult vallecular and epiglottic cysts can be asymptomatic or may show only mild symptoms initially. With progressive growth of tumour, patients can feel foreign body sensation, hoarseness of voice, and even dyspnoea. However, airway obstruction is quite a rare symptom.<sup>2</sup> The most effective treatment for these cysts remain surgical resection.<sup>3</sup> For patients with epiglottic or vallecular cysts, even if the clinical symptoms are mild, the perioperative period should be meticulously planned to avoid any obvious airway obstruction that may be noted soon after the use of sedatives and other anesthesia-induction drugs, leading to difficult airways.<sup>4</sup>

Difficult airway is defined as the clinical situation in which a conventionally trained anesthesiologist experiences difficulty with mask ventilation, difficulty with tracheal intubation or both. Difficult intubation is defined as the need for > 3 intubation attempts or attempts which last more than 10 minutes, with failure of best optimal attempts. We,

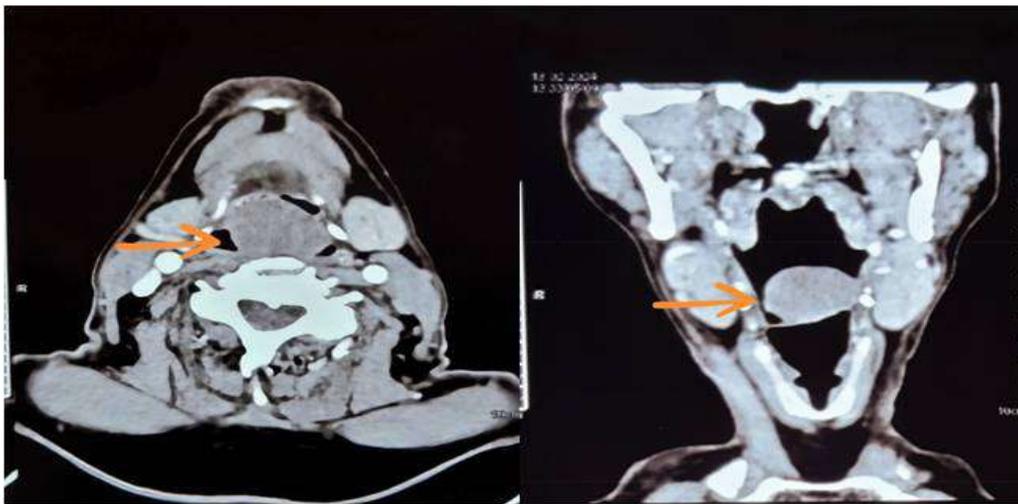
hereby, describe a case of difficult intubation in an adult with symptomatic vallecular cyst for surgical resection under general anaesthesia.

## CASE REPORT

An 80 years old man, a known case of diabetes mellitus, hypertension, and dyslipidemia on regular treatment presented with a history of change in voice since past 10 months, foreign body sensation in the throat and dysphagia since 3 months. There was no history of dyspnoea, stridor, snoring, choking, apnoea, aspiration or weight loss.

On examination, the patient was haemodynamically stable with a pulse rate of 70 beats/min, respiratory rate of 14/min, blood pressure of 140/90 mmHg and oxygen saturation of 94% at room air. There were no palpable masses on the patient's neck or visible abnormalities or pathology in his oral cavity. Cranial nerves were intact, there was no lymphadenopathy and his systemic examination was normal. Airway assessment showed Mallampati score 1, and the patient had a good mouth opening. His neck extension was slightly limited.

Computed tomography of the neck revealed a well-defined smooth margined lesion predominantly occupying vallecular, more towards left side measuring  $3.4 \times 2.5 \times 2.5$  cm, anteriorly it was found to be abutting the base of tongue, posteriorly abutting the posterior pharyngeal wall as well as lingual surface of epiglottis, thereby causing significant airway compromise. (Fig. 1)



**Fig. 1:** Preoperative computed tomography scan in the axial and coronal planes of the head and neck showing a well-defined,  $3.4 \times 2.5 \times 2.5$  cm lesion (orange arrow) Flexible nasal endoscopy revealed a non-pulsating, non-congested mass originating from the vallecula, measuring  $3 \times 2$  cm without any discharge. The patient's airway was compromised and vocal cords were not visible.

