Ghanaati S, Barbeck M, Willerhausen I, Thimm B, Stuebinger S, Korzinskas T, Obreja K, Landes C, Kirkpatrick CJ, Sader Ra

Nanocrystalline Hydroxyapatite Bone Substitute Leads to Sufficient Bone Tissue Formation Already after 3 Month: Histological and Histomorphometrical Analysis 3 and 6 Months following Human Sinus Cavity Augmentation.

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Purpose: In this study the de novo bone formation capacity of a nanocrystalline hydroxyapatite bone substitute was assessed 3 and 6 months after its insertion into the human sinus cavity.
Materials and Methods: Sinus cavity augmentation was performed in a total of 14 patients (n = 7 implantation after 3 months; n = 7 implantation after 6 months) with severely atrophic maxillary bone. The specimens obtained after 3 and 6 months were analyzed histologically and histomorphometrically with special focus on bone metabolism within the residual bone and the augmented region.
Results: This study revealed that bone tissue formation started from the bone-biomaterial-interface and was directed into the most cranial parts of the augmented region. There was no statistically significant difference in new bone formation after 3 and 6 months (24.89 1 10.22% vs 31.29 1 2.29%), respectively.
Conclusions:Within the limits of the present study and according to previously published data, implant insertion in regions augmented with this bone substitute material could be considered already after 3 months. Further clinical studies with bone substitute materials are necessary to validate these findings.