Gholami G, Najafi B, Mashhadiabbas F, Goetz W, Najafi S

Clinical, histologic and histomorphometric evaluation of socket preservation using a synthetic nanocrystalline hydroxyapatite in comparison with a bovine xenograft: a randomized clinical trial

Clin. Oral Impl. Res. 00, 2011, 1–7 doi: 10.1111/j.1600-0501.2011.02288.x.

Objectives: The aim of this study was to compare a nanocrystalline hydroxyapatite (NCHA), NanoBone® and a deproteinized bovine bone mineral (DBBM), Bio-Oss® with a collagen membrane on the horizontal ridge width alterations following tooth extraction, in addition to histologic aspects of the grafted extraction sockets.

Material and methods: In this randomized clinical trial, 28 symmetrical, non-molar, extraction sockets using a split-mouth design in 12 patients (eight women and four men; aged 21–60; mean 44.6 ± 11.4 years), were randomly selected in the first group to be grafted with DBBM granules covered with a collagen membrane and in the other group grafted with NCHA covered with a collagen membrane. Following extraction horizontal ridge width was measured using caliper and was blindly compared to the dimensions measured prior to implant placement, at the 6- to 8-month follow-up. Subsequently, a 2 9 6 mm trephine core was obtained with aid of acrylic stent and routine histologic preparation was performed on the specimens.

Results: The width of the DBBM group decreased from 7.75 ± 1.55 to 6.68 ± 1.85 mm ($P < 0.05$), whereas the width of the NCHA group decreased from 7.36 ± 1.94 to 6.43 ± 2.08 mm ($P < 0.05$). The mean between-group difference did not reach statistical significance ($P = 0.62$). Furthermore, histologic and histomorphometric analyses revealed 28.63 ± 12.53% vital bone in NCHA group vs. 27.35 ± 12.39% in DBBM group, and no statistically significant difference between the groups ($P = 0.68$).

Conclusion: Socket preservation using either NCHA or DBBM in combination with collagen membrane, results in similar, limited horizontal ridge width alterations following tooth extraction.