

Plunging Ranula Extending into the Oral Floor: A Case Report and Literature Review

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Abstract

A plunging ranula is a specific type of ranula that usually appears as a cystic mass in the submandibular area, originating from an obstructed sublingual gland, without a visible oral component, making diagnosis difficult.

Here we report an uncommon case of a nine-year-old girl with a submandibular mass that was diagnosed on CT imaging as a plunging ranula extending into the floor of the mouth.

The purpose of our case is to show the imaging features enabling the diagnosis of a rare cervical cystic mass in a child.

Keywords: Social Anxiety Disorder (SAD) • Leibowitz Social Anxiety Scale (LSAS) • Impact • Prevalence • Association • Achievement • Adolescence

Introduction

Ranula commonly appears as a bluish translucent cyst in the mouth's floor due to sublingual gland duct obstruction, causing mucous accumulation and extravasation. When mucous leaks through the mylohyoid muscle into the neck, it forms a painless, soft swelling known as plunging ranula. Ranula can manifest as oral, plunging, or mixed types [1]. CT and MR imaging plays an important role in the diagnosis. This paper presents an exceedingly rare case of plunging ranula extentend into the oral floor.

Case Presentation

We report the case of a nine-year-old girl, having a medical history of osteomyelitis of the left lower limb, put on antibiotic therapy. The patient has been admitted for a painless left submandibular swelling persisting for over two years.

During the examination, the patient was fond conscious, afebrile, with a normal respiratory rate of 14 cycles per minute. The Physical examination

revealed a bluish cystic mass under the left lateral chin, fluctuant, non-tender without inflammatory signs opposite, or oral involvement. The remainder of the physical examination revealed no other abnormalities.

A Computed Tomography (CT) was ordered to further characterize the mass. In fact, the CT-Scan identified the presence of an oblong cystic formation at the level of the oral floor, lateralized to the left, hypodense with liquid density, thickened and enhanced wall after contrast administration, measuring 55 mm x 25 mm in diameter. This cystic lesion dissects the fascial planes in the sublingual space around the mylohyoid muscle. It comes into contact with the sublingual gland, which is discreetly swollen compared with the contralateral side, and compresses Warthon's canal as it passes through the floor of the mouth (Figure 1).

The patient underwent surgical excision of the left sublingual gland with the associated cystic lesion with no complications. Pathology demonstrated a normal sublingual gland with mucocele and no other associated abnormality.

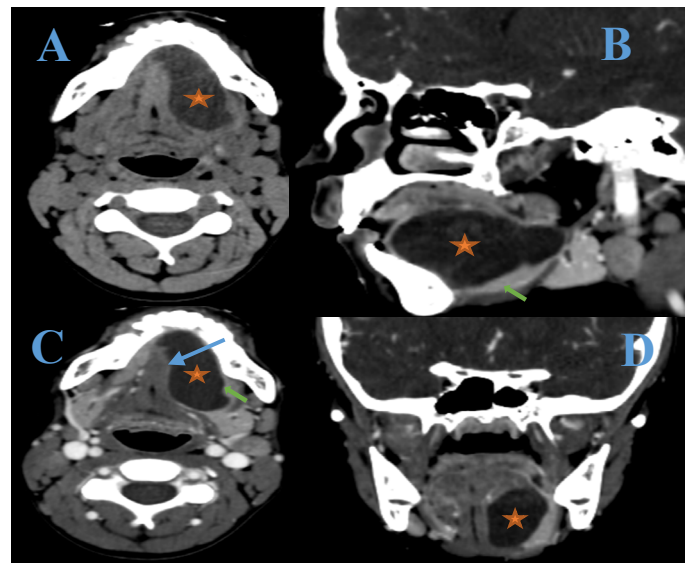


Figure 1: Head and neck CT scan in spontaneous and after contrast injection, in axial (A, C) sections, with coronal (D) and sagittal (B) reconstructions: Oblong cystic formation in the floor of the mouth, lateralized to the left, with hypodense fluid content (star) and enhanced wall after contrast administration, dissects the fascial planes in the sublingual space around the mylohyoid muscle (blue arrow) and displaces the sublingual gland (green arrow).

Discussion

Ranula is a rare, benign, acquired, cystic lesion that occur at the floor of the mouth as sublingual or minor salivary gland retention cysts. Plunging ranula's pathogenesis involves sublingual gland duct anomalies or trauma, leading to mucus accumulation in the neck [1, 2]. Imaging modalities, particularly ultrasound and CT, aid in diagnosis by distinguishing ranula from other cystic neck masses [2, 3].

It presents as a painless swelling typically located under the tongue (sublingual) or in the submandibular region (plunging), The swelling appears bluish or translucent due to mucous accumulation and may vary in size, is usually mobile and may change size with head movement or pressure [2, 3].

Ranula is a cystic lesion typically originating from the sublingual gland, presents distinct imaging characteristics across various modalities, including Ultrasound (US), Computed Tomography (CT), and Magnetic Resonance Imaging (MRI).

Ultrasound is often the initial imaging modality used to evaluate ranula. It reveals a well-defined, hypoechoic or anechoic cystic lesion in the sublingual or submandibular space. The cystic nature of ranula is evident as it typically lacks internal vascularity on color Doppler imaging. US provides real-time visualization and helps in determining the size, location, and internal content of the lesion [2, 4].

CT imaging offers detailed anatomical information and is valuable for assessing the extent and relationship of ranula with adjacent structures. On CT scans, ranula appears as a well-defined, low attenuation (hypodense) cystic lesion with thin or imperceptible walls. Contrast-enhanced CT can further delineate the lesion and help rule out other differential diagnoses such as lymphatic malformations or cystic hygromas [1, 4].

MRI is considered the imaging modality of choice for comprehensive evaluation of ranula due to its superior soft tissue contrast and multiplanar imaging capabilities. Ranula typically appears hyperintense on T2-weighted images and hypointense to isointense on T1-weighted images. MRI can accurately depict the extent of the lesion, involvement of adjacent structures, and any associated complications. The "tail sign," where the lesion extends through a defect in the mylohyoid muscle, is a characteristic feature seen on MRI [3, 4].

Histologically, ranula is characterized by mucin-filled pseudocysts without epithelial lining [5, 6].

Differential diagnoses include lymphatic and venous malformations, thyroglossal duct cyst, branchial cleft cyst, and abscesses, differentiated by fluid analysis and imaging features [7, 8].

Treatment options range from sclerotherapy to surgical excision, with complete gland removal preventing recurrence [9, 10].

Conclusion

Plunging ranula presenting as a large cervical cystic mass is rare but can be accurately diagnosed through clinical, imaging, and histological correlation. Surgical resection remains the definitive treatment, emphasizing complete gland excision for optimal outcomes.

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