

Healing outcomes at implants installed in sites augmented with particulate autologous bone and xenografts. An experimental study in dogs

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Abstract

Aim: To evaluate the integration of implants installed at the interface of pristine and grafted tissue augmented with particulate autologous bone or deproteinized bovine bone mineral (DBBM), concomitantly with a collagen membrane.

Material and methods: In 6 Labrador dogs, the distal root of (3)P(3) and (4)P(4) was endodontically treated and hemi-sected, and the mesial roots extracted concomitantly with the extraction of (2)P(2). The buccal bony walls were removed, and two box-shaped defects, one larger and one smaller, were created. After 3 months, flaps were elevated, and the defects were filled with particulate autologous bone or DBBM in the right and left side of the mandible, respectively. Collagen membranes were used to cover the grafted areas. Three months later, flaps were elevated, and a customized device was used as surgical guide to prepare the recipient sites at the interface between grafts and pristine bone. One implant was installed in each of the four defects. After 3 months, biopsies were harvested and ground sections prepared for histological evaluation.

Results: The augmentation technique was effective at all sites and all the foreseen implants were installed. In the histological analysis, all implants were integrated in mature bone, at both the buccal and lingual aspects. The most coronal bone-to-implant contact and the top of the buccal bony crest were located at a similar distance between test and control implants. However, these distances were higher at the larger compared with the smaller defects. Especially in the large defect, residual particles of DBBM were found embedded into connective tissue and located outside the bony crest.

Conclusions: Particulate autologous bone as well as DBBM particles used to augment horizontally the alveolar bony process allowed for the osseointegration of implants installed after 3 months of healing.