Giant Dental Calculus Mimicking a Tumor: A Case Report

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ABSTRACT

Dental calculus consists of mineralized bacterial plaque that forms on the surfaces of natural teeth and dental prostheses. Giant dental calculus mimicking a tumor is an unusual presentation. Buccal surfaces of the maxillary molars and the lingual surfaces of the mandibular anterior teeth are the most common location for calculus deposition. This case report presents a case of giant dental calculus mimicking a tumor on the labial surface of the mandible and its diagnostic dilemma, treatment and role of proper oral hygiene measures.

INTRODUCTION

Calculus consists of mineralized bacterial plaque that forms on the surfaces of natural teeth and dental prostheses.1 Calcium are supragingival and subgingival depending on their location. Supragingival calculus is white or whitish yellow in color whereas subgingival calculus is dark brown or greenish black in color.2 Dental calculus is primarily composed of inorganic components (70% to 90%) and the rest by organic components.3 Buccal surfaces of the maxillary molars and the lingual surfaces of the mandibular anterior teeth are the most common location for calculus deposition due to the opening of major salivary glands.3 We report a case of a giant dental calculus on the labial surface of the anterior mandible mimicking a tumor which is very unusual.

CASE REPORT

A 77 years old male presented to the department of Dental Surgery of Birat Medical College and teaching hospital with the complaint of whitish mass on the lower front region of the jaw for 3 months. Patient also complained of whitish discharge from the same region. Patient’s medical history was not significant. On examination, there was a yellowish hard mass extending from the distal of 31 to distal of 42 with an approximate size of 1 cm × 1 cm in diameter. It was associated with inflammation of gingiva and purulent discharge from the same site. (Figure 1) Grade II mobility of 41 was present along with gingival recession with root exposure. There was a presence of generalized plaque and calculus with poor oral hygiene.

Intra oral periapical radiograph (IOPAR) was done which revealed well defined radiopaque mass extending from distal of 31 to 42 without any root resorption. (Figure 2) calculus could be appreciated between the teeth.

Fig 1: Hard mass on the anterior mandible
Differential diagnosis of benign tumors of the jaw such as osteoma, complex odontoma and cemento-ossifying fibroma was made. Patient was advised for a computed tomography (CT) scan of the mandible. CT scan of mandible revealed radiodense lesion, similar to the mandible which was floating. Radiodense lesion did not seem to be originating from the bone. (Figure 3)

Diagnosis of chronic generalized periodontitis with large calculus was made and the patient was advised for supra and sub gingival scaling and root planing. Calculus was removed in pieces and the largest one was approximately one cm in length. (Figure 4) Patient was prescribed chlorhexidine (0.2%) mouthwash twice a day (1:1 dilution with 10 ml of water) for seven days. Patient was also given proper oral hygiene maintenance instructions and regular follow up was advised.

DISCUSSION

The inorganic component of calculus consists of 76% calcium phosphate (Ca\(_3\)PO\(_4\))\(_2\), 4% magnesium phosphate (Mg\(_3\)PO\(_4\))\(_2\), 3% calcium carbonate (CaCO\(_3\)), 2% carbon dioxide, and traces of other elements. The organic component of calculus consists of a mixture of protein-polysaccharide complexes, desquamated epithelial cells, leukocytes, and microorganisms. Calcification of plaque become 50% mineralized in 2 days, and 60% to 90% in 12 days.

Saliva is the primary source of mineralization for supragingival calculus, whereas the serum transudate called gingival crevicular fluid furnishes the minerals for subgingival calculus. Buccal surfaces of the maxillary molars and the lingual surfaces of the mandibular anterior teeth are the most common location for calculus deposition as large salivary gland openings are localized at that site. In our case it was located at the labial surface of the mandible which is not unusual for calculus presentation however the size of calculus and being submerged was very unusual. Poor oral hygiene leads to plaque accumulation that initiates gingival inflammation, pocket formation, and the pocket in turn provides a sheltered area for plaque and bacterial accumulation. Gingival inflammation increases the flow of gingival crevicular fluid that mineralizes the continually accumulating plaque, resulting in the formation of subgingival calculus. Moreover, subgingival calculus may serve as a secondary retentive site for toxic bacterial products leading to more and more deposition. This might have also contributed to the development of larger calculus. The percentage of inorganic constituents in calculus is similar to that of enamel (96%) dentin (45%) and bone (60–70%). This characteristics of calculus gives a radiopaque appearance on the Intraoral radiographs and subgingival calculus presents as interproximal spurs. However the larger calculus may mimic tumors due to similar characteristics. IOPAR is the most commonly used radiograph in the dentistry however it has its limitations. CT scan has the advantage of providing detailed image and 3-dimensional image can be created which
was helpful in diagnosing the lesion as the dental calculus. 

Fauchard in his classic treatise “Le Chirurgien Dentiste (1728),” had reported a calculus approximately twenty times the size of the molar tooth itself. Wilson in 1967 reported calculus of size 3 cm × 2 cm covering the left maxillary tuberosity with the left molar completely embedded within resembling odontoma. Dental calculus is often found attached to dentures as well as reported by midwood.

Dental calculus creates an ideal breeding environment for bacterial biofilm and growth and is an important secondary etiological factor in the development and progression of periodontitis. Mechanical removal of subgingival plaque and calculus is considered to be the mainstay for the treatment of the chronic generalized periodontitis

**CONCLUSION**

Dental calculus is a common occurrence however giant calculus resembling a tumor is rare. Poor oral hygiene is the root cause for such presentation. Treatment is mechanical removal of calculus along with proper oral hygiene maintenance.

**REFERENCES**


