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Case Report

Diagnostic imaging of a huge salivary gland calculi

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ABSTRACT

A 30 year old female patient reported to the Department with a swelling and mild discomfort in the right check region for two weeks. Clinical examination and three-dimensional computed tomography images revealed submandibular calculi on the right side. Early diagnosis by correlating clinical and imaging features is paramount in the management of such patients.

Key Messages: Importance of diagnostic imaging in the diagnosis of submandibular gland calculi

1. Introduction

Sialolithiasis is one of the most prevalent disorders of the salivary glands in middle-aged people, affecting 12 out of every 1000 adults.[1] The submandibular glands (up to 90% of cases) and parotid glands are the most prevalent sites for salivary stones (5 to 20 percent). The minor salivary glands and the sublingual gland are rarely affected. Salivary gland stones can occur at any age, although they are most frequent between the ages of 30 and 60 with males affected more than females.[2] The diagnosis of salivary gland arrived by a correlation of clinical findings with imaging features. This case highlights the importance of imaging in arriving at a diagnosis and the ignorance of the patients in disease progression.

2. Case History

A 30year-old female presented to the Department of Oral Medicine and Radiology with a chief complaint of swelling and mild discomfort in the right cheek region for two weeks. She had consulted a general physician for the same and had taken antibiotics for three days following which the swelling was reduced and no other symptoms were present.

No apparent facial asymmetry was found on extra-oral inspection. On intraoral examination, a firm mass of approximately size 1.5 *2 cm was noted on the right floor of the mouth extending from the distal aspect of first premolar to first molar region with mild tenderness.

A 5*10 CBCT scan was performed, and it shows a roughly ovoid hyperdensity noted on the right submandibular region concerning to the distal aspect of first premolar to first molar region measuring approximately 11.1*6.8mm in the axial section, 9.8*5.9mm in the coronal section, and 10.1*11.6mm in the sagittal section in its greatest dimension.

3. Discussion

Sialolithiasis is often accompanied by recurrent episodes of pain and swelling in the involved salivary gland. The pain and swelling are usually associated while eating. In the present case, the patient had no history of pain or reduced salivation. Because salivary duct calculi are usually symptomatic, patients frequently seek medical attention long before their calculi become large.

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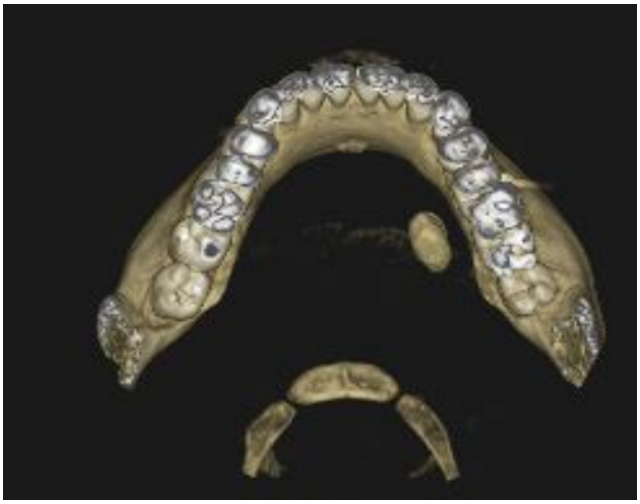

Fig. 1: 3D image

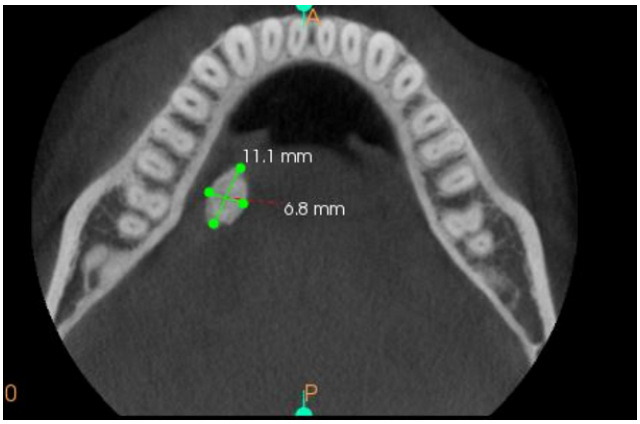

Fig. 2: Axial section

Fig. 3: Diffuse swelling on the right side extending from the distal aspect of the first premolar to the first molar region

