

Plunging Ranula: A Case Report and Review of Literature

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Abstract: Ranula is a mucocele which occurs in the floor of the mouth in relation to the sublingual salivary gland due to obstruction or trauma. Plunging ranulas with an oral and cervical component occurs in 34% cases as it dissects through the fascial planes and mylohyoid muscle to reach the submandibular space. Various surgical procedures have been described for its treatment with varying rates of recurrence. Here a case of plunging ranula with both the oral and cervical component and its removal by combined transcervical and transoral approach has been reported with no recurrence after a follow up of one year.

Keywords: Plunging ranula, Transcervical approach, Sublingual gland

INTRODUCTION

Ranula, derived from the Latin words “rana”(frog) and “ula”(little) means a little frog as it resembles the translucent underbelly of a frog [1]. It is a diffuse swelling, mucus retention cyst or a mucous extravasation pseudocyst as it lacks an epithelial lining in relation to the sublingual salivary gland [2]. It occurs secondary to obstruction or trauma to the sublingual duct. Current consensus supports mucus extravasation as the causative factor [3].

Types of Ranula are

- Simple or oral
- Plunging or cervical
- Mixed or sublingual plunging ranula with both an oral and cervical component [4].

Early diagnosis and proper surgical procedure results in decreased recurrences.

CASE REPORT

A 22 year old male presented with a recurrent swelling in the right side of the floor of mouth for one month and a swelling in the right submandibular region for 6 months. He was asymptomatic and had no history of trauma. On examination, a 2 x 2 cms soft, fluctuant, non tender swelling was palpated in the right side of floor of the mouth and a 2 x 3 cms, smooth, diffuse, soft, fluctuant, non tender, translucent swelling with well defined margins was seen in the right

submandibular region. A clinical diagnosis of plunging ranula was made.

Ultrasound revealed a well defined, thin walled anechoic lesion measuring 2 x 3 cms in the sublingual region extending inferiorly through a defect in the mylohyoid muscle into the right submandibular region with no internal echoes.

Combined transcervical and transoral approach was planned for excision of the lesion. Under general anaesthesia patient was put in supine position with neck extended and turned towards left side (Fig. 1). Cervical component of the ranula was well visualized with this position. A 2cm horizontal incision was made along the skin crease of submandibular region (Fig. 2) and incision was deepened till the cervical component of the ranula was well exposed (Fig. 3). All the soft tissue attachments of the ranula were separated and it was followed till the floor of the mouth through mylohyoid muscle. Transorally roof of the ranula was dissected and complete ranula was excised and delivered through cervical wound. Edges of the oral defect were sutured to the surrounding mucosa so as to minimize recurrence. Small piece of antibiotic soaked gauze was placed sutured over the defect (Fig. 4). Cervical wound was closed in layers. Sutured placed over intraoral defect was removed after 5 days. Histopathology reported mucin collection in the lumen lined by connective tissue

and inflammatory cells suggestive of ranula. The patient has been followed up for a year with no recurrence.



Fig. 1: Cervical component of ranula



Fig. 2: Incision is made along the skin crease in submandibular region



Fig. 3: Ranula exposed and followed till floor of mouth



Fig. 4: Transorally ranula was marsupialized and antibiotic soaked gauze was sutured into the defect

DISCUSSION

Ranula occurs in relation to the sublingual gland as it is the only gland which secretes continuously even in the interdigestive period [5]. It occurs more commonly in children and young adults with a peak incidence in the second decade with a female preponderance [6]. Plunging ranulas have an increased incidence in the third decade [7]. A congenital predisposition has also been ascertained secondary to an imperforate salivary duct or ostial adhesion [8, 9]. Simple ranulas are confined to the floor of the mouth in the sublingual space at times with a bluish hue and its incidence is 0.2% cases per 1000 persons. Plunging ranulas with lower incidence of 21% occur with only a cervical swelling. In 45%, patients first presentation is an oral swelling. Mixed ranulas have an incidence of 34% [10].

