Journal of Indian Society of Periodontology

Home
Current issue
Instructions
Submit article

J Indian Soc Periodontol. 2015 Mar-Apr; 19(2): 236–238.
doi: 10.4103/0972-124X.149941: 10.4103/0972-124X.149941

PMCID: PMC4439640
PMID: 26015681

Evidence of bone formation in the nasal floor around polished surface bi-cortical screw implants after indirect nasal lift in an atrophied maxilla: Cone beam computed tomography-based case report

Mayur Khairnar and Vivek Gaur[1]

Private Practice, Precision Dental Clinic and Implant Centre, Mumbai, Maharashtra, India
[1]*Private Practice, Om Sai Dental Clinic, New Delhi, India*
Address for correspondence: Dr. Mayur S Khairnar, Precision Dental Clinic and Implant Centre, Shop No. 13, New Geetanjali CHS Ltd., Near K.T. Vision Multiplex, Anand Nagar, Vasai Road (West), Thane, Maharashtra, India.
E-mail: drmayurkhairnar@gmail.com

Received 2014 Jul 12; Accepted 2014 Oct 13.

Abstract

Maxillary jaw is restricted superiorly with maxillary sinus in the posterior region and nasal cavity in the anterior region. Augmentation of distal maxilla with recessed maxillary sinus has been documented since, last few decades. Sinus lifts the procedure either through crestal or lateral approach proves to be an effective way for augmenting bone for the placement of dental implants in atrophied posterior maxilla. However, when it comes to vertically deficient anterior maxilla, lifting of the nasal membrane is not considered. Perhaps, recent studies have shown greater success of dental implant placed after augmentation of the nasal floor. This report emphasizes on an observation of significant bone formation after indirect lifting of the nasal membrane with smooth polished surface bi-cortical implants.

Keywords: Basal implant, bi-cortical implant, nasal augmentation, nasal floor, nasal lift, polished implant, single piece implant

INTRODUCTION

Unlike maxillary sinus, nasal cavity does not undergo process of active pneumatization throughout life. However, alveolar ridge of severely resorbed height in the anterior maxilla can give an indirect impression of nasal cavity encroaching in the inferior direction. Although several sinus lift techniques have been developed to overcome the expansion of maxillary sinus

for implant placement, no technique is practiced to augment nasal floor for implant placement in atrophied region. Nonetheless Mazor *et al*.[1] and El-Ghareeb *et al*.[2] observed a predictable results with nasal floor augmentation with bone graft material. Both the authors have performed lateral or direct approach and used bone graft as an augmentation material to carry nasal floor augmentation.

CASE REPORT

A 62-year-old female patient with severely atrophied jaws wase planned to treat with immediate loading bi-cortical screw implant and lateral implants. Anterior maxilla was intended to receive six bi-cortical implants. The cortical implants work on the principle of engaging cortical bone. Thus it targets mainly crestal and basal cortical bone and if required buccal or lingual cortical bone for support for safe load transmission. Nasal floor is considered to have resorption stable cortical bone. Unlike conventional implants, these implants are narrower at crest and wider apically, with a smooth polished endosseous surface. The smooth surface prevents any retrograde infection and bacterial colonization. With this intent, part of polished bi-cortical implant can stay in the maxillary sinus or above nasal floor without any risk of infection.[3] Bi-cortical screws can be engaged into nasal floor cortex by perforating it, and screwing its thread into thick nasal floor. Good cortical bone engagement with immediate splinting allows immediate loading of these implants.[3] Bi-cortical implant has a polished rounded, noncutting part at the end of the shaft that helps in lifting membrane without perforating it.

TECHNIQUE

Preoperative panoramic radiograph and *computed tomography* (CT) section of the left side of the anterior maxilla showed more inferior level of the nasal floor compared to that of the right side [Figures 1–3]. Osteotomy preparation was carried out without drilling. After attaching path, finder sharp drill to hand grip it was gently tapped to reach superior nasal cortex (2^{nd} Cortex). This was followed by use of 2 mm twist drill corresponding to the diameter of the implant shaft at apex to perforate nasal cortex. Implants were then placed in to the prepared osteotomy until sufficient torque is achieved.

