

Tissue changes after ridge preservation with two xenografts. Preliminary results from a multicenter randomized controlled clinical trial.

ABSTRACT

Ridge preservation procedures can counteract the tissue changes occurring after tooth loss. The aim of this randomized controlled trial was to compare and evaluate the clinical and histological outcomes of extraction sockets grafted with cortical porcine bone (OsteoBiol® Apatos, TecnoSS®, Giaveno, Italy) (*cort*-group) to those grafted with collagenated cortico-cancellous porcine bone (OsteoBiol® mp3®, TecnoSS®) (*coll*-group) both covered with a collagen membrane (OsteoBiol® Evolution, TecnoSS®) left exposed and fresh extraction sockets which healed naturally (*nat*-group).

The two different xenografts were also compared to each other to determine their respective efficacy in preserving the alveolar ridge dimensions following tooth extraction. The anatomical measurements were taken at baseline and at 3 months after tooth extraction. The following variables were registered to the nearest millimeter: vertical bone changes; buccal-lingual width; histomorphometric parameters such as newly formed bone (NFB), non-mineralized tissues (NMT) and residual graft particles percentages (RGP).

The grafted sites showed a significant ($P < 0.0001$) lower vertical bone loss at buccal and lingual/palatal aspects than that registered at the no-grafting sites. Moreover, the grafted groups behaved significantly better than the non-grafted group in terms of horizontal bone resorption. The *cort*- and *coll*-groups had a horizontal bone loss of 1.33 ± 0.71 mm and 0.93 ± 1.25 mm, respectively, while the *nat*-group had a horizontal bone loss of 3.60 ± 0.72 mm. No statistically significant differences were registered between the grafted groups for any of the variables, except for vertical bone loss at the lingual/palatal aspect ($P = 0.0039$).

CONCLUSIONS

The present study showed that porcine bone, resorbable membrane and a flapless approach were more effective in controlling the bone changes after tooth extraction when compared to no grafting. The ridge preservation procedures had significantly better outcomes when compared to natural healing. The biomaterials did not differ for maintenance of bone width; even though, the bone height seemed to be better preserved with the cortical porcine bone.

Based on these findings, the Authors affirm: *“Alveolar ridge preservation with cortical or collagenated cortico-cancellous porcine bone is an effective way to maintain the ridge dimensions after tooth extraction compared to spontaneous healing, though a complete prevention of remodeling is not achievable irrespective of the biomaterial employed. No significant differences were found between the two pertaining to the ridge width. Furthermore, no significant differences regarding the histomorphometric analysis were registered between the two grafted groups”.*

ALVEOLAR REGENERATION

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