CASE REPORT

# Hidden in Plain Sight: A Vallecular Cyst Case Report

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## ABSTRACT

Vallecular cysts, although rare, can cause stridor and respiratory distress in neonate. In severe cases, large vallecular cysts may even lead to life-threatening airway obstruction. Herein, we report a case involving a neonate with stridor in which the diagnosis was confirmed via flexible laryngoscopy, revealing the presence of a vallecular cyst. Post-endoscopic marsupialisation, the patient was asymptomatic and thrived well. This case report highlights the importance of considering vallecular cyst as a differential diagnosis in newborns presenting with stridor and respiratory distress at birth. It underscores that early diagnosis and timely intervention result in favourable clinical outcomes, with complete symptom resolution following endoscopic marsupialisation and a low recurrence rate of 0.02%.
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## INTRODUCTION

Vallecular cysts, albeit rare, are observed in infants or neonates with an incidence ranging from 1.82 to 3.49 per 100 000 live births (1). These cysts may manifest with symptoms like stridor, feeding challenges, failure to thrive, dysphonia or respiratory distress. Despite their benign nature, these cysts may lead to substantial airway obstruction as they enlarge. In some cases, patients may experience acute, life-threatening airway compromise, necessitating immediate emergency airway management (2). This case underscores the critical importance of early recognition of this condition, which may present immediately after birth. A timely and thorough airway assessment is essential to differentiate it from other potential diagnoses, such as haemangiomas, vascular malformations, dermoid cysts and congenital ranulas, all of which may present with similar features.

## CASE REPORT

A premature neonate, delivered via spontaneous vaginal delivery at 35 weeks and 3 days, experienced stridor and rapid breathing during the newborn assessment. He had a birth weight of 2.37kg and an uncomplicated antenatal course. There were no syndromic features present. He was attended immediately by the pediatric team and was subsequently intubated as the respiratory distress was not relieved with continuous positive airway pressure (CPAP) usage. During the intubation, an incidental finding of supraglottic mass was observed and was subsequently referred to ENT team for further evaluation. Upon flexible laryngoscopy, a large globular cystic mass was identified at the supraglottic region, obstructing the laryngeal inlet. A provisional diagnosis of vallecular cyst was made. An airway study under general anesthesia was performed at day 6 of life and a huge vallecular cyst was identified. The cyst displaced the epiglottis posteriorly with extension to left lateral pharyngeal wall. Endoscopic marsupialisation was performed. The procedure began with direct laryngoscopy using a size 1 Parson laryngoscope. A 0-degree Hopkins telescope was then introduced to enhance visualization and assist in guiding the endoscopically assisted marsupialisation. A winged IV needle was used to decompress the vallecular cyst, facilitating its mobilisation and aiding in identifying its origin. Monopolar diathermy with an angled Colorado tip, along with microlaryngeal instruments, was used to perform the marsupialisation. The procedure subsequently revealed laryngomalacia features, including a short aryepiglottic fold, a floppy epiglottis, and redundant arytenoid mucosa. Hence, supraglottoplasty was performed in the same setting. Histopathological examination (HPE) of the cyst wall revealed fibrocollagenous cyst wall lined by stratified squamous epithelium with few dilated lymphatic channels, consistent with laryngeal epithelial cyst. Postoperatively, the neonate was extubated after 48 hours and showed complete resolution of symptoms. He remained asymptomatic, demonstrated appropriate weight gain, and flexible laryngoscopy at his 6-month

follow-up showed no recurrence of the vallecular cyst. He was subsequently discharged from further ENT follow-up.

