

*Case Report***A Large Plunging Ranula Causing Sleep Apnoea: A Case Report**Haritosh K. Velankar<sup>1</sup>, Yogesh G. Dabholkar<sup>2</sup>, Naresh Dawat<sup>3</sup>, Saurabh Kansal<sup>4</sup>, Akanksha Saberwal<sup>5</sup><sup>1</sup>Professor and Head of Department, <sup>2</sup>Professor, <sup>3</sup>Ist Year PG. E.N.T. Resident, <sup>4</sup>Post MS -Senior Resident, <sup>5</sup>3rd Year PG. E.N.T. Resident;

Dept. of E.N.T., Dr. D.Y.Patil Hospital and Research Centre, Nerul, Navi Mumbai- 400706

Corresponding Author: Haritosh K. Velankar

*Received: 15/03/2014**Revised: 13/04/2014**Accepted: 17/04/2014***ABSTRACT**

Plunging ranulas, also known as deep diving, cervical or deep plunging ranula, usually appear in conjunction with oral ranula. Rarely, these ranulas may arise as independent of oral swelling. Large lesion with resultant elevation of the tongue not only interferes with swallowing (dysphagia) but also results in snoring and sleeps apnoea. A rare case of plunging ranula with minimal oral swelling is discussed along with a review of literature.

**Keywords:** Dysphagia, plunging, ranula, sleep apnoea, sublingual gland.

**INTRODUCTION**

A ranula is a type of mucocele found on the floor of the mouth, consisting of collected mucin from an obstructed or ruptured salivary gland duct, usually in relation to the sublingual gland. The latin word 'rana' means frog (ranula=little frog). The etymology of the term is usually explained by a resemblance with the underbelly, or the bulging throat of a croaking frog. Usually a ranula is confined to the floor of the mouth (termed a "simple ranula"). An unusual variant is the cervical ranula (also called as plunging or diving ranual), where the swelling is in the neck rather than the floor of the mouth. A plunging ranula is an extravasation of saliva from the sublingual gland due to trauma or obstruction of the gland. Fluid from the obstructed gland dissects between the fascial

planes and muscles of the base of the tongue to the submandibular space. The exact prevalence of plunging ranula is not known, however, these lesions are considered uncommon. A cervical ranula presents as a swelling in the neck with or without a swelling in the mouth. The usual location is lateral to the midline, which may help to distinguish from a midline dermoid cyst. Ranulas may be asymptomatic although they can fluctuate rapidly in size, shrinking and swelling. A large ranula may sometimes interfere with swallowing, causing dysphagia. The purpose of this paper is to present the clinical and radiographic findings of an uncommon presentation of a large plunging ranula with sleep apnoea and dysphagia.

**CASE REPORT**

A 50-year-old female reported with a right-sided neck swelling. There was intermittent change in the size of the swelling since it was first noticed twelve months back. On examination, a nonwarm, nontender, diffuse, soft, fluctuant, swelling, about 10 × 8 cm in size, was present in the submental region. The overlying skin was normal. Intraorally, swelling was evident in the sublingual areas bilaterally as a translucent blue, dome-shaped. The overlying mucosa was normal and Wharton's duct openings were patent.

Orthopantomograph of the patient failed to show any sialolithiasis. Ultrasonography of the swelling showed an anechoic, bilobed fluid collection in left submandibular region with a superficial and

deep component. MRI showing cystic lesion on the left side in the sublingual region extending into the submental region, submandibular region, and the left parapharyngeal region up to the pharynx.

Based upon the clinicoradiological and MRI findings, a tentative diagnosis of plunging ranula was made with a differential diagnosis of dermoid and epidermoid cyst, thyroglossal duct cyst, cystic hygroma, and lymphadenopathy. The excision of the lesion was done via cervical approach under general anaesthesia and the tissue was subjected to histopathological evaluation. Histopathological picture of the excised lesion showed mucin collection in the lumen lined by connective tissue with inflammatory cells.



Fig 1. Intra Oral Swelling.



Fig 2 Neck Swelling.



Fig 3. Intra Operative.

## DISCUSSION

Ranula develops from extravasation of mucus after trauma to the sublingual gland or obstruction of the ducts. [1,2] Although a ranula can present at any age, usually it occurs in children and young adults, with the peak frequency in the second decade. [3] The cervical variant tends to occur a little later in the third decade. The diagnosis of a plunging ranula is usually determined by a combination of history, clinical presentation, and imaging studies. The etiology is unknown, but it has been

described in association with congenital anomalies, trauma, and disease of the sublingual gland. [4]

The most common etiology of ranulas is partial obstruction of a sublingual duct, leading to formation of an epithelial-lined retention cyst, which occurs in <10% of all ranulas. Second, most common cause is trauma, often iatrogenic, resulting in direct damage to the duct or deeper areas of the body of the sublingual gland, leading to extravasation of mucus and formation of pseudocyst.