Three implants from midline to left-side in the anterior maxilla corresponding to the area of 21-23 region were found to be extruding much beyond the nasal floor [Figure 4]. Due to high primary stability of these implants, prosthesis were loaded immediately, within 72 h. Figure 4 shows immediate postoperative panoramic radiograph after implant placement that reveals radiolucency around these three implants. This was basically due to indirect lifting of nasal floor membrane with tapping and smooth apical part of the implant. Careful attempts were made to lift nasal floor membrane, to achieve primary stability and good torque of insertion for the implants. Patient was kept under observation and remained asymptomatic without any nasal problem during the observational period of 1 year. Postoperative 1-year follow-up panoramic X-ray also showed evidence of bone formation around the implant without any signs of infection [Figure 5]. This finding was confirmed by cone beam CT sections taken 1-year after loading of the prosthesis. The CT sections revealed evidence of new bone formation in the area of the nasal floor after indirect lifting of the nasal membrane with bi-cortical implants [Figures 6 and 7].

DISCUSSION

Evidence of bone formation below nasal membrane has been reported by several authors. However, the approach for achieving this was direct open approach, where nasal membrane was raised after raisng muciperiosteal flap to the nasal floor followed by bone augmentation. Recently, Mazor *et al*.[1] in retrospective cohort study documented that nasal floor elevation with the lateral approach serves as a predictable procedure allowing implant placement with increased stability due to the bi-cortical support. Similarly, El-Ghareeb *et al*.[2] observed predictable results with nasal floor augmentation with osteo-conductive material. Both the authors have performed lateral or direct open approach, and used bone graft as an augmentation material to carry nasal floor augmentation.

Unlike the lateral approach, this case observed a finding of bone formation below nasal membrane after indirect lifting of the nasal membrane with bi-cortical implants. This approach can be compared to indirect sinus lift. Bone formation in the nasal floor without augmentation material, is an uncommon phenomenon but same can be observed well in sinus lift procedure without using any augmentation material. Christopher Riben and Thor[4] concluded graft-less sinus lift as a reliable technique with higher implant survival rate in such areas. However, in this case evidence of bone formation with indirect nasal floor lift without any graft has been observed. The possible mechanism being formation of the blood clot after lifting nasal membrane could act as a scaffold for new bone formation. This patient post 1-year evaluation did not express any symptoms of nasal dripping or infection, without any signs of implants failure.

The preliminary observation from this case draws greater attention towards research with greater number of cases, follow-up period and long term studies with histological evidences of nasal augmentation with or without graft by indirect lifting of nasal membrane. Also, the possibility of clot or any augmentation materials getting infected is high in the nasal cavity, and this must not be avoided.

Footnotes

Source of Support: Nil

Conflict of Interest: None declared.

REFERENCES

1. Mazor Z, Lorean A, Mijiritsky E, Levin L. Nasal floor elevation combined with dental implant placement. *Clin Implant Dent Relat Res.* 2012;14:768–71. [PubMed: 20977613]

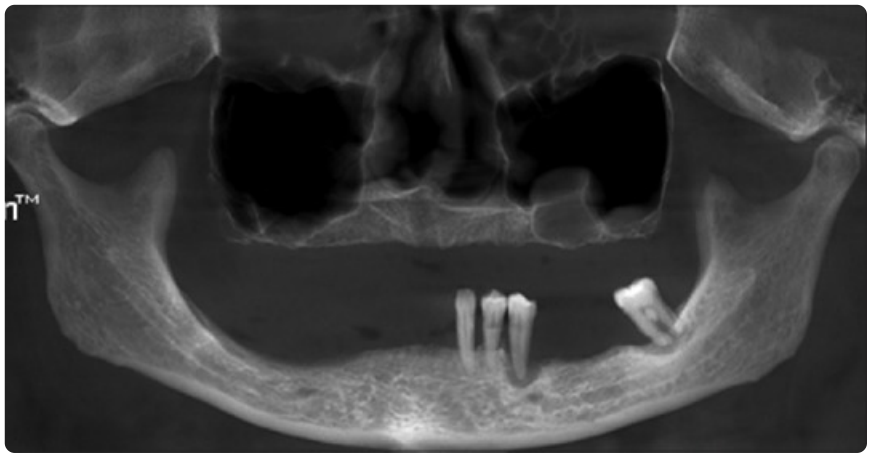
2. El-Ghareeb M, Pi-Anfruns J, Khosousi M, Aghaloo T, Moy P. Nasal floor augmentation for the reconstruction of the atrophic maxilla: A case series. *J Oral Maxillofac Surg.* 2012;70:e235–41. [PMCID: PMC4045105] [PubMed: 22177805]

