

# Peri-Implant Augmentation

## Long-term stability



### 3.5-year follow-up

by Dr. Paul Stone, University of Edinburgh Dental Institute and Blackhills Specialist Referral Clinic, Scotland



### 9.5-year follow-up

by Dr. Christian Ramel, Clinic of Fixed and Removable Prosthodontics, University of Zurich, and Private Practice, Zurich, Switzerland



### 4 and 5.5-year follow-up

by Dr. Claude Andreoni and Dr. Thomas Meier, Private Practice, Zurich



### 10-year follow-up

by Dr. Jean-Pierre Gardella (surgeon) and Dr. Christian Richelme (prosthodontist), Private Practice, Marseille, France



### 12-year follow-up

by Prof. Daniel Buser and Prof. Urs Belser, University of Berne, Switzerland



## Use of Geistlich Bio-Oss Pen® and Geistlich Bio-Gide® to carry out simultaneous GBR augmentation around an implant

by Dr. Paul Stone

3.5-year  
Follow-up



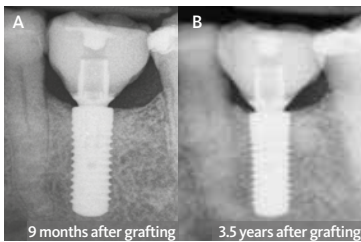
**Fig. 1** An intra-operative view of surgical site 36 showing the implant site osteotomy and associated crestal and buccal bone defect.



**Fig. 2** The Geistlich Bio-Oss® graft particles completely filling the crestal and small buccal defects.



**Fig. 3** A Geistlich Bio-Gide® membrane adapted over the implant and graft material ensuring exclusion of non-osteogenic tissues.



**Fig. 4, A** First x-ray follow-up: 4 months after implant loading (9 months after grafting and implant placement).

**Fig. 4, B** Long-term x-ray follow-up: over 3 years after implant loading (3.5 years after grafting and implant placement).



**Fig. 5** Restored implant with cemented all-ceramic crown - restorative work carried out by Elaine Halley, Cherrybank Dental Spa (9 months after grafting and implant placement).



**Fig. 6** Stable clinical situation over 3 years after implant loading with no evidence of any peri-implant inflammation, probing depths or bleeding (3.5 years after grafting and implant placement).



## Single implant placement with concomitant ridge augmentation with Geistlich Bio-Gide® and Geistlich Bio-Oss® Collagen for a double-tooth gap in the lower front region

by Dr. Christian Ramel

9.5-year  
Follow-up



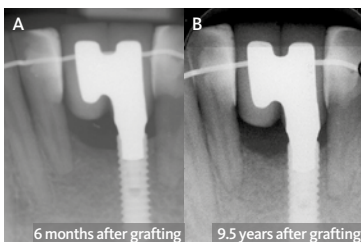
**Fig. 1** In horizontal aspect, a major bony defect is visible. The ridge measures about 2 mm in width in the central region.



**Fig. 2** Geistlich Bio-Gide® was apically positioned underneath the mucoperiosteal flap and deflected, then Geistlich Bio-Oss® Collagen was carefully put onto the defect region. The aim was to over-augment the site, since considerable soft-tissue pressure was to be expected.



**Fig. 3** The collagen membrane was then laid over the implant, and tucked underneath the lingual mucosa.



**Fig. 4, A** First x-ray follow-up: 1 year after implant loading showing healthy bony surrounding structures. A stable slight horizontal remodeling process is visible (6 months after grafting and implant placement).

**Fig. 4, B** Long-term x-ray follow-up: 9 years after implant loading showing a stable situation and virtually no changes compared to the 1-year x-ray (9.5 years after grafting and implant placement).



**Fig. 5** The situation shortly after the insertion of the reconstruction with stable, healthy peri-implant mucosa (6 months after grafting and implant placement).



**Fig. 6** Stable clinical situation 9 years after loading the implant. The buccal over-contouring graft with Geistlich Bio-Oss® and Geistlich Bio-Gide® remains stable (9.5 years after grafting and implant placement).



