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Infected Sialolithiasis- A Case Report

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ABSTRACT

Our study aim is to characterize and assess the case of infected sub mandibular sialolithiasis in a patient who developed mild swelling and pain in the right submandibular region. An 40year old male patient with the complaint of mild swelling and pain in the right mandibular region for past 1month. Patient noticed mild swelling which appeared behind his chin for past 3 weeks specifically after meal time which eventually subsides within 3-4 hrs. Patient had no significance family and medical history. A single well defined swelling present in the right side floor of mouth. The right side submandibular duct opening was erythematous with no evident pus discharge. On bimanual palpation it was mildly tender and mobile with significant pus discharge.

*Occlusal radiograph revealed radio-opaque mass which is oval to round in shape with each measuring 1*1 cm in size on the right submandibular region which confirmed the diagnosis of sub mandibular sialolithiasis which is secondarily infected. Patient was prescribed antibiotics and referred for surgical removal of the sialolith.*

Keywords: Submandibular sialolithiasis, Painful swelling, Micro-obstruction, Secondary infection, Antibiotics

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INTRODUCTION

The development of calcific concretions inside the ductal system of a large or small salivary gland is known as sialolithiasis. After mumps, it is the second most prevalent condition affecting the salivary glands. Between the ages of 30 and 50, the incidence peaks. Men experience it twice as frequently as women do. With a frequency of 80% for salivary stones, the submandibular gland is the salivary gland that is most frequently affected. Based on its anatomical position, the submandibular sialolith can be divided into intra-glandular and extra-glandular categories. The extra-glandular sialoliths are further divided into two groups: anterior sialoliths, which are located anterior to the line connecting the mesial surfaces of the mandibular second molars, and posterior sialoliths, which are located in the duct behind this line up to the extra-glandular section [1].

The submandibular gland, a significant salivary gland, has a broad surface part and tiny, deep lobes that join at the posterior border of the mylohyoid muscle at the angle of the jaw. It is a mixed, primarily mucous gland. The deep portion of the gland from the floor of the mouth rises along the lateral side of the frenulum linguae, and here is where the submandibular duct originates. Because Wharton's duct is located in the lower part of the oral cavity, oral bacteria can infect the gland retrograde. The submandibular gland's saliva has an alkaline pH, which might cause calcium salts to develop. Sialolithiasis's true cause is unclear. Clinically, the calculi often present as yellowish, oblong, or spherical lumps [2].

Case Report

A 40year old male patient came with the complaint of mild swelling and pain in the right mandibular region for past 1month. Patient noticed mild swelling which appeared behind his chin for past 3 weeks specifically after meal time which eventually subsides within 3-4 hours figure 1. Patient had no significance family and medical history. On intra oral examination generalized attrition present and generalized recession present. A single well defined swelling approximately 1*2 cm in size present in the right side floor of mouth figure 2. The right side submandibular duct opening was erythematous with no evident pus discharge. On bimanual palpation it was mildly tender and mobile with significant pus discharge figure 3.

Investigation: An occlusal radiograph was planned and taken which reveal two radiopaque mass which is oval to round in shape with each measuring 1*1 cm in size on the right submandibular region which confirmed

Figure 1: Mild swelling in the right swelling in mandibular region.

Figure 2: single well- defined right floor of mouth.

Figure 3: significant pus discharge on bimanual palpation confirming secondary infection.

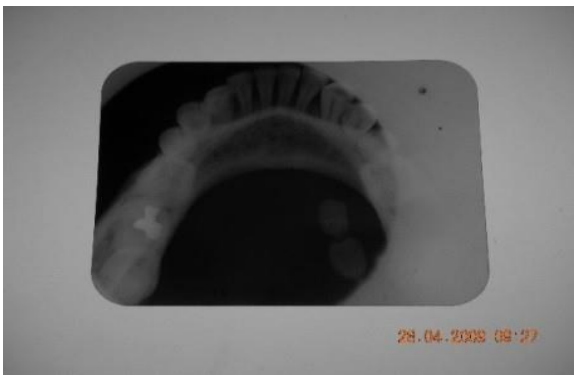

Figure 4: occlusal radiograph revealing two radio-opaque mass in the Right submandibular region

the diagnosis of sub mandibular sialolithiasis which is secondarily infected Figure 4.

DISCUSSION

Due to the very low prevalence of the condition, which makes substantial studies challenging, the etiology of salivary stone development is still mysterious, and research into etiologic variables is still mostly limited. Salivary stone-forming factors may be categorized into two main categories: compositional (such as increased calcium content or altered enzyme activity) and anatomical (such as duct stenosis or inflammation), which impact saliva generation or flow.

Sialolithiasis is most prevalent between the ages of 40-50 years. Individuals with parotid stones seem to be somewhat older on average than individuals with submandibular stones. In contrast to the parotid gland, which is only impacted by 4 to 28% of patients, the submandibular gland is afflicted in 72 to 95% of instances. 80–90% of submandibular stones are found in the duct, with 34% of them in the distal duct and 57% in the hilum. The gland alone contains 10% of the submandibular stones. Submandibular gland-specific innate variables that favor the production of stones include: Larger and longer ducts, slower flow rate from antigravity flow of saliva caused by angulation of the mylohyoid muscle [3].

