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FOR THE OLD STONES IN THE DUCT; DO WE NEED A NEW GOLD STANDARD?

¹Sujatha Dyasanoor, ²Shweta Channavir Saddu, ³Beena Varma R, ³*Nidhin J. Valappila

¹Oxford Dental College, Bommanahalli, Bangalore, India

²Pandit Deendayal Upadhyay Dental College, Kegaon, Solapur, Maharashtra, India

³Royal Dental College, Chalissery, Palakkad, Kerala, India

*Correspondence author: nidhin.valappila@gmail.com

FOR THE OLD STONES IN THE DUCT; DO WE NEED A NEW GOLD STANDARD?**¹Sujatha Dyasanoor, ²Shweta Channavir Saddu, ³Beena Varma R, ³*Nidhin J. Valappila**¹Oxford Dental College, Bommanahalli, Bangalore, India²Pandit Deendayal Upadhyay Dental College, Kegaon, Solapur, Maharashtra, India³Royal Dental College, Chalissery, Palakkad, Kerala, India***Correspondence author:** nidhin.valappila@gmail.com**ABSTRACT:**

Sialolithiasis is not uncommon condition. Its historical roots can be laid back even to the writings of Oribasius. Over the years diagnostic and therapeutic modalities have changed. Currently there are many imaging modalities which can be used to detect sialolith and even 3D imaging is available. But for all practical purposes the conventional radiograph will suffice when the sialolith is in the anterior floor of the mouth.

Key words: Sialolith, sialadenitis, submandibular gland, sialolithiasis*Submitted: November 2014; Accepted: March 2015***INTRODUCTION:**

Sialolithiasis is a frequently encountered condition by dentist [1]. It finds its place even in the writings of Oribasius, who mentions it as a “calcareous concentrations in the mouth” and Alexander, a Roman physician describes it as “a stone spat by the patient from the mouth” [2]. Sometimes it may cause a diagnostic dilemma especially when it is small superficial and cause ulceration on the floor of the mouth. Variety of imaging modalities is available but old and time tested modalities are good enough

to identify and diagnose majority of the submandibular salivary calculi [3]. Availability of advanced imaging modalities is not condonable for their use especially when it involves financial burden and expendable radiation exposure to the patient.

Here we are presenting a series of case reports, some of which were diagnostic dilemma and all of which were diagnosed and managed by conventional methods.

PRESENTATION OF CASES:**CASE 1:**

A 51 years old female patient reported to outpatient department with a chief complaint of swelling in right submandibular region since 15 days. History revealed that the presence of recurrent swelling since 5-6 years which was managed symptomatically with analgesics. The pain characteristically increased during meal times only. The medical history was unremarkable. Extraoral examination revealed a palpable, firm and tender right submandibular salivary gland, while intraoral examination showed a unilateral hard swelling of right Wharton's duct with purulent discharge.

A diagnosis of chronic suppurative sialadenitis of right submandibular gland secondary to sialolithiasis was made based on the history given by the patient and the signs elicited by the clinician followed by a mandibular occlusal radiograph.

The patient was referred to oral surgery where the stone was removed by a transoral approach with a sharp dissection under local anesthesia. Antibiotics, analgesics and sialagogues were prescribed postoperatively and she was instructed to sip water regularly, application of moist heat and massage the gland to avoid recurrence. The stone measured about 9 mm in length. Subsequent follow up showed uneventful healing. (Figure 1)

CASE 2:

A male patient aged 40 years reported with complaint of pain in left submandibular region since 3 days. Patient gave history of recurrent swelling since 1 year which subsided on symptomatic management by local doctor. However from past 3 days patient was experiencing similar swelling which aggravated on eating/swallowing and subsided during rest of the day. Examination revealed palpable, non-tender swelling in left submandibular region extra orally whereas a diffuse, hard intraoral swelling was seen in left floor of the mouth. Overlying mucosa was smooth and erythematous. The left Wharton's duct opening was inflamed with pus discharge on bimanual palpation. A diagnosis of chronic suppurative sialadenitis of left submandibular gland secondary to sialolithiasis was made. Occlusal radiograph showed an oval shaped homogenous radiopaque mass measuring about 15mm x 10 mm in the left floor of the mouth. The patient was managed similarly as in case 1 and postsurgical instructions were given to avoid recurrence. (Figure 2)

