

New Method to Increase Inter-alveolar Height With Preservation of Crestal Cortical Bone for Implant Treatment

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The aim of this technique is to provide adequate interocclusal distance (3 mm) allowing preprosthetic management. A bone block was cut with piezosurgery and extracted, leaving the crestal cortical bone intact. The free crestal alveolar bone was fixed to the maxilla with 2 dental implants. After 3 months of follow-up, abutment surgery was performed and osseointegration was evident with adequate interocclusal height (7 mm) allowing prosthetic management.

Key Words: *surgical techniques, guided bone regeneration, dental implants*

SURGICAL TECHNIQUE

A 64 year-old woman with partial edentulous maxilla was referred to our clinic for preprosthetic management. Vertical interocclusal distance was almost 3 mm, which was inadequate for prosthetic treatment. Under local anesthesia horizontal and vertical incisions were made from the alveolar ridge. Mucoperiosteal flap was reflected from the vestibule side to avoid periosteal damage. To protect the marginal cortical bone a rectangular shape corticotomy was made with piezosurgery above 4 mm of the alveolar ridge with a length of 20 mm and a height of 4 mm; osteotomies were made with chisel (Figure 1a). Bone block was extracted in the middle of the alveolus and coronal bone segment was left. The intact alveolar segment and basal segment were drilled together and fixed with two intraosseous dental implants (Figure 1b). Primary stability of the implants was satisfactory. The extracted bone was used as autogenous bone graft onto the

osteotomy line and platelet-rich fibrin was applied onto the graft (Figure 1c). Mucoperiosteal flap was closed primarily. After 3 months of follow-up radiographic healing was evident. The new vertical interocclusal height increased to 7 mm (Figure 1d). Under local anesthesia healing caps of the osseointegrated implants were placed and the patient was scheduled for prosthetic rehabilitation.

Primary stability, which mostly depends on bone quality, is a critical factor for dental implant therapy. Thick cortical plates are essential for achieving primer implant stability. Posterior maxilla especially shows a poor bone quality with low bone density and thin cortical bone plates. Therefore achieving adequate primer stability may be challenging in posterior maxilla. In a cadaver study, average buccal and palatal cortical thicknesses in posterior maxilla were 1.69 mm 2.06 mm, respectively.¹ In addition, it has been reported that crestal cortical bone thickness is a significant factor for optimal stress distribution around implants.² With this technique, adequate interocclusal height for implant treatment devoid of cortical crestal bone destruction, which allows desired primary stability was provided. This technique may also be used with flapless implant insertion for wider alveoli, which

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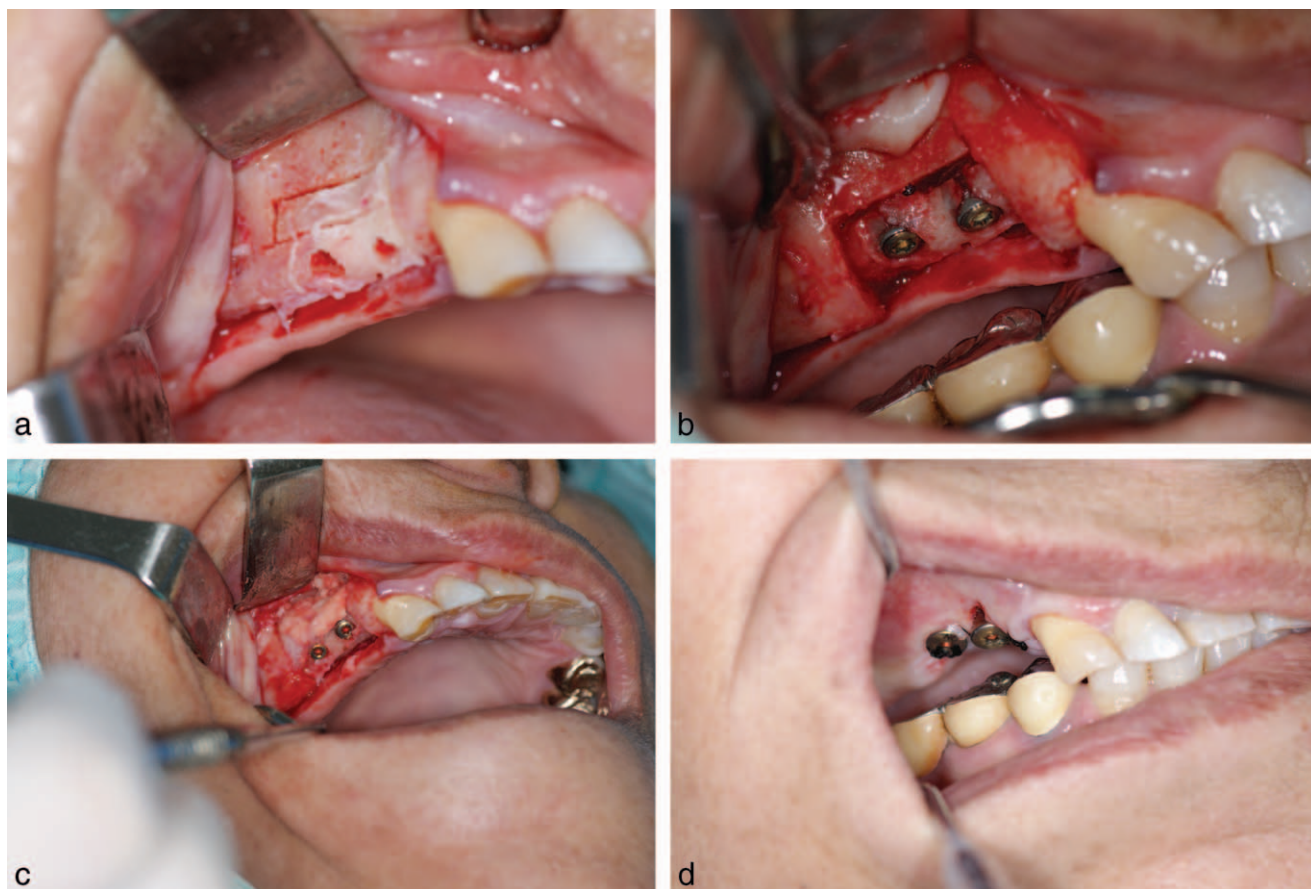


FIGURE 1. (a) Bone block was extracted in the middle of the alveolus and coronal bone segment was left. (b) After osteotomies, coronal and basal segment were drilled together and two segments were fixed with two intraosseous implants. Primer stability was good at both of implants. (c) Autograft and fibrine-rich plasma was on the segments. (d). Increased vertical occlusal height is seen.

provides better blood supply for the crestal segment.

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