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Giant Submandibular Ductal Sialolith – A Case Report

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Abstract

Sialolithiasis is one of the prevalent conditions affecting the salivary glands, that occurs when a calculus causes a blockage in a salivary gland or its duct. Sialolithiasis accounts for more than 50% of the major salivary gland diseases. These are deposits that obstruct the ducts or parenchyma of the major or minor salivary glands. Giant sialoliths are salivary stones that are larger than 15 mm.

Keywords: Sialolithiasis; salivary gland disorder; Submandibular gland; sialolith

Introduction

Sialolithiasis is the second most frequent salivary gland disorder. It is defined by a calculus or sialolith obstructing the salivary gland or its excretory duct, leading to swelling, discomfort, and infection of the affected gland.(1)

Sialolith can occur in any of the salivary glands in the head and neck region, with the submandibular gland (80–92%) being the most usually afflicted. Stones have been documented to occur in the parotid gland in 6–20% of instances, as well as the sublingual and minor salivary glands in 1–2% of cases. Only about 3% of patients suffer from bilateral or multiple-gland sialolithiasis. Calculi may be found in various locations along the salivary duct and gland in circumstances where there are many stones.(2) Sialolithiasis is most common in people between the ages of 30 and 60 years. Only 3% of all instances of sialolithiasis have been recorded in the paediatric population. Males are twice as likely to be afflicted as females.(3)

Case Report –

A 42-year-old female patient had reported with the chief complaint of swelling on the floor of the mouth on the left side since 1 year and associated with pain since 8 days. Swelling was gradual in onset, slowly progressing, initially smaller in size and progressed to the present size and is associated with pain. Pain was sudden in onset, gradually progressed, continuous in nature, dull aching type, radiating to left cheek and neck region, moderate in intensity, aggravates during chewing food and relives on its own. There was no significant medical, dental and family history.

Intra oral examination revealed a solitary swelling on the left floor of the mouth, roughly oval in shape, measuring 3X2 cm in greatest diameter, with well-defined borders, mucosa over the swelling was stretched and appeared erythematous, extending anteroposteriorly from lingual frenum of tongue to the left 2nd premolar and mediolaterally from lingual vestibule to above mentioned teeth, with inflamed

submandibular ductal opening. On palpation all inspectory findings are confirmed, swelling was tender on palpation, firm to hard in consistency and mobile. (Figure 1)

Based on history and clinical findings a provisional diagnosis of Benign swelling on floor of the mouth was given with differential diagnosis being Submandibular Ductal Sialolithiasis, Submandibular Sialadenitis, Sialodochitis and Benign neoplasm originating from salivary gland.

OPG radiograph revealed a solitary dense radiopacity lying obliquely on the left mandibular alveolar ridge and body which is overlapped by teeth in relation to 33 to 36. The radiopacity measures Antero posteriorly 2cm in length and superior inferiorly 1cm with well defined borders and its internal structure is homogenously radiopaque and the radiodensity is more than the radiopacity of the adjacent bone.(Figure 2) The mandibular occlusal radiograph revealed a single ovoid radiopacity extending from 35 tooth to the distal aspect 37 tooth. (Figure 3)

CBCT – 3D reconstruction image showing radio dense structure present on the medial aspect of the mandible. Axial and Coronal sections defines the length and width of radio dense structure. Sagittal section showing the obliquely lying radio dense mass on the medial aspect of mandible. (Figure 4)

On the basis of clinical and radiological findings, diagnoses of the left submandibular ductal sialolithiasis was made. Excisional biopsy was done and the tissue was sent for histopathology examination.The specimen macroscopically appeared as Hard tissue mass measuring approximately 2 x 0.3 x 0.3 cm in size, yellowish to greyish in color and hard in consistency. Tissue was decalcified, routinely processed and stained with Haematoxylin and Eosin stain (Fig 5). Microscopy it showed Haematoxylin and eosin stained Sections from the submitted hard tissue specimen under 10x magnification reveal the presence of lamellar pattern of calcifications (Fig 6).