A salivary gland contains a minute concretion called a sialomicrolith. These concretions are made up of calcium and phosphorus crystals, granular organic secretory material, and necrotic cell remains. Nearly all of the normal submandibular glands as well as 10–20% of the normal parotid glands exhibit serous acinar cells, striated ductal cells, lumen, and interstitium that have been shown to contain sialomicroliths. The finding that sialomicroliths were more commonly discovered in the submandibular gland may be related to the glands' increased calcium content. The size of micro calculi varies depending on where they are found; sialomicroliths can be up to 25 m intracellularly, up to 70 m in the acinar lumen and up to 35 m interstitially. Sialomicrolith occurrence is correlated with patient age, with patients 40 years of age or older having a higher incidence of sialomicrolith production in the intra glandular duct system of the submandibular gland. Sialomicrolith production is also enhanced when a normal salivary gland is not secreting.

The salivary calculi can occasionally get affected, causing local micro obstruction. Chronic sialendenitis and atrophic foci may result from this micro obstruction. These tiny impediments could group together to form a stone in the saliva. Microorganisms have been found in the middle and periphery of sialoliths, mostly oral commensal bacteria like Streptococcus or Pepto streptococcus species. Infected salivary gland calculi were observed to have a thick buildup of filamentous and rod-shaped bacteria with a diameter of 0.5–1 m on their exterior surfaces [4]. This patient had pus discharge on bimanual palpation suggestive of secondary infection. For this patient, an occlusal radiograph was planned and taken which reveal two radio-opaque mass which is

oval to round in shape with each measuring 1*1 cm in size on the right submandibular region which confirmed the diagnosis of sub mandibular sialolithiasis which is secondarily infected.

There are several ways frequently done to diagnose sialolithiasis using a variety of instruments and research techniques. The diagnostic screening performance of both panoramic and occlusal radiography approaches has been shown to be good. 20% of sialoliths have inadequate calcification, rendering them invisible on 2D radiographs. Moreover, the mandible's body may become so radiographically faint due to the deposition of a radiopaque sialolith on it. The diagnosis of sialolithiasis has been reported to be successfully confirmed by high frequency ultrasound examination (US). The structures of the skull are imaged using reconstructed conventional CT, volume rendering, or 3D computed radiography (3D-CT). These treatments have the drawback of only providing a relatively modest radiation absorption dosage (50 mSv), which is not recommended for use on pregnant patients [5]. The sialolith in the current example had radiologic characteristics like a radiolucent core and an outside radiopaque region, which was consistent with the allusion of having a matrix on which calcium is deposited. However, certain stones could be radiolucent and difficult to see on an X-ray, although both computed tomography and ultrasonography can see both radiopaque and radiolucent calculi. CT scans or sialography may be useful to further identify these conditions as extra ductal. By cannulating either Wharton's duct or Stensen's duct, sialography is conducted by slowly infusing radiopaque dye into the intraductal system. The dye is filled retrograde into the duct and gland. To reduce the interference of nearby bone structures, plain radiographs are acquired either conventionally or through digital subtraction [6].

Sialolithiasis can manifest as painful swelling (59%) or as swelling without discomfort (29%), or as only pain (12%). Patients will have spasmodic aches during eating and recurring salivary colic. The patient might develop abscesses as well as recurrent infections. Salivary stones can also be unintentionally found on dental radiographs or during a normal checkup. Naturally, not every patient with stones may experience symptoms. This is dependent on how much the salivary outflow is restricted of people with a disease of the salivary glands; this patient had mild swelling and pain in the right sub mandibular region which aggravated on eating.

For these patient antibiotics was prescribed and was referred for surgical removal of the sialolith. The currently recommended therapies for the management of sialolithiasis are as follows:

A medication that combines an antibiotic (only in cases of infection or invasive therapy, amoxicillin or macrolide) with an antispasmodic (increases the width of the ostium facilitating canal drainage).

Extracorporeal lithotripsy, which involves fragmenting the calculus with ultrasound or laser pulses; - Surgical therapy using an intra- or extra-oral approach: removal of the calculus or the gland itself.

Sialendoscopy, which uses a camera and a basket probe to locate and remove the stone.

Gland massage and sialagogues, which increase saliva production [7].

The intra- or extra-oral approach is based on the clinical examination. It is generally accepted that the intra-oral approach is done when the sialolithiasis is present anteriorly

Differential diagnosis: are Mandibular torus, Osteoma, Calcified lymph nodes Phlebitis and other vascular calcifications, Tuberculosis of lymph nodes or of the salivary gland itself, calcified atherosclerotic plaques in major blood vessels, Myositis ossificans, Metastasis from distinct calcifying neoplasms.

Management of sialolithiasis: The criteria for management of sialolith depends if it is palpable or non- palpable and the location weather it is anteriorly or posteriorly located. Surgical treatment is done for palpable anterior and palpable wide posterior calculi, Sialendoscopy for small [>4mm] posterior calculi and anterior and posterior non- palpable salivary calculi. Sub mandibulectomy is done when the sialolith is present in the hilum of the gland [8].

CONCLUSION

Sialolithiasis is one of the most common diseases of salivary gland which lead to micro-obstruction of the saliva flow and can cause secondary infection; it is mostly diagnosed with the help of occlusal radiograph. Surgical removal of the calculi can be done in majority of cases.

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