

# Case Report Of A Giant Plunging Ranula In A 25-Year-Old Patient

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## Abstract

This case report aims to present an unusual case of a plunging ranula that extended to the superior vertebral body of the T4 vertebrae, we will be elaborating on the patient presentation, investigations, diagnosis, and treatment of the lesion, while also talking about the adversities faced while diagnosing and treating the patient. The rarity of this condition and an atypical presentation makes this a difficult case to diagnose and vigilant treatment is needed to prevent any complications associated with the condition and ensure a successful treatment and recovery.

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## 1. Introduction

"Ranula" is a word used for a growth in the floor of the mouth caused by either extravasation of mucus or sometimes, a mucous retention cyst of major sublingual or submandibular salivary glands [1]. The presentation of a ranula is usually a slow-growing, non-tender, soft, fluctuant swelling in the floor of the mouth. There are two types of ranula- oral and plunging ranula. Diagnosis is made with clinical examination, FNAC, and high amylase content containing mucus. Imaging is the gold standard for diagnosis and for surgical decisions [2] Surgery is the treatment of choice and involves the removal of the sublingual gland along with excision and marsupialization of the plunging ranula itself [3]. In this particular case study, the patient had a rare diagnosis of a plunging ranula so large that it extended from the sublingual space along the left side of the neck and continued to the sternal region externally and up to the superior margin of the T4 vertebral body in the anterior superior mediastinum internally, the lesion was successfully treated surgically via the transcervical approach.

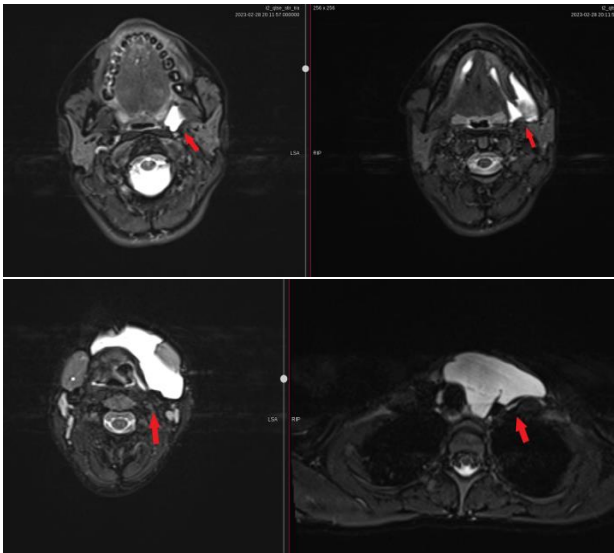
## 2. Case Presentation

The case is of a 25-year-old female patient, with no known comorbid. She presented to another hospital one year back with a non-tender, progressively increasing, fluctuating swelling in the floor of the mouth that extended towards her neck for the past 5 to 6 months. She ended up undergoing an intraoral excision of that swelling along with the excision of the sublingual salivary gland.

About 2 months ago, she started complaining of pressure symptoms and intermittent difficulty in breathing, she presented to the ENT OPD of Shifa International Hospital, and an MRI was advised on the 1st of March, 2023. On examination, there was a fluctuant swelling on the left side of her neck that extended to her sternal region externally. The swelling was aspirated and drained of about 200 ml of fluid every 3 to 4 months, this aspirate was also sent for culture and cytology and the result confirmed salivary fluid.

The imaging showed a large encysted loculated fluid extending from the left sublingual space inferiorly up to the anterior superior mediastinum to the level of the superior margin of T4, it measures approximately 4x 7.8 x 19.3 cm (AP x TR x CC) in dimensions. It was mildly displacing the left side of tongue muscles, laryngeal cartilages, and left thyroid lobe medially, The left-sided carotid and jugular vasculature is displaced posterolaterally but is patent and blood flow isn't compromised, airway compromise is also not as significant. There are no notable contrast enhancements except for a few thin hairline septates seen in the lower part, there was also no restricted diffusion to suggest any superadded infection.

