Large Intraductal Sialolith in Wharton’s Duct

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ABSTRACT

Giant salivary gland calculi are considered rare. More than 80% of it are formed in submandibular duct but can also be located in the glandular parenchyma. These account for the most common disease of the salivary glands. They can occur in any salivary duct or gland but are most common in Wharton’s duct and Submandibular gland. These are formed by organic and mineralized matter, in diverse proportions. They are formed by precipitation of calcified structure around a nucleus that is made up of foreign bodies in the gland. These can range from desquamated epithelial cells to the degraded proteins of bacteria. Calcified structures include calcium carbonate and soluble salts present in stone in addition to organic element and water.

KEYWORDS: Sialolith, Wharton’s Duct, Salivary Gland

INTRODUCTION

Sialolithiasis is the most commonly are found in middle age patients though to some extent have been reported in children also. It is the most common disease of salivary gland, the symptoms of which develop as a consequence of obstruction of the duct secreting the saliva. There is swelling and pain distal to the region, where the obstruction may be present which is usually manifested during meal time.¹

Radiographic exams are used to identify sialoliths, which normally show radiopacity. The degree of radiopacity varies from 56% to 98% and depends on it mineral composition. All giant calculi are usually radiopaque and easily depicted on a panoramic radiograph or CT scan. Sialography is a simple technique and an important tool for the assessment of salivary gland obstruction in patients.² New technique like sialoendoscopy has also been introduced for assessing and treating salivary gland obstruction.³

Management of salivary calculus is either removal of the calculus or the gland afflicted depending upon the position and extent of the calculus. The stone if left untreated have been known to migrate in adjacent tissues.⁴ Late and extreme stages have been known to cause a fistula in the skin resulting in a supplicative infection as a result of perforation of floor of mouth which in turn is caused by the ulceration of the duct in which the obstruction is present. This then can lead to loss of secretion resulting in gland atrophy and in some cases exfoliation of the stone as has been reported by Karengera et al.⁵

Salivary calculi are usually small, and have been known to be measured from 1mm to upto 1.5 cm. Giant sialoliths are rare in occurrence and are defined as the size of 3 cm or larger. The majority of sialoliths are round to oval in shape and shows variety in number and size. They have rough nodular surfaces with prominences with colour ranging from white to brown. Believed to be enlarging at the rate of 1.5 mm per year, which occurs due to extra deposition of duct lining cells or the bacteria itself, these have been reported to be found in parenchyma of the glands and sometimes in salivary duct.⁶

CASE REPORT

A 69 year old male reported to the department of Oral and Maxillofacial Surgery with a chief complaint of dull, intermittent aching pain and that of dry mouth and swelling on the left side of the neck occurring with meals since 1 year. Patient reported that the aches and swelling occurred about 3 to 4 times a day followed by dry mouth after meals. Medical history was unremarkable. On extra oral examination, no swelling was observed. Intraoral examination revealed presence of swelling in the floor of the mouth. Bimanual palpation revealed a hard mass in the orifice of the duct was also appreciated. Radiographic examination revealed presence of swelling in the floor of the mouth. Panorex view which revealed an oval shaped radiopacity extending from premolar region to the body of mandible on the left side (Fig 1). On clinical co relation a diagnosis of intraductal sialolithiasis was made.

Fig 1: Panorex view showing radiopacity in left mandibular body region superimposing over the premolar region.

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It was decided to excise the calculus via transoral approach under local anesthesia. An incision of approximately 5 mm long was made directly on the tissue overlying the stone parallel to the Wharton’s duct. Two stay sutures were tied and the floor of the mouth was raised. Encounter with lingual nerve during dissection was anticipated hence the dissection was strictly limited to the proximal part of the duct near the location of the stone. The duct was left open for drainage. A cylindrical, hard, dark yellowish in colour, about 3 cm in length and around 1 cm across was obtained (Fig 2). It was also grainy in appearance as well as rough on palpation. The site was checked for remnants or any other stones. The gland was not resected. Histopathological examination after decalcification of the specimen revealed concentric lamellar arrangement with varying thickness and diagnosis of sialolith was confirmed.

![Specimen after being excised from the duct. Note the prominences and granulations on the surface](Image)

**DISCUSSION**

Sialolithiasis is the formation of calcified concretions in the salivary duct or glands. Most salivary calculi occur in the submandibular gland (80-95%) whereas (5-10%) are found in the parotid gland. Sublingual glands are rarely affected. Male predominance has been reported in the literature. The prevalence is usually between third and the seventh decade of life. However, Steiner and Gould have reported a multiple sialoliths in an 8 year old boy. It was treated by excision of the involved salivary gland. Zeeshan and Forte have reported a case of bilateral sialoliths in 11 year old girl which was managed by conservative approach i.e. by massaging the gland to improve the rate of flow.

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In comparison to other salivary glands, the submandibular gland varies in secretion which is viscous due to presence of mucin and highly alkaline because of presence of calcium and phosphate. Apart from the nature of secretion the pathway which is relatively longer and essentially against the gravity predisposes pooling or delayed effusion of saliva hence resulting in sialolith. It has also been suggested that introduction of foreign body, desquamated epithelial cells form a nidus as an initial stage of sialolith formation. Further salivary stagnation and infection can proceed to augment the deposition coupled with precipitation of the mineral salts in the vicinity of the nidus. Observation of differences in mineral composition in sialoliths in different parts of the ductal system possibly reflects difference in the environment in the submandibular duct. Different concentration of calcium and phosphate could influence the occurrence of various calcium phosphate crystals. Further investigations are needed to determine the chemical differences of saliva in intra and extraglandular ducts of the submandibular glands and to explain the differences in mineral composition of the salivary calculi.

Though slow growing Makidissi has reported a calculus growth rate of upto 3.5 mm a year. Recurrence though rare can be attributed to presence of any previous stone or presence of large sac in the duct after its removal which can act as a potential site for pooling of secretion.

The treatment objective of giant sialolith, as for standard-sized stones, is restoration of normal salivary secretion which is most of the time accomplished by excision of the stone. Conservative methods of treatment should be considered as an alternative for surgical excision. These include moist heat and gland massage, while sialogogues are used to promote saliva production and flush small calculi out of the duct. In case of presence of swelling in the gland along with because of sialolith, infection should be assumed and an appropriate antibiotic therapy initiated. The excision can also be achieved via a transoral sialolithotomy, to avoid the morbidity associated with sialadenectomy. Sialography initially used for diagnosis in patients suffering from an obstructive pathology is now routinely carried out for the affected gland after the acute phase. Sialoendoscopy enables a direct view to see the different aspect of the glands by showing the intraductal and intraglandular microanatomy which makes it possible to reach a deeper portion of the gland, remove sialolithiasis or correct duct kinks hence reducing the predisposition to the recurrence if any.

**CONCLUSION**

The diagnosis and management of sialoliths of a remarkable size are challenging for the clinician. In most cases, the diagnosis is made following acute obstructive or inflammatory episode which must be treated appropriately. Large sialolith should be treated by appropriate approach to prevent possible severe complications. However, for giant sialoliths, amenable to physical or pharmaceutical measure alone, transoral sialolithotomy with sialadenectomy or plastic repair of salivary duct also known as sialodochoplasty still remains the mainstay of management.
REFERENCES


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