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A Case Report of Rare Giant Submandibular Sialolith

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Abstract: *Salivary gland calculi account for the most common disease of the salivary glands.Most of the salivary calculi is small in size. Some calculi that reach several centimeters are reported as giant calculi. They may occur in any of the salivary gland ducts but are most common in Wharton's duct and in the submandibular gland. A patient came with pain and swelling on the floor of the mouth on the left side. Radio graphical examination revealed large irregular radio-opaque mass superimposed on left canine to first molar region. This case report describes a patient presenting with an unusually large submandibular sialolith, the subsequent patient management, diagnosis and treatment.*

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I. Introduction:

Sialolithiasis is the most common disease of salivary gland caused by the obstruction of salivary gland or its excretory duct by a calculus[9]. Frequency of occurrence is more common in males than in females[10]. The peak incidence of occurrence is fourth, fifth and sixth decades[11].

Salivary calculi most commonly occur in the submandibular gland. Salivary calculi consist of mainly calcium phosphate with smaller amounts of carbonates in the form of hydroxyapatite, with smaller amounts of magnesium, potassium, and ammonia[11].

II. Case Report:

A 55year old male reported to the Sriram hospital, Thirukovilur, with the chief complaint of pain and swelling in the floor of the mouth on the left side since 1 month.
Patient gives history of small swelling which used to increase in size before meals 1 month back.
Extra-oral examination revealed a palpable left submandibular gland.

Intraoral examination revealed a well-defined elongated swelling of approximately 2.5 cm × 1.3 cm in size in the floor of the mouth in relation to lower left canine to first molar region. Mucosa which is overlying the swelling was inflamed. Swelling is hard in consistency and tender on palpation.

Radiographic examination included Orthopantamogram(figure-1) which reveals a large well-defined elongated radio-opacity on the left side in relation to lower left canine to first molar region. It was approximately 2.5 cm × 1.3 cm in size.

Figure 1: Orthopantomogram showing a well defined elongated radiopacity in relation lower left canine to first molar region

On the basis of clinical and radiological findings, it has been provisionally diagnosed as left submandibular duct sialolith. As it was a giant sialolith we decided to remove the sialolith surgically under local anesthesia. Under aseptic conditions, a giant sialolith was removed in a minimally invasive manner via intraoral sialolithotomy and sialodochoplasty. The sialolith was measuring approximately 25mm x 13mm, weighed approximately 10g, and was yellow to white in color. (Figure 2). After 6 months of follow up, the patient remained asymptomatic with satisfactory glandular function and normal, undisturbed salivary flow.

Figure 2: Excised giant sialolith, measuring 25mm × 13 mm.

III. Discussion:

Sialolithiasis is more common in submandibular gland (80%) as compared to parotid(19%) and sublingual (1%) glands. It is because of increase alkalinity of its saliva, and greater concentration of calcium, phosphate and high mucin content [22]. In addition, submandibular duct course is tortuous which facilitates the stasis of saliva.

Traditional theories suggest that the formation occurs in two phases: A central core and a layered periphery.The central core is formed by the precipitation of salts, which are bound by certain organic substances[14]. The second phase consists of the layered deposition of organic and nonorganic material.Another theory has proposed that an unknown metabolic phenomenon can increase the saliva bicarbonate content, which alters calcium phosphate solubility and leads to precipitation of calcium and phosphate ions[15].A retrograde theory for sialolithiasis has also been proposed[13]. Aliments, substances, or bacteria within the oral cavity might migrate into the salivary ducts and become the nidus for further calcification.

Salivary stagnation, increased alkalinity of saliva, infection or inflammation of the salivary duct or gland, and physical trauma to salivary duct or gland may predispose to calculus formation[14]. Submandibular sialolithiasis is more common as its saliva is (i) more alkaline, (ii) has an increased concentration of calcium and phosphate, and (iii) has a higher mucous content than saliva of the parotid and sublingual glands[1,10]. In addition, the submandibular duct is longer and the gland has an antigravity flow[1].

As giant sialoliths are mostly radiopaque. Careful history and examination are important in the diagnosis of sialoliths[3,12]. 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 and a uniformly firm and hard gland suggests a hypofunctional or nonfunctional gland. If not removed giant calculi may cause various complications like sialo-oral fistula,sialo-cutaneous fistula, atrophy and fibrosis of the gland[3,11].The differential diagnosis of sialolith includes calcified lymph node, embedded tooth, foreign body, phlebolith, and myositis ossificans[3,13].

Imaging studies are very useful for diagnosing sialolith. The best view for visualizing radiopaque stones is a standard mandibular occlusal radiograph [4]. Other traditional diagnostic methods include sialography, ultrasound, computed tomography, and scintigraphy for sialoliths[16]. Sialoendoscopy can be used for both diagnostic and treatment purposes[17].

The treatment objective for giant sialoliths, as for the standard-sized stones, is restoration of normal salivary secretion. There are three ways in which we can treat patients with salivary stones: Removal through the oral cavity, interventional sialoendoscopy, and resection of the gland. Our choice depends on the site, size, shape, number, and quality of the stones. The giant sialolith should be removed in a minimally invasive manner, via a transoral sialolithotomy; to avoid the morbidity associated with sialadenectomy[12].Whenever the stone can be palpated intraorally, it is best to remove it through an intraoral approach[9]. For giant sialoliths, transoralsialolithotomy with sialodochoplasty or sialadenectomy remains the mainstay of management[4].

The tissue transfixation or sialolith anchorage with the suture thread involving the duct can be performed to promote the obstruction, preventing the sialolith displacement towards the gland[12]. In this present case, we opted by performing the anchorage with the suture thread posterior to the sialolith, aiming to prevent its displacement and provide a more accurate incision on mucosa resulting in minimum dilacerations of the duct epithelium as in the case of giant sialoliths. After removing the stone, the duct epithelium should be sutured to oral mucosa, leaving open for proper drainage [2,12,15],and aiming to guide the formation of a new salivary drainage [12.]

IV. Conclusion:

There are various methods available for the management of salivary stones, depending on the gland affected and stone location. Transoral sialolithotomy remains mainstay of the treatment for giant sialolith in the duct of submandibular gland. Also, patients should be followed up regularly as recurrence has been reported in the literat

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