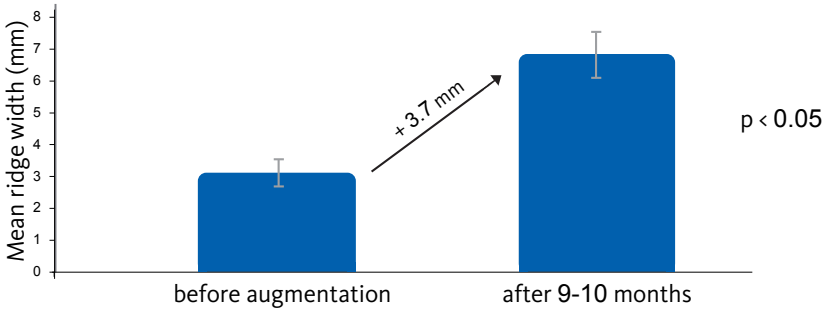
Geistlich Bio-Gide® and Geistlich Bio-Oss® for alveolar ridge augmentation – a predictable procedure

Excerpt from Hämmerle Ch.F., Jung R.E., Yaman D., Lang N.P. Ridge augmentation by applying bioresorbable membranes and deproteinized bovine bone mineral: a report of twelve consecutive cases. Clin. Oral Impl. Res. 2008; 19(1): 19-25.

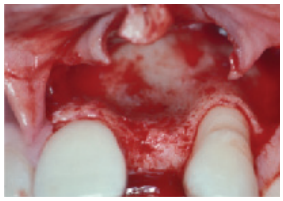
Results

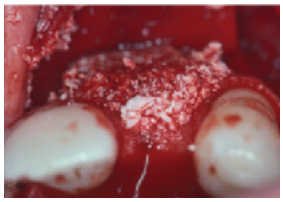
1. Significant increase of mean crestal bone width by 3.7 mm
2. Integration of Geistlich Bio-Oss® into newly formed bone consistently observed

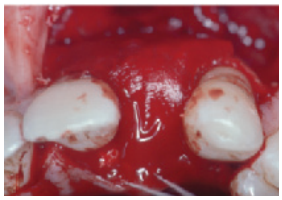


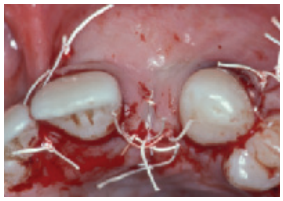
Study design

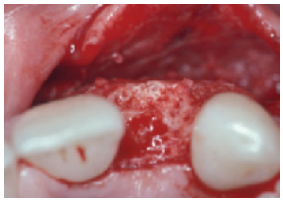
- 12 patients, 15 sites of bone deficits in the areas intended for implant placement
- Blocks or particles of Geistlich Bio-Oss® were applied to the defect area and covered with Geistlich Bio-Gide®
- After 9 to 10 months, flaps were raised in order to visualize the outcomes of the augmentation
- The crestal bone width was measured by a caliper in the same locations before surgery and at re-entry

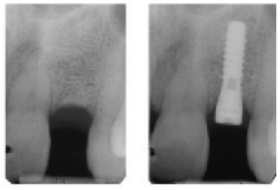

Occlusal view of regio 22 showing a limited amount of bone


Application of Geistlich Bio-Oss®


Coverage of grafted material with Geistlich Bio-Gide®

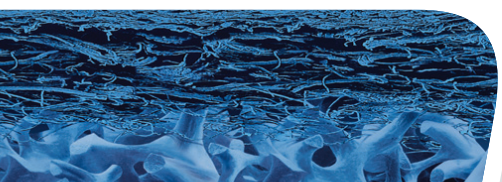

Horizontal mattress and single interrupted sutures to obtain primary wound closure


Re-entry after 9 months reveals a thorough integration of Geistlich Bio-Oss® into newly formed bone


Radiographs before and after regeneration and implant placement

Conclusion

The study indicates
...that the combined use of Geistlich Bio-Gide® and Geistlich Bio-Oss® leads to predictable results in alveolar ridge augmentation.
...that Geistlich Bio-Gide® helps to generate a thick periosteum-like tissue on top of the newly formed bone. This may indicate, that Geistlich Bio-Gide® is partially replaced by new tissue.
...that the barrier function of Geistlich Bio-Gide® is optimal for the desired treatment outcome.
...that harvest of autogenous bone is not required, thus saving the patient from pain.



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Ridge augmentation by applying bioresorbable membranes and deproteinized bovine bone mineral: a report of twelve consecutive cases

Hämmerle Ch.F., Jung R.E., Yaman D., Lang N.P. Ridge augmentation by applying bioresorbable membranes and deproteinized bovine bone mineral: a report of twelve consecutive cases. Clin. Oral Impl. Res. 2008; 19(1): 19-25.

Abstract

Objective: Lateral ridge augmentations are traditionally performed using autogenous bone grafts to support membranes for guided bone regeneration (GBR). The bone harvesting procedure, however, is accompanied by considerable patient morbidity.

Aim: The aim of the present study was to test whether or not resorbable membranes and bone substitutes will lead to successful horizontal ridge augmentation allowing implant installation under standard conditions.

Material and methods: Twelve patients in need of implant therapy participated in this study. They revealed bone deficits in the areas intended for implant placement. Soft tissue flaps were carefully raised and blocks or particles of deproteinized bovine bone mineral (DBBM) (Bio-Oss®) were placed in the defect area. A collagenous membrane (Bio-Gide®) was applied to cover the DBBM and was fixed to the surrounding bone using poly-lactic acid pins. The flaps were sutured to allow for healing by primary intention.

Results: All sites in the 12 patients healed uneventfully. No flap dehiscences and no exposures of membranes were observed. Nine to 10 months following augmentation surgery, flaps were raised in order to visualize the outcomes of the augmentation. An integration of the DBBM particles into the newly formed bone was consistently observed. Merely on the surface of the new bone, some pieces of the grafting material were only partly integrated into bone. However, these were not encapsulated by connective tissue but rather anchored into the newly regenerated bone. In all of the cases, but one, the bone volume following regeneration was adequate to place implants in a prosthetically ideal position and according to the standard protocol with complete bone coverage of the surface intended for osseointegration. Before the regenerative procedure, the average crestal bone width was 3.2mm and to 6.9mm at the time of implant placement. This difference was statistically significant ($P < 0.05$, Wilcoxon's matched pairs signed-rank test).

Conclusion: After a healing period of 9–10 months, the combination of DBBM and a collagen membrane is an effective treatment option for horizontal bone augmentation before implant placement.