Marsupialization as a ranula management: Case report

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ABSTRACT Objective: A Ranula is a form of cyst occurring because of obstruction major salivary gland. A ranula is a phenomenon of sublingual gland duct retention in the mouth floor. That results in a bluish swelling in the mouth floor. It usually occurs unilaterally and appears as a fluctuating swelling like a frog belly. Methods: A 9 years old girl patient complained of a swelling in her mouth floor. Clinical examination shows a reddish blue mass in her mouth floor with a size of 4x3x3 cm pushing the tongue upward. The patient came with a good general condition, and it can impair speaking, eating or swallowing. This case is managed by marsupialization. The following is incision as long as 2 cm in the mass surface only in mucous facing directly to the mass capsule, bleeding control. The entire mass liquid is removed until the iodoform gauze is filling as antiseptic, the margins of the mucosa are a suture. Results: Etiology of ranula is still unknown, but it is suspected because of trauma, and salivary gland obstruction. Clinically, ranula has an appearance as a swelling in the mouth floor pushing the tongue upward; it is more likely to be unilaterally rather than bilaterally. That swelling has a thin transparent wall, reddish blue, grows slowly and appears like a frog belly. Big size ranula will push salivary gland duct and impairs salivary flow. Conclusion: Marsupialization as the treatment of ranula has a good result.

KEYWORDS Ranula, cyst, Obstruction, Salivary gland, Marsupialization

Introduction

Generally, ranula is classified into two types; those are superficial ranula or simple ranula and plunging ranula or diving ranula. Plunging ranula often occur in children and adult whose age is 8-22 years old. In research of 129 children patient with the age range of 3-16 years old experiencing plunging ranula, 82 male patients (63,57%) and 47 female patients (36,43%). Research shows that ranula prevalence happens to be in a range of 0.2% from 1000 patients. Besides, the male: female comparison is 1: 1,4 with the age range of 3-61 years old. Mouth disease study shows that ranula has the 41st grade based on mucocele prevalence research result in few nations from the entire mouth disease in Minnesota.[1] Salivary glands are classically divided into major and minor salivary glands. Major salivary glands are large glands located at a distance from the oral mucosa, which empty their secretions in the oral cavity through long extraglandular ducts, whereas minor salivary glands are small secretory units contained inside the oral mucosa that open either directly in the mouth or indirectly through many short ducts. However, ranula is a mouth disease that has to be managed seriously because it can infect submandibular space because of trauma or others.[2,3] The current scientific knowledge reveals that ranulas originate primarily from the sublingual salivary gland which is a spontaneous secretor of saliva, that is, produces saliva without parasympathetic stimulation that occurs during feeding, which is drained by 6–20 ducts scattered in the floor of the oral cavity called ducts of Rivinus. They are located majorly at the posterior and superior aspects, while at the anterior part, they coalesce into a single duct termed the Bartholin’s duct which empties into the Wharton’s duct of the submandibular salivary gland. The sublingual salivary gland is almond shaped, weighs 2–4 g and produces mainly mucus secretions. It lacks a true capsule but the rather mucosal fold of the floor of the mouth which envelopes it. The gland is resistant to obstruction because of
this unique anatomical arrangement.[4] A plunging ranula is extravasation of saliva from the sublingual gland due to trauma or obstruction of the duct. Fluid from the obstructed gland dissects between the fascial planes and muscle of the base of the tongue to the submandibular space. The exact prevalence of plunging ranula is not known. However, these lesions are considered uncommon. Because most plunging ranulas either accompany a swelling in the floor of the mouth or are associated with a history of treatment of intraoral ranula, it is not difficult to diagnose such a lesion.[5] Formation of the ranula is due to rupture of the excretory duct which is followed by extravasation and salivary accumulation into the surrounding tissue which forms a pseudocyst that lacks epithelial lining. Clinically ranula is of three types. Most common of which is the “Sublingual ranula” which presents as an intraoral sublingual swelling. The second commonest is the “Plunging ranula” which is located cervically and extend beyond mylohyoid muscle, and those having both cervical and oral component is known as “sublingual plunging ranula.”[6]

Magnetic resonance imaging (MRI) can show herniation of the sublingual tissue and cystic material through the mylohyoid muscle(s). T1-weighted images are usually low enhancing while T2-weighted images are bright. If the mucocele or ranula is infected, the signal findings may vary.[4] (Figure 1).

Figure 1: Magnetic Resonance Imaging.

