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An unusual presentation of unilateral peripheral buttressing bone in maxilla: A Case report and its management

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Abstract

The term "buttressing bone formation" is suggested as descriptive of its role in the overall process of trauma from occlusion. The phenomenon of buttressing bone formation is relatively uncommon in the alveolar bone. In this case report, peripheral buttressing bone formation presented as an isolated hard gingival swelling in maxillary posterior region. On radiographic examination bone loss or altered bone density was present. Buttressing bone formation could be acknowledged, which also was the cause for swelling clinically. Therefore explorative surgery was planned. Osteoplasty was done along with modified Widman flap. Follow-up was done after the time interval of 7 days and 3 months.

Keywords: Buttressing bone, osteoplasty, bone, periodontal surgery.

Introduction

Chronic periodontitis is a common inflammatory disease which is characterized by progressive destruction of the tooth supporting structures and ultimately, potential tooth loss. Bone formation occurs as part of the reparative process in trauma from occlusion, but because of its location its significance may extend beyond that of restoring injured tissue. The distribution of the bone formation suggests that it provides a mechanism for reinforcing bone trabeculae weakened by occlusally induced resorption.

The term “buttressing bone formation” is suggested as descriptive of its role in the overall process of trauma from occlusion. The attempt to compensate for bone destruction may inadvertently produce significant changes in the morphology of the alveolus. The effects of buttressing bone formation depend upon its rate and location, the rate of bone resorption induced by the excessive occlusal forces and the direction of the forces. Buttressing bone formation occurs centrally and peripherally. When it occurs centrally, within the jaw, it is located along the endosteal surfaces of the trabeculae and does not alter the gross morphology of the bone. The endosteal bone formation which reinforces trabeculae undergoing resorption also reduces the size of the marrow spaces and increases the radiopacity of the bone adjacent to the periodontal space. When buttressing bone formation occurs peripherally, on the external surface, it may produce a bulbous contour in the buccal or lingual plate or a pronounced ridge at the cervical bone margin. Bone is lost because of excessive occlusal forces, without the destructive effect of inflammation. Such a mechanism could produce a dehiscence of the buccal or lingual bony plates or accentuate dehiscence of the bone on malpositioned teeth.

Buttressing bone formation may be stimulated by occlusal forces which are not severe enough to produce trauma from occlusion. Under such circumstances it represents an adaptive mechanism to accommodate the altered occlusal forces. New bone is formed in an attempt to reinforce trabeculae which are either weakened by accelerated resorption caused by excessive pressure or require strengthening to accommodate increased occlusal tension. Buttressing bone formation may occur in areas of excessive tension as well as excessive pressure. The alveolar plate is reshaped in the direction of the tension in an attempt to preserve the normal width of the periodontal ligament.

The present case report describes an unusual presentation of unilateral peripheral buttressing bone in maxillary posterior teeth and its management.

Case Report

A 24-years old female patient reported to Department of Periodontology and Oral Implantology, in Himachal Institute of Dental Sciences Paonta Sahib, Himachal Pradesh, with a chief complaint of painless, hard swelling in the gums in relation to the maxillary posterior teeth region with bad breath and spacing in upper and lower front teeth. The swelling was present for 4 years but the patient did not notice any pain and increase in the size of swelling. On clinical examination, hard and painless swelling was noticed in the marginal and attached gingiva in posterior region. Gingiva over the swelling appeared normal. [Figure 1]. The swelling was bony hard in consistency. Mobility was absent. Orthopantamograph showed generalized bone loss. Since the clinical and radiographical pictures were inconclusive, it was decided to surgically explore the site.

Blood profile was taken prior to surgery. All the values were within normal limits. Patient was free of any systemic illnesses. After obtaining written consent for explorative surgery from the patient, a mucoperiosteal flap was elevated in relation to 11, 12, 13, 14, 15, 16 and 17. After raising mucoperiosteal flap, excessive thickening of the labial cortex in relation to 14, 15, 16, and 17 was noticed which was extending from the mesial to the distal aspect of the tooth. Treatment involved osteoplasty in relation to 14, 15, 16 and 17 to reduce the thickened labial cortical bone. The inner surface of the flap contained thick fibrous granulation tissue and that made the gingival over the swelling appear thick. Prior to suturing, thick fibrous granulation tissue on the inner side of the flap was

dissected and removed and the flap was sutured with periodontal dressing. Post-surgical instructions were given along with antibiotics (Amoxicillin 500 mg, three times daily for 5 days) and anti-inflammatory analgesics (Ibuprofen and Paracetamol twice daily for 3 days). The patient was advised to use 0.2% chlorhexidine gluconate mouth wash 12 hourly for 1 week. Patient was recalled after 10 days and sutures were removed. The swelling was reduced as compared to the first visit. The follow-up after 3 months showed satisfactory esthetics and no evidence of any recurrence [Figure 4]. The patient was further referred to the department of orthodontics for the treatment of space closure.

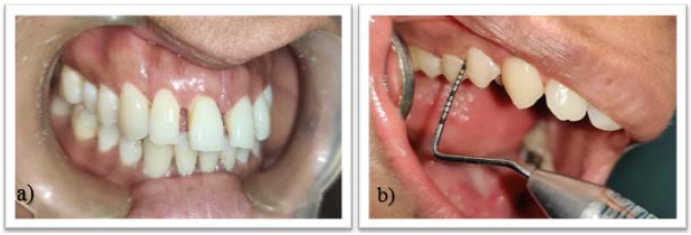

Figure 1: a) Pre-operative picture with painless hard swelling b) Clinical examination of periodontal pocket depth which was measured by UNC-15 probe

Figure 2: Orthopantamograph showing generalized bone loss.

Figure 3: Buttressing bone formation in posterior region

Figure 4: post-operative picture after a follow-up of 3 months with no hard swelling on clinical examination

Discussion

Inflammation in bone triggers a positive and a negative response in the form of bone formation and resorption simultaneously.[1] In periodontitis, both these processes occur at the same time, but most often bone loss results due to predominance of bone destruction over formation.[2] Occasionally in periodontitis, bone formation can be robust and in an attempt to buttress bony trabeculae weakened by resorption, peripheral buttressing bone is formed. This causes bulging of bone contour also termed lipping and may sometimes be accompanied by bony defects.[3] In our patient, a similar inflammation due to local factors or foreign body must have triggered bone resorption resulting in the intrabony defect. Considering the young age of the patient, a robust host response might have triggered exuberant bone formation on the labial

cortex resulting in buttressing bone formation that clinically presented as a gingival swelling. Literature search for reports of buttressing bone formation in periodontium and its management yielded few animal studies, an in vitro study analysing the prevalence and characteristics of bony exostoses using skull specimens by Horning et al,[4] and a report by Glickman and Smulow in 1962.[5]

Conclusion

The bone formative activity which occurs in the repair of trauma from occlusion has been described and designated as buttressing bone formation. It represents an attempt to reinforce weakened trabeculae, but it may produce additional effects such as bulbous or ridge-like distortion in the shape of the alveolus and areas of increased radiodensity in the periodontium.

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