BioBrief

GUIDED BONE REGENERATION

Dr. Gian Maria Ragucci Prof. Federico Hernández-Alfaro Curious about other BioBriefs?



Combined Horizontal and Vertical Regeneration Using a CAD-CAM Titanium Scaffold



leading regeneration

The Situation

A 54-year-old, systematically healthy male patient (ASA I*) came to our attention presenting with partial edentulism in the lower jaw and requiring a fixed and esthetic rehabilitation, refusing any removable solution. The clinical and radiographic evaluation resulted in significant bone atrophy both in the vertical and horizontal components; which makes it impossible to place both conventional implants and short or narrow implants.

* American Society of Anesthesiologists Physical Status Classification System

The Approach

Solving the case was developed in two steps: first bone reconstruction to restore the ideal anatomy, second positioning of the prosthetically guided implants. An individualized regeneration technique was chosen using a CAD-CAM titanium scaffold (Yxoss CBR®) in conjunction with a mix of 60% autogenous bone and 40% Geistlich Bio-Oss[®], covered by Geistlich Bio-Gide[®]. At 9 months, the titanium scaffold was easily removed and 3 prosthetically guided implants were placed, completely surrounded by bone. At 12 months, a free gingival graft was performed to re-establish the missing amount of keratinized mucosa. Finally, at 16 months, the final rehabilitation was carried out with a fixed prosthesis on implants.

T	he	Ris	k F	Profi	le

	Low Risk	Medium Risk	High Risk
Patient's health	Intact immune system/	Light smoker	Impaired immune system
Patient's esthetic requirements	Low	Medium	High
Height of smile line	Low	Medium	High
Gingival biotype	Thick - "low scalloped"	Medium – "medium scalloped"	Thin - "high scalloped"
Shape of dental crowns	Rectangular		Triangular
Infection at implant sight	None	Chronic	Acute
Bone height at adjacent tooth site	≤ 5 mm from contact point	5.5 - 6.5 mm from contact point	≥ 7 mm from contact point
Restorative status of adjacent tooth	Intact		Restored
Width of tooth gap	1 tooth (≥ 7 mm)	1 tooth (≤ 7 mm)	2 teeth or more
Soft-tissue anatomy	Intact		Compromised
Bone anatomy of the alveolar ridge	No defect	Horizontal defect	Vertical defect















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Vertical bone reconstruction combining the use of Yxoss CBR®, Geistlich Bio-Oss®, and Geistlich Bio-Gide® allows for a predictable regeneration procedure that is able to create sufficient bone volume suitable for prosthetically guided implant placements."

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- Universitat Internacional de Catalunya (UIC), Barcelona
- Dental degree at Universidad Europea de Madrid 2015
- International Master in oral surgery at UIC, Barcelona 2018
- PhD student at UIC, Barcelona 2018
- EAO Certification program in implant dentistry 2018
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66 Combined horizontal and vertical bone augmentation utilizing a CAD CAM titanium scaffold can be achieved with less surgical time and less complications."





The Outcome

The final resolution of the case was very satisfactory. There were no complications during all the procedures performed. The Yxoss CBR[®] allowed for easier reconstructive surgery and a significant reduction in surgical times, thanks to the precise dimensions of the scaffold. This resulted in a favorable post-operative situation for the patient and complications were prevented.

- 1 Panoramic radiographic view of the defect.
- **2** Horizontal and vertical augmentation step by step.
- **3** (A) Baseline situation vs. (B) 9-month follow-up.
- 4 Scaffold removal and implant placement step by step.
- **5** Soft-tissue management with free gingival graft.
- 6 Final restoration.
- **7** Periapical radiograph of implants and prosthesis.
- 8 Final restoration at 16 months.



Scan to access the video tutorial

Geistlich

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Keys to Success

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- → The scaffold was fixed with 2 titanium micro screws
 - → Substantially reduced surgery time vs. the utilization of conventional, non-individualized titanium meshes
 - → Augmentation performed with a mix of 60% autogenous bone particles and 40% Geistlich Bio-Oss[®]
 - → Resorbable collagen membrane, Geistlich Bio-Gide[®], in order to optimize the barrier effect
 - → Geistlich Bio-Oss[®] bone substitute granules to ensure long-term volume stability, Geistlich Bio-Gide[®] resorbable collagen membrane for barrier function and Yxoss CBR[®] customized CAD CAM titanium scaffold for graft containment and stability



For more information, please visit: www.geistlich.us

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For more information on contraindications, precautions, and directions for use, please refer to the Instructions for Use at: dental.geistlich-na.com/ifu