CASE REPORT

A Rare Presentation of Mucous Retention Cyst with Squamous Metaplasia in the Submandibular Region: A Case Report

Kukkapalli P Kumar[1], Ujwala T Gari[2], Nagisetty Sindhuja[3]

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Abstract

Mucous retention cysts represent an obstruction of salivary gland ducts and lesions that can be considered to be benign, generally involving minor salivary glands in the oral cavity. This cyst may exhibit epithelial transformation characterized by squamous metaplasia or the presence of goblet-like cells. Such occurrences are rare in the submandibular region; however, this has been noted to occur in other pathologies, warranting an organized approach. Typically, the cyst presents as a smooth nodule, which may be single or multiple.

We report the case of a 29-year-old male who complained of a swelling on the left side of the neck that had progressively increased over the past 3 months. Upon clinical examination, there was no tenderness and inflammation around the neck, and this was confirmed to be a firm swelling in the left submandibular region when imaging techniques were used. Ultrasound imaging suggested a mucous retention cyst; with fine needle aspiration cytology (FNAC), the diagnosis was confirmed by the presence of mucinous and inflammatory content.

The patient was taken for surgical excision under general anesthesia, and the specimen was sent for histopathological evaluation, which indicated a diagnosis of squamous metaplasia of a mucous retention cyst. The patient did well postoperatively and remained asymptomatic on follow-up with no signs of recurrence. Managing neck cysts requires careful formulation so as to exclude benign salivary gland cysts from the clinical picture, and this can be achieved through imaging and cytological assessment. Despite the fact that timely intervention remains eloquent in total muscular relief, further analysis demonstrates the scale of the challenge. Furthermore, the report emphasizes that better results can be obtained in such cases with an accurate approach towards diagnosis and management of the disease.

Keywords: Case report, Fine needle aspiration cytology, Mucous retention cyst, Squamous metaplasia, Submandibular swelling, Surgical excision.

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Introduction

Mucous retention cysts, or ranulas in the case of cysts formed at the floor of the mouth, are regarded as benign lesions caused by the blockage of the ducts of minor salivary glands. They are very rarely seen, particularly among adults, and tend to remain silent until they attain a certain size. Though these cysts are mostly described as benign, they may present in a manner that could afford stronger disease, warranting a proper workup (Bagán Sebastián et al.; Boneu-Bonet et al.).[1,2] This report describes a 29-year-old Caucasian male with syntony of a mucous retention cyst in the left submandibular region whose symptoms, diagnosis, and treatment are the main focus of this report.

Institutional Ethical Committee clearance was obtained.

Case Presentation

Clinical History

A 29-year-old male sought medical advice due to an increasing swelling in the left side of his neck, which he had felt for the past 3 months. The swelling was not associated with any symptoms. The swelling started as small and gradually progressed over the span of 3 months to the present size. He denied of any associated symptoms like pain, difficulty in swallowing, shortness of breath, and even the absence of fevers and weight loss or changes.

Physical Examination

A single mass was noted in the left submandibular region that measures 5 × 5 cm during the clinical examination. The swelling did not elicit pain on touch; it was mobile, and it was mostly firm or cystic in its nature (Fig. 1). There was no local rise of temperature over the swelling, and the skin over the swelling appears to be normal. On palpation around the neck, it was also confirmed that there was no lymph node enlargement as well as no masses that could be palpable in the other parts of the neck.

Investigations

Ultrasound of the Neck

Imaging demonstrated that a well-defined cystic lesion measuring 48 × 38 mm was noted in the left submandibular region with a stalk noted in the midline, seen arising from the floor of the mouth, and it was suggestive of a mucous retention cyst.

[1–3]Department of Otorhinolaryngology, Apollo Institute of Medical Sciences and Research, Chittoor, Andhra Pradesh, India

Corresponding Author: Kukkapalli P Kumar, Department of Otorhinolaryngology, Apollo Institute of Medical Sciences and Research, Chittoor, Andhra Pradesh, India, Phone: +91 9885359395, e-mail: prathap1015@gmail.com

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Fig. 1: Preoperative picture showing submandibular swelling

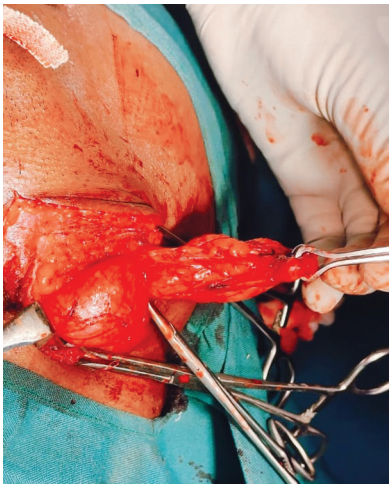

Fig. 2: Intraop picture showing attachment

Fine Needle Aspiration Cytology (FNAC)

H and E stained cytosmears show predominantly cyst macrophages, histiocytes, mixed inflammatory cells, and few giant cells against a proteinaceous background.

