

# Giant Sialolith of Submandibular Gland: A Case Report

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## Abstract:

Sialoliths are common in submandibular salivary gland duct and rarely do they occur in the submandibular gland proper. Very rarely the stones within the gland achieve a gigantiform size, imposing difficulty for the oral physician to differentiate it from a calcified submandibular lymphnode. Fine Needle Aspiration Cytology, computed tomography and ultrasonography provides additional information in such instances. Here we report a case of giant sialolith in the submandibular gland.

**Keywords:** Computed Tomography, Giant Sialolith, Submandibular Gland.

## Introduction

Sialolithiasis is one of the most common diseases of salivary glands.<sup>1-3</sup> More than 80% of the sialoliths occur in the submandibular gland or its duct, 6% in the parotid gland and 2% in the sublingual gland or minor salivary glands. Simultaneous lithiasis in more than one salivary gland is rare, occurring in fewer than 3% of cases. The submandibular gland hosts the largest stones with the largest reported one being 6 cm in length.<sup>3</sup> Most submandibular stones are found in the salivary ducts. Factors tend to favor submandibular gland stone formation are the longer, tortuous and the larger caliber duct and slower flow rates in the submandibular gland; the fact that saliva flows against gravity in the submandibular gland; the presence of more alkaline saliva; the high mucin and calcium content of the saliva in the submandibular gland.<sup>2,4,5</sup> We describe a patient with a giant sialolith in the submandibular salivary gland.

## Case Report

A 55 year old male patient presented to oral medicine and radiology department with chief complaint of swelling on the right lower jaw since ten years and pain and pus discharge from the floor of the mouth since twenty days. History of present illness revealed that the growth started as the small swelling of a peanut size and increased progressively with time. There was neither pain nor increase or decrease in the size of the swelling whilst chewing food. His medical history was unremarkable. On clinical examination, a firm swelling measuring approximately 4x4 centimeter was present in the right submandibular region (Fig.1). Intraorally, area of submandibular duct was tender and purulence was expressed on milking the swelling bimanually. A shallow ulcer was seen on the floor of the mouth in the lingual vestibule in relation to the molars. A provisional diagnosis of acute submandibular

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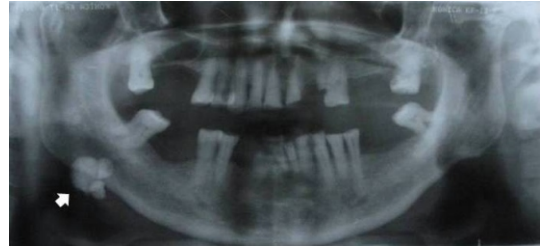
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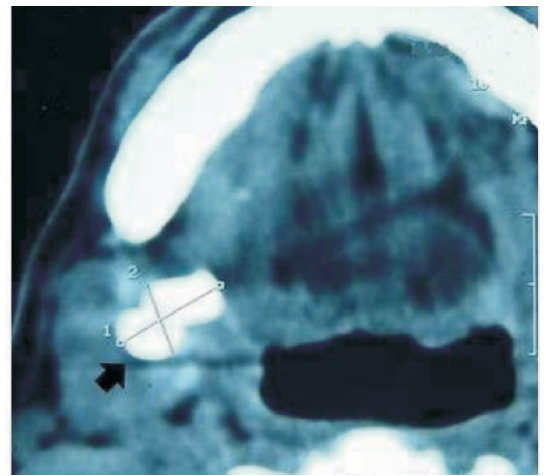
sialadinitis was made. Differential work up included chronic submandibular lymphadenitis. Panoramic radiograph showed a large radiopacity measuring 2x2 cm overlapping the antegonial notch of the right angle of the mandible (Fig. 2). Mandibular lateral cross sectional occlusal radiograph revealed a large radiopacity lying medial to the arch. To rule out calcified lymph node or sialolith, further investigations were carried out. Non contrast computed tomography showed a large irregular hyperdense lesion measuring 16x10mm in its greatest diameter located in the right submandibular gland. The gland itself was edematous and enlarged measuring around 26x24 mm. (Fig. 3). High resolution ultrasonography revealed a large mass with ill defined margins in the submandibular gland with no significant lymph nodes in the neck (Fig. 4). Fine needle aspiration cytology of the swelling revealed few clusters of round to oval cells with the background of lymphocytes suggesting chronic sialadinitis. Patient was prescribed antibiotics and analgesics for two weeks and surgical excision of the entire gland and calcified mass was performed by oral surgeons.