Based on the clinical, radiological, and past medical history a diagnosis of a plunging ranula was made, and surgical excision was chosen as the treatment of choice and was performed on March 17, 2023. A transcervical approach was taken, given the large size of the ranula and the decreased incidence of post-op complications and scarring associated with this approach.



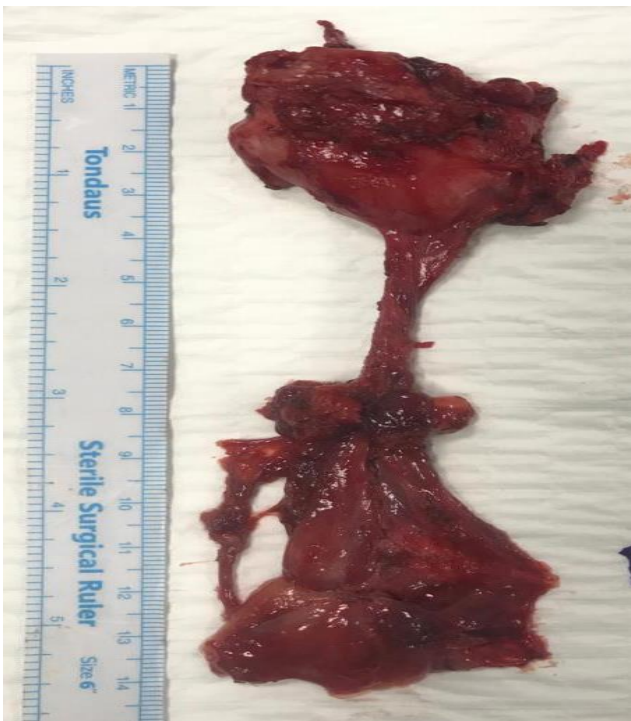
**Image 1** Shows a large loculated collection of fluid extending from the left sublingual space to the superior mediastinum to the level of the superior margin of T4 vertebrae.

reported no relapse of symptoms and there was no evidence of fluid accumulation and swelling on examination.



**Image-2** Incision line for excision of the plunging Ranula.

The surgery was done under general anesthesia and the lesion was completely excised. The resected specimen was sent for histopathological assessment and the diagnosis of a plunging ranula was confirmed



**Image-3** Resected Specimen consisting of the left submandibular gland and ranula.

The patient's recovery post-op was uneventful, the pressure symptoms and the swelling resided. The patient was discharged on the 2nd post-op day after the removal of two neck drains, regular follow-ups were advised. On the 10th day post-op follow-up of the patient, she

**5. Discussion**

"Ranula" is derived from the Latin word "Rana" which translates to frog, it is a growth in the floor of the mouth that resembles the underbelly of a frog [4]. It is a generalized swelling in the floor of the mouth mostly because of disruption of the drainage of secretions from the major salivary glands that results in a pseudocyst. It usually presents in the sublingual glands (90%) and sometimes in the submandibular glands [5]. Mostly occurs due to trauma and presents as a slow-growing, painless, benign, and fluctuant swelling in the oral cavity. Usually, the lesion is present at the lingual frenulum unilaterally; that being said, it can however extend deep into the soft tissue and cross the midline [6].

Ranulas occur more frequently in teenagers and young adults and have a frequency of 0.2 cases per 1000

persons [7]. Plunging ranulas are more common in adults [8]. No racial or sexual bias is documented for these lesions [5].

There are two types of ranulas oral and cervical (plunging ranula), the former is limited to the floor of the mouth, while the latter extends below the mylohyoid into the submandibular or parapharyngeal space, they present as neck masses usually unilateral, but can cross the midline [9].

