# Vertical Augmentation

Vertical alveolar ridge augmentation by means of the fence technique with Geistlich biomaterials

*Original publication of the technique on PubMed; Merli et al., Int J Periodontics Restorative Dent, 2013*

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### Literature


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### Source of supply for special materials (used suture material, medication, implant system etc.)

- Augmentation: Geistlich Bio-Oss® (0.25–1 mm); Geistlich Bio-Gide® (30x40 mm).
- Antibiotics: Cefixima (Cefixoral) 400 mg cpr riv.
- Osteosynthesis plate: KLS Martin.
- 3-D scanner: 3d DIEMME, Bioimaging Technologies.
- Suture material: Supramid 4/0, 5/0.
- Implant System: Thommen SPI® Element Inicell.
- Histology performed by Dr. Annalisa Mazzoni, University of Bologna, Italy.

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### Your contact

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### Further Indications Sheets in the same therapeutic area

- Horizontal bone regeneration with autogenous iliac crest and Geistlich Bio-Oss® covering (Prof. Carlo Maiorana, Dr. Mario Beretta; Italy)
- Vertical alveolar ridge augmentation utilizing the resorbable Geistlich Bio-Gide® membrane and a combination of particulated autogenous bone with Geistlich Bio-Oss® (Prof. Istvan Urban; Hungary/USA)
- Vertical alveolar ridge augmentation with autogenous bone, Geistlich Bio-Oss® and a non-resorbable reinforced membrane (Prof. Matteo Chiapasco, Italy)
- Vertical alveolar ridge augmentation with autogenous bone, Geistlich Bio-Oss® and Geistlich Bio-Gide® (Prof. Massimo Simion, Italy; Dr. Isabella Rocchietta, UK/Sweden)
- Vertical alveolar ridge augmentation with autogenous bone, Geistlich Bio-Oss® and Geistlich Bio-Gide® (Prof. Massimo Simion, Italy)

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### Indication profile

<table>
<thead>
<tr>
<th>Region</th>
<th>Procedure</th>
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</thead>
<tbody>
<tr>
<td>Single tooth gap</td>
<td>- Multiple tooth gap</td>
</tr>
<tr>
<td>Partially edentulous ridge</td>
<td>- Edentulous ridge</td>
</tr>
<tr>
<td>Edentulous ridge</td>
<td>- End situation</td>
</tr>
<tr>
<td>Bone situation</td>
<td>Bone closure procedure is applicable in the aesthetic region.</td>
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<tr>
<td>Soft tissue situation</td>
<td>Bone closure procedure is applicable in the aesthetic region.</td>
</tr>
<tr>
<td>Implantation</td>
<td>Bone closure procedure is applicable in the aesthetic region.</td>
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</tbody>
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**Remarks:**

- The bone closure procedure is applicable for both vertical and horizontal bone defects.
- Primary wound closure possible.
- Immediate with bone augmentation possible.
- Sequentially after bone augmentation possible.
2. Aims of the therapy

- Vertical stabilizer ridge augmentation and implant placement
- Reduction of complication rate and patient morbidity

3. Surgical procedure

- Placement of dental implants requires sufficient quantity of bone. In cases where advanced mandibular atrophy has already occurred and has led to insufficient alveolar ridges, a combination of horizontal and vertical augmentation is indicated. For such complex situations, either on or using block graftings or guided bone regeneration in areas of a form-stable membrane are used for a predictable augmentation from grafts from a second site or even autogenous bone from the iliac crest.

- Geistlich Bio-Gide® ensures uneventful soft tissue healing. This 3-dimensional reconstruction of elastic layer allows stretching which results in a stable augmentation while providing a barrier for non-resorbable membranes.3–5. Surgical and technical innovations combined with the appropriate choice of augmentation materials helped to overcome those disadvantages. One such innovative approach for the augmentation of the severely atrophied alveolar ridge is the so-called fence technique developed by Dr. Geistlich®. The technique uses a composite plate as a form-stable element under which a combination of autogenous bone and Geistlich Bio-OS® is used. The augmented site is covered with a tightly pinned native collagen membrane Geistlich Bio-Gide®. Its elasticity allows stretching which results in a functional length to generate optimal conditions for bone regeneration. At the same time Geistlich Bio-Gide® ensures uneventful soft tissue healing. This 3-dimensional reconstruction of non-dramatically atrophied alveolar ridge defies improves outcomes and contributes to reduced patient morbidity and overall treatment costs.

- In particular, autologous bone grafts from a second intra- or even extraoral surgery site not only potentially cause additional morbidity but may also be associated with an increased rate of subsequent complications.1 In addition, the autologous bone used for the augmentation of the site is subjected to a certain degree of resorption2 which may impair the clinical outcome. Another risk is the occurrence of dehiscenses after inappropriate soft tissue healing with non-resorbable membranes.3–5 Surgical and technical innovations combined with the appropriate choice of augmentation materials helped to overcome those disadvantages. One such innovative approach for the augmentation of the severely atrophied alveolar ridge is the so-called fence technique developed by Dr. Geistlich®. The technique uses a composite plate as a form-stable element under which a combination of autogenous bone and Geistlich Bio-OS® is used. The augmented site is covered with a tightly pinned native collagen membrane Geistlich Bio-Gide®. Its elasticity allows stretching which results in a functional length to generate optimal conditions for bone regeneration. At the same time Geistlich Bio-Gide® ensures uneventful soft tissue healing. This 3-dimensional reconstruction of non-dramatically atrophied alveolar ridge defies improves outcomes and contributes to reduced patient morbidity and overall treatment costs.

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