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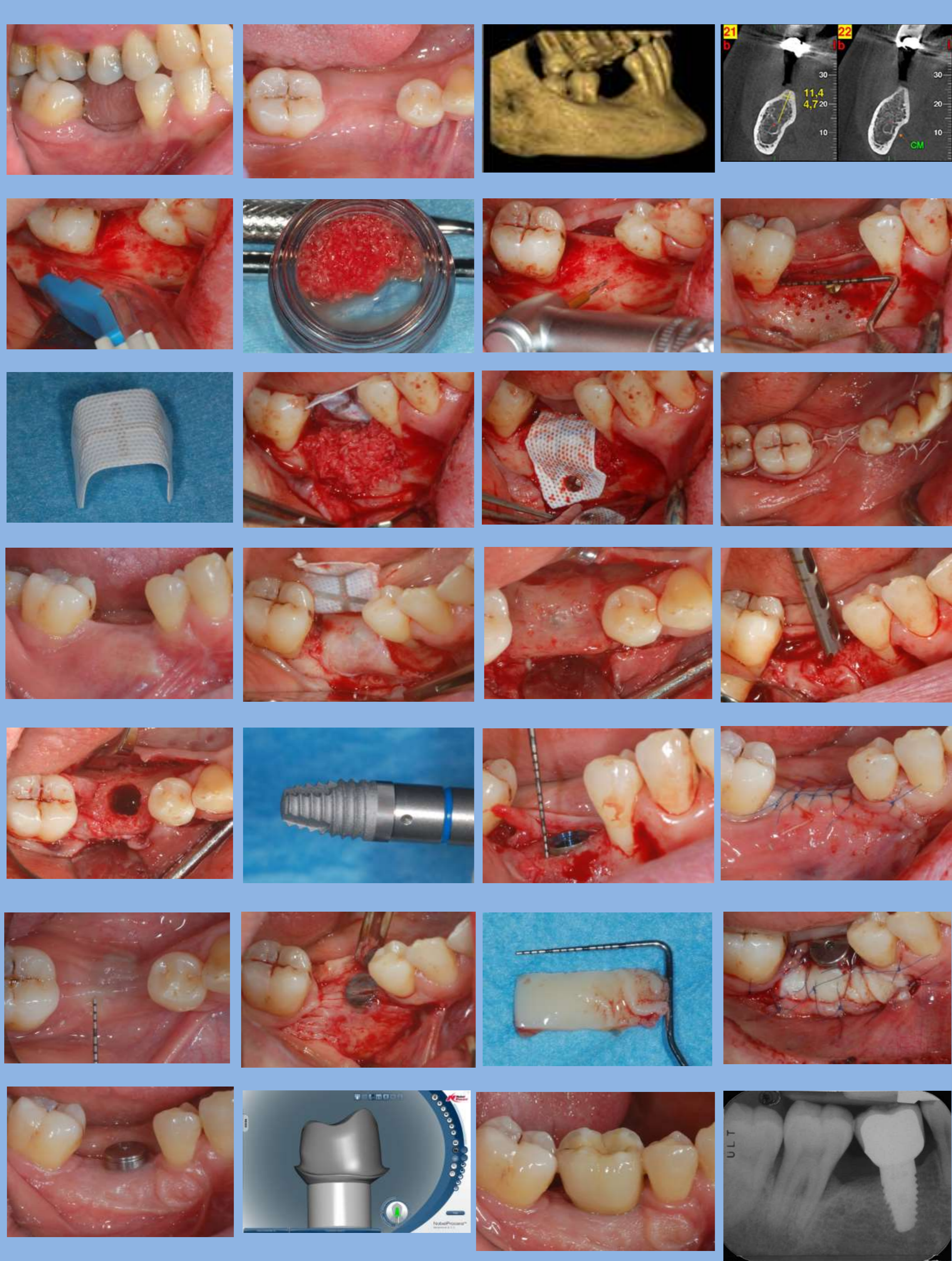
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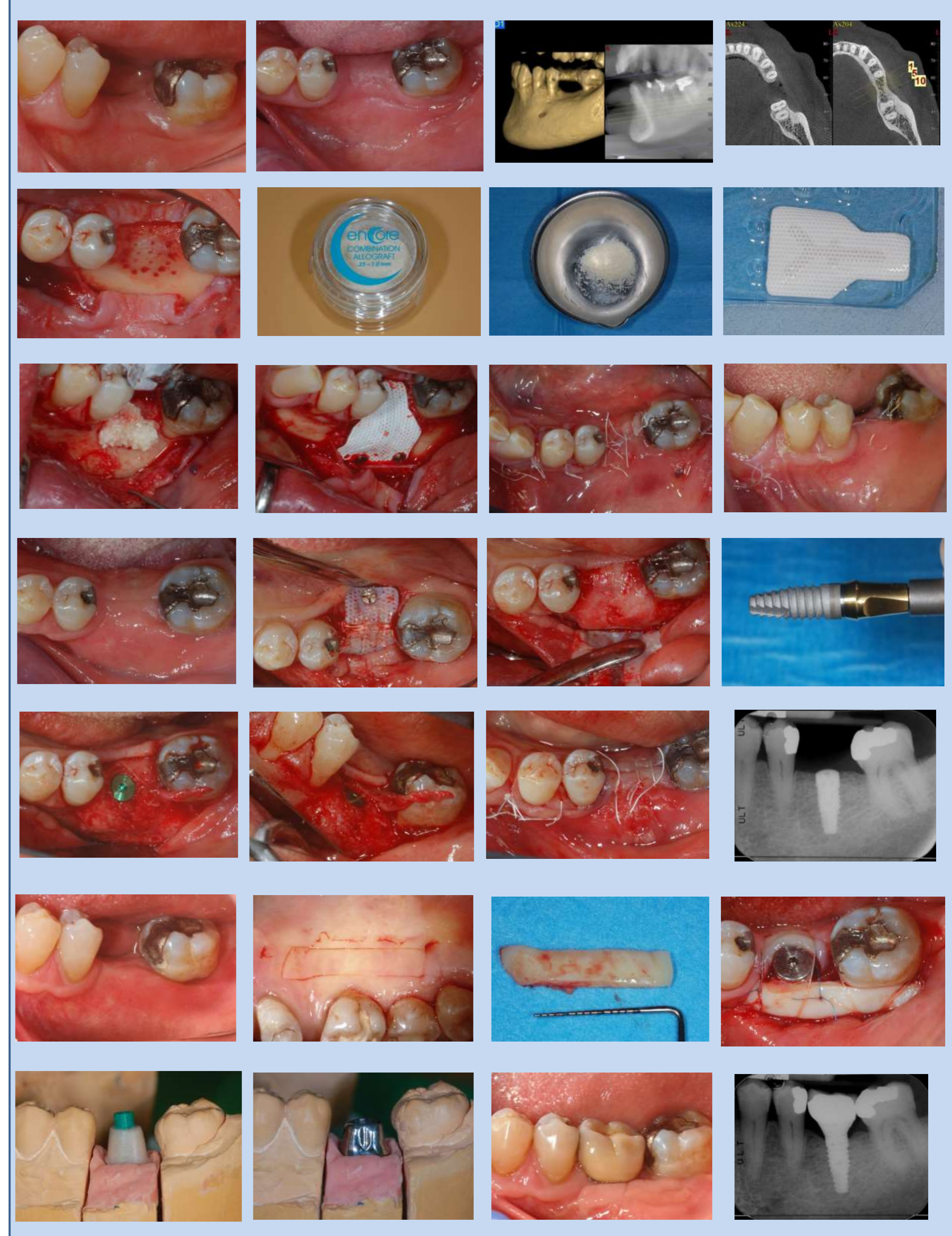
**Objectives:** The aim of this report was to determine if a particulated allograft could produce clinical and histological results similar to those of the autogenous cortical bone in horizontal ridge augmentation with non-resorbable titanium reinforced dense polytetrafluoroethylene (d-PTFE) membrane in 1-wall mandibular defects.

**Case presentation:** Two guided bone regeneration (GBR) procedures were performed in two consenting healthy patients (a 53 y.o. female, and a 65 y.o. male) for the treatment of similar 1-wall horizontal mandibular defects, requiring the positioning of 1 implant. A staged approach was chosen for both patients. One patient (control case) received a graft of autogenous cortical bone collected locally with a disposable bone collector (Safescraper, Meta, Reggio Emilia, Italy) covered by a titanium reinforced d-PTFE membrane (Cytoplast TI 250 PS, Osteogenics Biomedical, Lubbock, TX, USA), and the application of a tenting screw, to maintain the space beneath the membrane, while the other one (test case) received a particulated allograft composed by 70% mineralized bone and 30% demineralized bone (Encore™, Osteogenics