An Unusual and Rare Presentation of Sialolith on Inferolateral Part of Soft Palate

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ABSTRACT

Sialolithiasis of minor salivary glands is, generally considered to be extremely rare, though it is the main pathology of all major salivary glands. The elementary lesion consists of a firm nodule located under the mucosal membrane on various sites of the oral cavity. The present case brings the unusual position of sialolith at the inferolateral part of the soft palate. It was then excised and sent for the histopathological examination that confirms the diagnosis of sialolith of palatal minor salivary gland, which is extremely rare in the scientific literature available so far.

Keywords: Saliva, Salivary gland, Sialolith, Sialolithiasis, Soft palate

INTRODUCTION

Sialolithiasis is a common pathological disease involving the major salivary glands and their ducts, they also found in accessory minor salivary glands. However, the presence of sialolith in palatal minor salivary glands is extremely rare. Only 2-3 cases have been reported in literature during 1970-1980. They are most often seen in the buccal mucosa and the upper lip of patients in the 5th, 6th, or 7th decade, but are rarely found in the lower lip and palate.¹ The authors found that clinicians usually failed to include calculi in the differential diagnosis and further, they concluded that minor salivary gland calculi are more common than generally believed. In contrast to other studies of calculi in major and minor salivary glands, the periphery of the stones was found to be less frequently lamellated and mineralized in later case.³

Anatomically, these salivary glands are small, unsheathed masses of secretory units opening in the oral cavity with small canaliculi. They are from 450 to 750 in number. The submandibular glands are by far the most prone to lithiasis (80-92%), followed by the parotid glands (6-19%), and finally by sublingual and accessory glands (2%),³ which represent only a small proportion of the affected glands as these are small, unsheathed mass of secretory units opening into the oral cavity with small canaliculi.³ Moreover as the clinical features related to it is not so typical so clinical misdiagnosis is possible.²

Sialolithiasis is a common disease of the major salivary glands and is caused by the formation of calcified masses that develop in the intra- or extra-glandular duct system. Sialoliths form as a result of mineralization of debris that has accumulated in the duct lumen.⁴ This debris may include mucous plugs, bacterial colonies, exfoliated ductal epithelial cells, foreign bodies, and so on. A sialolith is an apatite structure with condensations of calcium phosphate and calcium carbonate. Around the amorphous nucleus, laminar layers of organic and inorganic substances accumulate; their content varies within a single sialolith.⁴,⁵

It seems that sialolithiasis of accessory salivary gland affects men and women equally (58.3% and 41.7%,

Case Report
The prevalence is highest in the “over 40” age group (81.6% and 85.2%). Diagnosis occurs a long time after onset of sialolithiasis as remains asymptomatic. The most common locations are upper lip (49.2%), inner aspect of cheeks (37.3%), lower lip (5.5%), vestibule (4.7%), and palate and tongue (1.6%) and even on anterior tongue, ventral surface has been reported.

The etiology is not well understood. Two distinct phases seem to occur. An irritant triggers a neurohormonal response that triggers spasmodic contraction of the canaliculi and stasis of saliva. The irritant factors might be due to inflammation of the inner layer of the canaliculi, saliva acidosis, or hypoptyalism. All of these factors are often concomitant to saliva stasis. The second phase is physicochemical. The process leads to development of calculus.

A diagnosis of sialolith in the minor salivary glands cannot be ruled out if radiographs do not show the calculi, because many of them may be radio transparent. In addition, the calculus may also spontaneously avulse. When using radiograph, technicians should use a lowest setting so as to visualize the calculus in soft tissue, and the radiographic techniques has to be modified especially in the diagnosis of sialolith of palate, tongue, peritonsillar regions.

**CASE REPORT**

A 26-year-old male patient came to the Department of Oral And Maxillofacial Surgery with a chief complaint of difficulty in swallowing and on and off pain in throat region since 1 month. The patient gave the history of pain and swelling on same side around 1 year back which was diagnosed to be acute sialoadenitis of left submandibular gland for which he was given antibiotics and analgesics tablet augmentin 625 mg which is composed of amoxicillin and clavulanic acid, tablet diclofenac sodium, with multivitamins somewhere else, and patient was relieved. Presently, the presence of a firm swelling in the mucosal surface of soft palate was discovered on palpation during intraoral examination for which the patient stated that he had been aware of the swelling for few months but as it was painless, he did not bother about it. Throughout this period of time, the swelling had remained asymptomatic. The patient suffered pain and difficulty while swallowing. He also had a limitation of tongue movement as the mass would strike against the tongue while under function.

Clinical examination of the area concerned revealed a firm swelling in the mucosa on the inferior lateral border of the soft palate posteriorly. The mass, of around 0.8 cm. in diameter and 1.5 cm in length was palpated and is freely movable under inferolateral mucosa of soft palate left side (Figure 1). There was no surface erythema overlying the involved area.

To reach the diagnosis provisionally, some radiographs were taken to rule out the sialolithiasis present or associated with other major salivary glands as the patient was having the previous history of sialoadenitis. Occlusal radiograph and lateral oblique radiograph was taken, and it appeared normal ruling out the presence of sialolithiasis in the submandibular gland. Orthopantomogram X-ray was taken to reveal the sialolithiasis associated with parotid gland and was found to be normal.

As the nodular mass was palpated posteriorly on the soft palate, we took a soft tissue radiograph to find out about the calcified mass. To prevent the gag reflex lignocaine jelly was applied around the lateral wall of soft palate and an intraoral periapical radiograph was taken, which confirmed the presence of a calcified mass to be a sialolith of minor gland at left inferolateral part of soft palate (Figure 2).

