Multiple Salivary Duct Calculi of Sublingual Gland: An Unusual Phenomenon

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Abstract

Salivary gland/duct calculi account for the most common disease of the salivary glands. As compared to the frequency with which we see calculi in submandibular gland or its duct, the frequency of sublingual duct calculi is far less. The following case details a case of multiple sialoliths in the sublingual gland duct and brings to light the dilemma that might occur during the clinical diagnosis, owing to the proximity of location of the openings of the ducts of the aforementioned glands.

Keywords : Sublingual gland, Sialolith, Submandibular duct sialolith

Introduction

Salivary gland/duct calculi account for the most common disease of the salivary glands. The majority of sialoliths occur in the submandibular gland or its duct and are a common cause of acute and chronic infections[1]. Sialolithiasis commonly occurs in middle aged adults, with men affected twice as much as females[2]. Sialolithiasis is probably the most frequent salivary gland pathology beyond the second decade of life. It is most commonly seen in the submandibular gland and duct (about 80% of cases), followed by the parotid gland (6%) and duct (2%)[1]. The frequency of sublingual duct calculi is far less. The present case highlights the findings of duct calculi of the sublingual gland in a 30 yr old male.

Case Report

A 30 year old male patient reported with the chief complaint of pain in the lower jaw and discharge from the same region. The patient was apparently asymptomatic two months back when he experienced pain and noticed a discharge from the anterior region of the floor of the mouth, just below the tongue, on application of pressure. Pain was aggravated on eating citrus food. Intraoral examination revealed an inflammed ductal opening of the right submandibular salivary gland duct, associated with tenderness. A sialolith was palpable bimanually. No lymph node involvement was evident. An excisional biopsy of the gland alongwith the duct was done (Fig 1.) and two creamish-white specimens were submitted for histopathological evaluation.

Gross specimen studied in the stereomicroscope revealed sialoliths throughout the length of the salivary gland (Fig 2).

Soft tissue specimen from near the ductal opening showed predominantly mucous acini and ductal architecture of gland consisting of interlobular and intralobular ducts (Fig 3). Lymphocytic infiltration was occasionally seen in the connective tissue septa. Decalcified tissue section examination showed calcified mass surrounded by fibrous stroma (Fig 4). Diagnosis of a sialolith within the sublingual salivary gland duct was made.

Discussion

Salivary calculi are usually found in the ducts of the salivary glands. The extent of damage to the glandular acini is proportional to the amount of ductal obstruction. Clinically, they are round or ovoid, rough or smooth and of a yellowish colour. They consist of mainly calcium phosphate with smaller amounts of carbonates in form of hydroxyapatite, with smaller amounts of magnesium, potassium and ammonia.

The exact etiopathogenesis of salivary calculi is largely unknown. Genesis of calculi lies in the relative stagnation of calcium rich saliva. They are thought to occur as a result of deposition of calcium salts around an initial organic nidus consisting of altered salivary mucins, bacteria and desquamated epithelial cells. For stone formation, it is likely that intermittent stasis produces a change in the mucoid element of saliva, forming a gel. This gel produces the framework for deposition of salts and organic substances creating a stone[1].

Theories suggest that the formation occurs in two phases: a central core and a layered periphery. The central core is formed by the precipitation of salts, which are bound by certain organic substances. The second phase consists of the layered deposition of organic and inorganic material[1].

Submandibular stones are thought to form around a nidus of mucous, whereas parotid stones are thought to form most often around a nidus of inflammatory cells or a foreign body[1].Another theory has proposed that an unknown metabolic phenomenon can increase the saliva bicarbonate content, which alters calcium phosphate solubility and leads to precipitation of calcium and phosphate ions[1].

A retrograde theory for sialolithiasis has also been proposed. Aliments, substances or bacteria within the oral cavity might migrate into the salivary ducts and become the nidus for further calcification[1].

A case in which a stone formation around a vegetal nidus was histologically proven has been reported. Salivary stagnation, increased alkalinity of saliva, infection or inflammation of the salivary duct or gland, and physical trauma to salivary duct or gland may predispose to calculus formation.

Submandibular sialolithiasis is more common as its saliva is:

(i) More alkaline,

(ii) Has an increased concentration of calcium and phosphate, and

(iii) Has a higher mucous content than saliva of the parotid and sublingual glands. In addition, the submandibular duct is longer and the gland has an antigravity flow.

Sialolithiasis is rare in the sublingual gland.

According to Rausch and Gorlin, the sublingual and minor salivary glands account for 2% of salivary calculi formations[4,5].

Sublingual sialolithiasis may be misdiagnosed as submandibular gland sialolithiasis, which is more common. It is important to preoperatively determine which gland is involved, because they require different surgical approaches. Careful history and examination are important in the diagnosis of sialolithiasis[6,7]. Pain and swelling of the concerned gland at mealtimes and in response to other salivary stimuli are especially important. Complete obstruction causes constant pain and swelling, pus may be seen draining from the duct and signs of systemic infection may also be present [2,3].

