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An Extraordinarily Large Submandibular Salivary Gland Duct Calculus

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ABSTRACT

Sialolithiasis means formation of calcified structure in salivary gland and at the salivary duct ranging from tiny particle to several centimeters in size. Sialolithiasis often occur at any age, but it is most common in middle aged adults in submandibular gland with 80-90 % occurrence, followed by parotid, accounting for 5-15 % and about 2-5 % in sublingual gland. Majority of salivary stones are asymptomatic or cause minimal discomfort, large stones may interfere with the flow of saliva and cause pain and swelling. In this case report a 40-year-old male with a large calculus in the submandibular gland duct is presented. The calculus was roughly oval and it was remarkable for its size.

Keywords: Sialolithiasis, Submandibular Salivary Gland.

1. CASE REPORT

A 40-year-old male reported to the Department of Oral Medicine & Radiology with a chief complain of periodic and recurrent pain and swelling during and after meals in the lower left floor of the mouth since 1 month. Swelling was intermittent in nature, with pain which was dull and continuous and aggravated after taking meals. Patient gave a history of regression of swelling approximately 1 hour after meal. There was no positive history of trauma associated. There was no significant finding in patient's medical & dental history.

On extraoral examination, face was bilaterally symmetrical, lips were competent, no clicking or deviation sound was detected on TMJ palpation. On inspection intraoral examination revealed a diffuse swelling present in the floor of mouth on left side extending anteroposterior from mesial of 34 to mesial of 38 and mediolaterally from the lingual frenum to the lingual vestibule which was approximately of 2x5 cm, roughly elongated in shape with diffuse borders. Color was pink and the overlying surface interspersed with two small areas of necrosis in the posterior region. On palpation consistency was firm and tenderness was absent. Bony hard structure was palpated in the distal half of swelling.

Cross sectional view revealed a single well defined homogenous radiopacity in region of 35 36 & 37 on the lingual aspect, away from the lingual cortex, with irregular borders of size 2.5x1cm roughly oval. Depending on the above investigations a diagnosis of salivary calculus of sublingual gland was made. Under all aseptic measures and precautions stone was removed under local anaesthesia by milking of the gland.

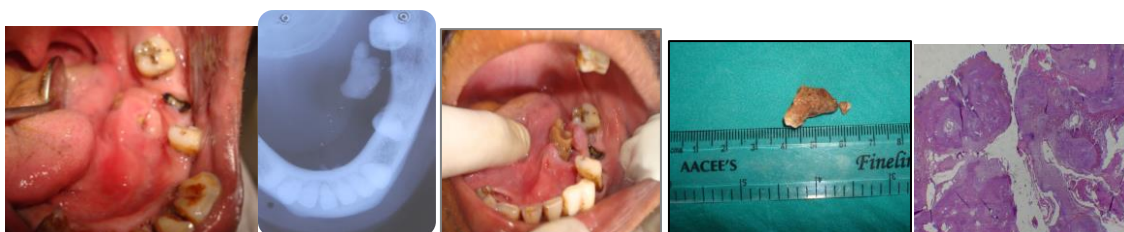


Fig 1 Intraoral picture, Fig 2 Cross sectional view, Fig 3 Milking of Gland, Fig 4 Specimen Fig 5 Photomicrograph

2. DISCUSSION

Sialolithiasis is the most common disease of salivary gland. It is estimated that it affects 12 in 1000 of adult population.¹ Males are affected twice as much as females.² It involves most commonly the major salivary glands. More than 80 % sialolith occur in the submandibular gland or its, 6% in the parotid gland and 2 % in the sublingual gland or minor salivary gland.³ Exact etiology and pathogenesis of salivary gland calculi is unknown. They are thought to occur as a result of deposition of calcium salts around an initial organic nidus consisting of altered salivary mucin, bacteria and desquamated epithelial cells.^{2,4} According to literature the formation of sialolith can occur in two phases: a central core and a layered periphery.⁵ Central cores are formed by the precipitation of salts which are bound by certain organic substances. Second phase consists of a layered deposition of organic and inorganic material.⁶

Submandibular stones are thought to form around a nidus of mucous whereas the parotid stone are thought to form a nidus of inflammatory cells or a foreign body.⁷

Another theory has proposed that an unknown metabolic phenomenon can increase the salivary bicarbonate content, which alters the calcium phosphate solubility and leads to precipitation of calcium and phosphate ions.⁸

A retrograde theory proposed for sialolithiasis suggested that, substances or bacteria within the oral cavity might migrate into the salivary ducts and become the nidus for further calcification.⁵ Salivary stagnation, increased alkalinity of saliva, infection or inflammation of salivary duct or gland and physical trauma to salivary duct or gland may predispose to calculus formation.¹

Clinically sialolith are round or ovoid in shape, rough or smooth in texture and yellowish in color. Submandibular stones consist of 82% inorganic material and 18% organic material whereas parotid stones are composed of 49% inorganic and 51% organic material.³

The inorganic material comprises of calcium, phosphate, smaller amounts of carbonates in form of hydroxyapatite and smaller amounts of magnesium, potassium, ammonia, whereas organic material consists of various carbonate and amino acids.⁸

Sialolithiasis are usually unilateral. Typically cause pain and swelling of involved salivary gland by obstructing the salivary flow. Calculi may cause stasis of saliva, leading to bacterial ascent into the parenchyma of gland resulting in sialadenitis. Some Sialolithiasis may be asymptomatic. Long term obstruction, in the absence of infection can lead to atrophy of gland with resultant lack of secretory function and ultimately fibrosis.⁸

Careful history & examination are important in diagnosis of sialolithiasis. Pain and swelling of the concerned gland at mealtimes and in response to another salivary stimulant are important. Complete obstruction causes constant pain, swelling and signs of systemic infection may be present.⁹

Bimanual palpation of the floor of mouth, in a posterior to anterior direction, may reveal a palpable stone in majority of the case of submandibular calculi.⁸

Patient presenting with sialolithiasis may benefit from conservative management, especially if the stone is small. Patient must be well hydrated and the clinician must apply moist warm heat along with massage of gland. Sialagogues are useful to promote production of saliva and to flush the stone out of the duct.

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