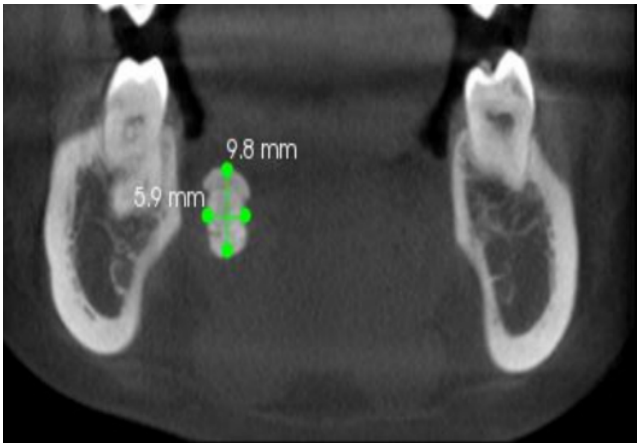

Fig. 4: Coronal section

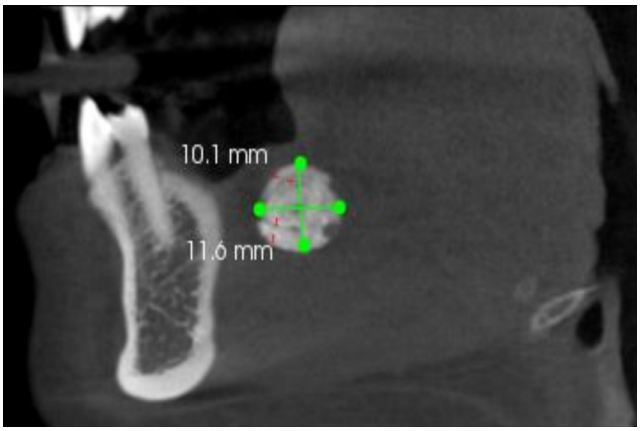

Fig. 5: Sagittal section

Salivary calculi are thought to form as a consequence of mineral salts forming around a nidus of bacteria, mucus, or desquamated cells.[3] Salivary stagnation, increased alkalinity, increased calcium content, infection or inflammation of the salivary duct or gland, and physical damage to the salivary duct or gland are all factors that can contribute to the development of calculus. Because its saliva is considerably more alkaline and has a higher quantity of calcium and phosphate, the submandibular gland is vulnerable. The mucus content of the submandibular gland is greater than that of the saliva of the parotid and sublingual glands.[4]

The algorithm for imaging the salivary glands depends on the clinical scenario with which the patient presents to the clinician. Copious specialized modalities have popped up so far including contrast CT, ultrasonography, sialendoscopy, and CBCT. MRI is superior to all modalities to visualize the soft tissue structures. The sensitivity and specificity for CBCT are superior and are comparable to the most favorable results for 3D imaging modalities such as medical CT and MRI sialography.[5] In the present case, we

used CBCT for the diagnosis of sialoliths and identify their location.

The role of CBCT in the diagnosis of salivary stones has received little research attention. A retrospective study by Dreiseidler et al. assessed a series of 29 CBCT showing salivary calculi.[6] Schwarz et al. performed a retrospective comparison of the Ultrasound and CBCT data of a cohort of 43 patients with suspected sialolithiasis and concluded that CBCT is capable of diagnosing sialoliths in general and that CBCT tends to be more sensitive than sonography, but must be critically evaluated in terms of radiation exposure.[7,8]

Combining CBCT with sialography, which includes injecting a radio-opaque contrast agent into the gland's ductal system before imaging, improves diagnostic value by allowing visualization of the ductal system. CBCT has recently been used by certain researchers as an imaging technique for sialography, and it promises to be a useful diagnostic tool for the visualization of the intraglandular ductal system.

4. Conclusion

Although a variety of diagnostic tests are used to detect submandibular salivary calculi due to high accuracy combined with low costs, good availability, and limited radiation exposure makes CBCT an ideal first-line imaging modality for patients with signs and symptoms of obstructed major salivary glands. The additional use of a contrast medium would enable visualization of the ductal system with high accuracy.

5. Source of Funding

None.

6. Conflict of Interest

None.

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