GIANT SIALOLITH OF WHARTON'S DUCT: A CASE REPORT

ABSTRACT
Sialolithiasis is one of the most common pathological condition of salivary glands. It may be present in any of the minor or major salivary gland or their ducts, but its presence is most common in relation to submandibular gland. The factors responsible for salivary gland calculi may include reduced salivary flow rate, a change in pH, dehydration, duct anomalies, and the retrograde migration of food, bacteria or foreign bodies from the oral cavity favoring stone formation. Sialoliths measuring more than 15 mm are termed as giant sialoliths. Here, we report a case of a giant sialolith of the wharton's duct.

Keywords: Sialolith, Wharton duct, submandibular salivary gland

INTRODUCTION
Sialolithiasis is one of the most common diseases of salivary glands. Obstructing the salivary flow, sialoliths cause swelling, pain and recurrent infections of the associated gland. More than 80% of the salivary gland calculi appear in the submandibular gland, more frequently in the excretory duct as compared to the gland parenchyma. The etiopathogenetic factors responsible for salivary gland calculi may include reduced salivary flow rate, a change in pH, dehydration, duct anomalies, and the retrograde migration of food, bacteria or foreign bodies from the oral cavity favoring the stone formation. Sialoliths generally measure from 1 mm to less than 1 cm. However, rarely they may measure more than 1.5 cm. In the literature, giant sialoliths are classified as those exceeding 15 mm in any one dimension.

CASE REPORT
A 29-year-old male reported to the Department of Oral and Maxillofacial Surgery at Sri Guru Ram Das Institute of Dental Sciences And Research with a history of pain in the left submandibular region for the past 6 months. The pain was dull, intermittent, and the swelling enlarged during and after meals. On extraoral examination, there was a localized swelling in the left submandibular region measuring...
approximately 3.5 cm × 3.0 cm. The swelling was soft and tender on palpation with normal overlying skin. Intraoral examination revealed an edematous floor of the mouth on the left side. Intraorally, on bimanual palpation on the floor of mouth, a hard mass was felt in the molar region.

Orthopantomogram (Fig 1) and Computed tomography (Fig 2 and Fig 3) revealed a calcified mass posterior to the molar region on left side. On the basis of the radiological and clinical findings, a diagnosis of sialolith of submandibular salivary gland duct was made. The sialolith was planned for removal under local anaesthesia using 2% xylocaine with 1:200,000 adrenaline. Upward and medial pressure was applied at the submandibular area, and an intraoral incision was placed directly over the sialolith to expose it. After sufficiently mobilizing the sialolith, it was delivered through the ductal opening taking care that the downward extensions from the sialolith did not break. The dimensions of the sialolith removed were measured to be 28 mm in length and 20 mm in circumference, and weighed 1.38 g (Fig 4). The postoperative recovery of the patient was unremarkable.

**DISCUSSION**

Sialolithiasis is one of the most common diseases of salivary glands. Sialoliths cause swelling, pain and recurrent infections of the associated gland by causing the obstruction of salivary flow. Most calculi are found in the submandibular gland of the middle aged male patients. Usually they are less than 10 mm in diameter and giant sialoliths (>15 mm) are considered rare. In this report clinical and radiological features of a giant sialolith with dimensions of 28mm × 20mm was present. It was located in the wharton’s duct opposing the left mandibular first molar region.

The exact mechanism of lithogenesis is unclear; however, the presence of microcalculi in 80% of normal submandibular and in 10% of normal parotid glands may correspond well to overt incidence of calculi in these two glands. Traditional and recent etiopathogenetic factors include a reduced salivary flow rate, a change in pH, dehydration, duct anomalies, and the retrograde migration of food, bacteria or foreign bodies from the oral cavity thus, favoring the formation of salivary gland calculi. The factors responsible for higher rate of sialolithiasis in case of submandibular gland may be high mucin content of saliva, tortuous course of wharton's duct, flow of saliva against gravity, high calcium content of saliva and more alkaline saliva.

I. Faklaris et al conducted a review of literature and concluded that in terms of weight and size, the sialoliths showed quite a large variation. Sialolith weight ranged widely, from 5 mg to 790 mg with mean value of 198.4 mg and standard deviation of 210.4 mg. Bhullar R.S. et al reported a salivary gland sialolith from wharton’s duct measuring 31 mm in length and 16 mm in circumference weighing 1.250 g, however, in present case sialolith measuring 28 mm in length and 20 mm in circumference, weighing 1.38 g was removed.

The clinical feature frequently encountered is the enlargement of the gland while eating. If the obstruction is not complete, this
swelling gradually diminishes between meals as the saliva is permitted to escape slowly from the duct around the obstructing stone. Complete obstruction is manifested clinically by swelling, redness and pain in the area of the orifice of the excretory duct. This is followed by the acute symptoms of the gland. The pain is dull at first but gradually becomes severe as pus starts to form and the gland continues to perform its functional activity, causing an increase in pressure. At this time the patient may become febrile and the gland is markedly enlarged and tender.\textsuperscript{10} Long standing obstruction by a sialolith can cause severe damage to the acini of the gland, resulting in permanent decrease or even absence of salivary flow.\textsuperscript{5}

Ultrasoundography (USG) is a method of choice in salivary stone diagnosis. Its sensitivity in calcui detection amounts to 94\%, specificity 100\%, and accuracy 96\%. USG allows detection of nonopaque calcui with sensitivity of 80 - 96\%.\textsuperscript{11} However, small stones less than 2 mm in size may not produce any acoustic shadow leading to diagnostic errors, especially small stones in the intraparenchymal ducts with no duct distension. Sialendoscopy allows direct visualization of the salivary duct lumen, i.e., visualization of calcui, mucosal plugs, foreign body, and polyps. It is mainly used in the treatment of inflammatory condition of the salivary glands and obstruction of the salivary ducts.\textsuperscript{12}

Restoration of the normal salivary secretion is the treatment objective post giant sialolith removal. The treatment options available for stone removal are transoral sialolithotomy, interventional sialoendoscopy, extracorporeal shock wave lithotripsy (ESWL), and resection of the gland.\textsuperscript{7} Submandibular gland excision is indicated only in cases where there is substantial mass within the gland itself that is surgically inaccessible intraorally and in case of small stones present in the vertical portion of the Wharton duct from the comma area to the hilum. Surgical removal of the gland is also indicated in a situation where opening of the duct surgically created causes recurrent infection of the gland due to ingress of oral fluids.\textsuperscript{13}

CONCLUSION

The submandibular gland is the largest contributor to baseline salivary flow.\textsuperscript{15} Submandibular sialolith should be removed with minimally invasive method, via transoral sialolithotomy, to avoid the morbidity associated with sialadenectomy which is the standard treatment for glandular sialoliths.\textsuperscript{14}

BIBLIOGRAPHY