

## CASE REPORT

# Plunging Ranula mimicking Extensive Submandibular Gland Abscess: A Diagnostic Challenge

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## ABSTRACT

Ranula is a salivary gland cyst that typically presents as localized superficial swelling over the floor of the mouth. Complex or plunging ranulas develop when the mucus extravasation extends through or around the mylohyoid muscle, deeper into the neck, and present with neck lump along with or without swelling over the floor of mouth. It is not a straightforward diagnosis in case of superimposed infection as it will resemble a submandibular gland abscess clinically and radiologically. We report here a case of large plunging ranula, which initially diagnosed radiologically as submandibular gland abscess with extension to parapharyngeal space.

**Keywords:** Oral swelling, Ranula, Salivary gland.

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## INTRODUCTION

Ranula is a retention cyst of the sublingual gland, which enlarges progressively and extends into the surrounding soft tissues. Two variants have been described: A superficial or oral ranula and a cervical or plunging ranula.<sup>1</sup> 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 1,000 persons.<sup>2</sup> Primary etiology of these lesions is due to partial obstruction of a sublingual duct as a consequence of congenital duct agenesis or trauma that will lead to the formation of an epithelial-lined retention cyst.<sup>3</sup> The other etiology that has been described is 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, causing the formation of pseudocyst.<sup>4</sup>

Diagnosing a plunging ranula is a challenge for the practitioner as it only presents with a cystic neck mass, and superimposed infection made the diagnosis more difficult. Correct diagnosis is crucial as the management of ranula is different and mismanagement will definitely end up with recurrence.<sup>2</sup> We present the case of a 10-year-old girl who presented to us with painful right submandibular swelling for 1 month, then diagnosed to have extensive submandibular abscess radiologically; however, intraoperatively the presence of cystic mass extending from right submandibular space to floor of mouth without any purulent content was noted.

## CASE REPORT

A 10-year-old girl presented to the ORL department in local hospital with a complaint of painful right neck swelling for the past 1 month, which was increasing in size. Initially, the parents took the girl to a general practitioner and was given antibiotic for 1 week, the swelling then subsided. However, it reappeared after 2 weeks, and it was associated with a swelling at the right side of floor of mouth.

The parents denied any symptoms of airway obstruction and swallowing difficulties throughout the duration. On general examination, the girl looked comfortable without noisy breathing and respiratory distress. Neck examination showed ill-defined right submandibular swelling with the size of about 3 × 4 cm and red overlying skin. Oral cavity revealed the presence of swelling in the floor of mouth, which was more on the right side.

Initial diagnosis made was right submandibular gland abscess, so computed tomography (CT) scan was ordered to localize the extension of the abscess before incision, and drainage under general anesthesia was planned. The CT scan findings are multiloculated multiseptated hypodense fluid collection with rim enhancement in keeping with abscess at right submandibular space with extension into right parapharyngeal space (Figs 1 and 2).

A transcervical approach through vertical incision 2 finger breadth below inferior border of right mandible was performed, exposing a smooth translucent mass that was encountered medial to submandibular gland (Fig. 3). Aspiration of straw color content reversed the diagnosis of abscess to ranula, so case proceeded for ranula excision instead of incision and drainage. At the end of the

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Fig. 1: Computed tomography scan of the neck (axial view)

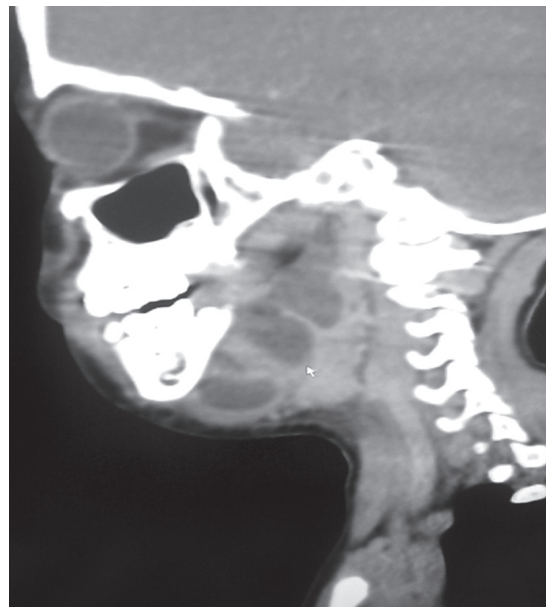


Fig. 2: Computed tomography scan of the neck (sagittal view)



Fig. 3: Intraoperative finding of smooth cystic mass medial to right submandibular gland

operation, the tear at the floor of mouth due to strong adherence of the ranula was repaired by primary closure.

