

Extra oral digital scanning and imaging superimposition for volume analysis of bone remodeling after tooth extraction with and without 2 types of particulate porcine mineral insertion: a randomized controlled trial

ABSTRACT

In case of progressive tissue and volume loss with dimensional changes of the alveolar ridge contour, it has been demonstrated that incorporation of bone substitute material into the extraction socket can minimize the edentulous ridge volume loss or maximize the bone formation within the healing area. This technique, called socket grafting or “alveolar ridge preservation” (ARP), showed to be effective. The aim of this multi-center single-blind randomized control trial was to test the effectiveness of socket grafting with 2 biomaterials (cortical or pre-hydrated collagenated cortico-cancellous porcine bone) covered with a resorbable barrier in maintaining contour stability of the extraction area when compared to control extraction sockets that had a natural healing. The observation was performed by means of a laser scanner that provided the possibility of 3-dimensional evaluation to be performed on patients’ dental arches plaster cast models. Following tooth extraction, 55 patients were assigned to their treatment group using a random sequencing: 15 patients (*cort*) were grafted with cortical porcine bone (particle size 600-1000 μm , OsteoBiol® Apatos, Tecnos®, Giaveno, Italy); 15 patients (*coll*) were grafted with collagenated cortico-cancellous porcine bone (particle size 600-1000 μm , OsteoBiol® mp3®, Tecnos®); 25 patients (*nat*) had natural healing without grafting.

At the 4-month intergroup analysis, the test groups (cortical or pre-hydrated collagenated cortico-cancellous porcine material) seemed to behave significantly better than the naturally-healing group in terms of volume and contour conservation. No differences were seen, however, between the 2 test groups, although the volume loss and linear height reduction seemed to slightly favour the collagenated material.

CONCLUSIONS

Based on the results of the present randomized trial, Authors concluded that *“the present investigation attested that post-extractive sockets grafted with either cortical or pre-hydrated collagenated cortico-cancellous porcine material covered with a resorbable collagen membrane showed reduced bone loss when compared to naturally-healing sockets. Moreover, the 2 grafting materials were not able to preserve the alveolar crest, and a reduction close to 30% in the estimates was registered after healing”*.

ALVEOLAR REGENERATION

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A Barone¹
P Toti^{2,3}
GB Menchini-Fabris^{2,3}
G Derchi^{2,3}
S Marconcini^{2,3}
U Covani^{2,3}

1 | Unit of Oral Surgery and Implantology, Department of Surgery, University of Geneva, Genève, Switzerland

2 | Department of Surgical, Medical, Molecular and Critical Area Pathology, University of Pisa, Pisa, Italy

3 | Tuscan Dental Institute, Fortis Dental Center, Forte dei Marmi, Italy

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