Biomedical, Lubbock, TX, USA) covered by a titanium reinforced d-PTFE membrane (Cytoplast TI 250 BL, Osteogenics Biomedical, Lubbock, TX, USA). In both cases, the barrier membranes were fixed with titanium tacks. Periosteal incision allowed the flap to move coronally. Horizontal internal mattress and single interrupted PTFE sutures (Cytoplast, Osteogenics Biomedical, Lubbock, TX, USA) allowed a tension-free closure. Healing was uneventful and, after a period of 22 and 36 weeks for the test- and the control-case respectively, the sites were reopened, for titanium tacks and tenting screw removal and implant application. One BioHorizons Tapered Internal Laser-Lok implant (BioHorizons, Birmingham, AL, USA) was inserted in both cases. The test-case received a 4.6X12 mm implant, while the control-case received a 5.8X10.5 mm implant. The staged approach allowed to harvest a specimen for histologic evaluation of the regenerated tissue for both cases. Healing was uneventful and, at the moment of healing abutment connection, a free gingival graft, harvested from the palate, was performed for both cases, in order to increase the width of the keratinized tissue that was diminished after the coronal flap mobilization. After gingival graft shrinkage, a CAD-CAM titanium custom abutment and a porcelain-fused-to-metal crown were used for the restoration of both patients.

