Plunging Ranula – Surgery Made Easy

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ABSTRACT

The term RANULA has its root in the Latin word “rana” which means frog. Ranula is a mucous filled cavity in the floor of the mouth related to the sublingual gland. Two variants of ranula reported in literature – Simple Ranula and Plunging Ranula. Plunging Ranula can spread to deeper spaces like the parapharyngeal space. It creates a dilemma for the clinician due to its similarities with other neck swellings like cystic hygroma, thyroglossal duct cyst, intramuscular hemangioma, cystic or neoplastic thyroid disease, branchial cyst. This paper highlights a case report of Plunging ranula in the floor of the mouth that has been excised with minimal morbidity along with the sublingual gland using modified L-shaped surgical approach.

KEYWORDS: Ranula, Plunging Ranula, Hygroma, Sublingual Gland.

INTRODUCTION

Ranula was reported by Hippocrates and Celsus.1,2 Partial obstruction of a sublingual duct may lead to the formation of an epithelial-lined retention cyst.3 Other etiologies may be rupture of excretory duct, congenital anomalies for, e.g., duct agenesis, hypoplasia of the sublingual gland and direct trauma damaging the duct or deeper parts of the sublingual gland.4 The swelling enlarges progressively and spreads to the surrounding soft tissue. The Ranula appears bluish, superior to the Mylohyoid muscle, representing a frog’s underbelly, hence the name (word “rana” meaning frog in Latin).5 Such phenomenon is due to Tyndall effect.

Two types of Ranula can be found described in the literature – the Simple or Superficial Ranula, one that is restricted to the sublingual space, and the Deep Diving or Cervical or Plunging Ranula, one that breaches the sublingual space and extends cervically.6

Simple Ranula can be diagnosed with relative ease as they pose as a swelling underneath the tongue.7 Plunging Ranula can be a diagnostic doldrum for its clinical similarity with other neck swellings like cystic hygroma, thyroglossal duct cyst, intramuscular hemangioma, cystic or neoplastic thyroid disease, branchial cyst, submandibular lymphadenopathy.2 A plunging ranula extends inferiorly beyond the mylohyoid muscle sometimes intruding into the parapharyngeal and submandibular spaces giving rise to an extra-oral fluctuant swelling.8 Pressing the extra-oral cervical swelling can cause ballooning of the intra-oral swelling, which is a characteristic feature of a Plunging Ranula.

Plethora of treatment methods is present in literature including marsupialisation, excision, excision and drainage, excision of ranula with the sublingual gland, use of Yttrium- Scandum- Gallium- garnet laser, Cryosurgery, fenestration and continuous pressure, injection of Hydrocolloid dental impression material.2,6,9

The most commonly used method is excision of Ranula along with the involved Sublingual gland. The vital structures at risk during this procedure are the – Submandibular duct, which lies medial to the sublingual gland and the Lingual nerve, which is situated inferior to the gland. The sublingual artery and vein, situated medial to the gland, might be at risk as well. The field of operation is very limited owing to the anatomic location of the gland–these factors makes the surgery a difficult affair, often marred by complications.10

Hence this surgical approach, The Modified–L shaped incision utilized in this case has significantly lesser co-morbidities.10

CASE REPORT

A 32-year-old female patient reported to our college with a chief complaint of long standing swelling inside her mouth since 9 months with difficulty in swallowing and tongue movement. History revealed the onset of swelling a size of a peanut in the floor of the mouth which gradually increased to attain the present size. No history of any pain or pus discharge was reported. Extra-oral examination revealed a fluctuant, diffused swelling in the submental region (Fig.1). Swelling was compressible with no local changes. Intra-oral examination revealed a 3 x 3 cm bluish dome-shaped swelling in the sublingual area (Fig.2). Medio-laterally it extended from the midline till the lingual fossa, posteriorly it extended till the lower right First premolar tooth. The swelling was soft, non-tender, fluctuant and displaced tongue to the left side. Bi- digital palpation of the right sublingual gland revealed mild tenderness as compared to the left side. No surface...
changes over the mucosa of the swelling and no secondary changes like lymphadenopathy, paresthesia were noted. Radiographic examination did not reveal any finding of significance. Routine blood investigations revealed no physiological abnormality. Clinical diagnosis of plunging ranula was made. Treatment decided was excision of the lesion along with the involved sublingual gland using modified L-shaped surgical approach, under general anaesthesia.

