

Ranula of The Sublingual Area- A Case Report.

Abstract:

Ranula is a cystic fluid filled cavity that is caused by extravasation of the sublingual gland at the floor of the mouth. Ranula originates in the body of the sublingual gland, especially in the Rivinus ducts of the sublingual gland, and occasionally originates in the minor salivary glands at the floor of the mouth [1]. There are a variety of treatment modalities for ranula including aspiration of the cystic fluid, sclerotherapy, marsupialization, incision and drainage, ranula excision only, and excision of the sublingual gland with or without the ranula [3]. In this article we present a case report of a ranula, which developed after the extraction under lingual nerve block on the same side.

Key Words: Ranula, Sublingual gland, Marsupialization.

Introduction:

The word Ranula was derived from the Latin word Rana, which means frog belly and a ranula shows its resemblance to a swollen belly of a frog [1]. Ranula is a mucocele that forms due to the retention of mucus inside the sublingual gland at the floor of the mouth. Ranula emanates exclusively from the body of the sublingual gland, especially in the Rivinus ducts of the sublingual gland, and sometimes arises from the minor salivary glands at the floor of the mouth. Since ranulas are attached to granulation tissue instead of epithelium, they are considered a pseudocyst.

The events of ranula usually peak in the second decade of life and based on its clinical presentation [1].

There are three types of ranula: -

- sublingual,
- plunging, and
- Sublingual plunging.

While the oral ranulas form because of leakage and accumulation of secretions of minor salivary glands above the mylohyoid muscles, cervical/plunging ranulas result from the collection of mucus along the fascial planes of the neck. The leading cause of origin of a ranula is mainly trauma to the excretory duct of the minor salivary gland and obstruction of the duct (sialolith or mucus plug) [3]. Other causes leading to ranula formation include chronic inflammation (sarcoidosis and Sjogren syndrome) or infection with periductal scarring,

ductal hypoplasia, ductal stenosis, ductal agenesis, and neoplasia.

Patients with ranulas often present with a painless swelling in the floor of the mouth. This swelling can interfere with speech, swallowing, mastication, and even respiration as it displaces the tongue in an upward and medial direction. Sometimes, the tongue may also put pressure on the lesion, interfering with the saliva outflow, thus leading to obstructive salivary gland signs and symptoms (pain when eating or chewing)[4]. Thus, it is very important to diagnose ranulas.

Complications associated with ranulas may include infection, rupture and reformation, and dysphagia in cases of larger ranulas [4].

About half of the plunging or cervical ranulas arise as a result of the failure to excise oral ranulas completely. These plunging ranulas may enlarge and result in a respiratory compromise or acute mediastinitis, a life-threatening complication [4].

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Possible surgical complications may be both intraoperative and postoperative.

Intraoperatively:- it may include hemorrhage, possible damage to the Wharton duct damage leading to stenosis and obstructive sialadenitis, accidental injury to the lingual nerve leading to temporary or permanent paresthesia, damage to the facial nerve marginal mandibular branch causing paresthesia[4]

Postoperatively:- complications may include hematoma, infection or dehiscence of the wound [4].

Differential diagnosis:

The differential diagnosis of a ranula may include:[4]

- Hemangioma
- Lymphangioma
- Dermoid cyst
- Benign or malignant salivary gland neoplasm
- Lipoma
- Abscess
- Venous lake
- Fibroma
- Benign mesenchymal neoplasm

Imaging Modalities:

The diagnosis of a ranula is mainly based on the clinical picture. Although imaging studies are not generally indicated for the evaluation, they can undoubtedly help in excluding other differential diagnoses, determining the cause (e.g., calculi) as well as the extent of the swellings, thus aiding in excision and removal.

- Ultrasonography: High-resolution ultrasonography can detect calculi, abscesses, and cysts, and can even correctly assess up to 90% of benign or malignant tumors. Vascular lesions, however, require color doppler imaging for their evaluation [4].
- CT and MRI: They are seldomly required, except if there is a large plunging or cervical ranula that has breached through a defect in the mylohyoid muscle. Also, they aid in determining the extent of the swelling, which is important to know before its removal [4].
- Biopsy: It is required to differentiate between the benign and the malignant diseases [4].

Case Report:

A 23-year-old male patient reported with a swelling on the right side of the floor of the mouth since 2 months. The patient gave a history of extraction of 46 months 2 months back after which he began to develop a painless swelling in the floor of his mouth. The swelling was non tender but it did not cause any difficulty in the movements of the tongue. On clinical examination, a reddish blue 3 cm × 2 cm swelling at the floor of the mouth appeared on the right side. On palpation, swelling was progressive, non tender, and transilluminant. There were no symptoms of any cervical enlargement.



Fig. 1(a): Front and side profile



Fig. 1(b): Preoperative

Based on the clinical examinations a provisional diagnosis of ranula was made. The patient was advised for an ultrasonography of the floor of the mouth.

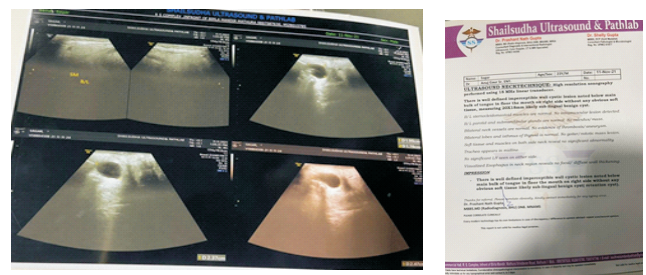


Fig 2: Ultrasound of sublingual gland

The ultrasound revealed a well-defined imperceptible wall cystic lesion present below the main bulk of the tongue in the floor of the mouth on right side without any obvious soft tissue, measuring 20-18 mm likely a sublingual benign cyst (retention cyst). Bi-lateral sternocleidomastoid muscles were normal with no intramuscular lesion detected. Bi-lateral submandibular glands were normal with no calculus or mass present. Bilateral neck vessels were normal and no adjacent soft tissue abnormality present. No significant LN seen on either side.

