

A Giant Sub-Mandibular Sialolith: A Case Report

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Case Report

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ABSTRACT

One of the most common diseases of salivary gland encountered is sialolith. It is relatively common in sub-mandibular salivary glands and its duct. The largest salivary gland stones are formed by submandibular glands. This case report is of a patient presented to our unit with a history of severe pain and swelling on floor of the mouth, which was clinically and radiographically diagnosed as sialolith. One of the most common diseases that affect the salivary glands and a major cause of salivary gland dysfunction is salivary stone. Studies have reported that the overall incidence is 1% in the population. Most of the cases remain asymptomatic. The incidence of occurrence in sub-mandibular region is relatively high, 80-90% as compared to parotid region, 5-20% and the sub-lingual and other minor salivary glands which range from 0-10%.

INTRODUCTION

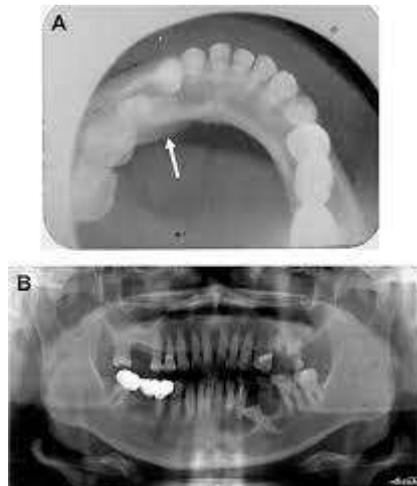
One of the most common diseases that affect the salivary glands and a major cause of salivary gland dysfunction is salivary stone. Studies have reported that the overall incidence is 1% in the population [1]. Most of the cases remain asymptomatic. The incidence of occurrence in sub-mandibular region is relatively high, 80-90% as compared to parotid region, 5-20% and the sub-lingual and other minor salivary glands which range from 0-10% [2]. When minor salivary glands are involved mainly in buccal mucosa, upper lip which forms a firm nodule may mimic a tumor. The largest salivary gland stones are formed by submandibular glands. Salivary stones are single in 70-80% of the cases and are also presented as multiple, usually two or three in number rarely. Nearly 88% of sialoliths are reported to be of a size

less than <10 mm in dimensions. According to literature the development of an atypically large, >15 mm sialolith was found to be sporadic [3]. Most common manifestations of salivary lithiasis include pain and swelling, especially during pre-meal period wherein the salivary flow is stimulated. The sialolith obstructs the normal salivary flow which can lead to multiple disabilities of oral cavities [4]. Reports of huge salivary calculi have been reported in literature. This manuscript is a case report on Submandibular sialolith and briefs on clinical presentation, examination, investigations and the surgical.

CASE PRESENTATION

A 69 years old male patient reported to our unit with chief complaint of pain in left side of floor of mouth since 15 days [5]. He was presented with pain associated with a diffuse swelling in left side of floor of mouth. Pain was sudden in onset, severe in intensity and continuous in nature. Pain aggravated on eating. The swelling associated was small initially and gradually increased to present size over time [6]. On examination solitary diffused swelling noted over left side of floor of mouth with a sinus opening with respect to 36, 37 region. Also, an extra-oral swelling noted in the submandibular region measuring about 2 cm in diameter. Swelling was oval in shape, firm, tender and not attached to underlying structures [7]. Left submandibular lymph node was palpable and was tender. Mandibular occlusal radiograph was advised, which revealed a homogenous radio-opaque structure in left submandibular region with respect to 36, 37, oval in shape with well-defined borders and measuring about 1 x 1 cm in Figure 1.

Figure 1. Mandibular occlusal radiograph shows a homogenous radio-opaque structure in left submandibular region.



Also, a CBCT was advised to determine the position. Based on the clinical and radiographic presentation we came to a diagnosis of Surgical excision of the sialolith under local anaesthesia was planned as the treatment plan [8]. Routine minor surgery protocol was followed and 2% lignocaine with adrenaline 1:80,000 was infiltrated around the pathology. An incision was placed of around 1 cm over the most prominent part of the pathology [9]. Blunt dissection was carried out through the Wharthon's and sialolith was identified to expose it completely. The calculi was removed in tooth which measured 2.2 x 1.9 centimetres and weighed 3.33 grams. Duct was examined using Adson's forceps and mucous secretions were seen. Through duct irrigation was done using betadine and saline. Milking of gland was performed to confirm the normal function of salivary gland. 5 simple interrupted 3-0 Black Braided Silk sutures were placed. Post procedure patient instructions were given, and he was prescribed antibiotics and analgesics for 5 days. The wound healed uneventfully without any complications. No recurrence seen till date [10-16].

