

Large Oral Ranula - Secondary to Trauma

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Abstract: Ranula is a benign mucous containing, thin walled swelling which is caused by either rupture or blockage of major or minor salivary gland ducts. We present a case of a healthy 46 year male patient who presented with a 14 days history of swelling under the tongue, accompanied by discomfort while swallowing. He revealed a history of trauma of the maxillofacial region 2 months earlier. Local examination revealed a soft non tender fluctuant mass on the floor of the mouth extending bilaterally with seemingly normal mucosa. A clinical diagnosis of Ranula was arrived at and the lesion was subjected to marsupialization under Local Anesthesia. The aim of this article is to present a case of a giant bilateral Ranula located on the floor of the mouth and to discuss the various diagnostic and treatment modalities.

I. Introduction

There are three pairs of major salivary glands as well as numerous minor salivary glands which drains directly into the oral cavity through salivary ducts. Obstruction of these ducts due to any external or internal injury causes the secretions to collect within the facial planes and muscles in the base of the tongue leading to the formation of a Ranula [1].

The term Ranula is derived from "Rana" (meaning frog) as the shape of this pseudo cyst resembles the aerated vocal sac of a frog. Clinically, Ranula may be of intraoral type which is non-tender, slow growing and confined to floor of the mouth whereas a plunging Ranula is a pseudo cyst which is present as a swelling in upper part of neck. Histopathologically, on the basis of presence or absence of epithelial lining Ranula can be classified as a true cyst or a pseudo cyst [2].

A 46 year old male patient reported with a painless swelling on the floor of the mouth since 14 days. The patient complained of difficulty in speech, mastication and swallowing. He further complained of difficulty in breathing in supine position. History revealed trauma 2 months previously for which he has undergone open reduction and internal fixation of the mandible under general anaesthesia. The general physical examination was non-significant and there was no history of chronic illness. Intraoral examination revealed a soft, non-tender, fluctuant, fluid containing mass on the floor of the mouth extending bilaterally. The swelling caused the tongue to be markedly elevated [Figure 1].



Figure 1- intra oral view of bilateral Ranula pushing the tongue to the palatal shelf.

Extra orally, a scar was visible extending from the chin to 3-4 cm posterior to the left submandibular region, which was the site for the previous surgical intervention[Figure2]. Overlying skin was normal in colour and temperature. The associated cervical lymph nodes were not palpable. A clinical diagnosis of Ranula was arrived at.

1. Panoramic radiograph revealed no pathological changes. It was performed to rule out any calculus in the salivary gland duct.
2. Fine Needle Aspiration Cytology was performed which revealed a thick yellow coloured mucous fluid from the pathological site which was subjected for biochemical analysis. The biochemical analysis of the aspirated fluid shows high amylase and protein content.



Figure 2 frontal profile of the patient where a scar is evident extending from chin to left sub mandibular lesion.

The differential diagnosis of any mass of swelling in the floor of the mouth includes dermoid or epidermoid cysts, cystic hygroma, thyroglossal duct cyst and malignant/ benign neoplasia of major/ minor salivary glands.

Treatment plan:

Surgery was considered as it is the standard protocol for the management of Ranula. Marsupialization of the Ranula was planned. Lignocaine 1:200000 was infiltrated sub mucosally in the floor of the mouth. De-roofing of the cystic lesion was performed taking care not to injure submandibular duct or lingual neurovascular bundles. The central portion of the Ranula with the over lying mucosa was excised in an elliptical pattern. During surgery the lesion was found to be filled with viscous yellowish fluid. Haemostasis was achieved. The mucosal opening was sutured with 3-0 mersilk in the anterior portion of the membrane of the lesion. Multiple sutures were placed in a view to maintain a new epithelialized drainage pathway. The cavity was packed with iodoform gauze and was removed after 3-4 days postoperatively [Figure3].



Figure 3- aspect of lesion after marsupialization and packing with iodoform gauze

This was replaced with smaller packs periodically till the lesion filled up with tissue. The complete healing took 6 weeks. The recovery was uneventful. The patient has not experienced any recurrence following 6 months post-operative follow-up [Figure4]. Later the patient was instructed to return if he observes any sign of swelling or elevation in the floor of the mouth.

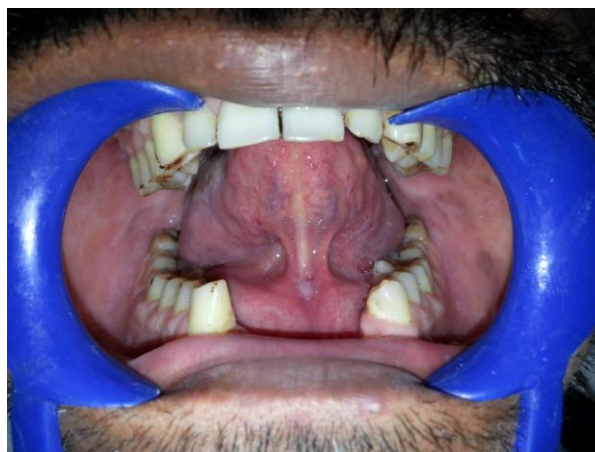


Figure 4- Six month follow up

II. Discussion

Ranula usually refers to a bluish, thin-walled, transparent swelling which is filled with mucous and is present in the floor of the mouth [3].

