

Imaging of a Rare Case of Vallecular Cysts Presenting with Odynophagia: A Case Report

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Cite this paper as: Dr. Deivanai R, Dr. Ashwin Kumar. A, Dr. G Murugan, Dr. MK Rajasekar (2025) Imaging of a Rare Case of Vallecular Cysts Presenting with Odynophagia: A Case Report. *Journal of Neonatal Surgery*, 14 (16s), 578-584.

ABSTRACT

Background:

Vallecular cysts are very rare benign ductal cysts in the larynx. While many remain asymptomatic, symptomatic patients may present with airway obstruction, respiratory distress or odynophagia. In this article, the patient exhibits bilateral vallecular cysts accompanied by odynophagia and hemoptysis- symptoms not commonly associated with these cysts. Flexible laryngoscopy and radiologic imaging are pivotal in the diagnosis of vallecular cysts, aiding in the assessment of their size, location, and relationship to surrounding structures, which are essential for effective surgical planning. Given the limited number of cases reporting vallecular cysts with odynophagia, and hemoptysis being described in only two cases in the literature, this article aims to provide a comprehensive approach to the diagnosis and management of vallecular cysts presenting with these rare and concerning symptoms- odynophagia and hemoptysis.

Case presentation:

A 44-year-old Indian gentleman presented to the ENT (Ear, Nose, Throat) Department with history of hemoptysis for the past 4 days with history of painful swallowing for the past 1 month, recurrent upper respiratory tract infections and 1.25 pack years of smoking history. On examination, bilateral non-tender neck nodes were palpable. The patient was referred to the Radiology Department for Contrast-Enhanced Computed Tomography (CECT) of the neck, which revealed two well-defined oval lesions with the right sided lesion becoming completely hyperdense, averaging ~ 40-50 HU (Hounsfield Unit) and the lesion on the left side showing central hypodensity, averaging ~ 10 to 12 HU (Hounsfield Unit) of water, suspicious area of enhancement was also seen involving the vallecula, extending to supraglottis, in close proximity to bilateral pyriform fossa- A possibility of bilateral vallecular cysts with bleed in the right cyst was considered. The patient was subjected to a video laryngoscopy examination that confirmed bilateral vallecular cysts with the right cyst showing granulations on its surface along with the presence of clots.

The patient was planned for excision of the right vallecular cyst.

Postoperative recovery was favorable with satisfactory wound healing observed on a 2-week follow-up video laryngoscopy.

Conclusion:

Vallecular cysts are rare, benign lesions in the supraglottic region of the larynx, resulting from the obstruction of mucous glands. While majority of vallecular cysts remain asymptomatic, some can present with atypical symptoms like foreign body sensation, odynophagia, hoarseness, stridor, cough, hemoptysis and dysphonia. These symptoms can mimic more serious conditions such as tumors or foreign body aspiration, necessitating the use of precise imaging techniques for accurate diagnosis and surgical planning. Surgical excision remains the cornerstone of management for symptomatic patients and large vallecular cysts.

Keywords: *Vallecular cyst; Laryngeal cyst; Mucous retention cyst; Odynophagia; Hemoptysis.*

1. MAIN BODY

Background:

