The Yale Larynx Laboratory

A Clinical Review

Plunging Ranula: (Another) Great Masquerader

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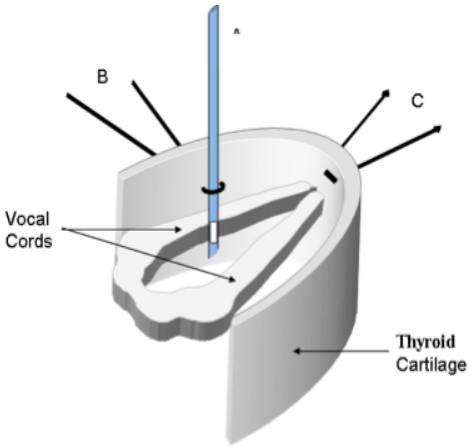

Laboratory Note

The purpose of this newsletter is to update our readers with the evidence-based management of certain Head & Neck disease presentations. In this issue we shall focus on the head and neck plunging ranula.

The Yale Larynx Laboratory was founded by John A. Kirchner in 1967. Since 1975 this laboratory has been in continuous operation under the direction of Clarence T. Sasaki, the Charles W. Ohse Professor and has been funded by the National Institutes of Health and by endowments of grateful patients.

Introduction

We will describe two cystic tumors of the head and neck that mimic each other clinically and may be problematic to manage without accurate diagnosis. This short communication is intended to guide the Head & Neck Specialist to a successful outcome.

Case Presentation

A 19 year old woman, non-smoker, presented with a 3 week history of mildly tender right neck swelling. She was never febrile but noted that the swelling had decreased since starting Amoxicillin. She denied previous episodes of neck swelling or pain while eating.

Inspection of the oral cavity revealed no active mucosal lesions. Bimanual palpation elicited clear saliva from the submandibular ducts. Examination of the neck was notable for a non-tender 5cm ill-defined swelling of level 1 without overlying skin inflammation (figure 1). Based on this history, a preliminary diagnosis of plunging ranula was made. CT imaging showed a 5x5cm loculated cyst (figure 2) extending from the floor of mouth into the right neck and the presence of a ‘tail sign’ (figure 3).

She underwent resection of the right sublingual gland through a transoral approach. Sharp dissection was used to free the gland from overlying mucosa while preserving the lingual nerve and Whartons duct crossing beneath. The gland was dissected free from front to back by blunt dissection and traction with minimal bleeding. Mild scarring was encountered likely due to previous inflammatory events. Based on our diagnosis of plunging ranula, **the associated cystic component was allowed to resolve independently**. Pathology showed mild

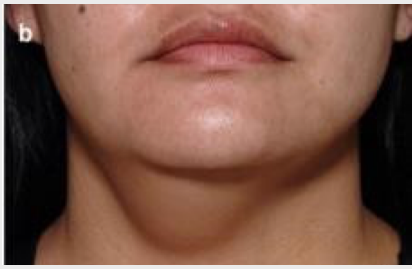

Figure 1 - unilateral submandibular swelling associated with a ranula

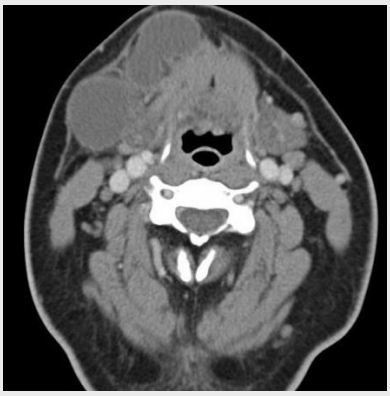

Figure 2 - septations, loculations

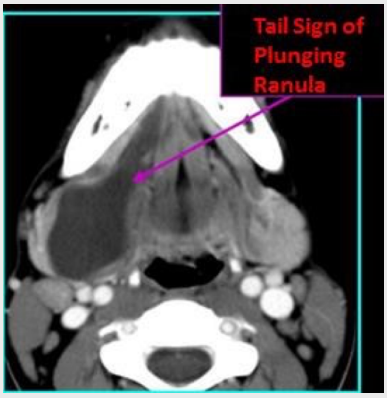

Figure 3 - tail sign

chronic sialadenitis of the sublingual gland.
Healing was uneventful with complete resolution of the cyst. No recurrence has been noted.