Impression: Features are in favor of mucous retention cyst with inflammatory changes

Differential Diagnosis

- Branchial cyst
- The presence of membranous cystic lumps like lymphatic malformations that comprise of cystic hygromas.
- Lumps within the salivary glands that were benign, such as pleomorphic adenoma.
- Cysts that evolve from the dermis or epidermis.
- Inflammatory lymphadenopathy.
- Fine needle aspiration cytology and imaging provided adequate diagnosis.

Surgical Management

The excision was scheduled under general anesthesia. An incision was given over the left submandibular region, and the cyst was identified within the submandibular salivary gland, and it extended beyond the gland till the floor of the mouth and sublingual region. It did not seem to invade any other assigned tissues (Fig. 2). Total removal of the cyst took place without any complications being noted. This was done by separating the tissues that adhered to the cyst and applying pressure until bleeding stopped, and the wound site was closed in multiple layers. The healing period went on smoothly, and the patient was later sent home after being well and stable.

Histopathological Examination

The excised specimen was sent to the laboratory for observing the histopathological structural components (Fig. 5). and it is suggestive of a mucous retention cyst with squamous metaplasia. Microscopic features suggestive of a cyst wall lined by the squamous epithelium with keratinization. No cancerous or abnormal cell structure changes were noticed (Figs 1 to 5).

Fig. 3: Picture showing the specimen after excision

Fig. 4: Postoperative specimen

Discussion

Mucous retention cysts result when mucus accumulates in a cyst due to obstruction or blockage in the ducts of salivary glands; it's also worth mentioning these are noncancerous growths (Houas et al.).[3] These are mostly seen within the oral cavity, as minor salivary glands are found there, other than the lower lip and the floor of the

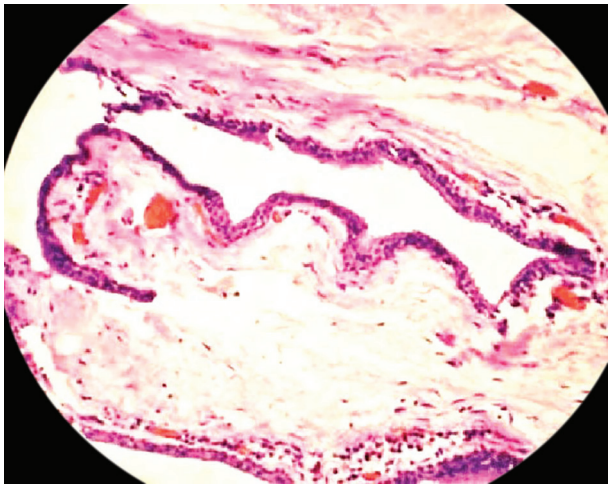

Fig. 5: Picture showing the histopathological image of squamous metaplasia

mouth (Shen et al.).[4] Even though in this case I was able to locate even submandibular parts, it wasn't easy to do so, as these are rare to find and diagnose.

Mucous retention cysts usually develop when the ducts of a salivary gland get obstructed as a result of trauma, inflammation, or calculi. These cysts are distinguished from the mucoceles, which form when a salivary duct ruptures, allowing mucus to flow into surrounding tissue, because retention cysts have a lining epithelium and do not rupture. Fluid accumulates in the cyst, creating a cycle where mucus secretion continually promotes more fluid buildup inside the cyst. In certain circumstances, secondary inflammation might occur, leading to irritation, or, in this patient, infection flared up the cyst, leading to noticeable changes (Tal et al.).[5]

On observation, mucous retention cysts can be identified as swellings which are painless and slow-growing and take time to grow to a "noteworthy" size. In this patient, there was no tenderness or inflammatory changes noted over the swelling, and the skin over the swelling is freely mobile. Other factors which inhibit such inflammation are not treatment conclusive; rather, they aid to the likeliness of dermoid cysts, benign salivary gland tumors, or cystic neoplasms, which present similar clinical features. For such observation, testing/treatment must be thorough and proper (Seifert; Bal et al.).[6,7]

Fine needle aspiration cytology and imaging modalities play a crucial role in the evaluation of neck swellings. Fine needle aspiration cytology, as performed in this case, is a simple, minimally invasive procedure that helps confirm the nature of the lesion. The finding of mucinous material with inflammatory cells is consistent with a mucus retention cyst and helps exclude other conditions such as neoplasms or infectious lymphadenopathy. Ultrasound, which is inexpensive and easily accessible, helps in cyst identification and the relationship of the cyst with the lesion and the nearby structures. In complex or atypical cases, cross-sectional imaging such as CT or MRI may be employed for detailed anatomical delineation and preoperative planning (Shah and Gandhi).[8]