The clinical findings, Radiographic appearance and the histopathological features are suggestive of Giant Submandibular Ductal Sialolith on the Left side.

Figure 1 - swelling in left floor of the mouth

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Figure 2 – OPG showing radiopaque structure on the left alveolar ridge and body

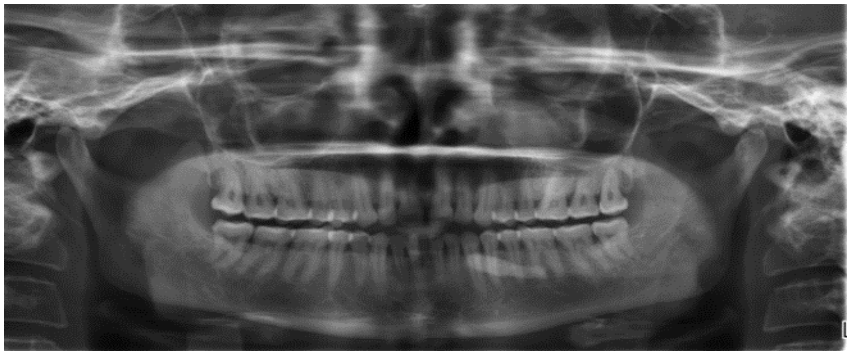

Figure 3 - Mandibular Crosssectional occlusal radiograph showing Radiopacity on medial aspect of mandible on left side

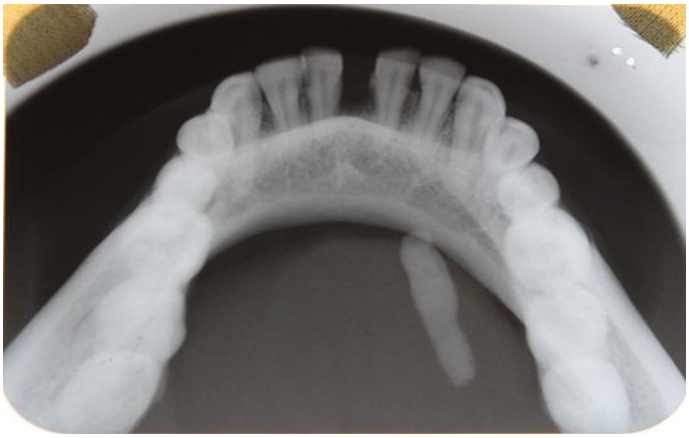

Figure 4 – Axial, Coronal, Sagittal and 3D CBCT reconstructions showing the sialolith

