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GIANT SUBMANDIBULAR GLAND SIALOLITH : A CASE REPORT

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Abstract

Sialolithiasis is a common disease of salivary glands characterized by the obstruction of salivary secretions by a calculus. Salivary stones may form in any of the major or minor salivary glands or their excretory ducts. This is associated with pain and inflammation, and in some occasions with an infection of the affected gland. Size of the sialolith may range from 0.1mm to 30mm or even bigger. Those salivary stones which exceed 15mm in any one dimension or 1gm weight are classified as Giant sialoliths. Giant sialoliths are rarely reported, we report here a case of giant sialolith of the submandibular gland duct.

Keywords: sialolith, saliva, surgery

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Introduction

Sialolithiasis is defined as the formation of calcific concretions within the parenchyma or the ductal system of a major or minor salivary gland. It constitutes one of the most common causes of dysfunction of the salivary glands. It occurs mainly in the submandibular gland (80-90%) and to a lesser degree in the parotid gland (5-20%). The sublingual and the minor salivary glands are rarely affected[1]. It is believed that salivary stones develop as a result of the deposition of mineral salts around a nidus of mucus, bacteria or desquamated cells[2]. The size of the calculi varies from less than 1mm to a few centimeters. Although the frequency of sialoliths is relatively high, the occurrence of giant sialoliths larger than 1.5cm in any diameter is rare.

This report describes a case of giant sialolith in a 35 year old male, addressing the clinical features, the diagnosis and the surgery performed to restore the salivary flow.

Case Report

A 35 year old male was referred to our center for evaluation and management of pain and swelling in the right submandibular region. Pain was dull, intermittent and associated with meals. There was history of enlargement of the pre-existing swelling during meals.

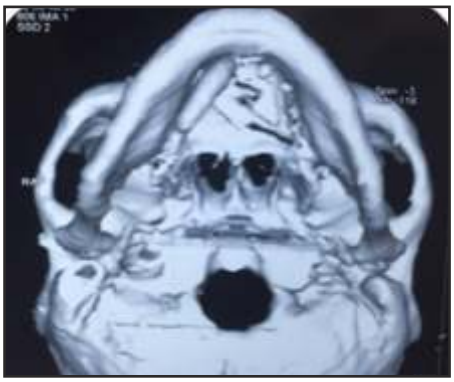

Fig 1. Axial CT scan showing a large calculus in the duct of right submandibular gland.

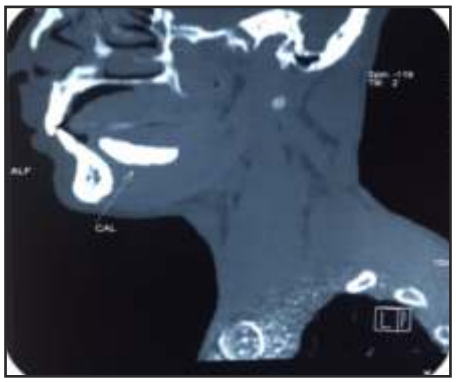

Fig 2. Sagittal CT scan showing calculus in the right submandibular gland duct.

Fig 3.Surgically obtained sialolith

On extraoral examination, there was a moderate sized swelling in the right submandibular region. The swelling was soft and tender on palpation with normal overlying skin. Intraorally there was considerable fullness along the course of Wharton's duct on the right side. On bimanual palpation of the floor of the mouth, a hard mass was felt in the premolar-molar region. Milking of the gland produced very less saliva but a flow of pus.

Computed Tomography scan (Axial section - Fig 1and Sagittal section - Fig 2) reveals a large radiopaque calculus lingual to the body of mandible in the duct of right submandibular gland.

On the basis of clinical and radiographic findings, a diagnosis of left submandibular gland duct sialolith was made.

Since the size of the sialolith was large, transoral-sialolithotomy was done under local anesthesia and proper antibiotic cover. The floor of the mouth was stabilized by firm upward and medial pressure in the submandibular area and incision was made through the mucosa over the sialolith. After careful mucosal dissection the submandibular duct was identified and incised over the sialolith. The sialolith was exposed, mobilized and removed. The wound was closed at the mucosal layer. The sialolith removed (Fig 3) measured 39mm in length. The follow-up of six months showed no complications and complete restoration of salivary flow.

On the basis of clinical, radiological and histopathological findings the diagnosis of giant submandibular salivary duct sialolith was confirmed.

Discussion

The formation of calcific concretions in the salivary duct or glands is a common disorder, especially in the submandibular glands. Most of the salivary calculi are small in size, in contrast to those that reach several centimeters, which are reported as megaliths or giant calculi. Giant sialoliths are classified as those exceeding 15mm in any one dimension or 1gm weight[3]. In this report clinical and radiological features of a giant sialolith, with dimensions of 39mmx11mm was present. It was located in the wharton's duct opposing the mandibular right premolar and first molar region. Large sialoliths may lead to infection, suppuration and ulceration on the floor of the mouth[5]. The largest sialolith reported in the literature was 70mm in the length of Wharton's duct and was described as having "Hen's Egg" size[6].