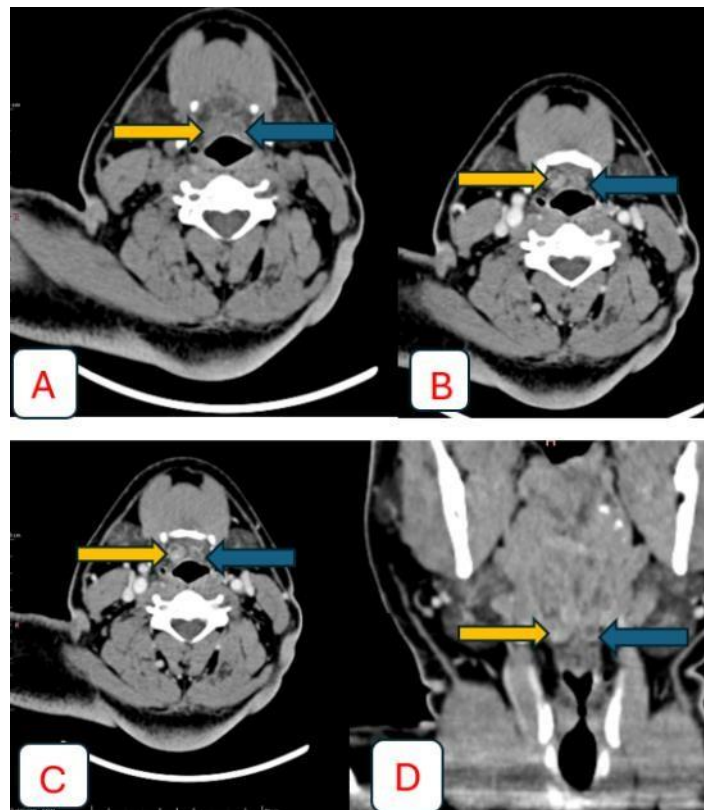
Vallecular cysts are rare, benign ductal cysts found in the larynx. While many of these cysts are asymptomatic, symptomatic patients may present with foreign body sensation, dysphonia or respiratory distress (1,2). In rare instances, some patients may present with atypical symptoms like odynophagia, hoarseness of voice or hemoptysis. In more severe cases, these cysts can lead to complications such as supraglottitis, epiglottic abscess or angioedema, often resulting from secondary infections (2,5). Early and accurate radiologic evaluation, coupled with timely surgical intervention, is crucial to prevent long-term morbidity associated with these lesions. Flexible laryngoscopy and radiologic imaging (1,2) are essential diagnostic tools for identifying vallecular cysts, assessing their size, location, and relationship to adjacent anatomical structures, and ultimately guiding the surgical management strategy.

Case presentation:

A 44-year-old Indian gentleman presented to the ENT (Ear, Nose, Throat) Department with history of hemoptysis for the past 4 days, which was spontaneous in onset, occurring 1-2 times per day in scanty amount, described as streaks of blood mixed with whitish mucous, accompanied by history of painful swallowing for the past 1 month which has been progressive in nature. He reported a history of recurrent upper respiratory tract infections, occurring 3-4 times a year for the past 2 years. He also reported smoking history of approximately 2-3 cigarettes per day for 10 years, corresponding to 1.25 pack years of smoking history, with cessation occurring approximately 10 years ago. There was no reported history of foreign body sensation in throat, difficulty in breathing, voice change and no other significant past medical and surgical history. On examination, bilateral non-tender neck nodes were palpable.

The patient was referred to the Radiology Department for a Contrast-Enhanced Computed Tomography (CECT) of the neck (Figure 1), which revealed two well-defined oval lesions with the right sided lesion becoming completely hyperdense, averaging ~ 40-50 HU (Hounsfield Unit) and the lesion on the left side showing central hypodensity, averaging ~ 10 to 12 HU (Hounsfield Unit) of water, suspicious area of enhancement was also seen involving the vallecula, extending to supraglottis, in close proximity to bilateral pyriform fossa- A possibility of bilateral vallecular cysts with bleed in the right cyst was considered.

Figure 1



Contrast-Enhanced Computed Tomography (CECT) of the neck – (A) Axial Computed Tomography (CT) of the neck; (B) and (C) Axial Contrast-Enhanced Computed Tomography (CECT) of the neck; (D) Coronal Contrast-Enhanced Computed Tomography (CECT) of the neck- showing two well-defined oval lesions involving the vallecula, in close proximity to bilateral pyriform fossa- Suggestive of bilateral vallecular cysts with bleed in the right cyst.

Yellow arrow: Right vallecular cyst with bleed

Blue arrow: Incidental left vallecular cyst

The patient was later subjected to a video laryngoscopy examination that revealed bilateral vallecular cysts with the right cyst (Figure 2) showing granulations on its surface along with the presence of clots.

