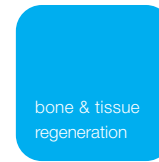


Science Flash clinical study



The physical and chemical properties of a bone graft material (as largely determined by its production process) significantly influence its resorption rate. In a comparative sinus lift study, cerabone® showed higher volume stability than Bio-Oss®.

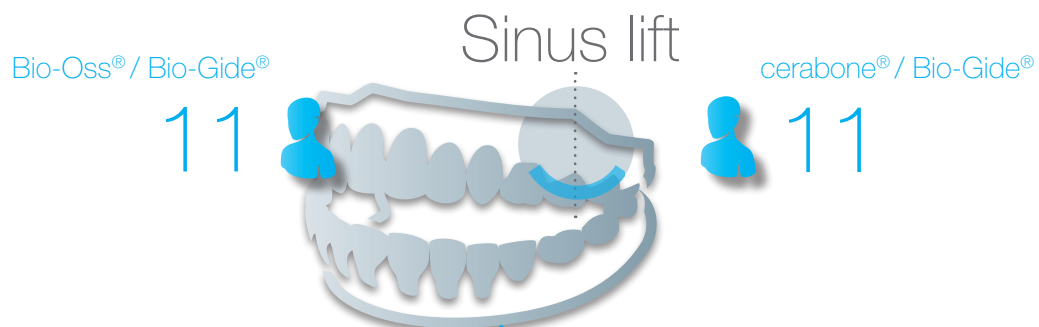
Scientific source:



Riachi, F., Naaman, N., Tabarani, C., Aboelsaad, N., Aboushellb, M.N., Berberi, A. and Salameh, Z. (2012), "Influence of material properties on rate of resorption of two bone graft materials after sinus lift using radiographic assessment", International journal of dentistry, Vol. 2012, Article ID: 737262.

<http://www.ncbi.nlm.nih.gov/pubmed/22899930>

Study design:



- Radiographic graft height assessment following sinus lift up to 4 years
- Measurements at the time of augmentation, at implant placement 8 months post augmentation, at 1 and 4 years post implantation

Results:

- Amount of calcium release due to dissolution of material in water much lower for cerabone®, after 6 weeks dissolution rate reached a fixed rate for both materials
 - Smaller particle size of Bio-Oss® results in significant higher surface area, higher calcium release rate and smaller crystallite size
- > These minor differences were associated with significantly higher resorption rate of the initial graft volume observed for Bio-Oss® material



The physical and chemical properties of a bone graft material (as largely determined by its production process) significantly influence its resorption rate. In a comparative sinus lift study, cerabone® showed higher volume stability than Bio-Oss®.

Abstract

PURPOSE:

The aim of this study was to investigate the influence of chemical and physical properties of two graft materials on the rate of resorption.

MATERIALS AND METHODS:

Direct sinus graft procedure was performed on 22 patients intended for implant placement. Two types of graft materials were used (Bio-Oss and Cerabone) and after 8 months healing time the implants were inserted. Radiographic assessment was performed over the period of four years. Particle size, rate of calcium release, and size and type of crystal structure of each graft were evaluated.

RESULTS:

The average particle size of Bio-Oss (1 mm) was much smaller compared to Cerabone (2.7 mm). The amount of calcium release due to dissolution of material in water was much higher for Bio-oss compared to Cerabone. X-ray image analysis revealed that Bio-Oss demonstrated significantly higher volumetric loss ($33.4 \pm 3.1\%$) of initial graft size compared to Cerabone ($23.4 \pm 3.6\%$). The greatest amount of vertical loss of graft material volume was observed after one year of surgery.

CONCLUSION:

The chemical and physical properties of bone graft material significantly influence resorption rate of bone graft materials used for sinus augmentation.