## Simultaneous approach: Repair of a dehiscence defect during implant placement

by Dr. Claude Andreoni and Dr. Thomas Meier

4-year Follow-up



Fig. 1 Status after insertion of the implant (SPI®, Thommen Medical AG).



Fig. 2 After covering the exposed implant surface with bone chips from the surrounding area, the Geistlich Bio-Oss® granules are applied using the Geistlich Bio-Oss Pen®.



Fig. 3 Covering of the graft with two layers of Geistlich Bio-Gide®. Here the collagen membrane is applied using the “double layer” technique to stabilize the graft and protect it from the ingrowth of soft tissue.

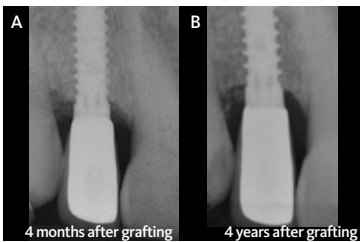


Fig. 4, A First x-ray follow-up: immediately after the definitive prosthetic restoration (4 months after grafting and implant placement).  
Fig. 4, B Long-term x-ray follow-up: 3.5 years after definitive prosthetic restoration (4 years after grafting and implant placement).



Fig. 5 Clinical situation 6 months after prosthetic restoration with preservation of hard and soft tissue (10 months after grafting and implant placement).



Fig. 6 Stable clinical situation 3.5 years after implant loading (4 years after grafting and implant placement).

## Sequential approach: Reconstruction of the alveolar ridge in a fenestration defect immediately after tooth extraction with implant placement at 7 months

by Dr. Claude Andreoni and Dr. Thomas Meier

5.5-year Follow-up



Fig. 1 Flap formation showing the extraction socket. The large labial fenestration defect is clearly visible.



Fig. 2 The fenestration is too large for single-stage implantation with bone grafting. Therefore, a two-stage approach is opted for. First, the infected tissue is completely removed, before the extraction socket is filled with Geistlich Bio-Oss® Collagen.



Fig. 3 For stabilization of the graft and protection from ingrowing soft tissue, using the “double-layer” technique, the socket is covered with two layers of Geistlich Bio-Gide®.

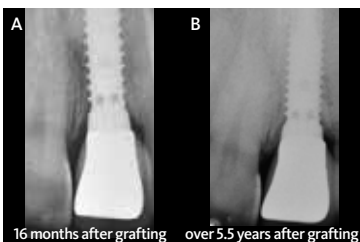


Fig. 4, A First x-ray follow-up: definitive porcelain-fused-to-metal crown screwed directly onto the implant immediately after loading (16 months after grafting and 9 months after implant placement).  
Fig. 4, B Long-term x-ray follow-up: 4.5 years after implant loading (over 5.5 years after grafting and 5 years after implant placement).



Fig. 5 Clinical situation – 9 months after implant loading (2 years after grafting and 1.5 years after implant placement).



Fig. 6 Stable clinical situation 4.5 years after loading the implant (over 5.5 years after grafting and 5 years after implant placement). A slight mucositis can be observed.

10-year Follow-up



### Early implant placement with filling of a peri-implant defect, combining an autogenous bone graft with Geistlich Bio-Oss® to correct substantial tissue loss (front region)

by Dr. Jean-Pierre Gardella (surgeon) and Dr. Christian Richelme (prosthodontist)



Fig. 1 Implant placement.



Fig. 2, A Filling the defect with autogenous bone cores.  
Fig. 2, B Placement of Geistlich Bio-Oss® to maintain volume and protect the autogenous graft against resorption.



Fig. 3 Geistlich Bio-Gide® arranged in a double layer.



Fig. 4, A First x-ray follow-up: final prosthesis in place after implant loading (6 months after grafting and implant placement).  
Fig. 4, B Long-term x-ray follow-up: 9.5 years after implant loading (10 years after grafting and implant placement).



Fig. 5 Clinical view of the final prosthesis immediately after implant loading (6 months after grafting and implant placement).



