

# Horizontal Augmentation



Treatment concept of Prof. Carlo Maiorana and Dr. Mario Beretta, University of Milan, Italy



> Bone regeneration with autogenous intraoral block and Geistlich Bio-Oss® contouring as well as Geistlich Bio-Gide® covering

## 1. Indication profile

|                                    |   |  |
|------------------------------------|---|--|
| <b>Region</b>                      | <input type="checkbox"/> aesthetic region<br><input checked="" type="checkbox"/> maxilla<br><input type="checkbox"/> single tooth replacement                           | <input checked="" type="checkbox"/> non-aesthetic region<br><input type="checkbox"/> mandible<br><input checked="" type="checkbox"/> multiple teeth replacement                          |
| <b>Bony situation</b>              | <input type="checkbox"/> small bone defect<br><input type="checkbox"/> immediately at time of implantation  | <input checked="" type="checkbox"/> large bone defect<br><input checked="" type="checkbox"/> prior to implantation (2-stage)   |
| <b>Bone augmentation indicated</b> | <input checked="" type="checkbox"/> use of block grafts   | <input type="checkbox"/> use of particulated grafts  |
| <b>Soft tissue situation</b>       | <input type="checkbox"/> thick biotype<br><input checked="" type="checkbox"/> primary wound closure possible<br><input type="checkbox"/> soft tissue grafting indicated | <input checked="" type="checkbox"/> thin biotype<br><input type="checkbox"/> primary wound closure problematic<br><input checked="" type="checkbox"/> soft tissue grafting not indicated |

## Background information

Prof. Carlo Maiorana and Dr. Mario Beretta:

Dental implantology offers several advantages for the treatment of edentulous areas. The successful use of osseointegrated implants in the treatment of complete or partial edentulism requires a sufficient quantity of available bone. However, when the tooth loss is due to trauma or congenital absence, often a ridge augmentation procedure is requested to correct the bone defect prior to implant placement<sup>1</sup>.

When a reconstruction for partially edentulous areas is needed, bony and/or soft tissue augmentation procedures are available. Bony reconstruction provides adjunctive support for implants, allows prosthetically guided implant positioning, and improves the aesthetic emergence profile. Bone grafting may be required prior to implant placement, at the time of implant placement<sup>2-4</sup>.

A variety of grafting techniques, as well as bone graft donor sites, are available. Considering the capacity of the inorganic bone matrix to reduce graft resorption, the idea of this case is to contour the autogenous onlay block grafts with Geistlich Bio-Oss<sup>®</sup>. Additionally, the augmented area is covered with a Geistlich Bio-Gide<sup>®</sup> membrane in order to avoid soft tissue ingrowth and therefore to enable undisturbed tissue regeneration.

## 2. Aims of the therapy

- > To enlarge the atrophic ridge vertically and horizontally by means of an autogenous block from the chin, contouring with Geistlich Bio-Oss<sup>®</sup> and covering with Geistlich Bio-Gide<sup>®</sup> as well as sinus floor elevation.

## 3. Surgical procedure



Fig. 1 Preoperative panorax. Region needs to be reconstructed and a sinus pneumatisation can be presumed.

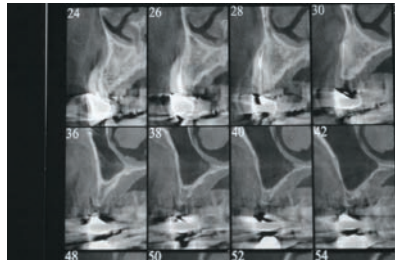


Fig. 2 CT scans show the vertical and horizontal ridge atrophy.



Fig. 3 Preoperative occlusal view showing the horizontal reduction of the ridge.



Fig. 4 Preoperative buccal view. A thin soft tissue biotype can be presumed.

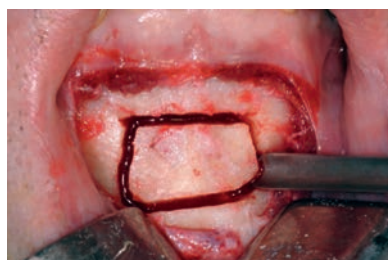


Fig. 5 Surgery: Detail of the chin harvesting procedure.<sup>5</sup>



Fig. 6 Sinus floor elevation: Access to the Schneiderian membrane.<sup>5</sup>

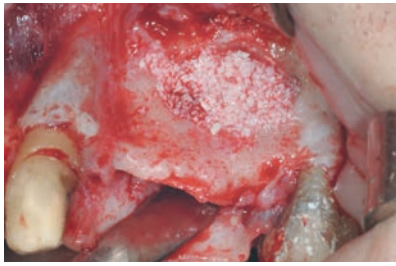


Fig. 7 Sinus subantral cavity filled with Geistlich Bio-Oss®.