The surgical site was prepared with 5% povidone iodine solution, and then transoral sialotomy was performed. For this a local anesthetic infiltration with 2% lignocaine with adrenaline 1:1,00,000 was given around periphery of mass, and then a small nick of around 5 mm was given from the nodular head, and mass was clamped with the help of small artery forcep and gradually the calcified mass was pulled out. Which was found to be oval in shape and hard in the consistency of around 0.5 cm in diameter and 1.7 cm in length (Figure 3). Post-operatively patient was advised antibiotics (tablet augmentin 625 mg twice daily, tablet metronidazole 400 mg thrice daily),
analgesics (tablet diclofenac sodium 50 mg thrice daily), multivitamin (tablet ascorbic acid 500 µg once daily) for 5 days and mouth wash 2% povidone iodine.

Calcified mass specimen was sent for the histopathological examination and it reveals that the periphery of the calcified mass exhibits a lamellated appearance with alternating eosinophilic and basophilic bands and with a more homogeneous central part, suggested the features to be a sialolith (Figure 4).

Regular follow-up after 3 days, 7 days, 1 month, 3 months, and 6 months was maintained, and we see that patient was relieved and the surgical site was healed properly without any post-operative recurrence and complications (Figure 5).

**DISCUSSION**

The sialolith of minor salivary glands diagnosis is done on the concept of an inflammatory process, which resolves either spontaneously or after antibiotic therapy lies on top of a small submucosal nodule. Such sialolith remains symptomless and thereby delay diagnosis. A firm diagnosis can be reached using radiographs. However, the diagnosis of sialolith cannot be ruled out if radiographs do not show the calculus, as half of them are radio transparent. In addition, the calculus may also spontaneously avulse. The radiographs are taken at low setting so as to see the calculus in the soft tissue.  

The development of sialoliths is a multifactorial event. Salivary dysfunction may be due to systemic disease or medications. Secretory disturbances, including viscous secretions, microlith formation, and ductal obstruction, may contribute to sialolith formation. Glycoprotein, one of the components of saliva, has a high calcium affinity. It contributes to the mineralization of the organic matrix supported by accumulation of calcium and a decrease in pH, which in turn decreases the solubility of calcium phosphates in saliva.

Sialoliths are composed of a central core of organic material and a layered cortex of mineral components.
An X-ray diffractometer showed that sialoliths consist mainly of 4 different calcium phosphates: (1) Hydroxyapatite \((\text{Ca}_10\text{(PO}_4)_6\text{(OH)}_2)\), (2) Brushite \((\text{CaHPO}_4\cdot2\text{H}_2\text{O})\), (3) Whitlockite \((\text{Ca}_2\text{Si}_2\text{O}_7\cdot2\text{H}_2\text{O})\), and (4) Octacalcium phosphate \((\text{Ca}_10\text{H}_2\text{(PO}_4)_6\cdot5\text{H}_2\text{O})\). The largest component of the mineral cortex is apatite. Brushite and whitlockite are located in different areas at the surface layer of cortex.\(^9\)

Salivary dysfunction may occur because of the local environmental, systemic disease, and/or medication. Ductal obstruction or salivary decrease may cause salivary stasis.\(^4\) Chronic sialoadenitis, inflammatory swelling, or gland injury may lead to ductal obstruction. Formation of mucous plugs within the duct after deposition of calcium salts may also cause ductal obstruction. Kasaboglu et al. indicated that a foreign body or micro-organism may act as a nucleus of the initial stone formation.\(^10\) Bacterial infection can cause the development of sialoliths through a decrease in salivary pH. It can cause increments in calcium phosphate super saturation, and the increase in organic matter can obstruct the salivary ducts. Another factor that contributes to the development of sialoliths is ductal epithelium metaplasia.\(^4,10\)

Kasaboglu et al. used a scanning electron microscope and X-ray diffraction to examine sialoliths. They found that the cross section from the surface to the inner part of the sialoliths contained no organic material. X-ray diffraction showed that the sialoliths were composed of hydroxyapatite crystals, but no organic cores were observed in the central parts of the sialoliths.\(^10\)

From our histologic findings, sialoliths had a concentric, laminated structure of alternating layers of inorganic substances. The acini surrounding the homogeneous sialoliths in the intraglandular region contained few inflammatory cells, whereas those surrounding the heterogeneous sialoliths contained abundant inflammatory cells. The ductal epithelium may constitute the nidus of stone formation.\(^4\)

The case just described is interesting because of its rare location. Of all the cases reported for minor salivary gland sialolith, very few have mentioned about the presence of sialolith at palatal glands. Our case, however, describes about the presence of a sialolith on the inferolateral part of the soft palate.

CONCLUSION

Sialolithiasis is a common pathological disease involving the major salivary glands and their ducts, they also found in accessory minor salivary glands. An awareness of this entity (sialolith of minor salivary gland) and certainty of its features can aid the clinician in the differential diagnosis of submucosal masses. For example, if one is confronted with a submucosal mass in regions containing minor salivary glands, the finding of a small, firm, nodule near the orifice of a minor salivary gland duct might suggest a sialolith and lead to the taking of a radiograph of the lesion. Radiographic findings suggestive of calcification would be meaningful, whereas negative findings would not rule out a sialolith since there may be a considerable variability in the degree of calcification of these stones. Because of the range of histologic findings reported, a thorough history and clinical description of the lesion should be sent to the pathologist along with the calcified material.

REFERENCES


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