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COMPARISON OF PORCINE VERSUS BOVINE BONE SUBSTITUTE FOR ALVEOLAR SOCKET PRESERVATION

Lee JS, Cha JK, Kim CS 'Alveolar ridge regeneration of damaged extraction sockets using deproteinized porcine versus bovine bone minerals: A randomized clinical trial.' Clin Implant Dent Relat Res. 2018 Oct;20(5):729-737. | Link to the abstract

CLINICAL RELEVANCE

The clinical evidence for the use of bone grafts within damaged extraction sockets is still limited. In addition, the choice of grafting biomaterial from different animal origins may influence the outcome The study shows that comparable results of extraction socket preservation can be achieved with similarly processed materials of different animal origin.

STUDY DESIGN

The randomized single-blinded study included 100 patients (50 per group) with periodontitis induced extraction socket damage. After tooth removal and socket cleaning, the sites were grafted with biomaterial of bovine or porcine origin and covered with a resorbable collagen membrane.[§]

- Test: Deproteinized porcine bone mineral (DPBM*)
- Control: Deproteinized bovine bone mineral (DBBM[#])
- Follow-up: 4 months post-surgery

Primary outcome: Change of alveolar ridge height and width based on CT data (DICOM format).

Secondary outcome: Included changes in the grafted volume within the damaged extraction socket.

RESULTS

A total of 100 patients (100 sockets) were included in the study (50 per group). Six patients (3 per group) were lost during the follow-up period before implant surgery. There were no statistically significant demographic or extraction socket site distribution differences between the two groups at baseline. The included sites exhibited a large variety of defect morphologies. Additional procedures such as guided bone regeneration were performed on 13 sites in the DBBM group and 8 sites in the DPBM group due to insufficient bone availability caused by dimensional shrinkage.

Reductions in ridge dimensions (width and height) were comparable between the two groups 4 months after surgery. There was no statistically significant difference between the two groups in the primary outcome of ridge reduction (Figures 1 & 2) .

WIDTH REDUCTION AT 4 MONTH

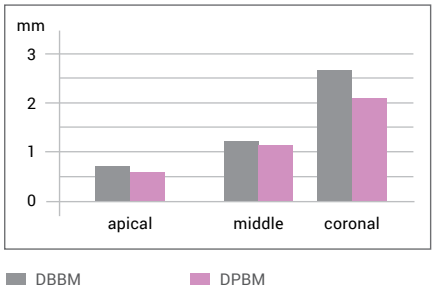

Figure 1: Similar average horizontal width reduction observed in both groups at the apical, middle and coronal level.

HEIGHT REDUCTION AT 4 MONTH

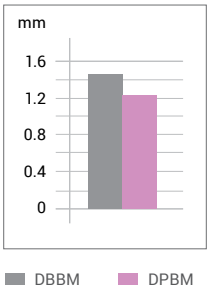

Figure 2: Comparable ridge height reduction in both groups.

The measured changes in graft volume were similar for the two grafting materials. Compared to the initial volume at baseline, the proportional volumetric reduction was 6.48% ± 24.23% in the DPBM group and 8.14% ± 22.23% in the DBBM group, with a large variation range observed in both groups (DPBM min. -38.90%/max. 40.21%, DBBM min. -54.80%/ max. 57.65%).

CONCLUSION

The study shows that alterations of ridge volume are minimal and independent of the deproteinized graft material (bovine or porcine) used for extraction socket treatment of periodontitis induced lesions.

[§] BioGide, Geistlich Wolhusen, Switzerland
* 0.25 – 1.00 mm ; THE GRAFT, Purgo, Seoul, Korea
[#] 0.25 – 1.00 mm ; Bio-Oss, Geistlich Wolhusen, Switzerland

REGEDENT AG
Zollikerstrasse 144 | CH-8008 Zürich
Tel. +41 (0) 44 700 37 77
info@regedent.com | www.regedent.com