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Case Report

A rare case report- Foreign body of submandibular gland

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ABSTRACT

Foreign bodies of submandibular gland are rare but consistently reported. They usually present as obstructive submandibular sialadenitis. The diagnosis can be challenging because of rarity of such an event, and inability of traditional diagnostic methods to detect the foreign body. Due to its protected location under the mandible and only penetrating injuries to the floor of the mouth or trauma underneath the mandible can reach and damage it. Hence, submandibular gland injury is a very rare incidence that has been documented only in case reports.

To approach an early diagnosis, a patient history needs to be believed. In this case report we will highlight the diagnostic and treatment challenges the patients and the surgeons face in foreign bodies of submandibular gland.

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1. Introduction

Submandibular sialadenitis is a common disease characterized by obstruction of saliva secretion in the submandibular gland. It can be due to endogenous causes like calculi, fibro-mucinous plugs, stenosis or malformations of the duct system, leading to mechanical obstruction with associated stasis and subsequent infection. The disease can manifest as a sudden onset of painful swelling mostly related to a meal, often unilateral and can become chronic.^{1,2} Exogenous causes, such as foreign bodies, are relatively uncommon. A number of anatomic and physiological barriers like a small calibrated punctum, a rather mobile distal end, and constant flow of saliva through a near horizontal course act as a defence against retrograde intrusion of a foreign body into the duct. Despite these protective features, patients with retrograde passage of foreign bodies into the submandibular duct have been

consistently seen.³ There are two mechanisms for such an entry: penetrating trauma and a retrograde migration.⁴ An early diagnosis of a foreign body is particularly challenging and more often the diagnosis is retrospective following organ resection. Traditional diagnostic tools like plain radiographs (occlusal film), sialography, ultrasonography (USG), are often not clearly able to identify the internal duct features and site of obstruction.⁵

Through this case report we aim at clearly delineating the presentation, investigation and management of submandibular gland foreign bodies.

2. Case Report

A 35 year old male visited the OPD at MMIMSR, Mullana with complaints of swelling over left side of neck since 2 months which was insidious in onset and gradually progressive. Patient also complained of mild pain on taking meals. No diurnal variation or any restriction of head movements. Not associated with any aggravating or

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relieving factors. Patient gave history of decrease in size of swelling after he took treatment from a local hospital 1 month ago but the swelling and pain still persisted.

On examination, left side neck swelling in the submandibular region was found below the angle of mandible. Overlying skin was normal. The swelling was approximately 2 × 2 cm in size. On palpation non tender with no local rise of temperature. Swelling was firm to hard in consistency, non-compressible and non-reducible. The swelling had well defined margins with overlying skin free and not fixed to the underlying tissue. Transillumination test was negative. On examination the oral cavity and floor of mouth appeared normal on inspection. The submandibular gland puncta appeared normal. The swelling was bimanually palpable and tender on deep palpation.

After thorough clinical examination USG of Neck was performed which was suggestive of a linear foreign body measuring approximately 11 mm in length × 0.9 mm in thickness at a depth of 9 mm from the skin associated with surrounding granulation tissue and sialadenitis of the left submandibular gland. Multiple lymph nodes were present adjacent to the gland largest measuring 8.5mm.

On enquiring the patient about any history of trauma or road traffic accident, he revealed the incidence of minor trauma while wearing a piece of cloth to cover his face during COVID — 19 times 2 months back. The history of trauma was not believed by many doctors, and he was referred to Psychiatrist to treat his illness. Hence, the patient decided to omit that history. To his disbelief his story was believed for the first time in two months of suffering.

Patient underwent Left Submandibular gland excision under GA. The foreign body — silver of wood was found in anterior superficial part of left Submandibular gland. Intraoperatively the gland was seen adherent to the subcutaneous tissue and platysma suggestive of previous recurrent inflammation. The gland was sent for histopathological evaluation which confirmed the presence of Foreign body granuloma of the left submandibular gland. The post-operative period was uneventful. Patient is under regular follow-up with no fresh complaints.

3. Discussion

Submandibular gland (SMG) injury is most commonly by fractures the body of the mandible.⁶ Submandibular gland injury is rarely described and occasionally reported as it is protected superiorly by mandible.^{6,7} Penetrative trauma from the floor of the mouth or base of the chin can also lead of injury to SMG.⁶ The most common cause of SMG injury is Motor vehicle accidents (MVA), along with significant collateral facial trauma.⁷ However, as evident in the case of our patient even a minor penetrating trauma can result in SMG injury, the silver of wood piercing through the floor of mouth was likely the mechanism of injury.



Fig. 1: Ultrasound Image suggestive of foreign body.



Fig. 2: Foreign body (Silver of Wood) Shown by Artery Forceps (Top), Scale Showing the Size of the Silver of wood (Bottom).