3. Ihde S. Dental implant treatment using cortical bone or corticalized bone areas. *CMF Implant Dir.* 2010;4:04–22.

4. Riben C, Thor A. The Maxillary sinus membrane elevation procedure: Augmentation of bone around dental implants without grafts-A Review of a surgical technique. *Int J Dent 2012.* 2012 105483. [PMCID: PMC3383004] [PubMed: 22754569]

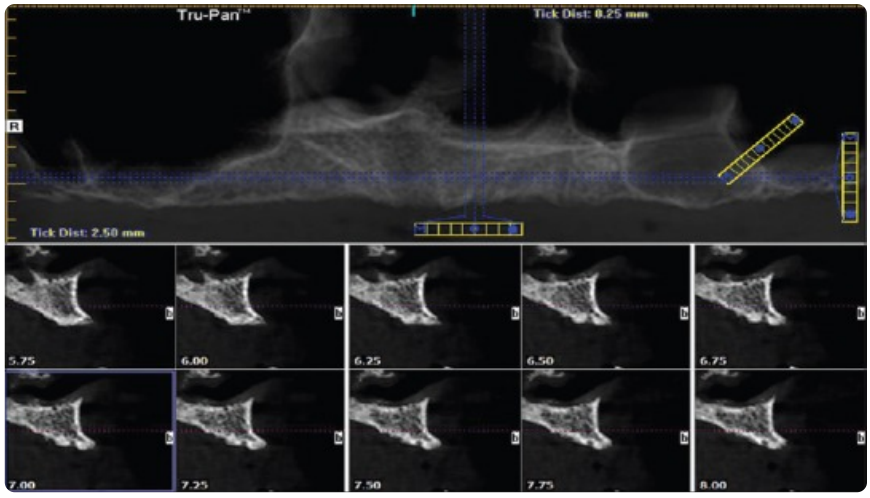
Figures and Tables

Figure 1



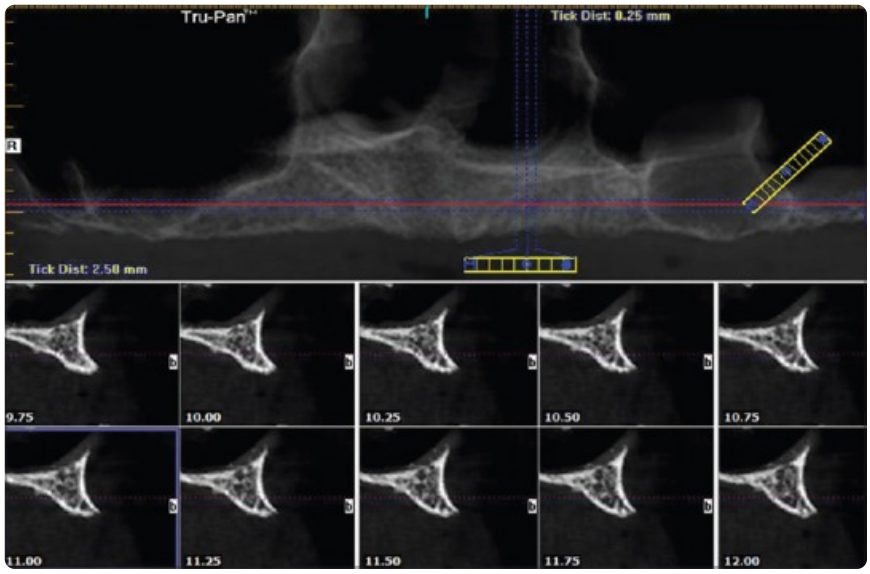
Preoperative panoramic radiograph

Figure 2



Preoperative cone beam computerized tomography section of left anterior maxilla- mesial section