Figure 2

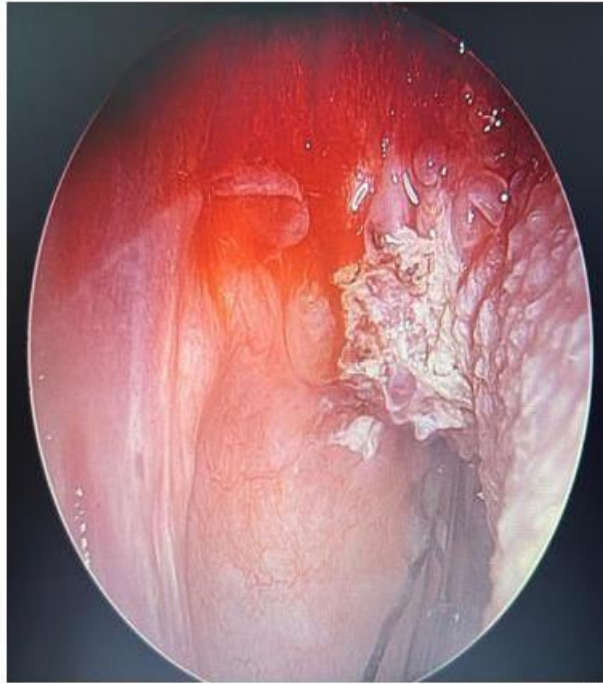


Pre-operative video laryngoscopy image showing right vallecular cyst (Green arrow) with bleed.

The patient was planned for excision of the right vallecular cyst.

Intraoperative image showing right cyst excision process (Figure 3).

Figure 3



Intraoperative video laryngoscopy image during excision of right vallecular cyst

Postoperative recovery was favorable, with symptomatic improvement and satisfactory wound healing observed on a 2-week follow-up video laryngoscopy (Figure 4).

Figure 4



Postoperative video laryngoscopy image after excision of right vallecular cyst (follow up after 2 weeks) showing satisfactory wound healing

2. DISCUSSION:

Vallecular cysts are rare, benign cysts located in the supraglottic region of the larynx, specifically in the vallecula- the anatomical depression between the epiglottis and the base of the tongue. Vallecular cysts are also known as mucous retention cysts, pre-epiglottitis cysts, epiglottitis cysts, ductal cysts and base of tongue cysts (2). They arise from the mucosal lining of the epiglottis or the aryepiglottic fold due to the obstruction of mucous glands resulting in retention of secretions. Vallecular cysts account for about 5% of benign laryngeal lesions and about 10.5-20.1% of all laryngeal cysts (1). They have been reported in both pediatric and adult population (1,2,3). In children, vallecular cysts often present with stridor, feeding difficulties and failure to thrive (1,3). Most of the cases are presented among men in their fifth decade (2). The majority of adult cases are discovered incidentally or as a result of complications during intubation procedures. Small cysts may be asymptomatic, whereas larger cysts may lead to significant airway obstruction or difficulty in swallowing. In adults, symptoms are usually less pronounced and can include voice changes, dysphagia, and foreign body sensation. Symptomatic patients most commonly report foreign body sensation, followed by odynophagia, hoarseness, stridor, cough, dysphonia, and referred otalgia (1,2). These symptoms can mimic more severe conditions, such as tumors or foreign body aspiration, making it crucial to employ appropriate imaging techniques for accurate diagnosis. Vallecular cysts presenting with hemoptysis are extremely rare- reported only twice in literature (6,7), which might indicate cyst infection or a malignancy and it should be excluded and dealt appropriately. In some instances, progressive inspiratory stridor (4) may develop, which can become life-threatening if not diagnosed promptly, necessitating emergency surgical excision. Additionally, some cysts can progress to cause supraglottitis, epiglottic abscess, or angioedema due to secondary infections (2,5), further complicating the condition and potentially leading to life-threatening airway obstruction. Thus, early recognition and appropriate treatment are essential to mitigate long-term morbidity. Flexible laryngoscopy remains the gold standard for direct visualization of the cyst and assessing its impact on the airway. While fiberoptic laryngoscopy can identify masses in the vallecula, it cannot differentiate between various types of laryngeal lesions (2), including vallecular cysts, thyroglossal duct cysts, dermoid cysts, thyroid lingual tissue, laryngeal papilloma, hemangiomas, lymphangiomas or teratomas. Therefore, high resolution imaging techniques like computed tomography (CT) and magnetic resonance imaging (MRI) are essential for accurate diagnosis and for evaluating vallecular cysts in determining the cyst's size, location and its spatial relationship with surrounding anatomical structures (1,2). Treatment options for vallecular cysts vary depending on the size, symptoms and location of the cyst and they range from cyst aspiration, marsupialization to surgical excision (1,2). Although cyst aspiration offers initial relief, it has a higher recurrence rate compared to more definitive treatments (2). Marsupialization involves creating a permanent opening in the cyst to facilitate continuous drainage, although recurrence is still possible. The surgical excision of the cyst is considered the gold standard for larger cysts and symptomatic patients to provide symptomatic relief, to prevent airway compromise and long-term complications and is associated with the lowest recurrence rate. Follow-up is recommended for all patients, regardless of treatment type, due to the risk of recurrence (1).

