

The use of a collagenated porcine cortical lamina in the reconstruction of alveolar ridge defects. A clinical and histological study

ABSTRACT

In case of hard tissue volume lack, the use of resorbable and non-resorbable membranes has been proposed in order to allow a proper alveolar ridge reconstruction. After the evaluation of the clinical advantages and disadvantages of different biomaterials normally used for this purpose, the Authors suggest that the use of a collagenated porcine cortical barrier seems to have relevant clinical advantages, including: the long-term stability of the membrane; its plastic consistency, well suited for the vertical reconstruction; the absence of a second re-entry surgery for its removal; the quality of integration with the native bone and the appositional graft; the second intention healing with keratinized mucosa in case of exposure and the poor presence of connective tissue over the regenerated bone.

The present pilot study included 8 partially edentulous patients (6 females and 2 males, mean age: 45 years) requiring bone regeneration procedures to achieve a prosthetically driven implant placement, with the aim to clinically and histologically evaluate the use of a collagenated porcine bone lamina in case of lateral and vertical bone augmentation procedures, in conjunction with porcine-derived bone particles. The bone graft consisted of a porcine-derived collagenated bone (OsteoBiol® mp3®, Tecnos®, Giaveno, Italy) whereas the membrane consisted of a porcine-derived collagenated cortico-cancellous shield (OsteoBiol® Curved Lamina, Tecnos®). The membrane is a soft cortical lamina derived from cortical porcine bone, with a plastic consistency, and can be shaped with sterile scissors to reach the desired size, and adapted to completely cover the grafting site.

The histological examination showed porcine bone to have osteoconductive properties, with the presence of new bone on the surface of the porcine bone particles. The Authors also found evidences of osteoclastic resorption, with no signs of foreign body reaction. Further, at the coronal part of the defect, a well vascularized connective tissue was found and this might suggest a certain porosity of the membrane, which allows vascular cells ingrowth and new vessels formation, attesting the biocompatibility of the shield.

CONCLUSIONS

The present study showed good clinical results when using a porcine bone substitute and a collagenated cortical lamina for the augmentation of the alveolar crest. A curved bone lamina was employed, with the clinical advantage of its adaptation to the alveolar crest, guaranteeing an optimal contour of the regenerated bone.

As the Authors stated in their conclusion: *"It may be assumed that the combination of a slowly resorbing cortical bone shield facing the inside of the defect and a biocompatible and tissue friendly collagenated membrane facing the outside could have the potential to simplify the achievement of the desired results without depending from operator skills"*.

HORIZONTAL AUGMENTATION

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BONE SUBSTITUTES

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