10.5005/jp-journals-10029-1040

CASE REPORT

Is It a Sialolithiasis or Tooth?

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ABSTRACT

Objectives: The aim of this study was to present careful evaluation of the clinical and radiological findings of submandibular salivary gland pathologies and its importance to diagnose.

Case report: Presented here is a case report of a 65-year-old male patient who had a submandibular sialolith. The sialolith was removed with intraoral approach and no postoperative complications were noted. Radiopaque lesion was similar to premolar tooth according to radiographic examinations performed by use of panoramic and occlusal radiography.

Conclusion: Reported here is a case of submandibular sialolith which was diagnosed clinically and radiographically and treated with no postoperative complications.

Keywords: Sialolithiasis, Radiographic examination, Ghost image.

How to cite this article: Inceoglu B, Senturk MF, Yakar EN, Oztas B. Is It a Sialolithiasis or Tooth?. Int J Experiment Dent Sci 2013;2(1):50-52.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

A sialolith (salivary stone) or salivary gland calculus is an aggregation of calcified material within the ducts or glandular tissue of salivary glands. It is the one of the most frequent disorders of salivary glands, second only to viral parotitis. These calcifications form in patients any time from the first decade of life on, with the peak incidence occuring between the fourth and the sixth decades. Men are affected twice as often as women.[1]

Sialolithiasis accounts for 30% of salivary diseases and it most commonly involves the submandibular gland (80-95%) and less frequently the parotid (5-20%). The sublingual gland and the minor salivary glands are rarely (1-2%) affected. About half of submandibular stones lie in the distal portion of Wharton's duct, 20% in the proximal portion and 30% in the gland itself.[2]

Sialoliths located in the duct of the submandibular gland usually are formed in a lamellar fashion, usually with layers of organic debris caught between layers of calcium phosphates and carbonates. Stones vary greatly in size and shape; they may be relatively smooth and cylindrical, or pointed on the ends, or very irregular and lumpy.[3] They consist of mainly calcium phosphate with smaller amounts of carbonates in the form of hydroxyapatite, with smaller amounts of magnesium, potassium and ammonia. This mix is distributed evenly throughout.[4] Submandibular stones are 82% inorganic and 18% organic material whereas parotid stones are composed of 49% inorganic and 51% organic material.[5] The organic material is composed of various carbohydrates and amino acids. Bacterial elements have not been identified at the core of a sialolith. Patients with sialolithiasis may be totaly asymptomatic or they may develop an obstructive sialadenitis characterized by pain and periodic swelling, especially around meal time when salivary flow is stimulated.[4]

Sialoliths may be discovered on routine films in asymptomatic patients. Salivary stones occasionally are seen on periapical views superimposed over the mandibular premolar and molar apices. The best view for visualizing stones in the distal portion of Wharton's duct is a standard mandibular occlusal view using half the usual exposure time, which displays the floor of the mouth without overlap from the mandible.[2] This helps in detecting stones that are lightly calcified.[3]

CASE REPORT

A 65-year-old male patient reffered to our clinic at the University of Ankara, Faculty of Dentistry, Department of Oral Diagnose and Radiology, complaining of absence of teeth on the left side of his mandibule and a radiopaque mass left side of mandibule in panoramic radiography (Fig. 1) noted by another dentist before he had reffered. Following a detailed intraoral and extraoral examination it was noted that premolar teeth were extracted 20 years ago and traumatic operating happened. Oral hygiene was rather bad. The patient gave no history of systemic disease, and there were no abnormal findings on general physical examination. In panoramic radiography, irregular-shaped radiopaque mass, located on left lower premolar area was observed (Fig. 2). There was no pain and swelling in palpation in this side of mandibule. After occlusal radiographic examination (Fig. 3), a premolar tooth-shaped radiopaque lesion about 20 mm in size on right submandibular region was observed. It was noted that there was low reduction in salivary flow according to patient under stress but patient was not complaining. We suspected it was tooth or sialolithiasis.

The patient was operated at Surgery Department under local anesthesia and the mass was removed from

This case report was presented in 16th International BASS Congress as a poster presentation.

