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Sublingual Infant Ranula: A Case Report with Long-Term Follow-UP

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Abstract

Ranula is a mucus extravasation pseudocyst arising from the sublingual salivary gland and presenting clinically as a swelling in the floor of the mouth. It may occur secondary to trauma, ductal obstruction, or developmental anomalies affecting the salivary gland ducts. Congenital ranula is rare and is believed to result from failure of canalization or atresia of the salivary ducts.

Based on anatomical location, ranulas are classified into simple ranulas, confined to the sublingual space, and plunging (cervical) ranulas, which extend beyond the mylohyoid muscle into the submandibular or parapharyngeal spaces. The incidence of ranula in pediatric patients is low, with congenital cases accounting for a very small proportion.

Although some congenital ranulas may resolve spontaneously, persistent lesions can interfere with feeding, swallowing, or respiration, necessitating

intervention. Various treatment modalities have been described, including aspiration, marsupialization, sclerotherapy, and surgical excision.

This report describes a rare case of sublingual ranula in an infant, highlighting its clinical presentation, management, and long-term outcome.

Keywords: Congenital, Infant Ranula, Needle Aspiration, Marsupialization.

Introduction

Ranula is a mucus extravasation pseudocyst arising from the sublingual salivary gland and presenting clinically as a swelling in the floor of the mouth.[1] It may occur secondary to trauma, ductal obstruction, or developmental anomalies affecting the salivary gland ducts. Congenital ranula is rare and is believed to result from failure of canalization or atresia of the salivary ducts.[2]

Based on anatomical location, ranulas are classified into simple ranulas, confined to the sublingual space, and plunging (cervical) ranulas, which extend beyond the mylohyoid muscle into the submandibular or parapharyngeal spaces.[2] Ranulas in paediatric patients are infrequent, corresponding to 0.2 cases per 1000.[3] The incidence of ranula in pediatric patients is low, with congenital cases accounting for a very small proportion about 0.7%. [1, 4-6]

Although some congenital ranulas may resolve spontaneously, persistent lesions can interfere with feeding, swallowing, or respiration, necessitating intervention. Various treatment modalities have been described, including aspiration, marsupialization, sclerotherapy, and surgical excision.[7]

This report describes a rare case of congenital ranula in an infant, highlighting its clinical presentation, management, and long-term outcome.

Case Report

A 4-month-old male infant with no significant medical history presented with a swelling in the floor of the mouth. According to the parents, the swelling had been present since birth and had gradually increased in size.

Intraoral examination revealed a smooth, fluctuant, non-tender swelling measuring approximately 3 × 2 × 2 cm on the left side of the floor of the mouth. The overlying mucosa was intact, translucent, and of normal color (Fig. 1). The tongue was slightly elevated and deviated toward the right side. There was no history of pain, airway obstruction, or feeding difficulty at the time of presentation.

A clinical diagnosis of congenital ranula was made, and treatment options were discussed with the parents. Considering the patient's young age and absence of significant symptoms, a conservative approach was initially adopted.

Needle aspiration of the lesion was performed using a fine-gauge needle, yielding a thick, mucinous fluid suggestive of salivary origin. Although the swelling reduced in size temporarily, it gradually recurred.

After a period of 6 months, the patient returned with complaints of difficulty in feeding and swallowing. In view of recurrence and progression of symptoms, surgical intervention was planned.

Under general anesthesia, complete surgical excision of the ranula along with the associated sublingual gland was performed. The excised specimen was sent for histopathological examination.

Microscopic analysis revealed a cyst-like space surrounded by granulation tissue, with mucous pooling, extravasated red blood cells, and chronic inflammatory cells. Adjacent minor salivary gland acini and ducts were also observed, confirming the diagnosis of ranula (Fig. 3).

The postoperative period was uneventful. The patient has been followed up regularly for 62 months, with no evidence of recurrence (Fig. 2).

