Sialolithiasis: A Case Series

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Abstract: Sialoliths are the calcified organic matter that forms within the secretory system of the major salivary glands. Sialolithiasis accounts for 30% of salivary diseases. Stones may be encountered in any of the salivary glands but most frequently in the submandibular gland and its duct (83-94%), less frequently the parotid (4-10%) and the sublingual glands (1-7%). Its occurrence in the adult population is approximately 12 per 1,000 patients, with a slight male predominance. While the majority of salivary stones are asymptomatic or cause minimal discomfort, larger stones may interfere with the flow of saliva and cause pain and swelling. This case report describes two patients presenting with submandibular gland sialolith and review of the literature regarding the salivary sialolithiasis.

Key words: Submandibular Salivary Gland, Sialolith, Warthon’s Duct.

INTRODUCTION

Heterotopic calcification which results from deposition of calcium in normal tissue despite normal serum calcium and phosphate levels is known as idiopathic calcification. Sialoliths belong to the category of idiopathic calcification. Salivary duct lithiasis refers to the formation of calcareous concretions or sialoliths in the salivary duct causing obstruction of salivary flow, resulting in salivary ectasia, sometimes even dilatation of the salivary gland. More than 80% of salivary gland calculi can be found in the submandibular gland and located in the glandular parenchyma or the excretory duct.

Males are affected twice as much as females, especially in case of parotid gland lithiasis. Sialolithiasis usually occurs between the age of 30-60 years, though it can also occur during teen age. Children are rarely affected, but submandibular gland calculi have been reported in children aged from 3 weeks to 15 years. Within the submandibular gland, the vast majority of sialoliths are found in the Wharton’s duct. The ratio of sialoliths found within the gland to those found in Wharton’s duct is 3:7:2.

The classic symptom are that of obstruction manifested by pain and swelling of the involved during eating. Sialoliths are usually unilateral and do not cause xerostomia. Submandibular stones consist of 82% inorganic and 18% organic material while the parotid stones are composed of 49% inorganic and 51% organic material.

Bimanual massage of the affected gland and the excretory duct should be carried out, observing the flow and the clearness of the saliva. Submandibular stones are typically removed surgically via either an intraoral or an external approach.

CASE REPORT 1

A 35 year old male patient reported to the Department of Oral Medicine and Radiology with a chief complaint of swelling and pain on the right side of the jaw since 2 months. History of the present illness revealed that there was history of increase in the size of swelling during meals and subsides during the rest of the day. It was not associated with any discharge. Pain was dull, aggravated on eating food and relieved by itself. Extraoral examination revealed a diffuse swelling won the right submandibular region roughly measuring about 2x3 cm in greatest dimension extending from base of mandible to 2 cm below the inferior border of mandible. The skin overlying the swelling was normal (Figure 1). On palpation, it was firm in consistency and tender on palpation. In intraoral examination, a firm mass was palpable on the floor of mouth extending from mesial aspect of 46 to 47 (Figure 2). On the basis of history and clinical examination, a provisional diagnosis of sialolith was given. In the investigations a mandibular occlusal radiograph was taken which revealed a well defined radiopaque structure measuring about 1x2 cm lingual to the body of mandible on the right side (Figure 3). In the treatment surgical excision was done which revealed the final diagnosis of sialolith.

CASE REPORT 2

A 45 year old female patient reported to the Department of Oral Medicine and Radiology with a chief complaint of swelling and pain on the left side of the jaw since 2 months. History of the present illness revealed that there was history of increase in the size of swelling during meals and subsides during the rest of the day. It was not associated with any discharge. Pain was dull, aggravated on eating food and relieved by itself. Intraoral examination, a firm mass was palpable on the floor of mouth extending from mesial aspect of 36 to 37 (Figure 4). On the basis of history and clinical examination, a provisional diagnosis of sialolith was given. In the investigations a mandibular occlusal radiograph was taken which revealed a well defined radiopaque structure measuring about 1.5x1cm lingual to the body of mandible on the left side (Figure 5). In the treatment surgical
DISCUSSION

Sialolithiasis accounts for more than 50% of diseases of the large salivary glands. Submandibular sialolith formation is more common because its saliva is more alkaline, has an increased concentration of calcium and phosphate, and has a higher mucous content than saliva from the parotid or sublingual glands. Further, the submandibular duct is longer than that of the other major glands, and the saliva flows against gravity. The etiological factors that account for sialolith formation are unknown, but saliva retention due to anatomical considerations, and saliva composition, are believed to be important. Traditional theories suggest that the formation of sialoliths occur in two phases: 1. Formation of a central core and 2. A layered periphery. The central core is formed by the precipitation of salts, which are bound by certain organic substances. The second phase consists of the layered deposition of organic and non-organic material. Submandibular sialoliths are thought to be formed around a nidus of mucus, whereas parotid sialoliths are thought to be formed around a nidus of inflammatory cells or a foreign body.