DISCUSSION AND CONCLUSION

Exact cause of salivary gland calculi formation is unclear but it is generally due to stagnation of calcium rich saliva. Partial obstruction of gland is more important than complete on patient point of view because even though complete obstruction causes stagnation of saliva, they do not cause increase in stone formation. In complete obstruction, there is depletion of the calcium secretory granules present in the acini and this saliva is less lithogenic. Another theory says that for stone formation, it is likely that intermittent stasis produces a change in mucoid element of saliva, which forms a gel. This formed gel provides framework for deposition of organic substances and salts which leads to formation of a stone. It also has been postulated that an unknown metabolic phenomenon can increase the salivary bicarbonate content, which alters calcium phosphate solubility and leads to precipitation of calcium and phosphorus ions. Irregular laminated morphology of the calculi gives an impression that it is formed intermittently. Light and electron microscopical studies have not found out any bacterial organisms or foreign bodies as the nidus for calculi formation. The composition is predominantly calcium phosphate and carbonate in the form of hydroxyapatite with small amounts of magnesium, potassium and ammonium, which is evenly distributed throughout the calculi. The organic matrix is composed of various carbohydrates and amino acids. Submandibular gland stones are denser and calcium rich, related to the nature of secretions of the gland which is more mucinous compared to other glands. The factors favouring the formation of submandibular stone formation are longer and larger calibre duct with slower salivary flow rates, salivary flow against gravity, alkalinity of the saliva secreted, and the high calcium and mucin content as mentioned earlier. Demographically it shows a male predilection. All ages may be affected but third to sixth decade has shown preponderance. Occurrence in paediatric age group is rare. Long term obstruction without any active infection can lead to gland atrophy and ultimately leads to fibrosis and loss of secretory function. Inflammation, scarring of the duct and stricture formation is the common sequelae of intraductal stones. Strictures and stenosis lead to recurrent salivary outflow problems. Patients presents with painful swelling in about 59% of cases whereas 29% reported to have painless swelling. They will be afflicted with a recurrent salivary colic and spasmodic pains upon having food. They may also experience repeated infections or abscess formation. Salivary stones can also be discovered as an accidental finding on routine dental evaluation. Careful history and examination are the key in the diagnosis of this disorder. Having the patient close the mouth slightly will aid in detection of these stones by bimanual palpation. Even the palpation of gland can be informative. If it is found to be spongy and elastic, it suggests a healthy gland and a uniformly firm gland may be suggestive of atrophied and hypo or non- functional gland. Plain radiography would be an excellent choice of investigation in which it be radio opaque in 80-95% of cases. CT scanning is the most accurate diagnostic tool in determining the position of stones which can help the surgeon in surgical planning. Ultrasonography is another investigation of choice to identify and locate sialoliths. It can even detect sialoliths of size 1.5 mm and has shown an accuracy of 99%. Mainstay of surgical treatment for submandibular sialoliths are either through a transoral sialolithotomy approach or through complete sialadenectomy through an extraoral approach. The approach depends on the location of stone. An anterior stone are usually palpable and is amenable to a transoral procedure. Rule of thumb is, if the stone is no further than 2 cm from the punctum as demonstrated by finger palpation or palpating the stone by ductal probe, the stone may be removed through a transoral approach. 90% of the total saliva is produced by parotid, submandibular and sublingual salivary glands. And rest 10% is from minor salivary glands. Submandibular salivary gland is the largest single contributor to baseline salivary flow. After removal of the gland or duct, the patient will have severe drop in salivary flow rates. Even glands which are severely compromised will return to normal function in 75% of the time after sialolith removal by

transoral approach. Evidences are there for significant acini regeneration after duct obstruction removal. Recurrence rates of patients who have undergone transoral sialothotomy are 18%. The intra-oral surgical technique can lead to various complications in lingual nerve paraesthesia is one of the common among them. Also, there are reported cases of ranula which formed due disruption of salivary duct. External approach carries a risk of marginal mandibular nerve injury of 0-8%. Another possible complication is sialo-cutaneous fistula due to obstruction of the ducts resulting is salivary stasis, infection and rupture through skin. The usual size of sialolith found in Wharton's duct ranges from 1-10 mm, also there are reports of giant sialoliths greater than 3.2 cm have been reported. Ledesma-Montes et al. found 16 cases of sialolith of size greater than 3.5 mm in their review of literature. The largest size sialolith reported in submandibular gland is 6 cm in length. In our case it measured 2.2 x 1.9 cms.

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