

CASE REPORT

PLUNGING RANULA: A CASE REPORT

B. Umakanth Goud¹, A. V. S. Hanumantha Rao², K. Anjani Kumari³, Manish Kumar Gupta⁴, K. Praneeth Kumar⁵

HOW TO CITE THIS ARTICLE:

B. Umakanth Goud, A. V. S. Hanumantha Rao, K. Anjani Kumari, Manish Kumar Gupta, K. Praneeth Kumar. "Plunging Ranula: A Case Report". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 38, May 11; Page: 6703-6707, DOI:10.14260/jemds/2015/973

ABSTRACT: A ranula is a bluish, transparent, and thin-walled swelling in the floor of the mouth. They originate from the extravasation and subsequent accumulation of saliva from the sublingual gland. The most common presentation of ranula is a painless, slowgrowing, soft, and movable mass located in the floor of the mouth. Ranula may be simple or plunging. Simple ranula often present as masses in the floor of the mouth, limited to the mucous membranes. Diving ranulas extend through the facial plans, usually posterior to the mylohyoid muscle into the neck, and present as cervical masses. A 25yr old male presented with a complaint of a large swelling in the right submandibular region. On plain MRI a fairly large, well defined cystic mass is seen in the right sublingual and submandibular spaces without septae. Provisional diagnosis of plunging ranula is made and excision done by intraoral approach.

KEYWORDS: Ranula, Cystic, Neck, Mylohyoid.

INTRODUCTION: The term "ranula" is used to describe a diffuse swelling in the floor of the mouth caused by either a mucous extravasation or, less commonly, a mucous retention cyst derived from the major sublingual or submandibular salivary glands.¹ The term ranula is used because this lesion often resembles the swollen abdomen of a frog. They are most common in the second decade of life and in females.² Ranulas typically have a bluish appearance and a fairly well-circumscribed, soft, painless, fluid-containing intraoral swelling. Most of the patients with ranula present with a gradually enlarging swelling of the floor of the mouth. The swelling is round or oval, and fluctuant. An intraoral swelling accompanied by a submandibular, cervical, and parapharyngeal extension is often defined as plunging ranula.³ MRI is the most sensitive to evaluate the sublingual gland and its states.⁴

CASE REPORT: A 25-year-old male visited our department complaining of a large painless swelling in the rightsubmandibular region. Inintraoral examination there was a small, smooth surface, and movable mass in the floor of the mouth, to right side of the lingual frenulum. The mucous color was normal. The patient had no traumatic or surgical history, and the swelling did not cause difficulty in swallowing or speaking. Routine blood tests and the thyroid profile were within normal limits. T-2 weighed MRI images, showed hyperintense fluid filled cavity in left sublingual space, extending to right submandibular space along the posterior edge of mylohyoid muscle. Under general anesthesia, an incision was made in the right lingual vestibule, and excision of the lesion along with extirpation of the right sublingual gland was performed. At surgery, the cystic lesion was found to be filled with a viscous and yellowish mucous fluid. The histopathologic examination of the specimen from the sublingual gland revealed ruptured acinar cells.

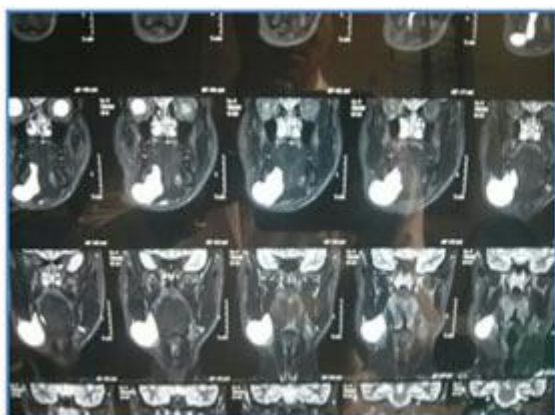
CASE REPORT



Pre-Operative Photo Showing Cystic mass in Oral Cavity



Pre-Operative Photo Showing Swelling on right side of Neck



CT images showing fluid filled cavity in right submandibular space



Intra operative photo showing excision of plunging ranula

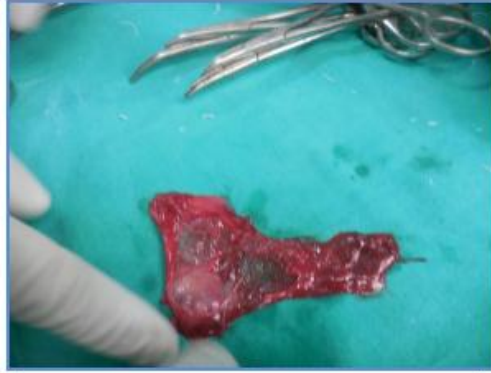


Post-Operative intra oral photo



Post-Operative photo showing Normal Neck on right side

CASE REPORT



Post-Operative photo showing specimen with sublingual gland

DISCUSSION: Plunging ranula develops if extravasation of mucus occurs beyond the confines of the floor of the mouth through the mylohyoid muscle into the upper neck or submental region, a large cystic swelling develops, that happened in this case. This can usually be defined on MR scanning but is difficult to clinically differentiate from cystic hygroma. Histologically, hygroma has a simple epithelial lining whereas a ranula is contained by loose connective tissue.⁵ It has been reported from 2 to 61 years of age with a slight female preponderance.⁶ The pathophysiology involved in extravasation is hypertension in the duct due to obstruction leading to acinar rupture in the salivary gland and then extravasation of the mucus. The initial stage is a traumatic rupture of the excretory duct and the second stage is the extravasation and subsequent accumulation of saliva within the tissue, as shown by experimental studies.⁷

