Airway Management in an infant with a giant vallecular cyst

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Abstract

Objective: Review vallecular cysts and report our technique of surgical management of a vallecular cyst of unusual size with near-complete obliteration of the airway.

Method: Case report. An 8 week old infant with progressive respiratory distress since birth and failure to thrive. Flexible endoscopic exam, suspension laryngoscopy, aspiration and CO2 laser marsupialization of cyst wall. Complete obliteration by cyst preventing visualization of airway. Intubation performed after rapid aspiration of the cyst content.

Results: Two month old male with failure to thrive, vomiting induced by gagging and worsening stridor previously evaluated by pediatricians for laryngomalacia and reflux. ENT evaluation led to microendoscopy with CO2 laser excision of a large obstructive vallecular cyst resulting in immediate relief of the airway obstruction. He displayed no signs of respiratory distress post-operatively and continued to normalize in feeding habits during the clinical course. At two month follow-up, the child’s weight had increased from below the 3rd percentile to the 50th percentile. Flexible laryngoscopic exam revealed an entirely normal airway at 2 month follow-up.

Conclusion: Vallecular cyst can present as a life-threatening obstructive mass in infants. Establishing an airway after induction of anesthesia can be very challenging if the cyst is unusually large and complete obstruction is present. In our case, rapid thinking and aspiration of the cyst content helped establish the airway for definitive CO2 laser excision.

Introduction

Vallecular cysts are a rare entity and typically present with respiratory and feeding difficulties due to obstruction and pressure at the laryngeal inlet. The difficulties may manifest as inspiratory stridor, chest wall retraction, increased work-of-breathing, apneas, cyanosis, and failure to thrive. Large cysts are more likely to be diagnosed at younger ages because larger cysts are more likely to cause symptoms that will lead to subsequent diagnostic work-up and treatment. Large vallecular cysts have also been described in the literature to be diagnosed at the time of induction of general anesthesia resulting in a difficult endotracheal intubation due to obstruction of the glottis. Adult vallecular cysts have been described as asymptomatic. When seen in adults the symptoms are subtle and include globus and voice changes. The contrasting difference in symptoms owes itself to the difference in the relative size of the airway.

A vallecular cyst has been classified as a ductal cyst by DeSanto in 1970. The ductal cyst, also known as mucus retention cysts, results from retention of mucus within an obstructed collecting duct of a submucosal gland. Ductal cysts are superficial and can occur at any site within the laryngopharynx (excluding the free edge of the vocal fold) due to the presence of mucosal glands. Most ductal cysts are <1cm diameter however they may be significantly larger. The cells of the cyst are of ductal cell type (squamous or respiratory epithelium) and not of acinar cells (supporting origin from dilution of ducts and not of distributed glands).

Ductal cysts at the tongue base and vallecula are the most common in children. (3) DeSanto described that among the ductal cysts found about the epiglottis, 48 of the 67 cysts occurred at the lingual surface of the epiglottis. These cysts are superficial, resulting from obstruction of the submucosal glands, and are confined to the submucosal layer. Mucus production results in further expansion of the ductal cyst. Symptoms result from direct obstruction of the airway directly or from distortion of the epiglottis and the laryngeal inlet.

Vallecular cysts have been described to have a high incidence of recurrence with simple needle aspiration. Mitchel in 1987 described 3 of 3 cyst recurring following simple aspiration. Vallecular cysts are typically removed by opening widely to prevent recurrence. (4) Carbon dioxide laser ablation of the inner epithelial lining of the cyst wall has been described to reduce risk of recurrence. (5, 5) Patients are generally described to have an immediate improvement in symptoms and post-operative care is limited to that needed for the patient’s comorbid conditions (such as reflux or laryngomalacia). Of the associated anomalies, laryngomalacia is the most common.

Case Report

An 8 week old male infant presented to the emergency room with failure to thrive, weak cry, progressive inspiratory stridor, and respiratory distress. Prior medical history was significant for reflux and suspected laryngomalacia. The patient was taken back to the operating room for an airway evaluation due to the above findings.

The patient underwent flexible fiberoptic laryngoscopy which revealed a large cystic lesion of the vallecular that was mobile and obstructing visualization of the airway beyond the epipharynx. Direct laryngoscopy and bronchoscopy was utilized to evaluate the extent of the cystic lesion. Due to the size of the vallecular cyst it was difficult ventilating the patient. This required immediate aspiration of the cyst contents with an 18 gauge needle prior to securing the airway. The patient was then suspended with infant Lindholm laryngoscope to fully address the vallecular cyst with biopsy and marsupialization of the cyst wall with a CO2 laser.

Post-operatively the patient experience immediate relief from the airway obstruction. Following the procedure, the patient displayed no signs of respiratory distress and feeding habits normalized. At two month follow-up, the child’s weight had increased from below the 3rd percentile to the 50th percentile. Follow-up flexible laryngoscopic examination revealed a normal airway with no evidence of recurrence or other abnormality at 2 month follow-up.

Discussion

Thorough airway evaluation is indicated in an infant with upper airway symptoms such as weak cry and stridor. This is especially true when symptoms are coincided with difficulty feeding and failure to thrive. When performing an evaluation of the airway it is important to expect difficulty with ventilation and endotracheal intubation. This is particularly true when symptoms are coincided with difficulty feeding and failure to thrive. When performing an evaluation of the airway it is important to expect difficulty with ventilation and endotracheal intubation. Difficulty with ventilation and endotracheal intubation can be expected. In this case, preparation and quick response allowed for successful aspiration of the cyst contents and safe intubation which was necessary to subsequently treat the condition of the large vallecular cyst that was obstructing and distorting the laryngeal inlet.

References