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Case Report

# Huge Sublingual Ranula: A Closer Look to Effective Surgical Removal

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**Keywords**

- Ranula
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**Abstract**

Ranulas are uncommon cystic type of lesion which resulted from mucus filled cavity in the floor of the mouth that is unique to the sublingual gland. This article highlights a case report on management of sublingual ranula in a 16-year-old male with emphasis on the effective method of surgical removal.

## ABBREVIATIONS

CT: Computed Tomography; MCI: Mild Cognitive Impairment; AD: Alzheimer's disease; SSRIs: Selective Serotonin Reuptake Inhibitors

## INTRODUCTION

There are numerous minor and three major (paired) salivary glands in which they drained their secretions into the mouth via ducts in the oral cavity [1]. There are two concepts proposed in the literature review of the pathogenesis of ranula. The first concept is due to the formation of a true cyst with mucus within the cystic lumen leading to mucus retention phenomenon as a result of obliteration of a small duct of the sublingual gland [2]. The second concept is relatively common where extravasation of mucus into the surrounding tissues due to traumatic injury to the duct or salivary acini. They were seen as a collection of mucus with no epithelial lining and hence lead to the formation of pseudocyst [3].

The term "ranula" is defined as mucous retention cyst in the sublingual salivary in the floor of the mouth that may enlarge progressively and extend into surrounding tissue1. Ranula can be divided into three types; oral or simple ranula, cervical or plunging ranula and mixed ranula [4,5].

Simple ranulas mean it is confined to the sublingual space (floor of the mouth). Cervical ranula is an unusual variant (also known as plunging or diving ranula) is the ones under mylohyoid muscle and above hyoid bone [4-6]. Our case present an unusually huge oral ranula at the right side floor of the mouth in an adolescent boy who was successfully excised with the involved right sublingual gland via innovative method of complete removal with no recurrence.

## CASE PRESENTATION

A 16-year-old boy presented with the history of painless swelling of the right submandibular gland and floor of the right oral cavity. There was no history of difficulty is speech and swallowing. No limitation of tongue movement. Neck examination showed 2 x2 cm right submandibular swelling. Intraoral examination revealed cystic swelling measuring about 3x 2cm on the right side on the floor of the mouth, beneath the tongue (Figure 1). It extends throughout the floor from anterior to the posterior and crossed the midline. There was no limitation of tongue movement. Oral hygiene was fair with good dentition.

Computed tomography (CT) of the neck with contrast revealed cystic swelling on the floor of the mouth and pushed the submandibular gland aside (Figure 2a, Figure 2b).

A diagnosis of ranula was made (Figure 3a). Excision of the ranula was performed. Elliptical incision was made using blade size 15. Submandibular duct cannot be identified at early stage of the operation. Cyst accidentally punctured, and thick mucoid fluid was noted. In view of the difficulty to excise the cyst, half inch ribbon gauze was inserted to the thick cyst lining to facilitate removal (Figure 3b). Placing ribbon gauze into a ruptured cyst is to maintain its position and shape of the cyst, therefore, a complete removal along with the cyst wall achieved. Lingual nerve and submandibular duct were identified and traced up to submandibular region posteriorly. The cyst was separated from the submandibular gland. Ranula was excised together with ipsilateral sublingual gland. Both structures were preserved. The