Modified L-shaped incision was utilized in this case (Fig.3). It started from the lingual frenum, crossing the sublingual caruncle on the right side and extended till the distal end of lower right first molar. Submucosal dissection was done; thin mucosal layer was raised including the submandibular duct with it as it is situated superficially (Fig. 4). A soft, friable, well-encapsulated swelling was seen which was dissected from the surrounding connective tissue and muscle plane medially. Now dissection was carried out in the lateral and deep surface of the swelling. The sublingual salivary gland was identified and separated from the dissection plane. 1-2 branches of sublingual artery was encountered while entering the sublingual gland which were separated and ligated. The sublingual gland was then dissected out along with the duct and in continuation with the swelling, in toto (Fig. 5). Primary closure was done using 3-0
vicryl suture after hemostasis was achieved. The excised specimen was sent for histopathological examination, which confirmed the diagnosis of Plunging ranula (Fig. 6). Patient had no specific complaint post-operatively and was discharged after 2 days of observation. There was no recurrence in the follow up of 24 months.

**DISCUSSION**

“A ranula, mostly seen, in the floor of the mouth in relation to the sublingual gland is a mucus filled cavity”. Ranula occurs either due to obstruction of excretory ducts or traumatic extravasation and subsequent accumulation of saliva from the sublingual gland. The initiation of a ranula is a traumatic rupture of the excretory duct, leading to the sequelae of extravasation and subsequent accumulation of saliva within the tissue, as shown in experimental studies. In 2012, Suresh B.V. and Vora S.K. described following mechanisms for the origin of ranula in the neck: 1) Sublingual gland projecting through the mylohyoid or an ectopic sublingual gland may exist on the cervical side of mylohyoid; 2) Dehiscence in the anterior part of the mylohyoid muscle providing a path for ranula into the floor of the mouth; 3) A duct from the sublingual gland may join the submandibular duct or its duct, allowing ranulas to form in continuity with the submandibular gland. Ranula can be classified into two groups, simple (intra oral) and the plunging (Cervical) type. Simple ranula is much more common than plunging type. A simple ranula represents a localised collection of mucous within the floor of the mouth. In plunging ranula, the sub mandibular and sub mental spaces of the neck are involved with or without an associated intraoral collection of mucous. Diagnosis of simple ranula is straightforward. But in case of plunging ranula, even with modern imaging technique, like ultrasound, computed tomography and magnetic resonance imaging diagnosis is difficult as they resemble various other neck swellings like cystic hygroma, thyroglossal duct cyst, intramuscular hemangioma, cystic or neoplastic thyroid disease, branchial cyst, submandibular lymphadenopathy. Diagnosis is made through clinical and histopathological correlation. The most effective treatment for all ranula is transoral excision of the involved sublingual gland with the ranula. In the conventional square incision on the floor of the mouth, the middle part of submandibular duct is targeted, but this part of the duct is not constant, i.e., it might be deep seated or might have been displaced by the ranula. Whereas the anterior part of the duct is more constant and superficially located. The modified incision uses the constant anatomic structures– the sublingual caruncle and the anterior part of submandibular duct. This approach reduces injury to the chances of injury to the submandibular duct and lingual nerve during dissection.

**CONCLUSION**

Effective treatment of ranula involves not only complete excision of swelling but also removal of the underlying etiology. Usually surgery is the time proven method for ranula. But usually it leads to inadvertent damage to surrounding vital structures. Modified L-shaped incision is an effective way for removal of the ranula and sparing the vital structures.

**REFERENCES**


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