Plunging, deep, diving or cervical ranulas derive its name as they “plunge” into the neck by one of the four mechanisms. Mucus extravasation occurs here due to salivary duct rupture secondary to duct obstruction and secretory back pressure or due to damage to the duct or acini resulting in a Mucus Escape Reaction.

Following are the theories regarding occurrence of plunging ranula

- Projection of sublingual gland through mylohyoid muscle or ectopic salivary glands on the cervical side of mylohyoid muscle could attribute to plunging ranulas without an intraoral component as stated by Moss and Hendrick [11]. Visscher et al. have the opinion that mucus secretion from these ectopic glands may drain saliva directly into neck mass [12].
- A hiatus or dehiscence of the lateral aspect of the anterior 2/3 rd of the mylohyoid muscle through which the mucin from sublingual gland penetrates into the submandibular space

or from behind the mylohyoid muscle termed the "Boutonniere of Gaughran" [13, 14].

- Many plunging ranulas occur secondary to procedures performed in the floor of the mouth such as secondary to surgical procedures for oral ranulas, implant placement, sialolith removal and duct transposition [15-17].
- Fusion of the sublingual and submandibular gland duct allows ranula to form in continuation to the submandibular gland as stated by Patton [18].

Clinically they appear as large (>2cms), painless, slow growing, non-tender, soft, tense fluctuant, asymptomatic movable swelling located in the floor of the mouth to one side of the lingual frenulum in simple ranulas and anterolateral neck swellings measuring 4-10 cms with intact skin that do not move with deglutition in plunging ranulas [19, 20]. Giant ranulas occur when the parapharyngeal space is involved [21].

Diagnosis is based on history, clinical presentation, radiological, biochemical, aspiration cytology and histopathological studies. Sialogram, ultrasound, Computed tomography and Magnetic Resonance Imaging are the imaging modalities used to confirm the diagnosis and for surgical planning. MRI is most sensitive in relation to the sublingual gland and its pathological state. Aspiration cytology reveals mucus with prominent histiocytes and biochemical analysis reveals high amylase and protein content [22]. Histopathologically a central cystic space with mucin and a wall with histiocytes and fibro connective tissue and no epithelial lining in pseudocyst are seen. It is important for confirmation and to rule out squamous cell carcinoma from the cyst wall and papillary cystadenocarcinoma of sublingual gland presenting as a ranula [23].

Prompt diagnosis and treatment aids in complete excision and lower recurrences. Various treatment modalities both medical and surgical have been described with varying rates of recurrence like Incision and drainage (100%), Marsupialization (61-89%), Excision of ranula (57-69%), Excision of sublingual salivary gland (1-2%), Excision of the ranula with or without the sublingual salivary gland, Sclerotherapy with OK -432, Cryosurgery, Micromarsupialization with placement of suture or seton and Carbondioxide laser [24].

Recent study with use of oral Nickel Gluconate Mercurius Heel - Potentised Swine Organ preparations D10/D30/D200, a homeotoxicological agent which stimulates pseudocyst reabsorption and aids in functioning of the gland has a good response in the treatment of ranula [25].

Excision of the ranula with the sublingual salivary gland is the key to minimizing recurrences as the pseudocyst is devoid of epithelium and has no potential for mucus production itself [26]. Transoral and transcervical approaches have been adopted for greater exposure and complete excision. Transcervical approach with excision of the ranula and sublingual gland with care not to injure the sublingual artery, lingual nerve and marginal mandibular nerve is an optimal access for excision and prevention of recurrences as advocated by Kovacic *et al.* [27] and Popescu *et al.* [28]. It can also be used in salvage surgeries where incomplete removal of the ectopic salivary glands on the inferior surface of the mylohyoid muscle is a cause for recurrence.

CONCLUSION

It is a case of a 22 year old male presented with plunging ranula with both the oral and cervical component and its removal by combined transcervical and transoral approach has been reported with no recurrence after a follow up of one year.

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