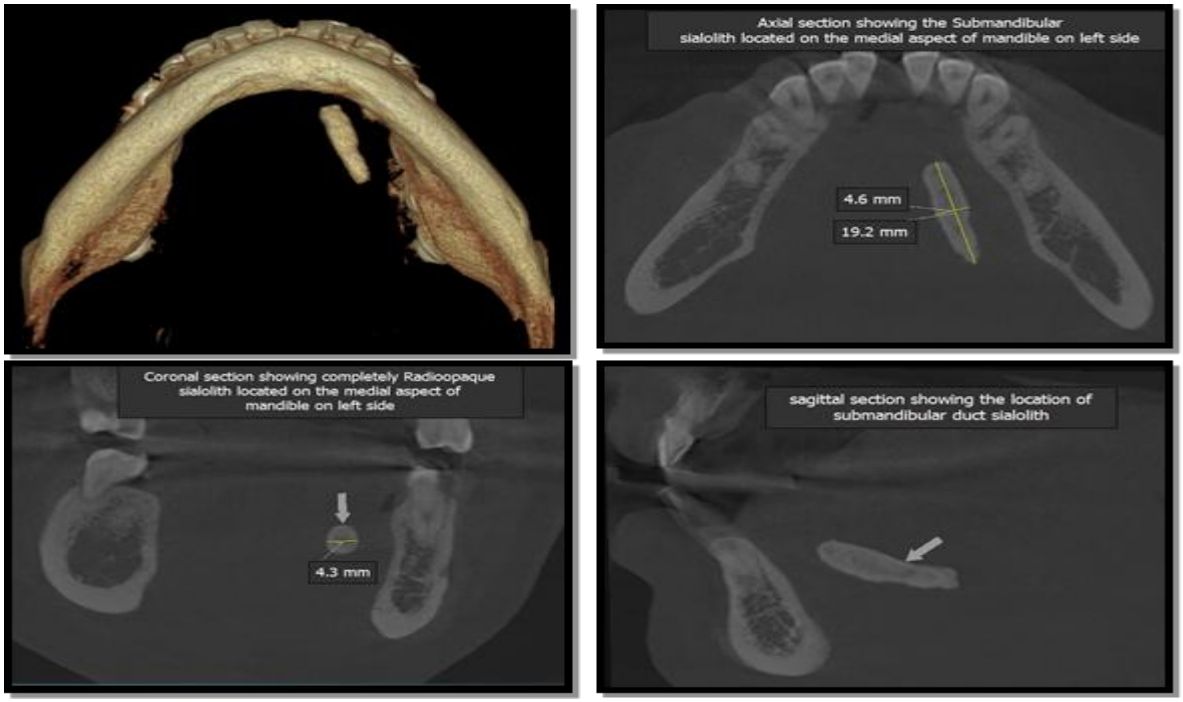

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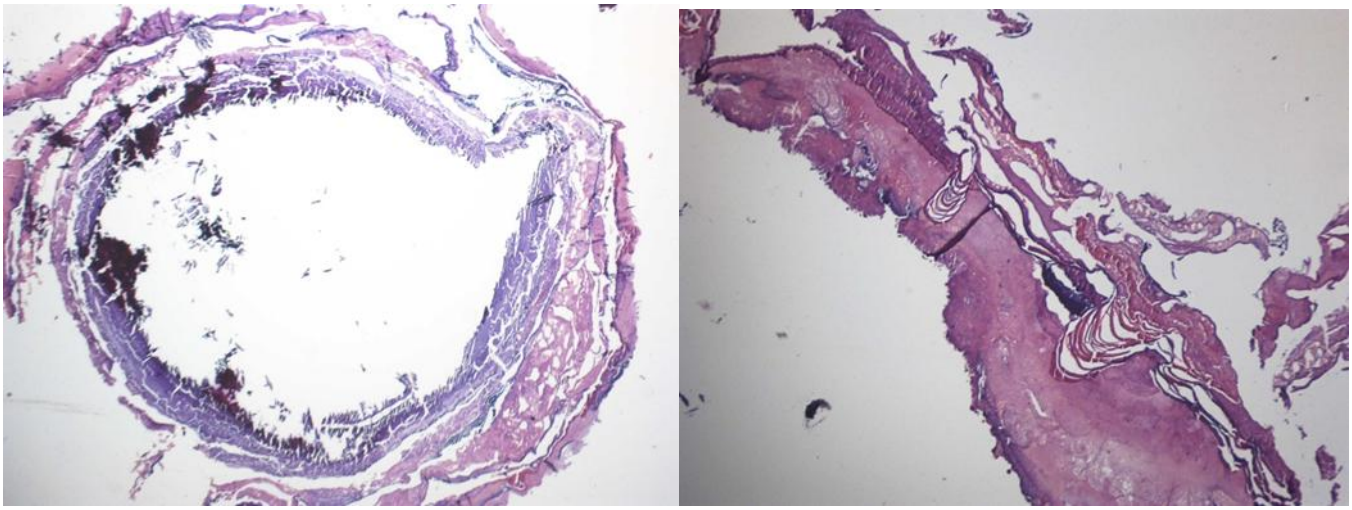
Figure 5 – Macroscopy - Hard tissue mass was measuring approximately 2 x 0.3 x 0.3 cm in size, yellowish to greyish in color and hard in consistency. Tissue was decalcified, routinely processed and stained with Haematoxylin and Eosin stain

Figure 6 - Microscopy - Haematoxylin and eosin stained Sections from the submitted hard tissue specimen under10x magnification reveal the presence of lamellar pattern of calcifications