Discussion

Ranula typically presents as a bluish, translucent, dome-shaped swelling in the floor of the mouth, resembling the underbelly of a frog.[8] Ranulas may be classified as either acquired or congenital. Acquired ranulas are more common and usually result from trauma leading to ductal disruption, whereas congenital ranulas are associated with developmental anomalies such as ductal atresia or failure of canalization.[9, 10]

A prospective study evaluated the pathogenesis of ranulas in relation to anatomical variations of the sublingual gland. Under normal anatomical conditions, multiple ductules arising from the posterior portion of the sublingual gland open independently along the crest of the sublingual fold. However, in certain individuals, several ductules converge to form a common duct, referred to as Bartholin's duct, which subsequently drains into Wharton's duct. Through meticulous anatomical dissection, the investigators demonstrated the presence of Bartholin's duct in 88.9% of patients with simple ranulas and in 42.9% of those with plunging ranulas, whereas this anatomical variation was not identified in any of the control subjects.[11]

The diagnosis of ranula is primarily clinical, supported by the characteristic appearance and location of the lesion. Imaging modalities such as ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI) may be useful in determining the extent of the lesion, especially in plunging ranulas. The "tail sign" seen on CT is considered pathognomonic for plunging ranula.[12]

Management of congenital ranula remains controversial. Conservative approaches, including aspiration and marsupialization, are often preferred in infants due to their minimally invasive nature. However, these methods are associated with high recurrence rates. Studies have reported recurrence rates as high as 82% following aspiration and approximately 66% following marsupialization.[13]

In our case, initial aspiration resulted in temporary reduction but failed to provide definitive resolution, consistent with findings reported in the literature. Surgical excision of the ranula alone also carries a significant risk of recurrence. In contrast, excision of the ranula along with the associated sublingual gland has been shown to have the lowest recurrence rate (approximately 1.2%).[14]

Although surgical management carries risks such as injury to Wharton's duct, bleeding, infection, and lingual nerve damage, careful surgical technique can minimize these complications.[15]

The decision to proceed with surgical excision in this case was based on recurrence of the lesion and the development of feeding difficulties. The excellent long-term outcome without recurrence supports the effectiveness of this approach.

Conclusion

Congenital ranula is a rare clinical entity that may present in early infancy. While conservative management may be considered initially in asymptomatic cases, recurrence is common.

Surgical excision of the ranula along with the sublingual gland provides definitive treatment with minimal risk of recurrence. Early intervention should be considered in cases associated with functional impairment such as feeding or airway difficulty.

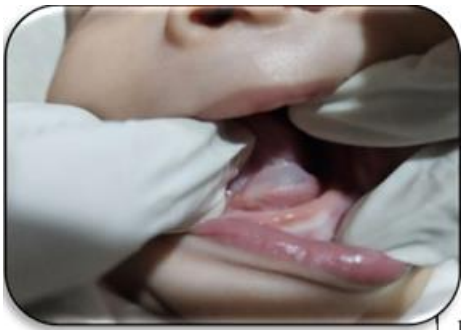

Figure 1: Initial clinical presentation showing swelling on the left side of the floor of the mouth

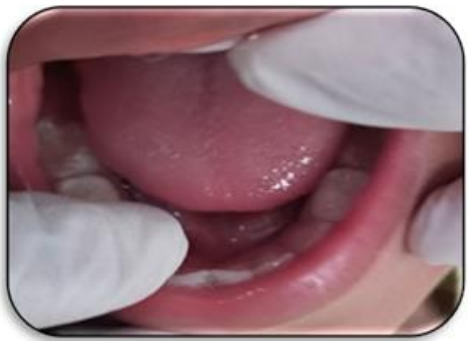

Figure 2: Clinical Appearance after 62 months of follow-up

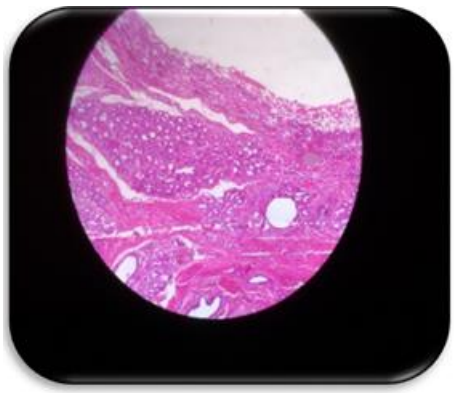

Figure 3: Microscopic (Histopathological) Examination Findings

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