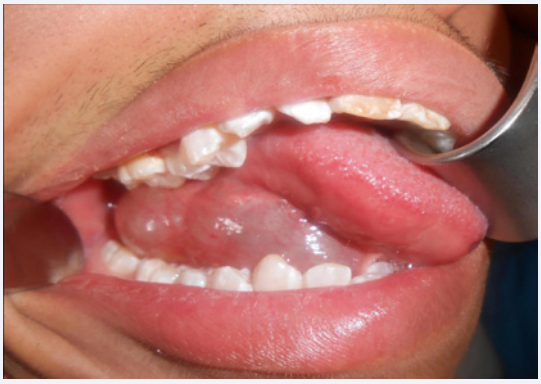

**Figure 1** Showed presence of the ranula beneath the tongue on the right side.

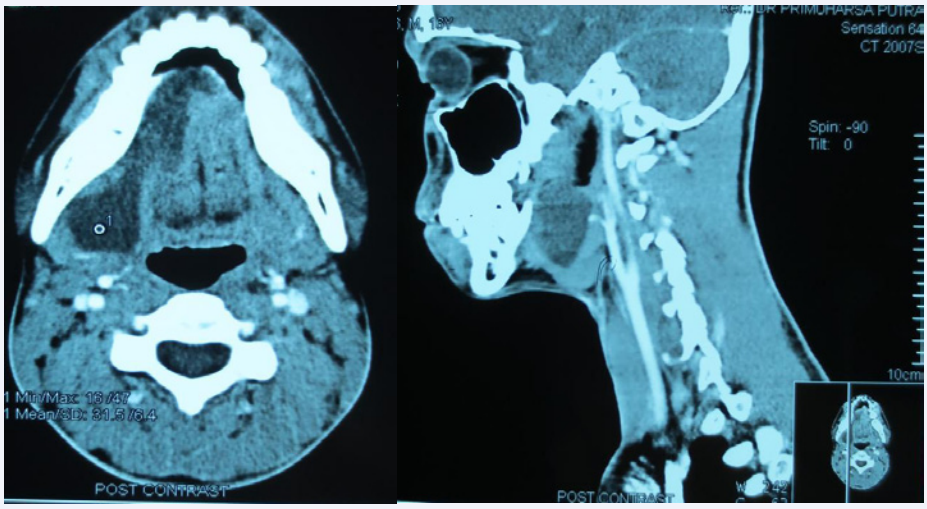


**Figure 2** Illustrates an axial CT scan image which showed the presence of the mass on the right site of the tongue region, which crossed the midline of the tongue (image on the right) and lateral view of CT scan image that showed swelling on the floor of the mouth and pushed the submandibular gland aside (image on the left).

| **Table 1:** Current standard surgical procedure for ranula removal. |
|---|
| **"Standard surgical procedure" currently employed for ranula removal** |
| Unroofing of the "ranula" - not preferred as high rate of recurrence |
| marsupialization of the ranula with preservation of the sublingual gland - higher rate of recurrence |
| Injection of sclerosant such as Bleomycin and OK-432 to reduce the ranula size |
| Carbon dioxide laser for removal of the ranula and scar the gland to prevent risk of recurrence |
| Excision of ranula along with the sublingual gland |

| **Table 2:** Advantages of the new procedure employed for treatment of ranula. |
|---|
| **Excision of the ranula and sublingual gland with the help of ribbon-gauze** |
| Advantages |
| Facilitate in making sure complete removal by lifting up the cyst lining on the floor of mouth |
| Easier identification and demarcation of the structures despite cyst rupture |
| Minimal trauma to surrounding tissue |
| Healing is much more rapid than other surgical procedures |
| Very large cyst will be easier for removal |
| Reduction of recurrence rate |