Pathophysiology

The pathophysiology of the salivary glands concerning ranula has been extensively investigated. The ranula is an extravasation mucocele that arises from the sublingual gland, either from a ruptured main duct or from ruptured acini following obstruction. The sublingual gland is a spontaneous secretor and produces a continuous flow of mucus even in the absence of nervous stimulation. Extravasates mucus produces an inflammatory reaction in which macrophages break down the organic component, which allows the water and inorganic component to drain away in the lymphatics, and granulation tissue forms fibrous tissue, which restricts the extravasation and sometimes seals the leak.[7]

However, the secretory activity of the sublingual gland is resistant and often persists in spite of the fibrosis, and balance is then achieved between extravasation of saliva is eventually stopped by fibrosis. The secretory activity of the parotid is least resistant. The minor salivary glands apart from the glands of von Ebner are histologically and functionally identical to the sublingual gland, and all are mucous glands.[7]

Case Report

A 9 years old girl complains that there is a swelling underneath her tongue. That swelling happened three years ago and has already been operated once. It once has a peanut seed size and then expanding to the size of red beans. The patient complains a pain sensation when swallowing.

Figure 2 in the clinical intraoral examination there is swelling with the size of 4x3x3 cm in the mouth floor with tender consistency, pain in palpation (+), and bluish colour. Examination results after mass aspiration, there were found mucous liquid in that mass. From the examination results, it is diagnosed ranula in the mouth floor.

Figure 2: Intraoral clinical.

Based on examination results, it is diagnosed as ranula, so that the decision is marsupialization. By using general anaesthesia, surgical treatment of ranula in children more difficult situation compared to adult patients. This could be explained by smaller surgical field, thinner wall, greater friability and closer proximity of the cystic lesion to vital structures in the floor of the oral cavity.

A ranula is sometimes managed by marsupialization or making a window in the lesion. Before we do the operation, the patient’s family sign an informed consent, disinfection of operation area, and vasoconstrictor injection. The following is incision as long as 2 cm in the mass surface only in mucous facing directly to the mass capsule, bleeding control, and mucocele suturing with mass/capsule wall. The entire mass liquid is removed until the gauze filling that contains iodoform as antiseptic, the margins of the mucosa are a suture, and the operation site is cleaned.[8] (Figure 3).

Postoperatively, the patient is instructed to undergo a soft diet, ceftriaxone medicament injection one gr/12 hour, ketorolac injection ten mg/12 hours, and ranitidine injection 40 mg/12 hours — follow-up one week after operation iodoform gauze removal figure 4.

Figure 5 clinical appearance of ranula are bluish swelling with a form of frog belly, without symptoms or pain sensation, slow-growing, tender, movable mass, clear boundaries and localized, fluctuating.

Discussion

Most ranulas happen in children and adolescent. Otherwise, it is also found in the third age of life, and most happen in the female. Even though it has no further study, superficial mucocele tends to happen in those older than 30 years old.[7,9] Ranula commonly has a relationship with submandibular space that
can be invaded when there is salivary gland impairment. This can be very important to know the anatomical form of space in the neck for determining the management.[2,10] Ranula has a variable size, from around 4 cm until 10 cm, in big-sized can cause a tongue deviation and in bigger-sized and expanding downward penetrating mylohyoid muscle.[11]

**Differential Diagnosis**
Mucocele, angioma (not as firm as ranula), lipoma (more firm than ranula), dermoid cyst (in the midline, doughy feeling on pressure). Mucocele is an oral mucosal lesion that is formed because of minor salivary gland duct ruptures and mucin accumulation in surrounding soft tissue. It is commonly caused by local or mechanical trauma. Mucocele is a benign cyst, but it is said not to be the true cyst because it doesn’t have lining epithelial in the histopathological appearance.[4]

**Conclusion**
A ranula is a term for depicting a mucocele occurring in the mouth floor, it usually occurs unilaterally, and has a form of bluish swelling like frog belly. A ranula is classified into two types; they are superficial ranula/simple ranula/oral cavity ranula and deep ranula/cervical ranula or plunging ranula. The success of ranula management depends on surgical excision entirely to the lesion and corresponding salivary gland that is sublingual salivary gland; seldom in submandibular salivary, so that it has a low recurrence risk. Marsupialization as the treatment of ranula has a good result. The dentist has to socialize the danger of ranula and the importance of dentist visit for consultation about dental and oral health, and dentist referral for advanced treatment.

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