Discussion

A plunging ranula is a mucous retention cyst, essentially a pseudocyst (without an epithelial lining), that originates in most cases from a blockage or injury to the ducts of the sublingual gland. The term ranula is derived from the Latin word *rana,* which means frog, due to the typical bluish appearance of the intraoral lesion that resembles the belly of a frog. A ranula may be congenital or acquired and either primary or recurrent. A *simple* ranula is limited to the floor of mouth (figure 4), whereas a *plunging* ranula extends through the mylohyoid muscle into the neck. A plunging ranula is derived by extravasation of mucous from the sublingual gland into the submandibular space and may or may not have an intraoral component. The sublingual gland is a constant producer of mucous even in the absence of nervous stimulation. Extravasated mucous produces an inflammatory pseudocyst in which macrophages break down the organic component, allowing water and inorganic components to drain away into the lymphatics. Although there have been reports of plunging ranulas presenting in infancy, the majority typically present in the second and third decades of life as unilateral neck swelling below the mandible.

The diagnosis of plunging ranula may be made using clinical presentation and imaging in the form of CT or MRI. Fine needle aspiration may be helpful in certain cases by demonstrating amylase in the aspirated fluid, often in the presence of scant macrophages on cytology. The main differential diagnosis of a large plunging ranula is a cystic hygroma that represents a lymphatic malformation, typically presenting as a unilateral cystic neck swelling. It can be difficult to distinguish from plunging ranula on history and physical examination. Cystic hygromas typically present earlier in life; 90% are evident by 2 years of age, whereas initial presentation in adulthood is less common.

Imaging can also be very helpful in making this distinction. Plunging ranulas tend to be unilocular, homogenous, well defined, non-enhancing masses with fluid attenuation and signal intensity on CT and MRI. Communication with the

sublingual gland typically occurs behind the posterior free edge of the mylohyoid muscle, the so called *tail sign* (figure 3). On the other hand, cystic hygromas are often infiltrative, involving several anatomic regions of the neck. They appear poorly circumscribed, multi-loculated, and septated (figure 5). Intrathoracic extension may also occur. Needle aspiration is negative for amylase and often paucicellular. Correct differentiation is critical because the two are managed quite differently.

Various treatment options have been described for plunging ranulas including observation, incision and drainage, marsupialization, sclerotherapy, and resection of the sublingual gland alone. As the literature points out cure rates are dependent upon the entire removal of the sublingual gland. Recurrence is possible if remnant gland is left behind during surgery.

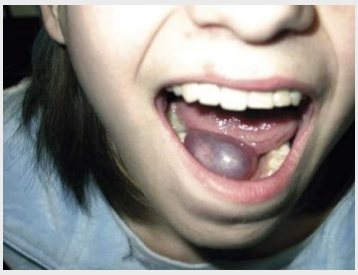

Figure 4 - simple intraoral ranula

Summary

Simple ranula

- confined to submucosa and best treated with wide marsupialization

Plunging ranula

-usually presents in early adulthood

-typically a painless, unilateral, cystic mass in the submandibular space

-communication between the sublingual and submandibular spaces behind the posterior edge of the mylohyoid can be seen on imaging and is called the *tail sign*

-needle aspiration may demonstrate amylase and inflammatory cells

-transoral resection of sublingual gland with or without decompression of cystic component is curative

-OK432 sclerotherapy has been described. Unfortunately recurrence approaches 50% with this technique.

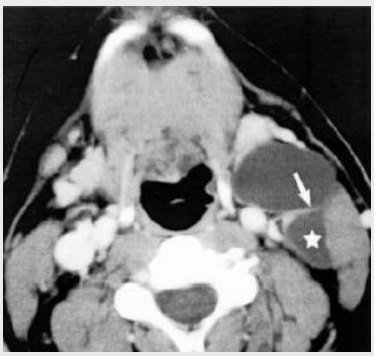

Figure 5 - Cystic hygroma; arrow showing septation; asterix showing extension into posterior cervical space

Cystic hygroma

- usually presents within first 2 years of life
- often involves multiple anatomic regions within the neck with possible intrathoracic extension
- poorly circumscribed, septated, loculated
- complete surgical excision is necessary to avoid recurrence
- OK432 sclerotherapy is a non-surgical option

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