We prepared the patient with proper pre-operative counselling for awake intubation. He was premedicated with antisialogogue Glycopyrrolate 0.2 mg and Midazolam 1 mg intravenously. The oropharynx was anesthetized with local anaesthetic 10% Lignocaine spray and nasal passage anesthetized with 2% Lignocaine jelly. Vasoconstriction of the nasal mucosa was achieved by using Oxymetazoline nasal drops. The trachea and vocal cords were anesthetized by transtracheal block using 4 ml of 2% Lignocaine.

The patient was preoxygenated with 100% oxygen for 3 minutes. We used titrated amounts of short acting sedatives like Inj. Fentanyl, Inj. Midazolam, and Inj. Dexmedetomidine to achieve Ramsay sedation scale of 2-3. We were able to maintain spontaneous respiration in our patient until safely securing the airway without compromise. We gave supplemental oxygenation via nasal prongs at 10L/min during our intubation attempts.

The flexible fiber optic bronchoscope (FOB) which passed through nasal cavity visualized large epiglottic/vallecular mass, but glottis was not visible. Video laryngoscope with a distally angulated blade provided an improved laryngoscopic view without requiring manipulation of the cervical spine. But even with C-MAC Video laryngoscope, we could visualize only the epiglottic lesion, and glottis was not visible. We didn't pass the bougie forcefully due to the risk of rupturing the cyst, obscuring views of the larynx, and potential aspiration of the cyst contents.

Finally, with the help of ENT Rigid laryngoscope, the ENT surgeon pushed aside the epiglottic mass towards left side. By this, we could visualize the arytenoids and introduced a 7 mm cuffed flexometallic endotracheal tube into trachea with the help of a bougie.

Once the bougie was passed, we gave Inj. Succinylcholine (100 mg) as muscle relaxant. Anaesthesia was maintained with bolus doses of Inj. Propofol, inj. Atracurium, in addition to Sevoflurane and controlled ventilation. The remainder of the anaesthesia was uneventful.

Intra-operatively, the surgeon found that it's a solid epiglottic mass rather than a cystic lesion. The definitive treatment done was debulking of the epiglottic mass. Inj. Dexamethasone (8 mg) IV was administered intra-operatively to limit airway oedema. Since it's not a cyst, the surgeon decided to proceed with tracheostomy for post-operative ventilation due to risk of airway edema, bleeding and aspiration.

Post operatively, the neuromuscular blockage was reversed, and the patient was shifted to surgical ICU after confirming that he was hemodynamically stable and conscious. He was comfortable and co-operative during post-operative days. He was treated with IV antibiotics and other supportive measures. Histopathology examination of epiglottic mass revealed that of a pleomorphic adenoma. The tracheostomy decannulated on post-operative day 7 and the patient was discharged home.