Oral ranula mostly demonstrates a non-tender growth in the floor of the mouth which can affect oration, deglutition, chewing, and even breathing since it moves the tongue in a ventromedial direction. The tongue can also compress the swelling, interrupting salivary secretion, resulting in signs and symptoms of obstruction (painful eating and mastication). The cervical ranula mostly shows no symptoms besides a mass in the neck usually associated with trauma to the floor of the mouth or surgery [5]. They tend to resolve on their own but may cause problems with swallowing, speech, and respiration prompt diagnosis and care are needed [5].

Examination shows a transparent to blue swelling in the floor of the mouth, has a pulpy consistency, and does not blanch when compressed. Diagnosis is established with clinical examination, FNAC, and high amylase content of the mucus content. Imaging is used for confirmation of clinical diagnosis and the decision of surgery [2].

MRI is the imaging of choice [10], since it is a soft tissue swelling it can easily tell about the extent of the swelling and its relationship with the surrounding structures. Computerized tomography shows a diagnostic "tail sign" [11]. This 'tail' is due to augmentation of the ranula posterior to the mylohyoid muscle and is a sign that the ranula is arising from the sublingual gland [12]. In FNAC, the aspiration is thick and has salivary contents [13].

If the cyst is over 2 cm in diameter, or of a plunging type, investigations such as MRI, CT, or ultrasound are preferred. If it is less than 2 cm, FNAC is advocated as the diagnostic modality [13].

Ranulas can be treated in a variety of ways, one of the recommended treatments of oral ranulas is with

excision of the cystic wall, along with the sublingual gland. Another text states, "Plunging ranula is best treated with a combination of transoral excision of the cyst and sublingual gland and a cervical approach to excise the plunging ranula portion." [14]. These diverse treatment opinions for the treatment of oral and plunging ranulas are responsible for the lack of a consensus treatment in the guidelines published by the American Academy of Otolaryngology/Head & Neck Surgery.

Oral ranula recurrence after complete excision is up to 25% after and 2% in the removal of both the ranula and salivary gland [15]. The recurrence rates with different surgical methods are as follows: Incision and drainage (71–100%); Ranula excision only (0–25%); Marsupialization only (61–89%); Marsupialization with packing (0–12%) (Limited studies), Complete excision of the ranula and sublingual gland (0–2%) [15]. In a review of 89 cases and associated 139 procedures of plunging ranula; a recurrence rate of 70.5% was seen after incision and drainage, 52.6% after marsupialization, 84.8% after excision of the neck lesion, 3.8% after both lesion and gland excision [16].

## 5. Conclusion

Although cases of plunging ranula have been moderately reported, there have been none to our knowledge that extends this far. Cases like these may present a challenge for the diagnosing physician and early diagnosis and treatment are needed. Prompt response and an all-hands-on-deck approach is needed from different surgeons and radiologists. The diagnosing modalities for a plunging ranula are MRI (gold standard), CT, FNAC, and USG. These can help in identifying the extent and course of the disease. Differentials of cervical ranula may include thyroglossal duct cyst, branchial cleft cyst, cystic hygroma, submandibular sialadenitis, cystic or neoplastic thyroid disease, infectious cervical lymphadenopathy and laryngocele [17].

Treatment is mainly surgical, multiple approaches can be used, in our case a transcervical approach was preferred given the size of the lesion and to decrease the risk of post-op scarring and other complications. The patient was treated successfully and no symptoms of recurrence have been reported till now, the follow-up period will be 3 months.

**Notes on patients' consent:**

The patient was told about the rarity of their case and how it would make an excellent case report to award the diagnosing physicians of this unusual case of the plunging ranula. Informed consent was taken and the patient was assured that their privacy would be ensured their identity would remain confidential and only the relevant medical facts about her case and disease course, along with management and outcomes would be part of the report.

**CONFLICTS OF INTEREST-** None

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**Contributions:**

S.S.A - Conception of study

T.E.K, H.W - Experimentation/Study Conduction

T.E.K, H.W, S.B, S.S.A -

Analysis/Interpretation/Discussion

T.E.K, S.B - Manuscript Writing

H.W, S.S.A - Critical Review

H.W, Z.R - Facilitation and Material analysis

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