

Case Report

Evidence of bone formation after Schneiderian membrane tenting without bone grafting for dental implantology

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Abstract: There is existing evidence that rough titanium surfaces could influence the blood clot formation and induce cell recruitment and stimulate wound healing. Grade 4 titanium implant was introduced in the left posterior maxillary region in a 45 year old female patient with 2.7 mm of dental implant projecting in the maxillary sinus after indirect sinus lift without bone grafting. Cone beam computer tomographic demonstrates organisation of haematoma and bone formation at six months post tenting of the sinus membrane.

Keywords: bone grafting, dental implant, haematoma

INTRODUCTION:

Heterotrophic bone formation in the areas of blood clot has been documented in literature and is a well know phenomenon. An organised clot with surrounding osteoprogenator cells progresses to bone formation. Management of pneumatised maxillary sinus is a vital parameter for implant retained dental prosthetic management as, the sinus boundary poses a critical limiting anatomical factor for implant size determination. In general, for the purpose of dental implant rehabilitation in maxillary posterior region, the sinus membrane is elevated either directly or indirectly and the created space is filled with a bone graft. Few reports suggest that lifting the maxillary sinus membrane and the accumulation of blood in the created space, leads to ossification of the organised clot without the need for additional bone grafting after the sinus lift.

CASE REPORT:

A 45 year old female patient who had reported with edentulism in the left maxillary posterior region was planned for rehabilitation with dental implant. Graft-less sinus augmentation technique was planned via indirect sinus lift technique for implant placement. Radiographic pre-surgical assessment revealed available bone height to be 8 mm and width of 5.5 mm at the planned implant placement site. Conventional para crestal maxillary alveolar incision was used to expose the crestal bone in the left maxillary alveolar region. A conventional implant osteotomy was created for Ø4.2mm for the implant diameter of 4.5mm to the depth of 7mm. Following this sinus floor osteotomy was done and the floor elevation was done. L 10mm x Ø 4.5mm dental implant was inserted at the proposed rehabilitation site.



Fig-1: presence of bone at the mesial aspect of the cranial end of the implant, the distal aspect shows regular beam hardening effect observed in X-Ray beam imaging techniques

Six month post-surgical cone beam computer tomographic evaluation demonstrated bone formation around the length of the dental implant projecting into the maxillary sinus even without bone grafting. Figure 1 demonstrates evidence of presence of bone at the mesial aspect of the cranial end of the implant, the distal aspect shows regular beam hardening effect observed in X-Ray beam imaging techniques. Clinically dental implant was functionally stable on prosthetic rehabilitation.

In this technique, schneiderian membrane elevation creates space for the accumulation of blood and clot organization around the dental implant. The space created is maintained by the implant placement due to the tenting effect. [1] Computed tomography data have demonstrated no difference in bone density following the use of allogeneic filling materials versus following a graftless sinus procedure. [2] In graft-less sinus elevation technique blood clot after sinus tenting acts as an autologous osteogenic graft material, to which osteoprogenitors can migrate, differentiate, and regenerate bone.

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