Bimanual palpation of the floor of the mouth, in a posterior to anterior direction, reveals a palpable stone in a large number of cases of calculi formation. Bimanual palpation of the gland itself can be useful, as a uniformly firm and hard gland suggests a hypo-functional or non-functional gland. Sialoliths tend to occur singly but multiple calculi have also been reported. A combination of local, mechanical and biochemical factors have been implicated in the etiology of minor salivary gland sialolithiasis[1].

The radiological evaluation includes plain radiography, ultrasound, conventional sialography and CT. Large, well-calcified stones can usually be recognized on a plain radiographic study. Sialography is, however, contraindicated in acute infection or in significant patient contrast allergy[8].

Small calculi can be treated by stimulating salivary flow, and these usually do not tend to recur. An iv antibiotic can be administered to prevent bacterial infection following persistent obstruction. Larger stones require surgical exposure for removal. Glend extirpation may also be required when present near or in the substance of the gland. Piezoelectric shock wave lithotripsy can also be used as an alternate mode[3].

Conclusion

Sialolithiasis is rare in the sublingual gland. The sublingual and the minor salivary glands account for only 2% of the total sialoliths reported. Presence of calculi throughout the length of the duct is a rarity still. The aforementioned case presents a rarity among sialoliths.

References

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Legends:

Fig. 1 Excised Salivary Gland
Fig. 2 Stereomicroscopic View Showing Calculi Throughout The Length Of The Duct.
Fig. 3 Photomicrograph Showing Mucous Acini(magnification X 10).
Fig. 4 Photomicrograph Of Decalcified Tissue Section Showing Calcified Mass Surrounded By Fibrous Stroma (magnification X 10)

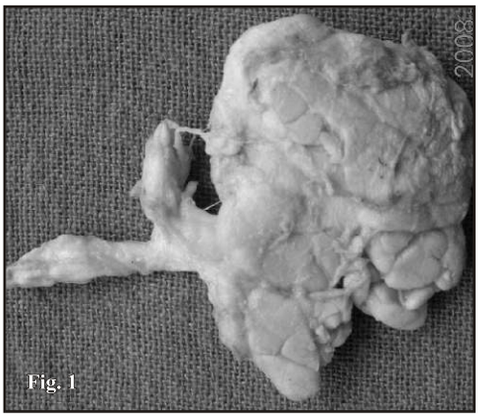

Fig. 1

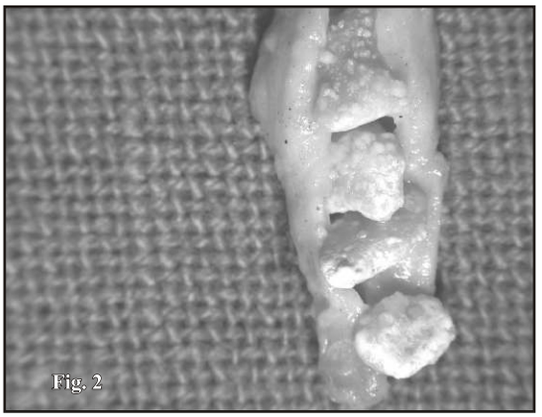
Fig. 2

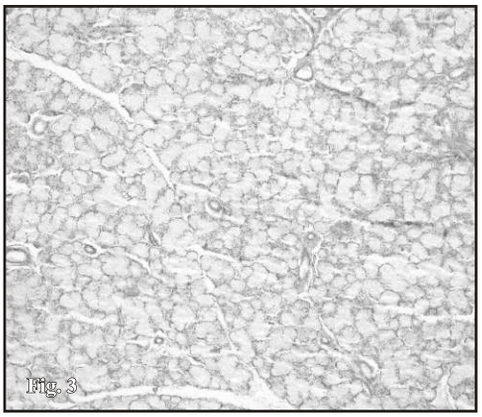
Fig. 3

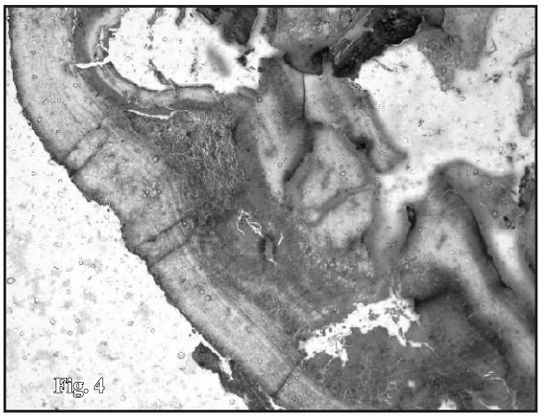
Fig. 4