CASE 3:

A male patient of 45 years of age reported with a chief complaint of pain in left floor of the mouth and difficulty in swallowing since 10 days. The pain was intermittent, dull aching which got worse during meal time and also a white mass under the tongue in the floor of mouth since three days. On examination a

diffuse, firm and tender swelling was detected in the left submandibular gland region with a white tooth like structure protruding through the mucosa in posterior floor of the mouth intraorally. Salivary flow was clear. Based on history and examination provisional diagnosis of sialo-oral fistula secondary to submandibular sialolithiasis was given. Lateral oblique view of left mandibular body and OPG (Orthopantomogram) revealed well defined oval shaped homogenous radiopacity measuring about 22mm x 12mm in relation to periapex of 38 extending to the inferior cortex of mandible. The stone was removed surgically with uneventful healing recorded in regular follow up. (Figure 3)

CASE 4:

A 32 year old male patient reported in our department with a chief complaint of ulcer and pain in floor of mouth since 2 weeks. Pain increased while having food. Patient had already consulted a dentist for the same problem and it was diagnosed as non-healing ulcer and patient was under treatment for ulcer. Failure to obtain any improvement in the condition after the treatment was the reason for the patient to visit our department. Intraorally there was a tender ulcer at the ductal opening

with pus discharge from the duct. Mandibular occlusal radiograph was taken which revealed homogenous radiopaque mass in right side of film which was diagnosed as sialolith. The salivary gland stone was removed surgically and healing was uneventful in follow up. (Figure 4)

DISCUSSION:

According to the literature sialolithiasis is one of the commonest of all non-neoplastic salivary gland disorders [1]. The incidence is about 1.0 % globally and age of occurrence ranges from 40 to 60 years, which is consistent with all our cases [4]. The findings in the four cases presented in this report are consistent with the available literature [1].

There is no consensus regarding the aetiology of sialolith, the suggested causes being viscosity of saliva and stasis of saliva in the duct, especially in the submandibular duct whose anatomy, composition and tortuous duct predisposes stasis [5]. The areas where the duct arcs around mylohyoid muscle and near the ductal openings are more predisposed to develop salivary stone. The starting point may be a nidus to which the above mentioned factors may act as additional contributors [6].

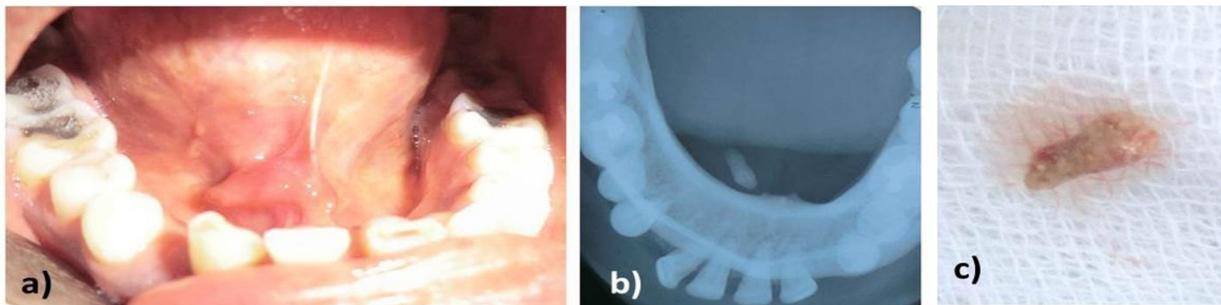


Figure 1: a) Right submandibular sialolithiasis in Wharton's duct, b) Occlusal radiograph showing typical radiographic appearance of stone in the submandibular duct, c) 9mm sialolith

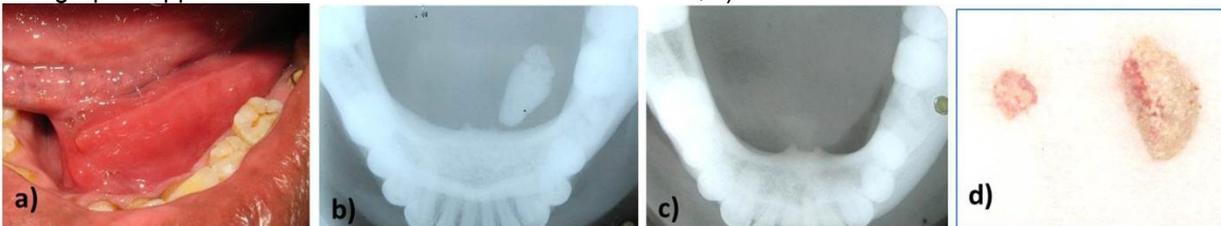


Figure 2: a) Left submandibular sialolithiasis in Wharton's duct, b) Occlusal radiograph showing radiopaque calculi in left floor of mouth, c) Sialolith measuring 15mm x 10mm, d) postoperative occlusal radiograph