Squamous metaplasia in the excised cyst which has been demonstrated through histopathological studies, is worth noting. Squamous metaplasia is defined as a process that involves the conversion of glandular epithelium into squamous epithelium, frequently as a response to a chronic insult or inflammation process. Even though this is a simple process, it shows the need for appropriate surgical management to eliminate the chances of subsequent complications, which may include infection, fistula, and even rare occasions of the development of a tumor. Furthermore, histopathological examination still stands out as the most effective way to provide a diagnosis, as it specifically identifies the absence of cancer and other conditions that can mimic mucous retention cysts (Matsuoka et al.; Giroux and Rustgi).[9,10]

Mucous retention cysts, regardless of etiology, are best treated by surgical excision, especially those that are large enough, symptomatic, and of the cosmetic concern. Ideally, when it comes to complete excision of the lesion as done in this case, there is little room for a relapse while an opportunity for a histopathological examination is opened. Equal care in the course of operation should be extended in order to avoid trauma to the neighboring structures, most importantly, the facial nerve and submandibular duct, due to the site of the lesions (Jadach et al.).[11] The effective postoperative recovery and positive clinical result in this patient provide good evidence of the adequacy of this method. The presentation of mucous retention cysts in anatomically atypical sites, such as the submandibular region, can sometimes provoke a sense of uneasiness. This perspective is, however, not justified since these lesions are generally considered to have an excellent prognosis and are in most cases asymptomatic (Jadach et al.).[11] This case not only expands the existing literature regarding mucous retention cysts but also stresses the importance of teamwork among doctors, radiologists, and pathologists to give the best possible care to the patients.

Conclusion

The mucous retention cyst in the submandibular region is a very rare entity. Even though the landmarks of submandibular glands are visible, mucous retention cysts situated in this region are sometimes troublesome with secondary neck pathologies. We have illustrated the role of imaging, FNAC, and further excision of the cyst followed by biopsy for histopathological examination for this case. So it not only ensures thorough and timely treatment and follow-up to relieve neck swellings but also establishes the benign characteristic of the lesion, thereby decreasing the chance of complications. The paramount importance of this approach to management and positive results for the patient has been illustrated.

Orcid

Kukkapalli P Kumar https://orcid.org/0009-0009-6184-9132
Ujwala T Gari https://orcid.org/0009-0002-5742-0420

References

1. Bagán Sebastián J V, Silvestre Donat FJ, Peñarrocha Diago M, et al. [Clinico-pathological study of oral mucoceles]. Av Odontoestomatol 1990;6:389–391, 394–395. PMID: 2094260.
2. Boneu-Bonet F, Vidal-Homs E, Maizcurrana-Tornil A, et al. Submaxillary gland mucocele: Presentation of a case. Med Oral Patol Oral Cir Bucal 2005;10:180–184. PMID: 15735552.
3. Houas J, Krimi H, Kermani W, et al. A rare case of submandibular mucocele extending into the oral cavity: A case report. Int J Surg Case Rep 2023;111:108798. DOI: 10.1016/j.ijscr.2023.108798.
4. Shen D, Ono K, Do Q, et al. Clinical anatomy of the inferior labial gland: A narrative review. Gland Surg 2021;10:2284–2292. DOI: 10.21037/gs-21-143.

5. Tal H, Altini M, Lemmer J. Multiple mucous retention cysts of the oral mucosa. Oral Surg Oral Med Oral Pathol 1984;58:692–695. DOI: 10.1016/0030-4220(84)90036-7.
6. Seifert G. Mucoepidermoid carcinoma in a salivary duct cyst of the parotid gland. Contribution to the development of tumours in salivary gland cysts. Pathol Res Pract 1996;192:1211–1217. DOI: 10.1016/S0344-0338(96)80153-1.
7. Bal M, Berkiten G, Uyanık E. Mucous retention cysts of the paranasal sinuses. Hippokratia 2014;18:379. PMID: 26052215.
8. Shah Y, Gandhi S. A prospective study of comparison between fine needle aspiration cytology (FNAC) with histopathological diagnosis (HPE) in neck masses. Indian J Otolaryngol Head Neck Surg Off Publ Assoc Otolaryngol India 2023;75:1447–1453. DOI: 10.1007/s12070-022-03461-y.
9. Matsuoka K, Hayashi S, Urano F, et al. Squamous metaplasia in the cyst epithelium of type 1 congenital pulmonary airway malformation after thoracoamniotic shunt placement. Hum Pathol 2012;43:1413–1417. DOI: 10.1016/j.humpath.2011.10.017.
10. Giroux V, Rustgi AK. Metaplasia: Tissue injury adaptation and a precursor to the dysplasia-cancer sequence. Nat Rev Cancer 2017;17:594–604. DOI: 10.1038/nrc.2017.68.
11. Jadach R, Osypko K, Nelke K, et al. Croco eye technique: Mucous retention cyst excision with immediate open sinus lift-a retrospective cohort study. J Clin Med 2024;13(11):3293. DOI: 10.3390/jcm13113293.