Treatment Plan:

The patient was informed of his diagnosis. He was advised for removal of the cyst and also the possibility of recurrence in the future. With his consent, he was taken for surgery, at first a cannula was placed in his Rivinus duct to relieve of the obstruction but later the entire cyst was removed by marsupialisation under local anaesthesia. The findings within the surgery included a clear gel-like substance that was removed from the cyst by marsupialisation and closed by running sutures.



Fig 3: Incision and Drainage of the cyst



Fig 4: Marsupialisation and post op

Review of Literature:

Ranulas are characterized by large (>2 cm) cystic cavities and appear as a tense fluctuant dome-shaped vesicles, sometimes with a bluish hue. The prevalence of ranula is about 0.2 cases per 1000 persons and accounts for 6% of all oral sialocysts. Only 1% to 10% of the ranulas are true retention cysts. Ranula usually occurs in children and young adults. The peak frequency of ranula occurs in the second decade of life [6].

Moss and Hendrick reported the presence of ectopic salivary gland below the mylohyoid muscle. Visscher et al. have the opinion that mucus secretion from these ectopic glands may drain saliva directly into neck mass. Secondly, a hiatus or dehiscence in the mylohyoid muscle may occur [7].

Additionally, Bridger et al. after reviewing plunging ranulas, found that 44% of them developed iatrogenically after single or multiple attempts at eliminating oral ranulas by either marsupialization or simple drainage. They stated that surface fibrosis after repeated failed procedures could be responsible for diversion of the saliva inferiorly leading to plunging ranula [8].

Therefore, Crysdale et al. recommended that all oral ranulas greater than 1 cm should be treated by removal of lesion along with offending sublingual gland. Whereas, other authors have proposed this treatment modality irrespective of the size of the ranula [9].

Patton postulated that an aberrant duct from the deep lobe of the sublingual gland may open into the submandibular duct. This abnormal communication may cause stasis of salivary flow in the duct leading to extravasation of the saliva into the neck in the submandibular region [10].

In 1995, Morton and Bartley stated that ranula can be treated by placing silk suture in the dome of the cyst [11]. Later on Delbem et al. utilized the micromarsupialization technique for the treatment of ranula. This technique involve topical anesthesia of the lesion for 3 minutes and use of a single 4-0 black silk suture passed through the internal part of the lesion along its widest diameter. The suture was removed after 7 days [12].

Sandrini et al. performed modified micro-marsupialization for treatment of ranula. The modification include an increased number of sutures, decreased distance between the entrance and exit of the needle followed by maintenance of sutures for longer duration approximately 30 days [13].

Zhao et al. recommended insertion of a large lacrimal probe or indwelling catheter into the Wharton's duct to facilitate identification of this structure during surgical exposure and removal of the sublingual gland [14].

Serological Examination:

Histopathological examination of the ranula consists of a central cystic space containing mucin and a pseudocyst wall which is composed of loose, vascularized connective tissues. There is predominance of histiocytes within the pseudocyst wall, but over a period of time, these become less prominent. An important feature in histologic diagnosis is the absence of epithelial tissues in the wall of ranula. A biopsy of the cystic wall is recommended not only for histopathologic diagnosis, but also to rule out the presence of squamous cell carcinoma arising from the cyst wall and papillary cystadenocarcinoma of the sublingual gland, which may present as ranula [15].

Discussion:

Ranulas usually take up 6% of all oral sialocysts, and their appearance increases in the second decade of life. Although its frequency is 0.2 / 1000 cases, it is less than 10% of all true cysts. Although the diagnosis of ranula is usually clinical, mucus extravasation is generally accepted as a cause of development of ranula [1]. The most common presentation of ranula involves a cystic fluctuant growth that gradually grows over time. Differential diagnoses may include various inflammatory lesions and neoplastic sublingual and submandibular or lymph nodes, granulomatous, adipose tissue diseases, cystic hygroma, branchial or thyroglossal duct cysts, laryngocele, dermoid cysts, and epidermoid cysts[2]. Although ranula accounts for a small percentage of any oral cavity lesions, its diagnosis is even more important because it mimics a wide range of inflammatory, malignant, and neoplastic lesions[2].

Surgical methods are still more popular than new treatments due to the lack of big data that supports new approaches to recurrence [6]. At birth, ranula may occur after removal of the salivary gland duct and ostial stenosis leading to cyst formation. Inflammation of the subcutaneous tract leads to an increase in mucus in the submucosa by hydrostatic pressure and the formation of a pseudocyst in response to the escape of mucus. Trauma may directly damage the acini which may lead to ductal obstruction, and back-pressure of secretion builds up with the rupture of the next acini. Later, there is an increase in hydrostatic pressure, leakage of mucus, and lead to the formation of pseudocyst [5]. In the case of extravasation mucocoeles, trauma does not always appear to play a role in its pathogenesis. In many cases, inflammation of the mucosal lining of the small gland leads to blockage, rupture and

rupture of the duct through the spillage of the underlying fluid [3]. Changes in the function of the salivary glands and the formation of saliva may also contribute to their development.

Conclusion:

Various treatment modalities for ranula have been suggested in the recent years, but each treatment plan has shown a different success rate. Marsupialisation and simple cyst removal also have different success rates, but the recurrence rates of ranulas are thought to depend on complete removal of the cyst and sublingual gland involved. Complete removal of the sublingual gland is the most recommended treatment for ranulas.

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