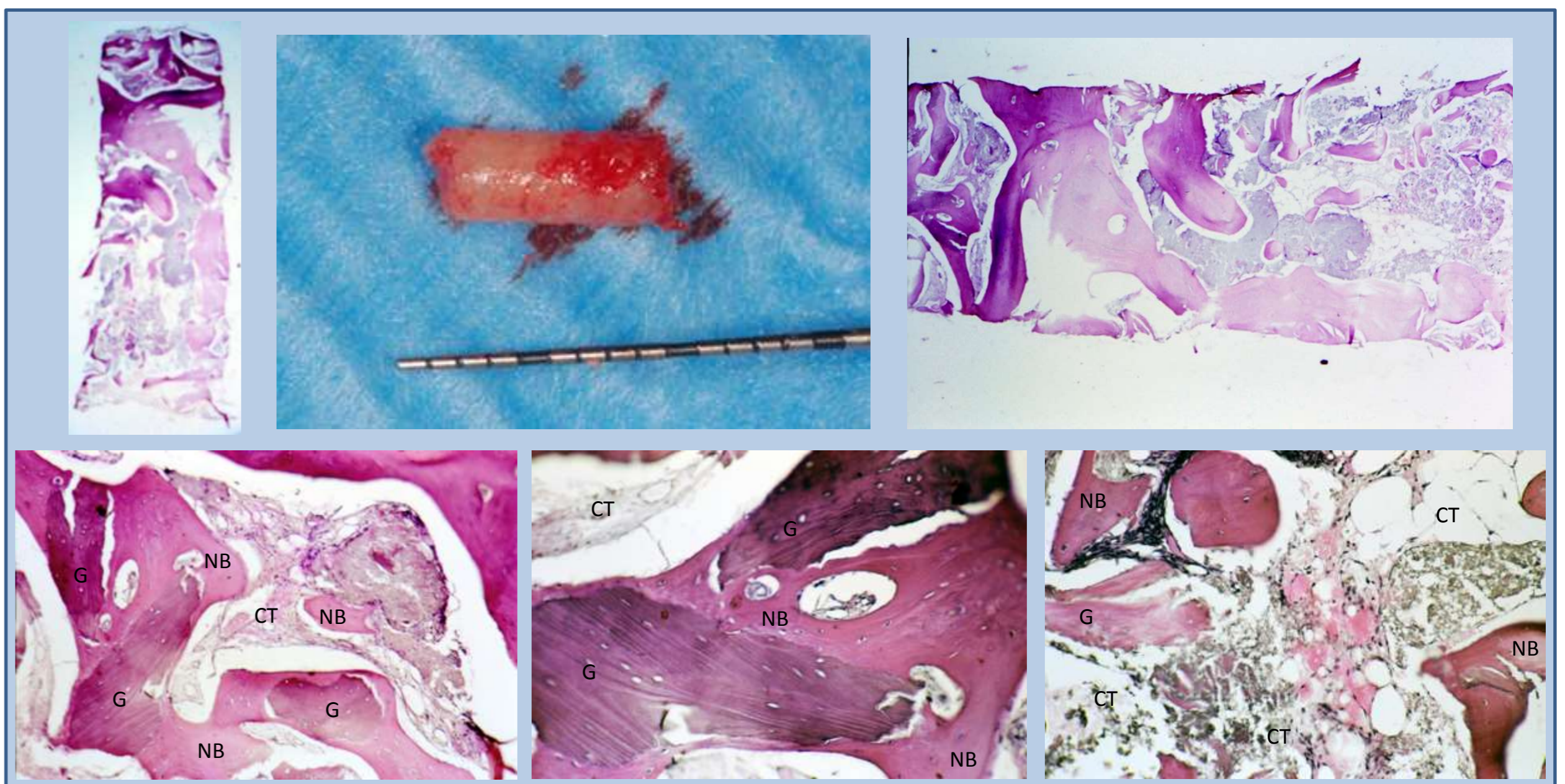
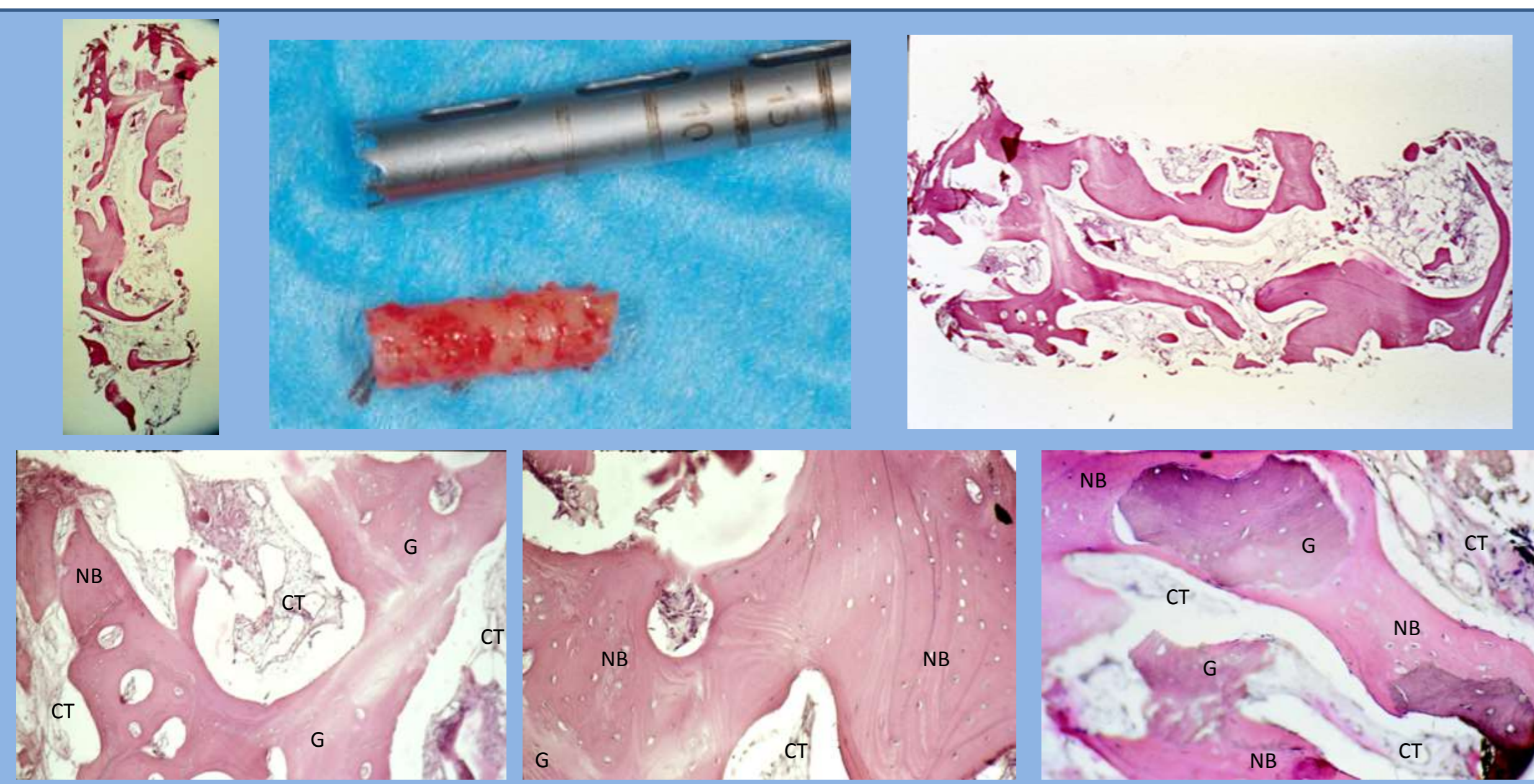
CONTROL CASE



TEST CASE



**Results:** Both procedures obtained similar horizontal ridge augmentation, allowing the positioning of an implant adequate to the site, Histologic evaluation revealed new bone formation, almost totally lamellar mature bone, in direct contact with the graft remnants. Both biomaterials used appeared to be very osteoconductive. The presence of vital lamellar bone in the most coronal part of the test-case biopsy was in correlation with the demineralized osteoinductive bone present in the graft. No sign of inflammation was observed either in the test- and in the control-case. Clinical and radiographical 1-year follow-up showed good results. NB: New Bone, CT: Connective Tissue, G: Graft. Hematoxylin-Eosin staining.



**Conclusion:** The use of a particulated allograft composed by 70% mineralized bone and 30% demineralized bone with a 5-month healing period under a d-PTFE membrane obtained the same clinical and histological results of an autogenous cortical bone graft with a 8.5-month healing under the same membrane in horizontal GBR procedures. Correction of 1-wall horizontal defect can be effectively achieved in just 5 months by means of an allograft that combines the osteoconductive properties of the mineralized bone, and the osteoinductive properties of the demineralized bone.