3. CONCLUSION:

Vallecular cysts are very rare ductal cysts in the larynx. These cysts are usually benign laryngeal lesions resulting from the obstruction of the collecting ducts of mucosal glands. While majority of vallecular cysts remain asymptomatic, some can present with atypical symptoms like foreign body sensation, hoarseness, stridor, cough, and dysphonia. In more severe cases, these cysts can lead to life-threatening complications like supraglottitis, epiglottic abscess or angioedema due to secondary infections. These atypical symptoms and complications necessitate the use of precise imaging techniques for accurate diagnosis and surgical planning. Therefore, accurate diagnosis and prompt intervention are essential to prevent such complications, ultimately reducing morbidity and mortality. Vallecular cysts presenting with odynophagia and hemoptysis are extremely rare. Given the limited number of cases reporting vallecular cysts with odynophagia, and hemoptysis being described in only two cases in the literature, this article aims to provide valuable insights into the diagnostic and therapeutic approaches for vallecular cysts, with a particular focus on these rare presentations of odynophagia and hemoptysis.

Figure legends:

Figure 1: (A) Axial Computed Tomography (CT) of the neck; (B) and (C) Axial Contrast-Enhanced Computed Tomography (CECT) of the neck; (D) Coronal Contrast-Enhanced Computed Tomography (CECT) of the neck- showing two well-defined oval lesions involving the vallecula, in close proximity to bilateral pyriform fossa- Suggestive of bilateral vallecular cysts with bleed in the right cyst.

Yellow arrow: Right vallecular cyst with bleed

Blue arrow: Incidental left vallecular cyst

Figure 2: Pre-operative video laryngoscopy image showing right vallecular cyst (Green arrow) showing granulations on its surface along with the presence of clots

Figure 3: Intraoperative image of excision of right vallecular cyst

Figure 4: Post-operative video laryngoscopy image after excision of right vallecular cyst (follow up after 2 weeks) revealed satisfactory wound healing

DECLARATIONS

Ethical approval (animals)

This article does not contain any studies with animals performed by any of the author(s).

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent for participation and publication

Informed consent was obtained from individual participant included in the study.

Availability of supporting data and materials

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Competing interests

The authors declare that they have no competing interests.

Funding

There is no funding.

Authors contribution

Dr. Deivanai R analyzed the availability of supporting data and materials and wrote the manuscript.

Dr. Ashwin Kumar. A reported the case findings and played a major role in diagnosis.

Dr. G Murugan finalized the report and discussed for further management with ENT (Ear, Nose, Throat) Department.

Dr. MK Rajasekar performed the video laryngoscopy and vallecular cysts excision and did follow-up.

Acknowledgments- Nil

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