

Submandibular Sialolithiasis Analysis of 4 Case Reports

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Abstract: We are reporting cases of submandibular modalities of conventional radiography ultrasonogram (USG), Computed Tomography (C.T. scan) subsequent treatment approach.

INTRODUCTION

Salivary gland calculi are a common occurrence in the salivary glands. The majority of the sialoliths occur in the submandibular gland or its duct and cause chronic infection. It's estimated that it affects 12 in 1000 of the adult population. Males are affected twice as much as female. More than 60% in the submandibular gland or its duct, 6% in the parietal gland and 2% in the sublingual gland. Salivary gland disorders are relatively common. Sialolithiasis is the main cause of obstructive salivary disease being involved in 66% cause and accounting for about 50% of major salivary gland disease. Incidence peak occurs between the ages of 20 and 60 years, and it is uncommon in children as only 3% of all sialolithiasis cases occur in the paediatric population. The striking difference between parotid and submandibular stones is partially related to the ascendant and sharper angled duct system of the submandibular gland and mainly mucous type of secretion, tortuous course of Wharton's duct higher calcium and phosphate levels and, the dependent position of the submandibular gland, which leave them more prone to stasis. Patients with obstructive sialadenitis present with a history of recurrent painful periprandial swelling of the involved gland, best known as the meal-time syndrome. Which is often complicated by recurrent discharge at the orifice of duct. The traditional aetiopathogenetic factors associated with stone formation are obstruction, xerostomia, dehydration, increase in salivary pH associated with oropharyngeal sepsis and impaired crystalloid solubility; physiologically, microliths may be detected following precipitation within redundant secretory vesicles which become symptomatic and act as a nidus. In addition to these classic hypotheses, Marchal et al. have recently suggested a retrograde theory in lithogenesis, according to which a retrograde migration of foods, or bacteria or foreign bodies from the oral cavity to the duct system may lead to stone formation. Salivary glands with sialolithiasis are frequently enlarged, tender and bimanually palpable along the path of the duct may confirm the presence of a stone. We are analysing 4 cases of submandibular sialolithiasis reported to our department of oral medicine and radiology, with their diagnostic imaging and treatment plan.

CASE REPORTS

Case 1: A 55 year old female patient presented with complaints of recurrent pain on left side of neck region and intraorally for past 3 months and swelling for past 2 years which increase in severity of pain and swelling before meal and during meals followed by gradual relief by itself. On examination patient was afebrile and of normal built. A mild diffuse swelling was present on left submandibular region which was firm and tender on palpation. Intraorally on left side of the floor of the mouth solitary swelling was present with erythematous mucosa which was firm and tender. Submandibular swelling was bimanually palpable, and on milking of gland pus discharge was seen from ductal opening of Wharton's duct (Fig.1). History and clinical examination was suggestive of left chronic submandibular sialadenitis. On further imaging with mandibular occlusal radiograph showed a well defined radiopaque structure 1x1 cm lingual to left side of mandible (Fig. 2) and to rule out any stone in showed mild radiopacity of 0.5x0.5cm in mandibular submandibular region by placing transducer extraorally of 5-10 MHz which revealed one hypoechoic region of size 1x1.2 cm and another hypoechoic region on left side near hilum of submandibular gland of size 0.5x0.5cm with ductal dilatation. Contrast enhanced C.T. scan of axial and



Fig. 1: Pus discharge on milking of submandibular gland.



Fig. 2: Mandibular occlusal radiograph

coronal section of submandibular region confirm the same. Based on above investigations diagnosis of left side submandibular sialolithiasis was arrived at. As sialolith was present in ductal region, treatment plan was surgical removal of sialolith.

Case 2: A 56 years old male patients came to our department with the complaint of pus discharge intraorally for 25 days history of swelling without pain on left neck for past 15 years which increase in size for past 3 month. On examination extraorally swelling was seen on left side submandibular region which was tender, firm and bimanually palpable. Intraorally firm swelling was present on same side sublingually with pus discharge from Wharton's duct. Increase in pus discharge occurred with milking of gland. Mandibular occlusal radiograph did not show any pathology while left side lateral oblique of mandible showed a well defined radio-opaque structure at angle of mandible. USG showed 2.8x1.4x1.3 cm altered echoic regions near left submandibular gland with post acoustic shadowing suggestive of radio-opaque mass and C.T. scan confirmed the presence of hyperdense area measuring 2x1.5cm at the hilum. Because of posterior positioning of sialolith treatment plan was sialadenectomy.

CASE III

A 37 years old male patients with swelling intraorally for past 2 year with pus discharge for past 2 month with pain. On examination one hard swelling was seen on left side sublingual region. Mandibular occlusal oblique of mandible Orthopantomogram (OPG) revealed one radio-opaque structure left side sublingually and small multiple radio-opaque structure near hilum region. USG showed 2 hypoechoic one in anterior region sublingually and one posterior near submandibular gland region subsequently C.T. scan revealed 2 hyperdense regions on left side sublingual area suggestive of small multiple sialolith surgical removal of sialolith. Biochemical analysis was positive for calcium carbonate and phosphate and negative for uric acid and oxalate.

CASE IV

A 45 years old male patients came to our department with complaint of extra oral recurrent swelling on left side of neck region for past 8 month and complaint of pain which was aggravated during meals. True mandibular occlusal radiograph revealed no evidence of any pathology while left side lateral oblique view of mandible revealed single oval shaped well defined radio-opaque structure on left angle region of mandible. USG showed hypoechoic region 4x4x3cm extending to submandibular gland region and C.T. confirmed submandibular sialolithiasis. Treatment plan was sialadenectomy.

DISCUSSION

Sialolithiasis can obstruct the secretory duct, resulting in chronic retrograde infection because of a decrease in salivary flow. Clinically, it can present as symptomatic or asymptomatic or both intermittent swelling and pain with eating and signs of infections. As many as 9% of patients have recurrent sialolithiasis and about

10% of patients with nephrolithiasis suffer from sialolithiasis. If stone is found at least a one in four chance exists that others are composed of hydroxyapatite. The chemical composition is calcium phosphate and carbonate, Gout is the only systemic disease which can cause calculi of uric acid composition 50% of parotid gland sialoliths and 20% of submandibular gland sialoliths which are poorly calcified. This is clinically significant as these sialoliths will not be detected radiographically. The traditional diagnostic approach consists of standard radiography which does not reveal radiolucent, intraglandular or small stones in about 20% of cases and computed tomography which is limited by the fact that the stone shadow can be occluded by thick radiological slices, although focussed helical CT with 1-2mm may pick up even tiny calculi.

Ultrasonography currently represents an excellent first line diagnostic technique; it reveals ductal and highly mineralized stones of at least 1.5mm size with accuracy of 99%. Conventional sialography in which dye is injected in retrograde way through ductal opening followed by radiography provides high resolution images of salivary ducts but it is contraindicated in acute infections, small stones present near ductal opening. T2 weighted MRI sequences which allow consistent and accurate assessment of salivary glandular calculi. Recent advances in optical technology have led to the development of sialoendoscopy a new diagnostic mean of directly visualizing intra ductal stones which allows complete exploration of duct including shockwave lithotripsy, sialoendoscopy, interventional radiology, endoscopically video-assisted trans-oral and cervical surgical retrieval of stones, and botulinum toxin therapy.

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