Mechanisms of formation of plunging ranula are varied. Approximately 45% of plunging ranulas occur iatrogenically after surgery to remove oral ranulas. Cases of plunging ranula arising after surgical procedures for sialolith removal, duct transposition and implant placement have also been reported. [5-7] Sometimes, a dehiscence or hiatus in the mylohyoid muscle may occur. This defect is observed along the lateral aspect of the anterior two-thirds of the muscle. Through this defect, the mucin from the sublingual gland may penetrate to the submandibular space. Occasionally, the sublingual gland may project through the mylohyoid, or an ectopic sublingual gland may exist on the cervical side of mylohyoid. This explains most plunging ranulas that exist without an oral component. Lastly, a ranula may arise from a duct of the sublingual gland which has joined the submandibular gland or its duct. In such cases, the ranula may form in continuity with the submandibular gland and access the neck from behind the mylohyoid muscle. [8]

The cervical ranula appears as an asymptomatic, continuously enlarging mass that may fluctuate in size. Most reported ranulas are 4–10 cm in size. The overlying skin is usually intact. The mass is fluctuant, freely movable, and nontender. Rarely, large-sized ranulas may cause dysphagia or airway obstruction. In our case, the ranula had developed into a large lesion many centimetres in diameter, with resultant elevation of the tongue. As such the lesions not only interfered with swallowing (dysphagia) but also resulted in snoring and sleep apnea. These complaints disappeared with excision of the ranula.

Ranula is a clinical diagnosis, and imaging studies are done mainly to know the extension of swelling prior to surgery or when the diagnosis is unclear. Sialogram, ultrasonography, Magnetic resonance

imaging (MRI), CT, and aspiration cytology can be helpful for diagnosis. Aspiration cytology will show mucin with muciphages and biochemical analysis will show increase in amylase and protein content. This is diagnostic of the salivary origin. [9]

Computed tomography and specifically the presence of “tail sign” is pathognomonic for the plunging ranula. [10] This tail is due to extension behind the mylohyoid muscle and confirms the ranula to arise from the sublingual gland and is especially useful in differential diagnosis of cervical ranula.

Surgery is the main stay for the management of ranulas. These include incision and drainage, excision of ranula, marsupialization, and marsupialization with packing or complete excision of the sublingual gland. Simple marsupialization has fallen into disfavor primarily because of the failure rate, which has been anywhere from 61% to 89%. Marsupialization with packing of the cyst cavity may reduce the recurrence.

Extraoral excision has also been done due to the fear of injury to Wharton’s duct and lingual nerve. Excision of the ranula with the associated sublingual salivary gland is the most accepted method with low recurrence rate. [11]

Other treatment modalities have also been utilized. Sclerotherapy with OK-432 is a good substitute for surgery. [12] Recurrence was noted in 14.3% and the patient had an average of 1.7 injections. Fukase *et al.* used a higher concentration in partially regressed cases and had 100% cure rate. [13]

## CONCLUSION

A ranula is often asymptomatic, but a plunging ranula can sometimes grow large enough to cause dysphagia and sleep disturbed breathing. The definitive treatment for plunging ranula is transcervical excision

of the ranula along with the ipsilateral sublingual gland.

## REFERENCES

1. Baumash HD. Mucocèles and ranulas. *Journal of Oral and Maxillofacial Surgery*. 2003;61(3):369–378.
2. Neville BD, Damm DD, Allen CM, Bouquot JE. *Oral and Maxillofacial Pathology*. 2nd edition. Philadelphia, Pa, USA: Saunders; 2002.
3. Zhao Y-F, Jia Y, Chen X-M, Zhang W-F. Clinical review of 580 ranulas. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology*. 2004;98(3):281–287.
4. Davison MJ, Morton RP, McIvor NP. Plunging ranula: Clinical observations. *Head Neck*. 1998;20:63–8.
5. Iida S, Kogo M, Tominaga G, Matsuya T. Plunging ranula as a complication of intraoral removal of a submandibular sialolith. *British Journal of Oral and Maxillofacial Surgery*. 2001;39(3):214–216.
6. Balakrishnan A, Ford GR, Bailey CM. Plunging ranula following bilateral submandibular duct transposition. *Journal of Laryngology and Otology*. 1991;105(8):667–669.
7. Loney WW, Jr., Termini S, Sisto J. Plunging ranula formation as a complication of dental implant surgery: a case report. *Journal of Oral and Maxillofacial Surgery*. 2006;64(8):1204–1208.
8. de Visscher JGAM, van der Wal KGH, de Vogel PL. The plunging ranula. Pathogenesis, diagnosis and management. *Journal of Cranio-Maxillo-Facial Surgery*. 1989;17(4):182–185.
9. Arunachalam P, Priyadharshini N. Recurrent plunging ranula. *J Indian Assoc Pediatr Surg*. 2010;15:36–8.
10. Coit WE, Hamsberger HR, Osborn AG, Smoker WR, Stevens MH, Lufkin RB. Ranula and their mimics: CT evaluation. *Radiology*. 1987;163:211–6.
11. Yoshimura Y, Obara S, Kondoh T, Naitoh S-I, Schow SR. A comparison of three methods used for treatment of ranula. *Journal of Oral and Maxillofacial Surgery*. 1995;53(3):280–283.
12. Rho MH, Kim DW, Kwon JS, Lee SW, Sung YS, Song YK, et al. OK — 432 sclerotherapy of plunging ranula in 21 patients: It can be a substitute for surgery. *AJNR Am J Neuroradiol*. 2006;27:1090–5.
13. Fukase S, Ohta N, Inamura K, Aoyagi M. Treatment of ranula with intracystic injection of the streptococcal preparation OK- 432. *Ann Otol Rhinol Laryngol*. 2003;112:214–20.

How to cite this article: Velankar HK, Dabholkar YG, Dawat N et. al. A large plunging ranula causing sleep apnoea: a case report. *Int J Health Sci Res*. 2014;4(5):301-304.

\*\*\*\*\*