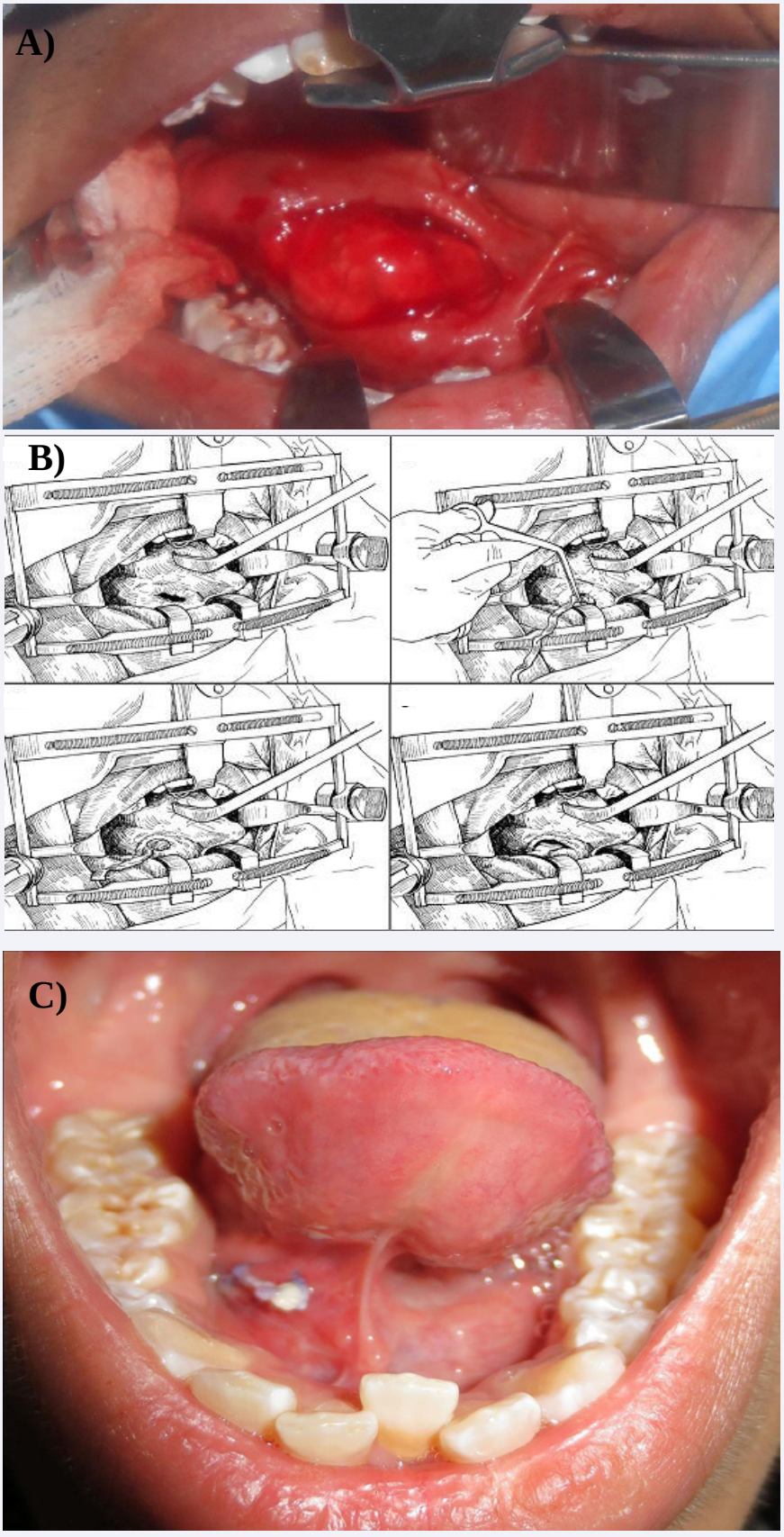


**Figure 3** (A) – showed the intra-operative view. (B) - Diagrams labelled from A to D where the ribbon gauze was being inserted to the collapsed ranula to facilitate complete removal. (C) - showed post-operative view.

