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# Autogenous Bone Block versus Guided Bone Regeneration with Dense Polytetrafluoroethylene Membrane in Mandibular Vertical Ridge Augmentation

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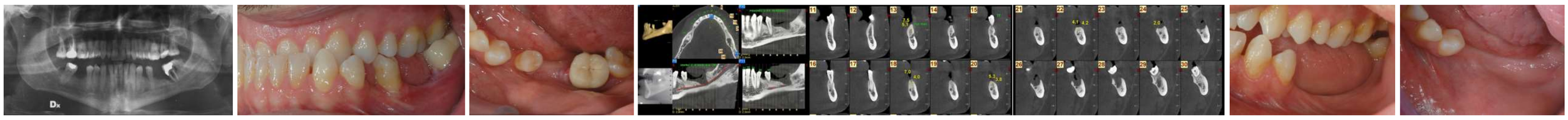
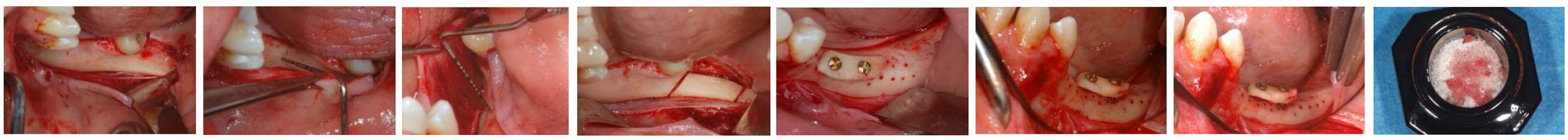
Objectives: The aim of this report was to determine which one, between autogenous bone block (ABB) or guided bone regeneration (GBR), is the most effective technique in mandibular vertical ridge augmentation.

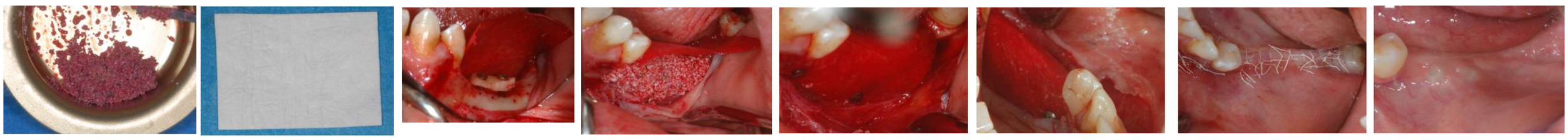
Case presentation: A 43 y o healthy patient, requiring the rehabilitation of the posterior left mandible, underwent the extraction of the periodontally compromised second molar and second premolar. Cone beam computed tomography (CBCT) scans showed a limited amount of bone above the mandibular canal, ranging from 2 to 6 mm. A vertical ridge augmemntation procedure with an ABB, harvested from the retromolar area, was performed. The ABB was fixed with 2 screws while the particles of a xenograft (Equimatrix™, Osteohealth, Shirley, NY, USA) filled the gap between ABB and the host bone. A cross-linked collagen membrane (Cytoplast RTM 3040, Osteogenics Biomedical, Lubbock, TX, USA), stabilized with titanium tacks, covered the graft. Coronal flap advancement allowed a tension-free suture. Healing was uneventful and after 6 months the CBCT showed the vertical and horizontal resorption of the ABB. A second intervention was required to reach a vertical ridge augmentation. A staged approach GBR procedure with the application of a titanium reinforced dense polytetrafluoroethylene (d-PTFE) membrane (Cytoplast TI 250 XL, Osteogenics Biomedical, Lubbock, TX, USA), fixed with mini-screws (Profix, Osteogenics Biomedical, Lubbock, TX, USA), and a graft of autogenous cortical bone, collected locally with a disposable bone collector (Safescraper, Meta, Reggio Emilia, Italy), mixed in a 1:1 ratio with a particulated allograft, composed by 70% mineralized bone and 30% demineralized bone (Encore™, Osteogenics Biomedical, Lubbock, TX, USA), was attempted. A tension-free suture was obtained with the coronal flap advancement. Healing was uneventful and after 6 months a new CBCT showed an effective vertical and horizontal ridge augmentation. Four Straumann Bone Level implants were inserted with a submerged healing. A free gingival graft, harvested from the palate, was performed in order to increase the width of the keratinized tissue that was lost because of the 2 vertical augmentation procedures.



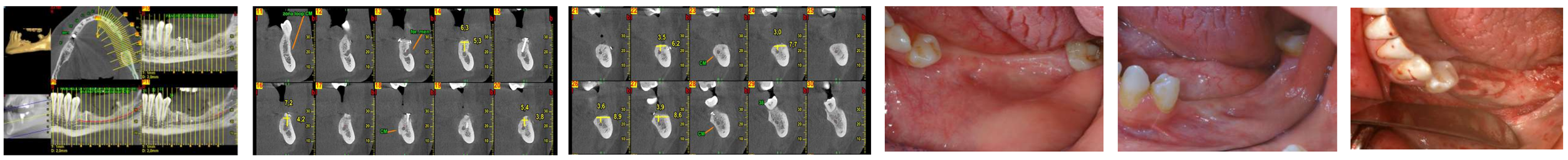
After the extraction of the periodontally compromised teeth, CBCT scans showed a lack of the vertical and horizontal bone volume, and the coronal position of the mandibular canal.