Submandibular, sublingual and parotid are the three pairs of major salivary glands as well as several minor salivary glands secrete saliva and drain into the oral cavity through a track called as duct.[1]

Due to any pathological condition or trauma, if the salivary gland is obstructed it may lead to pressure build up within the duct resulting in the rupture of the duct and extravasation of mucous into the surrounding tissue which is generally termed as mucocele [1,4].

Ranula is described as a painless mucous containing pseudo-cyst caused by collection of extraglandular and extraductal saliva in the floor of the mouth originates from sublingual salivary gland [2-4,6].

The disease was described a thousand years ago during the Byzantine era. In early twentieth century it was thought to be occurring as a developmental defect from the remnant of brachial arches. In 1956 Bhaskar et al [5] investigated the pathogenesis of Ranula and suggested that these are extravasation of saliva from salivary duct and is lined by surrounding connective tissue and not by epithelium. Later on, in 1972 Harrison and Garrett demonstrated that Ranula is caused by extravasation of saliva from sublingual gland [6].

Ranula is a rare disease and the frequency of affecting both the sex is reported to be more or less same. The prevalence of Ranula is reported in about 0.2% per 1000 persons [7]. Ranula usually occurs in children and young adults but the peak frequency of sublingual Ranula is reported in the second decade of life and that of plunging cervical Ranula tends to occur in late third decade of life [7].

Ranulas are commonly noticed in the lateral floor of the oral cavity and bilateral Ranulas are rare [8].

The present case of bilateral sublingual Ranula extended to the contralateral sublingual space causing significant raising of the tongue. Though it was non tender, the patient had difficulty in speech mastication and breathing while sleeping.

The mechanism by which a sublingual Ranula occurs is now well understood and documented. The three mechanisms described in the formation of a Ranula are a) partial/ complete obstruction of the sublingual duct, b) trauma to the salivary duct or salivary gland, c) iatrogenic [7].

Any pathological condition such as sialolith causes partial or complete obstruction of salivary gland leading to extravasation of mucous causing Ranula. Any trauma in the maxillofacial region which causes damage to the duct of sublingual salivary gland (ducts of Rivinus) can also cause formation of Ranula. The third most common cause in formation of Ranula is iatrogenic. Any surgery involving the sublingual region may accidentally damage the duct and can cause Ranula[7].

In our case, the patient had a history of trauma leading to fracture of the mandible 2 months back. He was operated for the same and an extraoral scar extending from chin to left submandibular region was evident. This may be attributed to the formation of Ranula.

There is no specific investigation or imaging modality for Ranula, though in the literature for the diagnosis of Ranula fine needle aspiration cytology, ultrasonography, sialography and MRI has been advocated[3,7].

Due to the location of sublingual gland ultrasonography is inconclusive. It may be helpful in plunging ranulas where submandibular gland is also involved. MRI is the most sensitive tool for the diagnosis for intraoral as well as plunging Ranula [7].

A simple technique for the preoperative diagnosis of Ranula involves fine needle aspiration cytology. Hence, we decided to perform fine needle aspiration cytology. A thick viscous yellow mucous fluid was aspirated, biochemical analysis revealed high amylase content which confirms the diagnosis of Ranula.

Surgery is the treatment of choice [2, 4, 5]. Keeping in view the proximity to the important structures like lingual neurovascular bundle, ducts of major and minor salivary glands in the floor of the mouth, a variety of surgical and non-surgical procedures have been advocated. Non-surgical procedures like intracystic injections of sclerotic agents like OK-432, vaporization of Ranula by carbon dioxide LASER therapy has been reported in literature [2, 7]. Still surgery remains the treatment of choice for Ranula [2- 4, 8-10].

Depending on the size of Ranula, many authors like *Crysdale et al* [11] advocated that oral ranulas greater than 1 cm should be excised with the offending sub lingual gland, others like *Pandit* and *Park* [6] advocated surgical excision of the lesion. Apart from radical surgery many authors like *Baurmash* advocated marsupialisation followed by positive pressure gauze pack [2, 5, 8].

In the present case we decided to marsupialise the lesion and to pack the lesion with iodoform gauze.

The aim of marsupialisation was to de-roof the Ranula and to evacuate the mucous. The packing with iodoform gauze will give a positive pressure which not only seal the leak but also evoke inflammatory response causing fibrosis. This fibrosis may cause permanent seal and prevent the extravasation of the saliva [9].

Moreover, marsupialisation does not require any special care, can be performed in the OPD, simple to perform and causes less post-operative pain and discomfort to the patient. Our case treated with marsupialisation had successful outcome. After a follow up of 6 months the healing was uneventful with no sign of recurrence.

III. Conclusion

1. Oral Ranula is non-tender, fluctuant, gradually enlarging swelling in the floor of the mouth which may drain spontaneously at intervals.
2. Bilateral Ranulas are extremely rare and are usually related to sublingual space but sometimes can extend to sub mandibular or para-pharyngeal space.
3. Though Ranula is caused due to blockage of salivary gland or duct, the increase or decrease in size of swelling is seldomly noticed while eating. Hence, a careful history, clinical examination, fluid aspiration and imaging is required to distinguish Ranula from other lesions involving the sub lingual or sub mandibular lesions.
4. Surgical excision of Ranula along with offending sublingual gland is a treatment of choice but newer conservative treatment modality like marsupialisation can be performed in the initial treatment plan.
5. Traumatic injuries to the mandibular region may predispose to the formation of oral Ranulae. Long term followup of mandibular trauma is recommended.

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