Figure 3: a) Sialolith perforating through the oral mucosa, b) OPG showing radiopaque calculi superimposing over periapex of 38, c) Lateral oblique radiograph showing calculi, d) Sialolith measuring 22mm x 12mm.



Figure 4: a) Submandibular sialolithiasis in right Wharton's duct mimicking as an ulcer, b) Occlusal radiograph showing calcified stone in the submandibular duct, c) Postoperative picture showing complete healing.

The average size of the sialolith in our case series is 11.4mm ranging between 5-22mm, two of which were fairly large, one measuring about 15 mm and another around 22mm. As per

literature the average size of salivary stone is around 7mm and those more than 10 mm could be considered as unusually large [7]. In this respect two of our cases can be considered as unusually large [7].

The tendency for a sialolith to become bigger in size depends on how the disturbed duct reacts to the change. The symptoms start only when the stone grows beyond the dilating capacity of the duct and becomes symptomatic when the free flow is obstructed. When the size of sialolith increases it may cause sialooral fistula formation as was seen in Case 3.

The diagnosis of sialolith is essentially multifactorial with a thorough history, clinical examination and usage of appropriate radiographs. Reduction in salivary flow from the affected gland may be present but the classic pathognomic symptom is pain and swelling before or during meals [8]. An obstruction in the duct can cause backward flow of bacteria into the gland parenchyma causing purulent discharge from the duct, increased leucocyte count and other systemic signs [8]. Bimanual palpation in the floor of the mouth can reveal superficial stones in the Wharton's duct. More than 85% of stones in the submandibular glands are radiopaque which can be easily diagnosed using mandibular occlusal radiographs with less exposure and/or processing may reveal deep seated and even partially calcified stones [9].

Other advanced imaging modalities like ultrasonography can be considered only when the calculi are hypomineralised and not visible in conventional radiographs. Cone beam computed tomography may be good to have a 3D visualization, but other factors like increased radiation and expense to the patient

do not make it the first choice [3]. Currently digital sialography and subtraction sialography are considered to be standard procedures [10].

The treatment of sialoliths is decided by factors like size and location of stone and symptoms of the patient. For a small stone just squeezing with fingers or use of a sialagogue may be sufficient to eject it out, whereas surgical removal may be needed depending on size and location with or without antibiotics based on presence or absence of infection [11].

The latest treatment option for sialolith includes sialendoscopy which can be used for smaller size sialolith removal with minimal trauma and damage. In case of larger sized stone disintegration of stone can be done before sialendoscopy using lithotripsy. Conventional treatment modality for larger stone is open surgery with submandibular gland removal [12]. All the four cases in our present study were managed surgically and got total relief from symptoms after surgery. Post-surgical follow up and evaluation showed normal clear saliva from the ducts.

The ability to regain the normal function and flow of saliva from salivary gland depends on the position of stone in duct or inside the gland. Almost normal functioning of salivary gland can be achieved if stone is removed from the duct. The damage to the gland increases when the stone is placed inside or more proximal to the gland [13]. As there was a good recovery of the gland in all 4 cases, it made us to conclude that conservative approach as a treatment modality

should be the first consideration. Proper case selection and treatment planning play the key role in achieving good results and help in maintaining the normal functioning of the gland.

CONCLUSION:

In the present case series all four cases of submandibular sialolithiasis were diagnosed using clinical and radiographic findings and managed with no postoperative complications. As an oral physician there should be sufficient awareness about distinctive presentation of sialolithiasis which helps in early diagnosis and treatment, thus can prevent or reduces the associated morbidity. Although various advanced diagnostic aids and treatment modalities are available in the management of sialoliths, the conventional techniques still preserves their place even in the current era.

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