Plunging ranulas arise in the neck by one of the following four mechanisms. Firstly, 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. Secondly, 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. Thirdly, approximately 45% of plunging ranulas occur iatrogenically after surgery to remove oral ranulas. Cases of plunging ranula formation have also been reported secondary to surgical procedures for sialolith removal, duct transposition and implant placement.^{8,9,10} According to Gupta et al., Kalra et al., and Zhao et al. studies 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.^{11,12,13}

MRI, which is the most sensitive imaging modality for studying ranula, showed hyper intense fluid filled cavity in left sublingual space, extending to left submandibular space along the posterior edge of mylohyoid on T-2 weighted images. T-1 weighted images showed a well-defined hypointense area suggestive of plunging ranula. Ultrasonography, CT, sialogram and aspiration can be helpful for diagnosis. Thyroglossal duct cyst, branchial cleft cyst, cystic hygroma, submandibular sialadenitis, intramuscular hemangioma, cystic or neoplastic thyroid disease, infectious cervical lymphadenopathy, hematoma, lipoma, laryngocele and dermoid cyst can be taken as differential diagnosis. Clinicians have been using several different methods for the treatment of cervical ranulas.

CASE REPORT

These include excision of the ranula only, cryosurgery, marsupialization with or without cauterization of the lesion lining, excision of the oral portion of the ranula with the associated sublingual salivary gland or, rarely, the submandibular gland, intraoral excision of the sublingual gland and drainage of the lesion, and excision of the lesion via a cervical approach, sometimes combined with excision of the sublingual gland. Besides surgical management, CO₂ laser has been used to vaporize ranulas.¹⁴

CONCLUSION: The Clinical Diagnosis of Ranula is always kept when a Mass seen in the Neck along different Diagnosis like lesions of submandibular and sublingual glands, of the lymphnodes, granulomatous, vascular, nerve or adipose tissue diseases, branchial and thyroglossal duct cysts, cystic hygroma, laryngocele. The traditional treatment of a plunging ranula was excision by external or by intraoral approach. However as in our case intraoral approach is done without any external scar.

REFERENCES:

1. Peters E, Kola H, Doyle-Chan W. Bilateral congenital oral mucous extravasation cysts. *Pediatr Dent* 1999; 21: 286-9.
2. Greenberg MS, Glick M, Ship JA. *Burket oral medicine*. 11th ed. Hamilton: Bcdecker; 2008. p. 203.
3. Van den Akker HP, Bays RA, Becker AE. Plunging or Cervical Ranula. Review of the literature and report of 4 cases. *J Maxillofac Surg* 1978; 6 : 286-93.
4. P. M. Som and M. S. Brandwein, "Salivary glands: anatomy and pathology," in *Head and Neck Imaging*, P. M. Som and H. D. Curtin, Eds., pp. 2067–2076, Mosby, St. Louis, Mo, USA, 2003.
5. *Scott-Brown's Otorhinolaryngology, Head and Neck Surgery*, 7th edition, p;1246.
6. Davison MJ, Morton RP, McIvor NP. Plunging ranula: Clinical observations. *Head Neck* 1998; 20:63-8.
7. Arunachalam P, Priyadharshini N. Recurrent plunging ranula. *J Indian Assoc Pediatr Surg* 2010; 15:36-8.
8. S. Iida, M. Kogo, G. Tominaga, and T. Matsuya, "Plunging ranula as a complication of intraoral removal of a submandibular sialolith," *British Journal of Oral and Maxillofacial Surgery*, Vol. 39, no. 3, pp. 214–216, 2001.
9. A. Balakrishnan, G. R. Ford, and C. M. Bailey, "Plunging ranula following bilateral submandibular duct transposition," *Journal of Laryngology and Otology*, vol. 105, no. 8, pp. 667–669, 1991.
10. W. W. Loney Jr., S. Termini, and J. Sisto, "Plunging ranula formation as a complication of dental implant surgery: a case report," *Journal of Oral and Maxillofacial Surgery*, Vol. 64, no.8, pp. 1204–1208, 2006.
11. Gupta A, Karjodkar FR. Plunging ranula: A case report. *ISRN Dent* 2011; 2011: 806928.
12. Kalra V, Mirza Kh, Malhotra A. Plunging Ranula. *J Radiol Case Rep* 2011; 5: 18-24.
13. Zhao YF, Jia Y, Chen XM, Zhang WF. Clinical review of 580 ranulas. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2004; 98: 281-7.
14. Y. Yoshimura, S. Obara, T. Kondoh, S.-I. Naitoh, and S. R. Schow, "A Comparison of three methods used for treatment of ranula," *Journal of Oral and Maxillofacial Surgery*, vol. 53, no. 3, pp. 280–283, 1995.

CASE REPORT

AUTHORS:

1. B. Umakanth Goud
2. A. V. S. Hanumantha Rao
3. K. Anjani Kumari
4. Manish Kumar Gupta
5. K. Praneeth Kumar

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Surgical Oncology, MNJ Cancer Hospital, Hyderabad.
2. Associate Professor, Department of ENT, Kakatiya Medical College, Warangal.
3. Assistant Professor, Department of ENT, Osmania Medical College, Hyderabad.

FINANCIAL OR OTHER

COMPETING INTERESTS: None

4. Assistant Professor, Department of ENT, Osmania Medical College, Hyderabad.
5. Post Graduate, Department of ENT, Osmania Medical College, Hyderabad.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Manish Kumar Gupta,
H. No. 564, Road No. 12
Banjara Hills, Hyderabad-500034.
E-mail: drmanishgupta003@gmail.com

Date of Submission: 11/04/2015.
Date of Peer Review: 22/04/2015.
Date of Acceptance: 30/04/2015.
Date of Publishing: 11/05/2015.