Soft Tissue is (still) the Issue!
Soft Tissue Management for Implants in the Aesthetic Zone

Some key slides from the presentation

Osseointegration

Soft Tissue Integration!

Surgical Protocols - bone
- Immediate Implants?
- Ridge Preservation?
- Early + Simultaneous Augmentation?
- 2 stage augmentation?
- Block Graft? Non-Resorbable membrane

- Reduced diameter implants? 2.9 mm?
- Tapered self-cutting implants?
- BLX Implant?

Surgical Protocols - soft tissue
- Free gingival graft?
- Connective tissue graft?
- Repositioned flaps?
- Pedicle grafts?
- Xenograft / Allograft?

- Timing?
- Before, during, after implant?

Temporary and Restorative protocols
Surgical and Restorative protocols

Immediate Implants?
Ridge Preservation?
Simultaneous Augmentation?
2 stage augmentation?
Block Graft? Non-Resorbable membrane
Reduced diameter implants? 2.9 mm?
Tapered self-cutting implants?
BLX implant?
Free gingival graft?
Connective tissue graft?
Repositioned flaps?
Pedicle grafts?
Xenograft / Allograft?
Immediate provisional/ loading
Removable denture
Transmucosal healing
Submerged healing - second stage
Early loading (<2 months)
Conventional Loading (2-4 months)
Delayed Loading (<4 months)

Soft tissue outcomes:

1: How much height?
2: How much width? (thickness)
3: How much keratinised mucosa?
4: How to design the prosthesis?

The soft tissue barrier at implants and teeth.
Berglundh T, Landfie J, Ericsson I, Marinello CP, Liljenberg B, Thomson P

<table>
<thead>
<tr>
<th>Tissue</th>
<th>Bone</th>
<th>Prosthesis</th>
<th>Implant</th>
<th>Ideal implant position</th>
<th>Optimal clinical outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
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<td></td>
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<tr>
<td>Height</td>
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<td>Width</td>
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To assess local anatomy, one should:
1. How much height?
2. How much width?
3. How much keratinised mucosa?
4. How to design the prosthesis?
Connective Tissue
Epithelium
Perpendicular Collagen Fibres
Bone
Sharpey's fibres
Junctional Epithelium

Tooth
Implant

Genetics

Attachment
Adhesion

Attachment
Adhesion

Attachment
Adhesion

Attachment
Adhesion

Attachment
Adhesion

Mesio-Distal Section

Teeth scalloped morphology
✓ Bone Scalping
✓ Vascularisation
✓ Periodontal Ligament
✓ Gingival fibre bundles

Tooth - Tooth

✓ Scalloped tooth
✓ Bone Scalping
✓ Vascularisation
✓ Periodontal Ligament
✓ Complex Gingival Fibres

✓ Not scalloped
✓ Bone Scalping
✓ Vascularisation
✓ Periodontal Ligament
✓ Some Gingival Fibres

Implant - Tooth

✓ Not scalloped
✓ Bone Scalping
✓ Vascularisation
✓ Periodontal Ligament
✓ Minimal Gingival Fibres

Implant - Implant

Not scalloped
Bone Scalping
Vascularisation
Periodontal Ligament
Minimal Gingival Fibres
Interdental papilla is supported by the local bone / teeth anatomy and vascularisation.

Peri-implant Papilla results in deep Peri-implant sulcus.

Implant Positioning and Prosthesis Design is crucial to ensure long term health, and effective application of oral hygiene.

What about width? (thickness)

Influence of Vertical Soft Tissue Thickening on Crestal Bone Changes Around Implants with Platform Switching: A Comparative Clinical Study

2 mm or less

97 patients
1 year

80 patients
1 year

Mid facial rec
Bone loss / PD

Less than 2 mm
More than 2 mm

-0.82
no difference
0.71

No statistical significant differences in bone loss among the two groups THICK vs THIN.

What about width? (thickness)
What about keratinised mucosa?

Is there a need for keratinized mucosa around implants to maintain health and tissue stability?

  - Wennström JL1, Derks J.

<table>
<thead>
<tr>
<th>Keratinised Mucosa</th>
<th>19 studies</th>
<th>non-keratinised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plaque score</td>
<td>no difference 7/12</td>
<td></td>
</tr>
<tr>
<td>probing depth</td>
<td>no difference 8/12</td>
<td></td>
</tr>
<tr>
<td>bleeding</td>
<td>no difference 6/12</td>
<td></td>
</tr>
<tr>
<td>bone level</td>
<td>no evidence</td>
<td></td>
</tr>
</tbody>
</table>

The evidence is equivocal regarding the effect of keratinized mucosa on the long-term health of the peri-implant tissue.

It appears, however, that keratinized mucosa may have advantages regarding patient comfort and ease of plaque removal.

Do we need keratinised mucosa?

Do we want keratinised mucosa?

**Interventions for the increase of the keratinised zone:**

- **Initial thickness:**
  - less than 2 mm
  - 2 mm or more

- **1 year gain:**
  - +2.56 mm
  - +0.55 mm

2 mm should be enough!
KTW change was 0.55 mm in ≥2 mm group and 2.56 mm in <2 mm group.

Predictable in sites with <2 mm KTW

Questionable in sites of ≥2 mm KTW

**Checkpoint!**

- **Buccal**
  - Papilla
  - Mid buccal
- **Implant shoulder**
  - Bone: 1-1.5 mm

- **Soft tissues**:
  - **Height?** 3 mm / 2-4 mm
  - **Width?** 2 mm
  - **Keratinised?** 2 mm

**Optimal clinical outcome**

- 2-4 mm
- 3 mm
- 2 mm

**How do we reach the optimal clinical outcomes?**

- **Keratinised mucosa?**
  - 2 mm should be enough!

**During implant surgery**

- Transmucosal healing
- Lingual incision
- Apically repositioning
- Rotating pedicle flap

**Before implant surgery**

**During implant surgery**

- 2 mm should be enough!
**keratinised mucosa?**

**2 mm should be enough!**

During implant Surgery

Before implant Surgery

During implant Surgery

After implant Surgery

Free Gingival graft
Apically repositioned flap
Xenograft

Hybrid CT - Epithelial
Split thickness AR Flap

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**At recipient site:**

Increase width of keratinised zone

Increase soft tissue volume

Ensure better vascularisation

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A randomized controlled study comparing guided bone regeneration with connective tissue graft to re-establish convexity at the buccal aspect of single implants: a one-year CBCT analysis

Thomas De Bruyckere et al., J Clin Perio 2018

**RCT** 21 patients 1 year

GBR and CTG were equally effective in re-establishing the convexity

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Periodontal

- Physiological stable in health
- contain disease progression

Peri-implant

- Repair tissue
- stable in health
- Compromised in disease
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