Treatment concept of Dr. Istvan Urban, Loma Linda University, USA

- Horizontal ridge augmentation utilising the resorbable Geistlich Bio-Gide® membrane and a combination of particulated autogenous bone with Geistlich Bio-Oss®
- Demonstration and explanation of the „sausage technique“: The Geistlich Bio-Gide® membrane stabilises the bone graft particles and acts as an immovable „sausage skin“

1. Indication profile

<table>
<thead>
<tr>
<th>Region</th>
<th>Bone augmentation indicated</th>
<th>Soft tissue situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>aesthetic region</td>
<td>maxilla</td>
<td>primary wound closure possible</td>
</tr>
<tr>
<td>non-aesthetic region</td>
<td>mandible</td>
<td>soft tissue grafting indicated</td>
</tr>
<tr>
<td>single tooth replacement</td>
<td>multiple teeth replacement</td>
<td>primary wound closure problematic</td>
</tr>
<tr>
<td>small bone defect</td>
<td>large bone defect</td>
<td>soft tissue grafting not indicated</td>
</tr>
<tr>
<td>immediately at time of implantation</td>
<td>prior to implantation (2-stage)</td>
<td></td>
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<tr>
<td>use of block grafts</td>
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</table>
2. Aims of the therapy

- The aim of this therapy is to predictably develop optimal bone width for dental implant placement with a technique which has minimal morbidity and more patient satisfaction.
3. Surgical procedure

Fig. 1 Occlusal view of severely atrophied posterior mandibular ridge.

Fig. 2 Occlusal view of the thin posterior mandibular ridge. A full thickness, mid-crestal incision is used in the keratinised gingiva. For surgical access, the two divergent vertical incisions are placed, one at the mesio-buccal line angle of the first premolar and an oblique vertical incision was created at the most distal aspect of the crestal incision.

Fig. 3 The recipient bone bed is prepared with multiple decortication holes and autogenous bone is harvested from the external oblique ridge using half of a 4mm trephine.

Fig. 4 Buccal view after application of a 1:1 mixture of autogenous particulated bone and Geistlich Bio-Oss® granules. Note that the Geistlich Bio-Gide® membrane is secured on the crest before the application of the graft.

Fig. 5a Buccal view of a single Geistlich Bio-Gide® membrane, which is fixed with titanium pins. The pins are 1mm diameter, which are stable in the cortical bone of the mandible. Note that the fixed membrane completely immobilises the bone graft creating the sausage skin effect.

Fig. 5b Buccal view.

Fig. 5c Occlusal view.

Fig. 6 A periosteal releasing incision is made connecting the two vertical incisions until enough elasticity is achieved. The flap is then sutured in two layers. The first layer is closed with horizontal mattress sutures placed 4mm from the incision line and than single interrupted sutures are used to close the edges of the flap.

Fig. 7 Buccal view of the soft tissues at three weeks of uneventful healing.

Fig. 8 Occlusal view of the newly formed ridge at re-entry after 7 months.

Fig. 9 Two implants were placed with good primary stability. Note the excellent incorporation of the Geistlich Bio-Oss® with the autograft.

Fig. 10 Periapical radiograph at implant placement.

Fig. 11 Final outcome 2 years after implant loading.
Literature


Suppliers

Anti-inflammatory medication: 50 mg diclofenac, Cataflam®, Novartis Pharmaceuticals
Local anesthetic: Artican-hydrochloride with adrenaline 1/100,000
Suture material (ePTFE): GORE-TEX® CV-5 Suture, W.L. Gore & Associates, Inc.
Implant: Brånemark System®, Nobel Biocare
Fixation pins: Master-Pin System, Meisinger

Contact

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