It is likely that for stone formation to occur, intermittent stasis of calcium-rich saliva occurs, producing a change in the mucoid element of saliva, and a gel forms. This gel produces the framework for deposition of salts and organic substances thus creating a stone. Salivary calculi are usually small and measure from 1 mm to less than 1 cm. They rarely measure more than 1.5 cm. Mean size is reported as 6 to 9 mm.

Sialoliths have been identified in the literature as causing repeated swelling during meals. However, symptomless sialoliths are common. If pain is present, the severity of the symptoms depends on the degree of obstruction, which is related to the size and location of the sialolith. Sialolithiasis causes pain and swelling of the involved area by obstructing the food-related surge of salivary secretion. In some cases, the sialolith may cause stasis of the saliva, leading to bacterial contamination of the parenchyma of the gland, and clinical infection, with pain and swelling of the gland. Long-term obstruction in the absence of infection can lead to atrophy of the gland with resultant lack of secretory function and eventual fibrosis.

Correct diagnosis of a sialolith requires a proper history and clinical examination. Sialoliths can occasionally be palpated using a bidigital palpation approach at the floor of the mouth and parotid regions. Bi-manual palpation of the gland itself can identify a hypofunctional or nonfunctional gland associated with a uniformly firm and hard mass. In the anterior floor of the mouth, an occlusal radiograph may reveal the calculus. All salivary stones cannot be visualized through conventional radiographs because a few of them are hypomineralized and are superimposed by other radiodense tissues. In these cases other advanced imaging modalities should be considered. Ultrasonography is widely reported as being very helpful in detecting salivary stones. As many as 90% of all stones larger than 2 mm can be detected as echodense spots on ultrasonography. However, detection of small calculi may be difficult with ultrasonography. Computed tomography (CT) is also highly diagnostic. Sialography is also useful to locate obstructions that cannot be detected by means of bidimensional radiography, especially whenever sialoliths are radiolucent or whenever they are not present (as is the case with stenosis).

Differential diagnosis of a sialolith could include a calcified lymph node, an avulsed or impacted tooth or foreign body, a phlebolith, or myositis ossificans. Once a diagnosis of sialolithiasis is determined, effective treatment of the sialolith depends on the location of the stone, and is accomplished by extraoral or intraoral surgical removal of the sialolith. Removal of the affected salivary gland and its associated duct may also be necessary. However, initial management consists of antibiotic therapy to reduce or eliminate the acute infection. The drug of choice is penicillin (250 mg- 500 mg orally, every 6 hr). The patient is also instructed to suck on sour lemon or orange candy to stimulate salivary flow. Patients presenting with sialolithiasis may benefit from a trial of conservative management, especially if the stone is small. The patient must be well hydrated and the clinician must apply moist warm heat and gland massage, while sialogogues are used to promote saliva production and flush the stone out of the duct. In the management of large sialoliths which are located in the close proximal duct, extracorporeal shock wave lithotripsy (ESWL) can be considered.

Conclusion

The dental practitioner has an important role to play in the management and possible treatment of sialolithiasis. Establishing a diagnosis of sialolithiasis requires a thorough history and physical examination along with routine radiographs. Patients should be educated regarding the mechanism of their underlying pathology and methods of maintaining control over them by emphasizing the value of hydration and excellent oral hygiene, which lessens the severity of the attacks and prevents dental complications. The accepted treatment of sialolithiasis is surgical intervention, either removal of the sialolith or complete excision of the gland.

REFERENCES

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LIST OF PHOTOGRAPHS

Fig: 1 Facial view of the patient

Fig: 2 Intraoral view

Fig: 3 Mandibular occlusal Radiograph

Fig: 4 Radiograph Showing Sialolithiasis

Fig: 5 Intra Oral Photograph