Traditional and recent etiopathogenicfactors include a reduced salivary flow rate, a change in pH, dehydration, duct anomalies and the retrograde migration of food, bacteria or foreign body from the oral cavity favoring stone formation[7]. Calculi may form in any of the salivary glands but submandibular gland is the most common by far (80-90%). Factors responsible are: high mucin content of the saliva, tortuous course of wharton's duct, flow of saliva against gravity, high calcium content of saliva and more alkaline saliva[8]. All these features are unique to submandibular gland.

The clinical feature frequently encountered is the enlargement of the gland during 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[2]. In this report the patient gave history of pre-prandial and postprandial submandibular swelling since six months. 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[1].

Salivary calculi consist of laminated structure of concentric shells of calcareous minerals with alternate layers of organic resinous material that also forms the outer covering. The crystalline component appears to be composed of calcium phosphate in the form of hydroxyapatite and small amounts of magnesium, carbonate and ammonium ions. The organic matrix is composed of various carbohydrates and amino acids[5].

Ultrasonography (USG) is a method of choice in salivary flow diagnostics. Its sensitivity in calculi detection amounts to 94%, specificity – 100% and accuracy-96%. USG allows detection of non opaque calculi with sensitivity of 80-96%[9].Sialendoscopy allows the direct visualization of salivary duct lumen i.e. visualization of calculi, 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[10].

The treatment objective for giant sialoliths, as for the standard sized sialoliths is restoration of normal salivary secretion. Treatment options are transoralsialolithotomy, interventional sialendoscopy, Extracorporeal short wave lithotripsy (ESWL) and resection of the gland[4]. The giant sialolith should be removed in a minimally invasive manner, via a transoralsialolithotomy to avoid the morbidity associated with sialadenectomy. Whenever the stone can be palpated it is best to remove it through intraoral approach. The cardinal rule when performing stone removal from wharton's duct is to first isolate the duct and then provide a longitudinal incision into the duct over the stone to retrieve it. Giant sialoliths are accompanied by long standing salivary gland sialadenitis resulting in a grossly fibrotic and poorly functioning gland. However, after elimination of the obstruction, the apparent resiliency of submandibular gland results in no adverse symptoms[11]. ESWL is an effective non invasive alternate approach where the size of the calculi is reduced to small fragments, the diameter of which does not block the flow of saliva and can be washed away[12]. Gland resection is only indicated when there is substantial mass within the gland itself that is not surgically accessible intraorally and when there are small stones present in the vertical portion of wharton's duct from comma area to hilum[11].

Chronic infection, strictures and fistulas are the main complications resulting from the presence of salivary calculus[5].

Conclusion

The submandibular gland is the largest contributor to baseline salivary flow. There are various methods available for the management of salivary stones depending on the gland affected and stone location. The treatment objective is to restore the salivary flow. The sialolith should be removed with minimally invasive method, via transoralsialolithotomy to avoid morbidity associated with sialadenectomy. Intraglandularsialoliths necessitate sialadenectomy.

References

1. Lustmann J, Regev E, and Melamed Y. Sialolithiasis : A survey on 245 patients and a review of literature. Int. J. Oral Maxillofac. Surg. 1990;19:135-138
2. Carr SJ. Sialolith of unusual size and configuration: Report of a case. Oral Surg Oral Med Oral Pathol. 1965;20: 709-712
3. Bodner L and Beer-Sheva. Giant salivary gland calculi: Diagnostic imaging and surgical management. Oral Surg Oral Med Oral Pathol Oral RadiolEndod. 2002; 94:320-323
4. Bhullar, R. S., Dhawan, A., Bhullar, K., andMalhotra, S. (2015). Giant submandibular gland duct sialolith mimicking an impacted canine tooth.National Journal of Maxillofacial Surgery, 6(1), 89.
5. Deeb ME, Holte N and Gorlin RJ. Submandibular salivary gland sialoliths perforated through oral floor. Oral Surg. 1981; 51: 134-139
6. Ledesma-Montes C, Garces-Ortiz M, Salcido-Garcia JF, Hernandez-Flores F and Hernandez-Guerrero JC. Giant sialolith: Case report and review of the literature. J Oral Maxillofac Surg. 2007; 65: 128-130
7. Capaccio P, Marciante GA, Gagguri M and Spadari F. Submandibular swelling: tooth or salivary stone. Indian journal of dental research. 2013;24:381-383
8. Arora V, Samadhani S and Bapan A.S. Stony Wharton's duct. Indian Journal of Otolaryngology and Head and neck Surgery. 2001; 53:242-243
9. Yousem DM, Kraut MA and Chalian AA. Major Salivary gland imaging. Radiology. 2002;216:19-29
10. Rzymska-Grala I, Stopa Z, Grala B et al. Salivary Gland calculi- Comtemprary methods of imaging. Pol J Radiol. 2010;75(3): 25-37
11. Iqbal A, Gupta AK, Natu SS and Gupta AK. Unusually large Sialolith of Wharton's duct. Ann Maxillofac Surg. 2012; 2: 70-73
12. Andretta M, Tregnaghi A, Prosenikliev V and Staffieri A. Current opinions in sialolithiasis diagnosis and treatment. ActaOtorhinolaryngol Ital. 2005;25:145-149