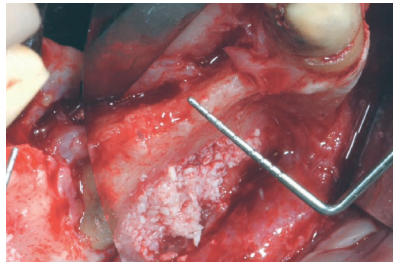


Fig. 8 Measurement of the atrophic ridge.<sup>6,7</sup>

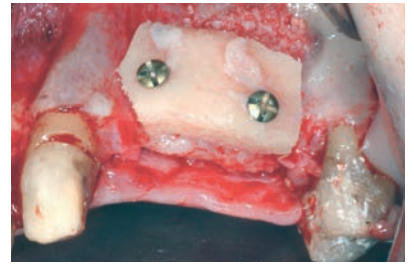


Fig. 9 Grafting of the ridge: Buccal view.<sup>6,7</sup>

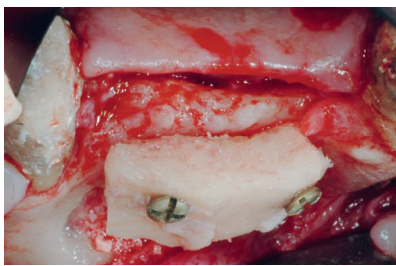


Fig. 10 Grafting of the ridge: Occlusal view.<sup>6,7</sup>



Fig. 11 Geistlich Bio-Oss® contouring to avoid resorption of the autogenous block graft.<sup>6,7</sup>

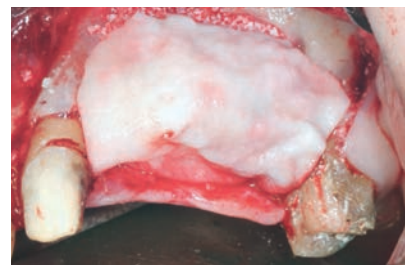


Fig. 12 Geistlich Bio-Gide® placement over the grafted area.<sup>6,7</sup>



Fig. 13 Soft tissue closure.



Fig. 14 Postoperative panorax.



Fig. 15 Clinical situation at time of implant placement, 3 months postoperative.

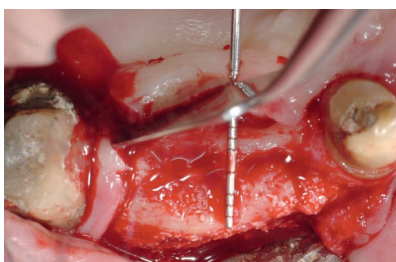


Fig. 16 Clinical aspect of the augmented ridge: No sign of block resorption.

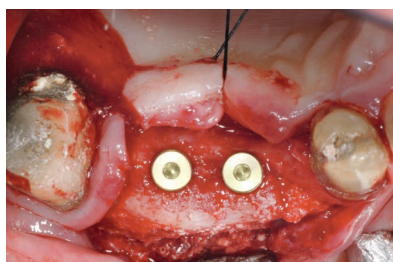


Fig. 17 Implant placement.



Fig. 18 Postoperative panorax.

## Literature references

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- <sup>1</sup> Schmitt A, Zarb GA. The longitudinal clinical effectiveness of osseointegrated dental implants for single-tooth replacement. Int J Prosthodont 1993;6:197-202.
  - <sup>2</sup> Studer S, Pietrobon N, Wohlwend A. Maxillary anterior single-tooth replacement: Comparison of three treatment modalities. Pract Periodontics Aesthet Dent 1994;6:51-60.
  - <sup>3</sup> Misch CM. Ridge augmentation using mandibular ramus bone grafts for the placement of dental implants: Presentation of a technique. Pract Periodontics Aesthet Dent 1996;8:127-135.
  - <sup>4</sup> Misch CM. Comparison of intraoral donor sites for onlay grafting prior to implant placement. Int J Oral Maxillofac Implants 1997;12:767-776.
  - <sup>5</sup> Santoro F, Maiorana C: Advanced osseointegration; RC Libri, Milan, 2005
  - <sup>6</sup> Maiorana C, Beretta M, Salina S, Santoro F: Reduction of autogenous bone graft resorption by means of BioOss coverage: a prospective study; JPRD, vol 25,1,2005
  - <sup>7</sup> Maiorana C, Simion M: Advanced techniques for bone regeneration with BioOss and BioGide; RC Libri, Milano, 2003
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## Suppliers

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- > Suture materials (silk): Silkam 4/0, B. Braun AESCULAP AG & CO.KG. D-78532 Tuttlingen
  - > Suture materials (polyamide): Dafilon 6/0, B. Braun AESCULAP AG & CO.KG. D-78532 Tuttlingen
  - > Implants: Camlog Promote plus 3,8 x 11 mm, Camlog Biotechnologies AG
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