A wide range of foreign bodies such as paper clips, stapler pins, feathers, toothbrush, spikes of wheat, blades of grass, hairs, pencil lead, pen tops, bristles, splinters of wood, pieces of metal, fingernail and fish bones have been found and reported in salivary glands.⁸

Assessing SMG injury is important due to the anatomy of the gland and its close proximity to important structures.⁹ In cases of neoplasms, autoimmune/inflammatory, and sialadenitis isolated pathology of SMG can be present.¹⁰ Careful evaluation of collateral damage is done in case of trauma through primary and secondary trauma assessment.¹⁰ In MVA with any facial trauma, life-threatening pathology like hematoma compressing trachea should be evaluated in a systematic approach.¹¹ Trauma evaluation helps in reducing morbidity and mortality by timely interventions in cases of unassessed pathology.¹¹

A systematic approach in evaluation of SMG injury from a trauma is important.¹² Record of history of injury is always paramount in the diagnosis of any pathology.¹² Imaging should be selected to best suit the data needs of the physician.¹⁰ The complex anatomy the gland, its surrounding structures and its pathology is best studied in cross-sectional imaging.¹³ Computed tomography (CT) is the most common type of imaging in case of SMG pathology.¹³ Although in vascular and neoplastic cases MRI is much more superior, CT imaging is a cost-efficient way to manage traumatic injury in time.¹³ For patients with metallic foreign body make MRI challenging. The imaging of the SMG injury comes with identification of variation in anatomy of the gland.¹³ The submandibular gland is situated in a triangle bounded by the mandible and anterior and posterior digastric muscles, which drain into Wharton's duct.¹⁰ Anatomical variation must be carefully considered, as understanding patterns of anatomy and its relation to lingual nerve, hypoglossal nerve, and submandibular ducts as it is the most important factor in reducing nerve damage during surgery.⁹

Imaging depends on association of airway compromise, facial fracture, or palsy, as well as the mechanism of trauma.¹² CT is preferred over MRI because of the availability, cost, and time to results.¹² As the body of the mandible offers protection, injury to the submandibular gland will most likely cause other pathologies identifiable on CT imaging, such as airway obstruction, vascular compromise, and fractures.⁹

Diagnosis and management of SMG injury include surgical management.⁹ The most common surgical excision is via the lateral transcervical approach. The biggest disadvantage in the transcervical approach is an injury to local nerves (hypoglossal, facial, and lingual) and scar healing, but transoral may be used in a stable patient with palpable portions of the SMG for resection.⁹ The decision for transcervical and transoral should be made by the surgeon on a case-by-case basis. In this case, the operating surgeon decided to complete a transcervical

approach because of non-tactile visualization during the oral examination.

4. Conclusion

We conclude that submandibular gland foreign bodies are rarely but consistently reported over the years. To approach an early diagnosis, a patient history, if suggestive needs to be believed, followed by meticulous examination. One has to maintain a degree of suspicion of an intra-ductal pathology including a foreign body, in case of a stone negative acute or recurrent sialadenitis.

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6. Conflict of Interest

The author declares that there is no conflict of interest.


References


1. Marchal F, Kurt AM, Dulguerov P, Lehmann W. Retrograde theory in sialolithiasis formation. *Arch of Otolaryngol - Head and Neck Sur*. 2001;127(1):66–8. doi:10.1001/archotol.127.1.66.
2. Lustmann J, Regev E, Melamed Y. Sialolithiasis. A survey on 245 patients and a review of the literature. *Int J Oral Maxillofac Surg*. 1990;19(3):135–8. doi:10.1016/s0901-5027(05)80127-4.
3. Riccio FJ, Scavo VJ. Unusual foreign body etiology of sialadenitis. *Arch Otolaryngol*. 1967;86(2):210–2. doi:10.1001/archotol.1967.00760050212019.
4. Derin S, Sahan M, Kule M, Koseoglu S, Celik OI. Fish bone induced sialolith in warthon duct. *J Craniofac Surg*. 2015;26(7):663–4. doi:10.1097/SCS.0000000000002075.
5. Ardekian L, Klain H, Peled M. Obstructive Sialadenitis of Submandibular Gland Due to Foreign Body Successfully Treated by Sialoendoscopic Intervention. *J Oral Maxillofac Surg*. 2009;67(6):1337–9. doi:10.1016/j.joms.2008.12.059.
6. Lazaridou M, Iliopoulos C, Antoniadis K, Tilaveridis I, Dimitrakopoulos I, Lazaridis N, et al. Salivary gland trauma: a review of diagnosis and treatment. *Craniofacial Trauma Reconstr*. 2012;5(4):189–96. doi:10.1055/s-0032-1313356.
7. Harbison JM, Page MP. Submandibular gland injury and delayed airway compromise caused by a seat belt. *Am J Otolaryngol*. 2010;31(3):209–11. doi:10.1016/j.amjoto.2009.02.002.
8. Ozturk K, Erdur O, Aksoy C. Foreign body of submandibular gland. *J Craniofac Surg*. 2016;27(7):600–1. doi:10.1097/SCS.0000000000002913.
9. Liu C, Darian A, Romeus L, Cervantes S, Westmoreland T. Submandibular Gland Injury With a Ball Bearing Gunshot Wound. *Cureus*. 2020;12(10):11268. doi:10.7759/cureus.11268.
10. Lazaridou M, Iliopoulos C, Antoniadis K, Tilaveridis I, Dimitrakopoulos I, Lazaridis N, et al. Salivary gland trauma: a review of diagnosis and treatment. *Craniofacial Trauma Reconstr*. 2012;5(4):189–96. doi:10.1055/s-0032-1313356.
11. Boyd BC, Dattilo DJ, Goth JH, Liberto FJ. An unusual supplemental vehicle restraint-induced injury: Report of case and review of literature. *J Oral Maxillofac Surg*. 2002;60(9):1062–6. doi:10.1053/joms.2002.34421.
12. Sun JK, Lemay DR. Neuroimaging Clinics of North America. *Neuroimag Clin N Am*. 2002;12(2):295–309. doi:10.1016/s1052-5149(02)00002-3..
13. Agarwal AK, Kanekar SG. Imaging of Submandibular and Sublingual Salivary Glands. *Neuroimag Clin N Am*. 2018;28(2):227–43.

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