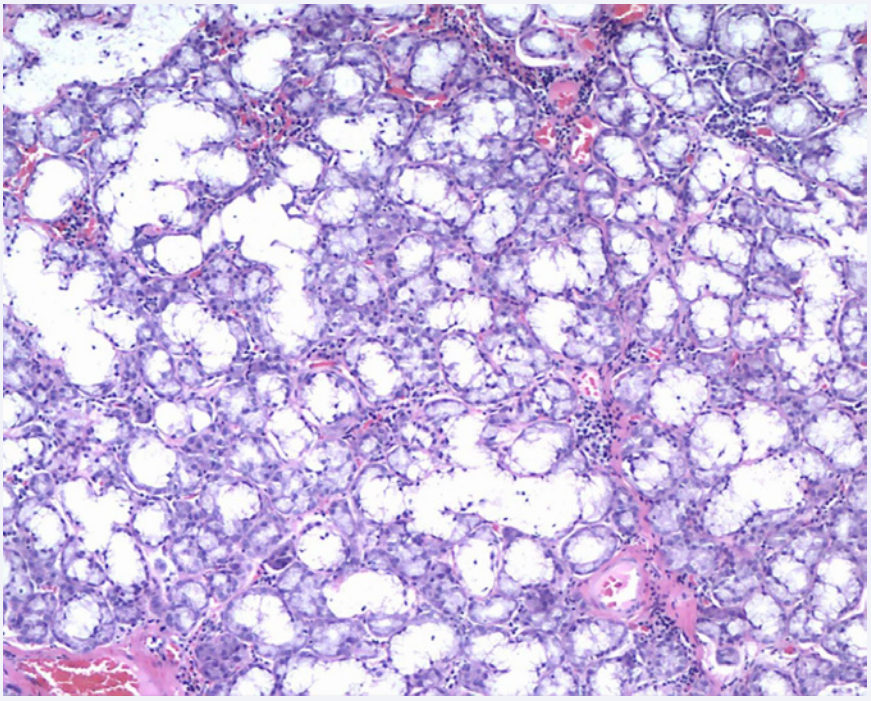

**Figure 4** Showing cyst wall composed of moderately inflamed granulation tissue composed of neutrophilic infiltration and fibrin devoid of epithelial lining. No giant cells, granuloma or evidence of malignancy.

wounds were closed with (absorbable sutures) vicryl 3/0 (Figure 3c). Post-operative recovery was uneventful. Histopathology confirmed it as ranula (Figure 4). We have successfully performed the excision of the ranula along with ipsilateral sublingual sialadenectomy with no recurrence in three years of follow-up.

## DISCUSSION

Ranula is not a common pathology in the oral cavity. The incidence is about 1% to 10% with the prevalence of 0.2 cases per 1000 persons10.

Patient usually will present with slow growing, soft, painless and movable mass located in the floor of the mouth. Lesion can be seen on one side of the lingual frenulum; however if the lesion extends deep into soft tissue, it can cross midline6. Ranula can be present as any age, usually in children and young adults, but for some unknown reason, they are most common in females [6-9]. In a recent literature by Suresh BV and Vora SK, they reported a male to female ratio of 1:1.3 without significant side preference10.

Primary standard treatment for ranula is still via surgical removal. However, the choice of surgical procedures is still debatable and controversial. Variety of procedures has been reported in the literature review for ranula that include marsupialization, incision and drainage, irradiation, injection of sclerosing agents, cyst extirpation and excision of the lesion with sublingual gland [10-13] (Table 1).

Main problem with surgical removal of ranula is recurrence. Meticulous removal of the cyst is required to avoid puncturing the cyst and incomplete removal. However, we emphasized in our case report, in case the cyst is accidentally ruptured, removal of entire cyst wall can be done by inserting the ribbon gauze to facilitate removal. We demonstrated a table of advantages and disadvantages of this new surgical procedure employed to treat ranula (Table 2). A study done by Ehab A. Shehata and Hussam S. Hassan where they noted that excision of the lesion along with ipsilateral sublingual gland has a recurrence rate approaching zero compared to marsupialization [14]. Zhao et al, also stated that recurrence rates for marsupialization, excision of the ranula, excision of the sublingual gland combined with the lesion were 66.7%, 57.7%, and 1.2% respectively [15]. Even though, complete excision of the ranula together with ipsilateral sublingual gland have low recurrence rate, they carry a potential risk of severe hemorrhage from the sublingual vasculature, lingual nerve damage and duct injuries [10].

## CONCLUSION

This case report highlights the role of packing the collapsed ranula to facilitate complete excision. It is an additional method for excision of ranula with ipsilateral sublingual gland, in case the ranula collapsed or ruptured.

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