Fig. 6 Stable situation 9.5 years after implant loading, with perfect soft tissue integration, both on the buccal and interproximal areas, and with parafunction, both at the natural denture and on implant restoration (10 years after grafting and implant placement).



### Early implant placement with simultaneous contour augmentation using GBR

by Prof. Daniel Buser and Prof. Urs Belser

12-year Follow-up



Fig. 1 Following the insertion of the screw-type implant in a correct 3-dimensional position and the application of a 1.5 mm healing cap, the exposed implant surface can be easily seen in the region of the crater-like bone defect with a favorable 2-wall defect morphology.

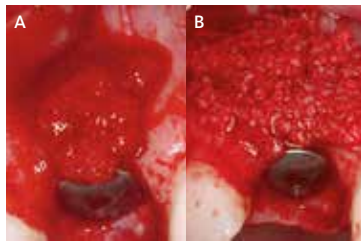


Fig. 2, A The exposed implant surface is covered with locally harvested autogenous bone chips in order to promote bone formation facilitating a short healing phase of around 8 weeks.  
Fig. 2, B Contour augmentation using Geistlich Bio-Oss®.

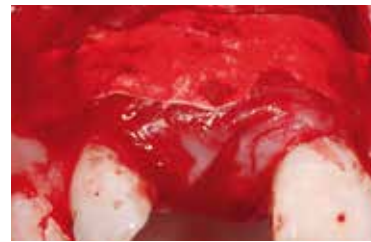


Fig. 3 Geistlich Bio-Gide® applied in two layers not only acts as a temporary barrier, but also as a place-holder and stabilizer for the graft. The low substitution rate of Geistlich Bio-Oss® helps to maintain the volume of the alveolar ridge over time, key factor for the long-term esthetic outcome.



Fig. 4, A First DVT follow-up: completely intact facial wall ~2 mm thick (7 years after grafting and implant placement).  
Fig. 4, B Long-term DVT follow-up: completely stable facial wall around the implant (12 years after grafting and implant placement).



Fig. 5 Clinical findings after the definitive metal ceramic crown was placed. The esthetic treatment result is excellent (1 year after grafting and implant placement).



Fig. 6 Excellent esthetic outcome, result of the GBR contour augmentation using autogenous bone chips and Geistlich Bio-Oss®, covered by a Geistlich Bio-Gide® and primary soft-tissue closure (12 years after grafting and implant placement).

# Product range



## Geistlich Bio-Oss®

Small granules (0.25–1 mm) | Quantities: 0.25 g, 0.5 g, 1.0 g, 2.0 g (1 g ≈ 2.05 cm<sup>3</sup>)  
Large granules (1–2 mm) | Quantities: 0.5 g, 1.0 g, 2.0 g (1 g ≈ 3.13 cm<sup>3</sup>)

The small Geistlich Bio-Oss® granules are recommended for smaller 1–2 socket defects and for contouring autogenous block grafts. The large Geistlich Bio-Oss® granules enable improved regeneration over large distances and provide enough space for the ingrowing bone.



## Geistlich Bio-Oss Pen®

Small granules (0.25–1 mm) | Quantities: 0.25 g ≈ 0.5 cc, 0.5 g ≈ 1.0 cc  
Large granules (1–2 mm) | Quantity: 0.5 g ≈ 1.5 cc

Geistlich Bio-Oss® granules are available in an applicator. It allows the bone substitute material to be applied faster and more precisely to the surgical site. Geistlich Bio-Oss Pen® is available containing both the small granules and the large granules.



## Geistlich Bio-Oss® Collagen

Geistlich Bio-Oss® (small granules) + 10% collagen (porcine)  
Sizes: 100 mg (0.2–0.3 cm<sup>3</sup>), 250 mg (0.4–0.5 cm<sup>3</sup>), 500 mg (0.9–1.1 cm<sup>3</sup>)

Geistlich Bio-Oss® Collagen is indicated for use in periodontal defects and extraction sockets. Through the addition of collagen, Geistlich Bio-Oss® Collagen can be tailored to the morphology of the defect and is particularly easy to apply.