Postoperatively, the patient was put under Ryle's tube feeding for 3 days and allowed orally after that. During follow-up, the operative wound was noted to heal well and no recurrence was noted subsequently.

### DISCUSSION

Ranula is a salivary extravasation cyst.<sup>5</sup> Harrison and Garrett<sup>6</sup> demonstrated that the extravasation of saliva from the sublingual gland induces a fibroblastic reaction that seals the saliva in a connective tissue sac, forming a pseudocyst. It typically presents as a submucosal swelling in the floor of the mouth. Simple ranulas are walled off above the mylohyoid muscle. Complex or plunging ranulas develop when the mucus

extravasation extends through or around the mylohyoid muscle and deeper into the neck. Plunging ranula with involvement of the submandibular and parapharyngeal spaces makes its differentiation difficult from other cystic neck masses especially when there is superimposed infection settle in.<sup>7</sup>

Radiological investigations like ultrasonography and magnetic resonance imaging (MRI) are useful tools to evaluate the cystic nature of lesion, its exact anatomical location, and extent. Macdonald et al<sup>7</sup> in a retrospective review analyzed the importance of contrast-enhanced CT and MRI in diagnosis of plunging ranula. Fine-needle aspiration is a useful diagnostic technique to differentiate between ranula and vascular lesion as vascular lesion will result in massive bleeding if removed.<sup>8</sup>

Various surgical procedures proposed for management of plunging ranulas vary from simple excision, combined ranula and sublingual gland excision, excision of the ranula along with the sublingual gland and submandibular gland. Other conservative means of management including marsupialization and use of drain to decompress ranula has been reported with varying degree of success.<sup>9</sup> A study was done by Shehata and Hassan<sup>10</sup> where they noted that excision of the lesion along with ipsilateral sublingual gland has a recurrence rate approaching zero compared with marsupialization. Zhao et al<sup>11</sup> 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.

### CONCLUSION

This case report highlights the importance of making a proper diagnosis of neck mass by utilizing ultrasound,

CT scan, and fine-needle aspiration before embarking on any surgical procedure of neck mass removal as one entity may mimick others.

## REFERENCES

1. de Visscher JG, van der Wal KG, de Vogel PL. The plunging ranula. Pathogenesis, diagnosis and management. *J Craniomaxillofac Surg* 1989 May;17(4):182-185.
2. Ghani NA, Ahmad R, Rahman RA, Yunus MR, Putra SP, Ramli R. A retrospective study of ranula in two centres in Malaysia. *J Maxillofac Oral Surg* 2009 Dec;8(4):316-319.
3. Gupta A, Karjodkar FR. Plunging ranula: a case report. *ISRN Dent* 2011;2011:806928.
4. Roh JL. Primary treatment of ranula with intracystic injection of OK-432. *Laryngoscope* 2006 Feb;116(2):169-172.
5. Bhaskar SN, Bolden TE, Weinmann JP. Pathogenesis of mucoceles. *J Dent Res* 1956 Dec;35(6):863-874.
6. Harrison JD, Garrett JR. Mucocele formation in cats by glandular duct ligation. *Arch Oral Biol* 1972 Oct;17(10):1403-1414.
7. Macdonald AJ, Salzman KL, Harnsberger HR. Giant ranula of the neck: differentiation from cystic hygroma. *Am J Neuroradiol* 2003 Apr;24(4):757-761.
8. Layfield LJ, Gopez EV. Cystic lesions of the salivary glands: cytologic features in fine-needle aspiration biopsies. *Diagn Cytopathol* 2002 Oct;27(4):197-204.
9. Kim P, Simental A. Treatment of ranulas. Operative techniques in Otolaryngology. *Head Neck Surg* 2008;19:240-242.
10. Shehata EA, Hassan HS. Surgical treatment of ranula: comparison between marsupialization and sublingual sialadenectomy in pediatric patients. *Ann Pediatr Surg* 2008 Jul;4(3 and 4):89-93.
11. Zhao YF, Jia J, Jia Y. Complications associated with surgical management of ranulas. *J Oral Maxillofac Surg* 2005 Jan;63(1):51-54.