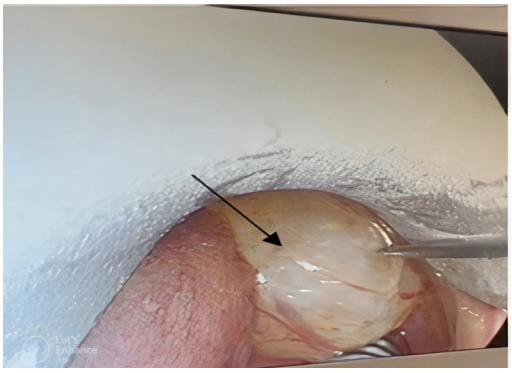

**Fig. 1: Direct laryngoscopic view of huge vallecular cyst obstructing laryngeal inlet (arrow)**

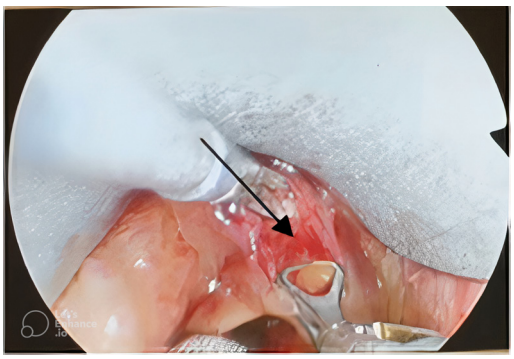

**Fig. 2: Direct laryngoscopic view of huge vallecular cyst post marsupialisation (arrow)**

## DISCUSSION

Vallecular cyst has been documented in several case studies, albeit under different names. These terms include mucus retention cyst, epiglottic cyst, base of the tongue cyst, congenital cyst and ductal cyst. Vallecular cyst, although uncommon, can pose a potential life-threatening risk due to their location by causing sudden airway obstruction especially in neonate with relatively smaller laryngeal inlet. It typically contains serous fluid and are generally smaller than 1 cm. However, they can expand due to subsequent mucus production.

The most frequently observed presenting symptoms include stridor (67%), respiratory distress (58%), and feeding difficulties (33%). Additionally, 67% of patients exhibited symptoms consistent with gastroesophageal reflux disease, and 17% were concurrently diagnosed with laryngomalacia(3, 4).

In this reported case, the pathology was incidentally identified at day 1 of life following intubation for respiratory distress due to its large size. Infants are typically diagnosed at an average age of 40 days, and are often asymptomatic at birth (1). As the cyst increases in size due to mucus accumulation, it can lead to symptoms mentioned above and diagnosis is made following flexible laryngoscopy. The newborn was fortunate to be delivered in a tertiary center with pediatric team on standby, for a vallecular cyst of this size can easily obstruct the airway leading to devastating outcome despite having an uneventful antenatal history. The differential diagnoses for a lesion that could cause airway obstruction in this region include hemangioma, vascular malformation, thyroglossal duct cyst, dermoid cyst, branchial cleft cyst and congenital ranula.

Vallecular cyst is usually diagnosed using flexible laryngoscopy while imaging modalities such as CT scan and MRI are not routinely required. The imaging modalities may play a role to delineate the cyst structure, extent and blood supply to differentiate it from other possible diagnosis. Diagnosis can be made as early as the prenatal period, with either ultrasonography or magnetic resonance imaging (MRI) scan. However, this proves to be particularly challenging as ultrasonography is heavily operator dependent and MRI scan is not routinely done for women in pregnancy.

Surgical decompression is the preferred treatment for vallecular cyst, and it can be performed during the same setting as the diagnostic study in the operating room, such as complete endoscopic excision, marsupialisation or aspiration. Among these, marsupialisation is the preferred treatment approach and can be carried out using micro-laryngeal instruments, CO2 laser, cauterization or coblation. Patient's outcome after marsupialisation is extremely well with negligible recurrence rate of 0.02% (5).

## CONCLUSION

Vallecular cysts should be considered as an important differential diagnosis when a neonate presents with stridor and respiratory distress. Diagnosing a vallecular cyst during the prenatal period is challenging, as there is no effective screening strategy and no well-established risk factors to predict its occurrence. Therefore, early airway evaluation is essential in neonates with features of upper airway obstruction, as prompt surgical management leads to excellent clinical outcomes.

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