## Geistlich Bio-Gide®

Bilayer collagen membrane  
Sizes: 25 × 25 mm, 30 × 40 mm

Geistlich Bio-Gide® consists of porcine collagen and has a bilayer structure – a rough side that faces the bone and a smooth side that faces the soft tissue. Geistlich Bio-Gide® is easy to handle: it can be positioned easily, adheres well to the defect, and is resistant to tension and tearing.



## Geistlich Bio-Gide® Compressed

Bilayer collagen membrane  
Sizes: 13 × 25 mm, 20 × 30 mm

Geistlich Bio-Gide® Compressed is the product twin to Geistlich Bio-Gide®. It combines the proven biofunctionality of Geistlich Bio-Gide® with a different feel. Its bilayer structure protects the graft and supports wound healing. Geistlich Bio-Gide® Compressed is easy to handle and can be positioned easily.



## Geistlich Combi-Kit Collagen

Geistlich Bio-Oss® Collagen 100 mg  
+ Geistlich Bio-Gide® 16 × 22 mm

When used in combination, the system has optimized properties for Ridge Preservation and minor bone augmentations according to the GBR principle.

**Geistlich**  
Biomaterials

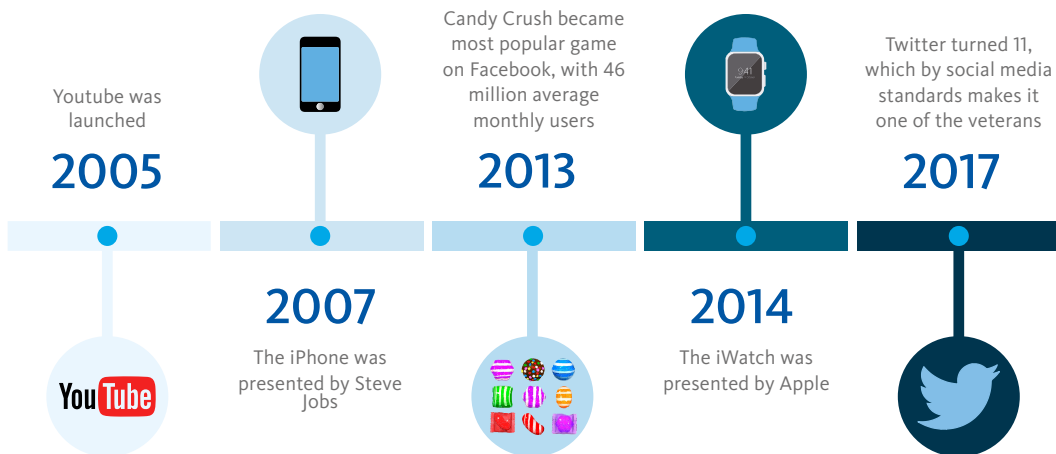
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# Long-term success with the dream-team

## GBR with the dream-team: Geistlich Bio-Oss® and Geistlich Bio-Gide® for outstanding and predictable clinical outcomes

Clinically, implant placement and simultaneous GBR with Geistlich Bio-Oss® and Geistlich Bio-Gide® perform as well as implant placement into native bone with respect to implant survival and marginal bone height for up to 12–14 years.<sup>1</sup> Additionally, clinical investigations suggest a high predictability for successful esthetic outcomes and good long-term stability (up to 6 years) of the established facial bone wall.<sup>2</sup>

## A LOT HAPPENED IN 12 YEARS, GEISTLICH BIOMATERIALS GRAFTED RIDGES REMAIN STABLE



Predictable therapy + high implant survival rate up to 12–14 years<sup>1</sup>

## Literature references

<sup>1</sup> Jung RE et al., Clin Oral Implants Res. 2013 Oct;24(10):1065–73.

<sup>2</sup> Buser D et al., J Dent Res. 2013 Dec;92(12 Suppl):176S–82S.

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