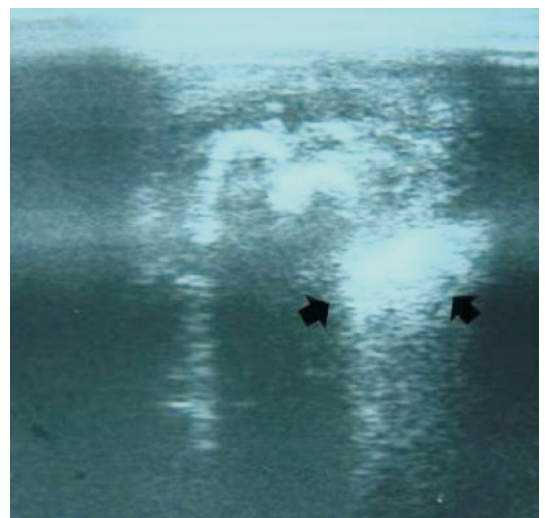
**Fig. 1:** Extraoral photograph of a 55 year old male patient showing firm swelling measuring approximately 4x4 centimeter present in the right submandibular region. (Black arrow)



**Fig. 2:** Panoramic radiograph demonstrating a large radiopacity measuring approximately 2x2 cm overlapping the antegonial notch of the right angle of the mandible. (White arrow)



**Fig. 3:** Non contrast computed tomography demonstrating a large irregular hyperdense lesion measuring 16x10 mm in its greatest diameter located in the right submandibular gland. (Black arrow)



**Fig. 4:** Longitudinal Ultrasonogram revealing a large mass with ill defined margins in the submandibular gland with no significant lymph nodes in the neck. (Black arrow)

## Discussion

Salivary calculi are typically composed of calcium phosphate or calcium carbonate in association with other salts and organic material such as glycoproteins, desquamative cellular residue and mucopolysaccharides.<sup>3</sup> They are usually small and measure from 1 mm to less than 1 cm. They rarely measure more than 1.5 cm. Mean size as reported in literature is 6 to 9 mm and it is also believed that calculus may enlarge at the rate of approximately 1 to 1.5 mm per year.<sup>2</sup> In our case sialolith measured 1.6mm in greatest diameter.

Sialolithiasis is usually seen in middle aged males. Females are less commonly affected. There is no left or right predominance. Recurrent pain and swelling of the associated gland during meals are the common symptoms as the stone usually does not block the flow of saliva completely.<sup>6,7</sup> However, large sialoliths in the body of salivary glands usually are asymptomatic, causing difficulty to exclude calcified lymph nodes.<sup>2</sup> These large calculi may perforate the floor of the mouth by ulcerating the duct as seen in our case or may result in a skin fistula by causing a suppurative infection.<sup>2,8</sup>

Careful history and examination are important in the diagnosis of sialoliths. Bimanual palpation of the floor of the mouth, in a posterior to anterior direction, reveals a palpable stone in a large number of cases of submandibular calculi formation.<sup>1,2,4,9</sup> In the absence of clinical signs and symptoms difficulty exists in ruling out calcified lymph node masses. In such instances ultrasonography, Fine Needle Aspiration Cytology and computed tomography provides additional information as seen with our case report.

Computed tomography and ultrasound can demonstrate sialoliths with high accuracy and can correctly localize them anatomically. Ultrasound is less accurate than computed tomography in distinguishing multiple clusters of stones from single large stones. Computed tomography can provide additional information about the total size of the gland. Currently, Magnetic Resonance Sialography obtained in two or three dimensional images is suggested for diagnosis of sialoliths. However, these methods are not suitable to visualize the inner duct system of the salivary glands. Sialoendoscopic system can be used for both diagnostic and treatment purposes.<sup>2</sup> Some authors have recommended that preoperative technetium-99m pertechnetate scintigraphy be obtained to determine how functional the gland is and thus to determine its treatment. Sialography is contraindicated in the acute setting of sialadinitis and should be restricted to a very few number of cases when clinical assessment, serology, conventional radiography (especially when the stones are radiolucent) and computed tomography cannot facilitate the diagnosis in chronic sialadinitis cases. MR sialography can replace conventional sialography.<sup>3</sup>

Different treatment options may be selected according to the size and location of the sialolith. If the stone is small, conservative management may be attempted with local heat, massage and sialogogues. Infection should be treated with antibiotics and these cases should be combined with simple sialolithotomy when required. If the stone lies in the distal one third of the duct, a simple surgical release can be performed. For giant sialoliths, alternate methods of treatment include piezoelectric extracorporeal shock wave lithotripsy or endoscopic intracorporeal shock wave lithotripsy. Once the diagnosis of

an intraglandular salivary stone with destruction of the gland is established, removal of the entire submandibular gland through an extraoral approach is recommended. However, excision of the submandibular gland carries a risk of permanent or temporary marginal mandibular nerve palsy.<sup>2,9,10</sup> In our case, as the infection was extensive and the total size of the gland has enlarged phenomenally, complete excision of the gland and calculus was planned.

### Conclusion

Management of large sialoliths remains a diagnostic and therapeutic challenge to the clinician. The choice of surgical treatment and the preservation of the submandibular gland require careful consideration when dealing with larger sialoliths. Patients should be educated regarding the mechanism of their underlying pathology and also emphasis should be given on the value of hydration and excellent oral hygiene preventing further complications.

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