Fig. 1: Preoperative panoramic radiography

Fig. 4: After surgery, intraoral appearance of the patients floor of mouth

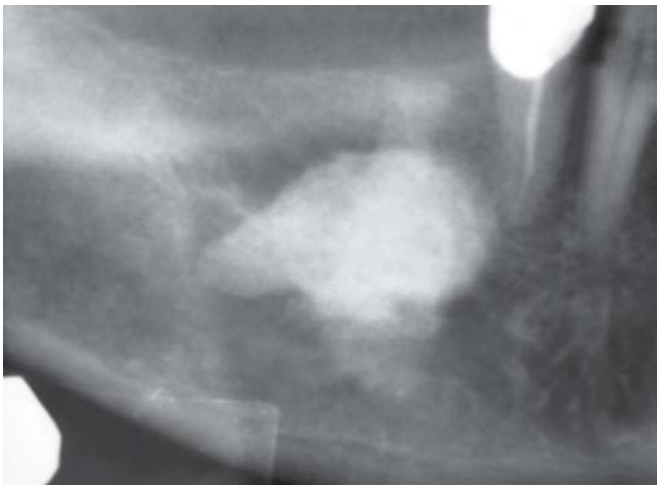

Fig. 2: Preoperative periapical radiography

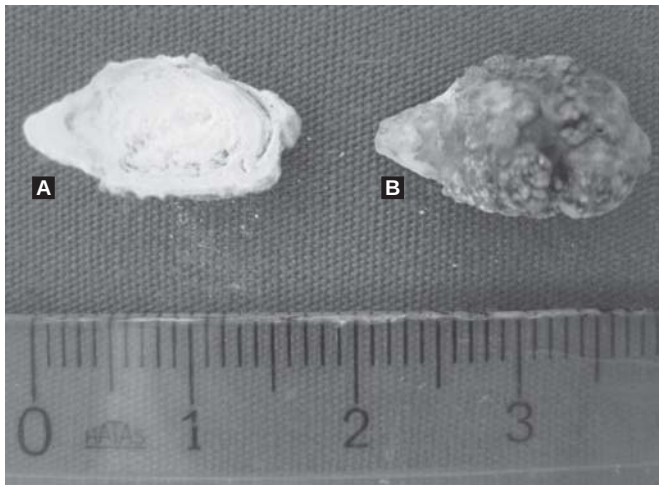

Fig. 5: Sialolith: (A) Cross-sections, (B) macroscopic image

Fig. 3: Occlusal radiography of the patient

submandibular region by intraoral approach (Fig. 4). After surgery another radiography was taken. The removed mass was 17 × 10 mm in size of yellowish-white color with an irregular surface from submandibular salivary duct. Macroscopic examination revealed that the removed mass was sialolithiasis appearence in premolar tooth (Fig. 5).

DISCUSSION

Salivary gland calculi account for the most common disease of the salivary glands.[1] It occurs with the obturation of calcified calcium carbonate and phosphate on an organic matrix of the parenchyma or the duct of the gland.[6] The majority of sialoliths occur in the submandibular gland or its duct.[1] Sialolithiasis are calcified masses that develop in the intra- or extraglandular duct system. Because of calcification masses, it may appear like a tooth or any calcifying mass.[6]

Clinical and radiological examination is important for diagnosis of sialolithiasis. In contrast to the small-sized calculi, 20 to 30% of which are radiolucent, giant sialoliths are mostly radiopaque and are easily depicted on panoramic radiographs, probably because their lithogenesis is long enough for calcification to be completed. But, clinician must be careful for asymptomatic sialolithiasis because of superimposition of calculi. It can lead to misdiagnosis without symptoms on panoramic radiographs. Occlusal radiographs are necessary for both diagnosis or surgical planning, especially when occurring in the Wharton's duct of submandibular salivary gland. Occlusal radiographs

clearly show the submandibular salivary gland location and must be taken before surgical treatment.[7]

Sialolithiasis typically causes pain and swelling of the involved salivary gland by obstructing the food-related surge of salivary secretion. Calculi may cause stasis of saliva, leading to bacterial ascent into the parenchyma of the gland and therefore infection, pain and swelling of the gland. Some may be asymptomatic until the stone passes forward and can be palpated in the duct or seen at the duct orifice. It may be possible that obstruction caused by large calculi is sometimes asymptomatic as obstruction is not complete and some saliva manages to seep through or around the calculus.[8] Long-term obstruction in the absence of infection can lead to atrophy of the gland with resultant lack of secretory function and ultimately fibrosis.[9]

Also, several local, chemical and mechanical factors in the precipitation of the mineral salts are involved. Infection, inflammation, salivary stagnation, physical trauma, introduction of foreign bodies, and the presence of desquamated epithelial cells seem to be the initial events for the formation of a nidus that later will be the site for the precipitation of mineral salts contained in the salivary secretion. The presence of salivary proteins plays an important role in the initial formation of these phenomena. The instrumental diagnosis of sialolithiasis is based on several imaging techniques. Ultrasonography represents an excellent first-level diagnostic technique because it reveals ductal and highly mineralized stones with a diameter of at least 1.5 mm with a accuracy of 99%.[9] Recently, Sherman and McGurk[8] showed that water hardness is not significantly associated with the incidence of salivary calculi. Based on 120 submandibular gland sialendoscopy studies, Marchal et al[6] observed the presence of a sphincter system in the first 3 cm of the Wharton's duct in 90% of their studied cases, and suggested that variation of such sphincter-like mechanism within the salivary ducts could be responsible for easier retrograde migration of oral materials. In a study by Levy et al[10] 5% of patients with submandibular stones had asymptomatic, discrete masses, which in a few instances were suggestive of a neoplasm on physical examination.

CONCLUSION

The dental practitioner has an important role to play in the management and possible treatment of sialolithiasis. This case report highlights the importance of taking a detailed medical and dental history along with panoramic radiography, followed by a more selective, individualized radiographic assessment as necessary. More specifically, the general practitioner should routinely and systematically analyze radiographs to identify any variation from normal. Any variations from normal must be evaluated in consideration of the medical and dental history. Panoramic radiography of an embedded supernumerary premolar image may direct the dentist to make an incorrect operation Therefore; each lesion was seen in the panoramic radiographs should not be treated without clinical and additional radiographic examinations, as it may be kept in mind there were ghost image. Finally, after a diagnosis is made, the patient should be treated. Reported here is a case of submandibular sialolith which was diagnosed clinically and radiographically and treated with no postoperative complications.

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