Figure 3

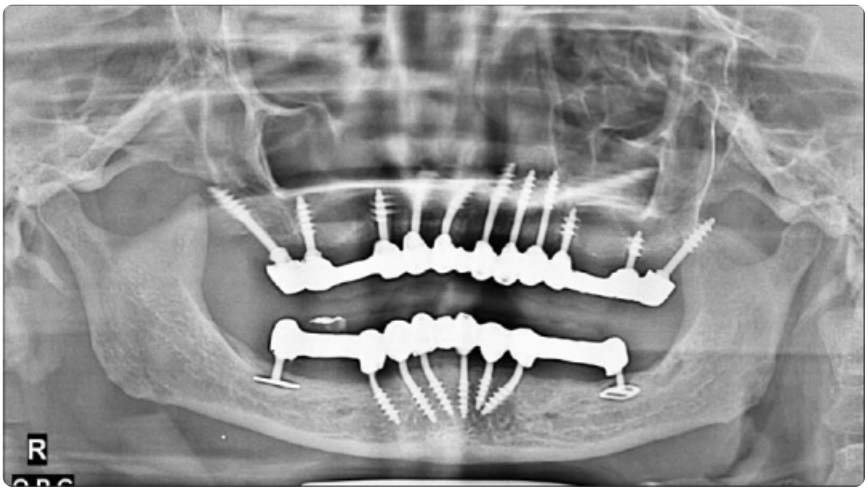


Preoperative cone beam computerized tomography section of left anterior maxilla- distal section

Figure 4

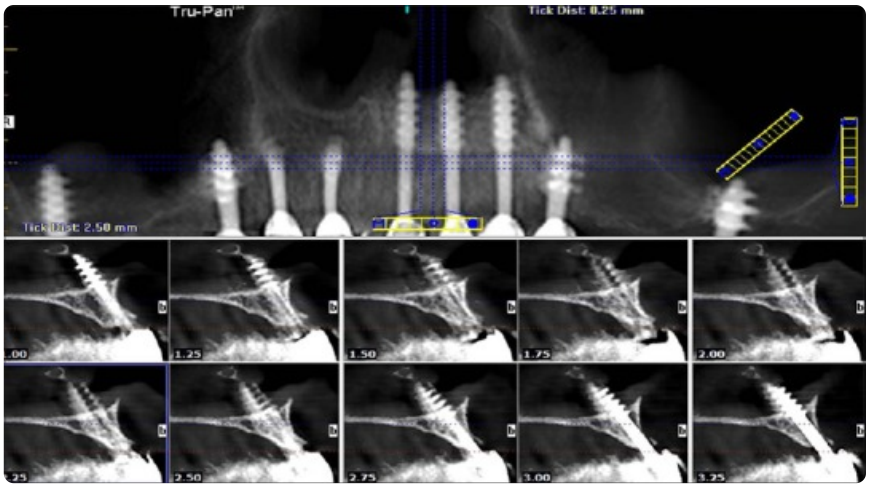
Panoramic radiograph immediately taken after implants placement. Note area of radiolucency in left anterior maxilla is created by lifting of nasal membrane with three bi-cortical implants

Figure 5



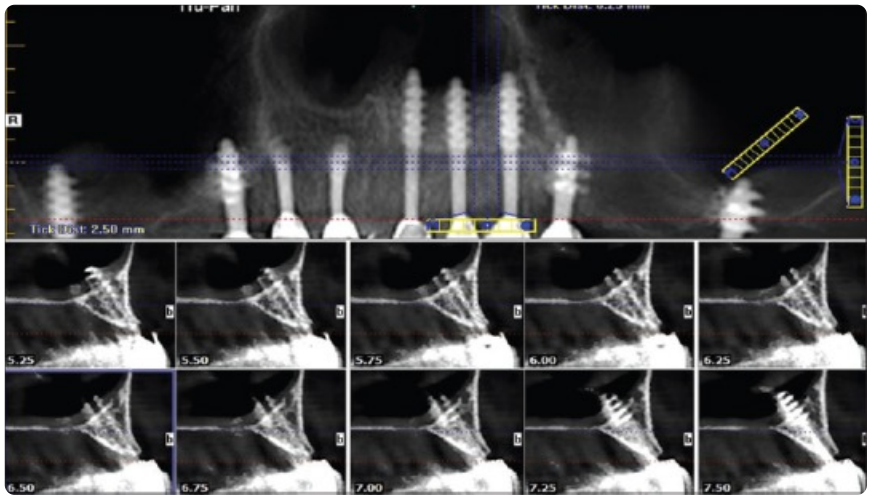
Post 1-year panoramic radiograph shows formation of bone in the nasal floor around implants

Figure 6



Post 1-year cone beam computerized tomography sections (thickness-0.25 mm) of left anterior maxilla-mesial sections. Note it reveals evidence of new bone formation between adjacent bi-cortical Implants

Figure 7



Post 1-year cone beam computerized tomography sections (thickness 0.25 mm) of left anterior maxilla-distal sections. Note it reveals evidence of nrw bone formation between adjacent bi-cortical implants