Discussion

Sialolithiasis is a benign lesion in which sialolith grow in any of three primary salivary glands: parotid, submandibular, and sublingual glands. With a reported prevalence of 1 in 10000 to 1 in 30000, it is the most common cause of salivary gland enlargement.(4) Sialoliths are calcium salt condensations, primarily in the form of hydroxyapatite, with minor amounts of magnesium carbonate and ammonium. The majority of sialoliths have a maximum diameter of 5 mm, and any stones larger than 10 mm should be reported as a sialolith of remarkable size. Furthermore, if any dimension surpasses 15 mm, they are regarded as giant. (3)

The specific cause of salivary stones is unknown, and several theories have been proposed. The aggregation of sialomicroliths, anatomical alterations of the salivary ducts, and a change in the biochemical makeup of saliva are among the hypotheses. Salivary stasis, or a reduction in salivary flow, is thought to contribute to calcium precipitation.(5)

In most cases, sialolithiasis is asymptomatic. The collection of saliva due to a blockage of the lumen of Wharton's duct by a salivary calculus causes pain and swelling of the affected gland. The ascent of germs

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into the gland's parenchyma can cause recurrent infections.(3) Around 60% of parotid stones and 30% of submandibular stones will be found distally in their ducts. These stones may be seen on inspection of the oral cavity if they are large enough. Visual examination of salivary stones reveals an oval or circular shape with a white or yellow tint. The stones are frequently perceptible along the anatomic course of the afflicted salivary duct or gland, even if they are not visible.(6)

The size and weight of salivary stones varies. The diameter of sialoliths varies between 2.1 and 10 mm, with just 7.6% exceeding 15 mm. Submandibular stones are more common than parotid stones. Predilection for the submandibular gland and duct may result from gravity and the fact that the oral terminus is superior to the gland. Sialoliths typically weigh 300 mg and range in size from 1 mg to 5 grammes.(7)

Clinical characteristics and radiography have traditionally been used to diagnose sialoliths, while newer, more advanced techniques are now available. A conventional mandibular occlusal radiograph is recommended for visualising radiopaque stones. Because some salivary stones are hypomineralized and superimposed by other radiodense tissues, they cannot be seen with a conventional radiograph. Other advanced imaging modalities, including as sialography, ultrasound, scintigraphy, and computed tomography, should be examined in these instances.(8)CBCT one of the recent advancement in the head and neck imaging can be more advantageous than the conventional CT.

Conservative methods, such as salivary gland massage, nonsteroidal anti-inflammatory medications (NSAIDs), and sialogogues, should be used to treat sialolithiasis. Infection symptoms such as cervical adenopathy, purulent discharge from the salivary ducts, or erythema surrounding the salivary ducts indicate that antibiotic therapy is required.(9)

Endoscopy should be used to treat mobile submandibular stones that are smaller than 5 mm in size and found inside the distal duct. Transoral duct slitting should be used to treat impacted submandibular stones within the distal duct and stones larger than 5 mm. Stones in the proximal duct or hilar area that are 5 to 7 mm in diameter should be treated endoscopically first. The next option is a transoral surgical procedure if this fails or the stone gets affected.(10)

Sialolithiasis has a good prognosis, and the majority of patients can be treated conservatively with sialogogues and nonsteroidal anti-inflammatory drugs (NSAIDs). When compared to traditional surgical approaches, the minimally invasive procedures offer great success rates with minimum morbidity. With modern treatment procedures, sialadenectomy for sialolithiasis is rarely necessary.(11)

Sialoliths should always be investigated in cases of submandibular and face pain, especially when it occurs during meals. To confirm the clinical diagnosis and specify the precise location of the calcification, a thorough history and proper imaging techniques are required**.** Occlusal radiographs are still effective in diagnosing sialoliths, even though more modern and efficient procedures are available. Small stones can be handled conservatively, but if newer technologies are unavailable, Sialolithotomy with antibiotics is the preferred therapy for bigger stones.

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