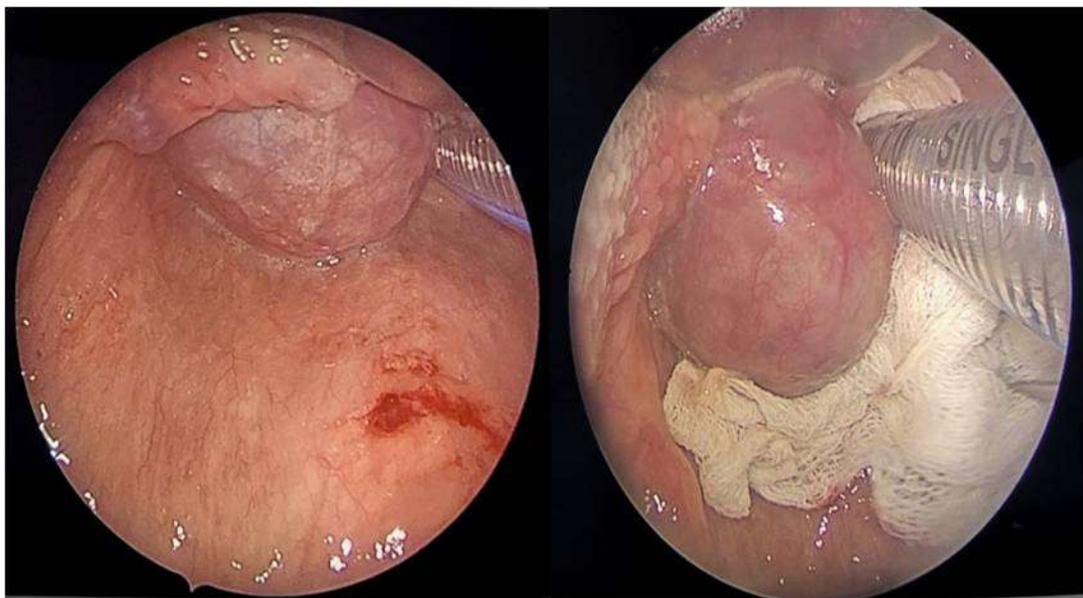


Fig. 2: Intra-operative images of epiglottic mass

## DISCUSSION

The vallecular or epiglottic cysts in adults are mostly asymptomatic and may be found as an incidental finding on X-ray or at the time of intubation for some other surgical procedure. However, the condition may present with stridor, dysphonia, cough, foreign body sensation in the throat, hoarseness, and dysphagia. The pressure effects exerted on surrounding tissues explain the cause of these symptoms.<sup>5</sup> In demanding circumstances, a vallecular cyst may be unexpectedly discovered when the patient poses a challenge for endotracheal intubation during rapid-sequence induction with general anesthesia. Hence, even if a vallecular cyst is found to be asymptomatic, it is recommended to remove the cyst.<sup>6</sup>

Fiberoptic laryngoscopy can be employed to identify masses in the vallecula but it cannot differentiate between a dermoid cyst, vallecular cyst, thyroglossal duct cyst, hemangioma, lymphangioma, thyroid lingual tissue or teratoma. Computed tomography scans can usually differentiate between cystic and mass lesions. In the current case, CT scan could not differentiate between cystic and mass lesion, and the diagnosis of epiglottic mass was an intra-operative finding.

In patients with an epiglottic mass, the glottis is generally not visible as it is concealed by the enlarged epiglottic mass. When conventional anesthesia is administered in such patients, their airway may be suddenly compromised since the epiglottic lesion can easily form a flap and can move with external pressure fluctuations and can cause obstruction at glottis due to loss of consciousness and the relaxation of the neck muscles of the patient. If endotracheal intubation is not initiated and effective ventilation is not established, the patient may suffer from hypoxia and other deleterious effects. Therefore, the anaesthetic treatment of patients with vallecular or epiglottic mass carries great significance.<sup>7</sup>

Awake intubation is the preferred technique in these cases. It can be performed after airway blocks and sedation. The appropriate level of analgesia and sedation is challenging because, overdose of medications results in loss of spontaneous ventilation which is disastrous in a difficult airway, and insufficient medications result in patient discomfort, pain, coughing, and tachycardia making tracheal intubation technically more difficult to even impossible. Transtracheal/translaryngeal nerve block, glossopharyngeal nerve block and superior laryngeal nerve block are

commonly performed airway blocks which will reduce patient discomfort during endotracheal intubation. Anticholinergics can be used to suppress oral secretions, and Dexamethasone can be used to reduce glottic edema.

Maintaining airway should always be the top priority when inducing anesthesia.<sup>8</sup> Comprehensive pre-operative airway assessment greatly improves the predictability of asymptomatic epiglottic mass and decreases the incidence of urgent difficult airways. If an immediate airway is required, a surgical airway would then have to be considered.<sup>9</sup> To avoid adverse events, the airway should be closely and carefully observed and managed postoperatively.

## CONCLUSION

Patients with vallecular or epiglottic mass are often more likely to have difficult airways after induction of anesthesia. As an anaesthesiologist, we should give paramount importance to pre-operative airway assessment, anticipating and handling difficult airway and intubation failure, and making prompt and correct choices in ensuring patient safety. This case also reinforces the need for avoiding repeated intubation attempts which may increase complications, and also bolsters the need of an ENT surgeon being immediately available to safely secure the airway in such a setting.

## DECLARATION OF PATIENT CONSENT

Informed written consent was taken from the patient for relevant images and other clinical information to be published in the journal. The patient understands that his name or initials will not be published in any manner and due efforts will be made to conceal the identity.

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*Conflicts of Interest:* There are no conflicts of interest.

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