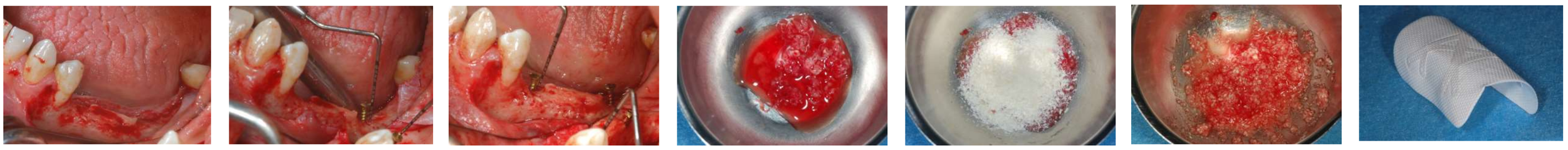
An autogenous bone block was harvested from the retromolar area, and stabilized in the premolar-molar area with 2 fixation screws, after the intramarrow bone perforation.



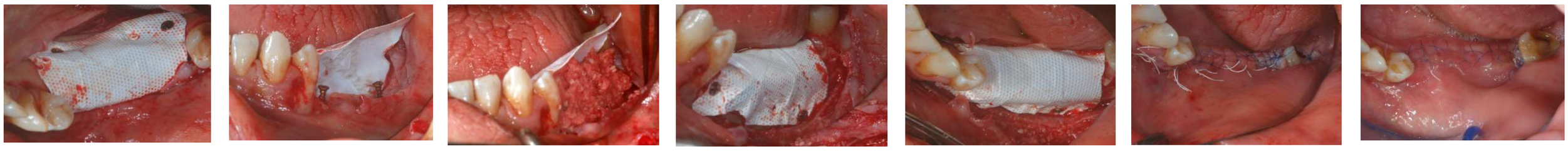
A graft of particulated autogenous bone and Equimatrix filled the gap. A Cytoplast RTM 30x40 collagen membrane, stabilized with tacks, covered the graft. PTFE sutures allowed uneventful healing.



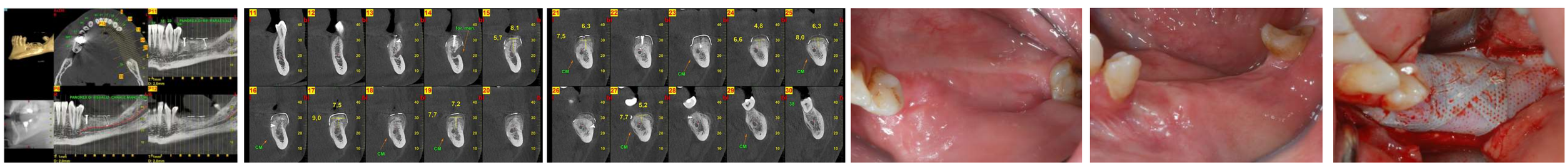
CBCT scans showed an improvement of the volume of bone. Nevertheless, this volume was not considered sufficient to allow a correct implant positioning, because of graft resorption.



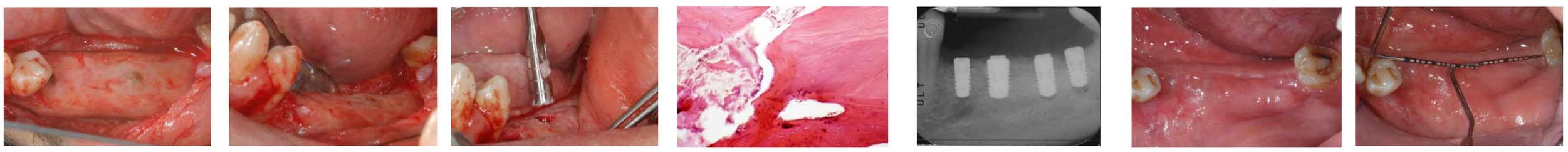
A second augmentation procedure was performed. Two tenting screws were used to prevent the collapse of a Cytoplast Ti-250 XL d-PTFE membrane, shaped to fit the defect.



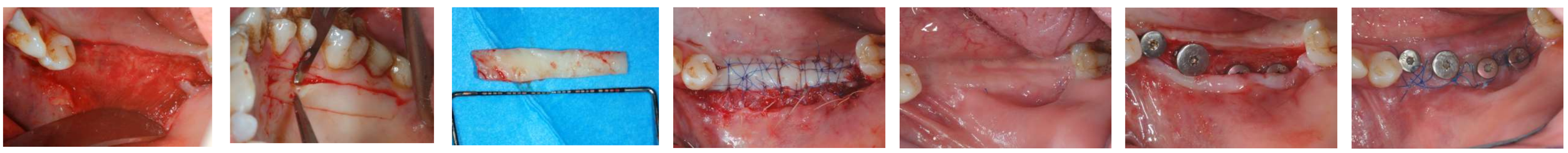
A graft of particulated autogenous cortical bone mixed with 1,5 cc of Encore combination allograft was covered by the membrane, that was stabilized with Pro-Fix micro-screws.



CBCT scans showed a vertical and horizontal bone augmentation that allowed the positioning of 4 Straumann Bone Level implants after the membrane removal.



The staged approach allowed to harvest a specimen of the regenerated bone, during implant bed preparation, for histologic evaluation. Cover screws were applied for submerged healing.



The thin band of keratinized tissue was augmented with a free gingival graft, harvested from the palate, before healing abutment application.

Results: The ABB procedure did not reach the required augmentation, because of the limited availability of bone and the remodeling pattern that took to the resorption of about half the graft. GBR performed better and gave a bulk of tissue increased both in vertical and horizontal dimension, that allowed the insertion of 4 implants.

Conclusion: GBR performed better than the ABB in the mandibular vertical ridge augmentation.