Long-term results in three-dimensional, complex bone augmentation procedures with customized titanium meshes

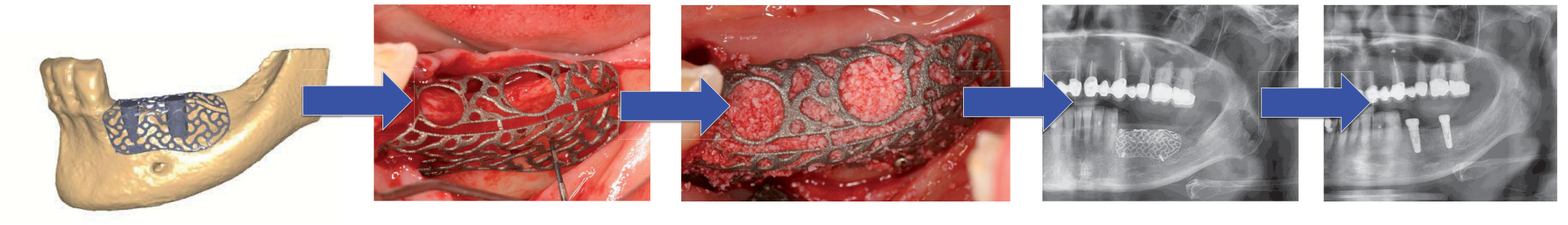
A Hartmann[1,2], H Hildebrandt[3], Z Younan[3], B Al-Nawas[2], PW Kämmerer[2]

[1]Private Practice, Dr. Seiler und Kollegen MVZ, Filderstadt, Germany
[2]Department of Oral and Maxillofacial Surgery, Plastic Surgery, University Medical Centre of the Johannes Gutenberg University of Mainz, Mainz, Germany
[3]Private Practice, Am Mühlenviertel MVZ, Bremen, Germany

Background

Complex, three-dimensional bony defects still represent challenging situations in routine implant dentistry.
The aim of this case series was to evaluate implant survival in customized bone regeneration (Yxoss CBR®) after >5 years.
Bone loss and potential symptoms of periimplantitis should be evaluated.

Materials and methods



Patients (n=21, implants 36) who had obtained an augmentation procedure with Yxoss CBR® as described elsewhere[1] were examined after 5.7 ± 0.38 years.

Primary outcome

- Survivalrate?
- Region of bone loss (mesial/distal)
- Periimplantitis (BOP+ ? Suppuration ? Percussion ?)

Secondary outcome

Oral Health Impact Profile (OHIP)

Influence of factors on bone loss ? :

- Gender
- Smoking
- Diabetes
- Previous exposures (or size of exposure)
- Professional regular maintenance
- Periodontitis

Results

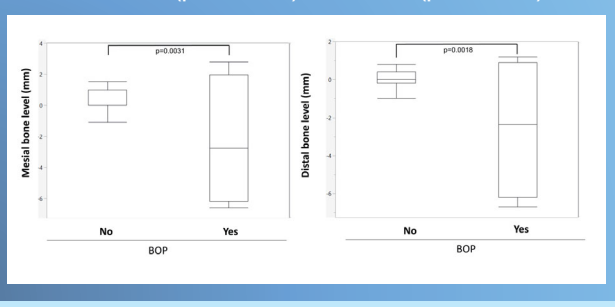
Primary outcome

- Survivalrate? **97%**
- Region of bone loss (mesial/distal)

The lower jaw showed statistically significant more bone loss mesial compared to the upper jaw (p=0.01).

- Periimplantitis (BOP+ ? Suppuration ? Percussion ?)

Positive BOP (four implants) was significantly associated with bone loss mesial (p=0.0031) and distal (p=0.0018).



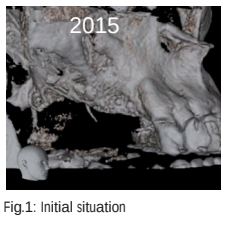


Fig.1: Initial situation

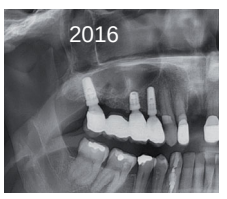


Fig.2: After implant placement (17,15,14).

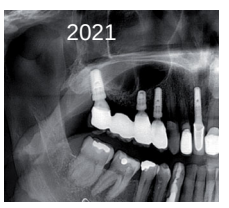


Fig. 3: A stable bone volume at 14, 15 and at 17 distal a slight vertical bone loss.

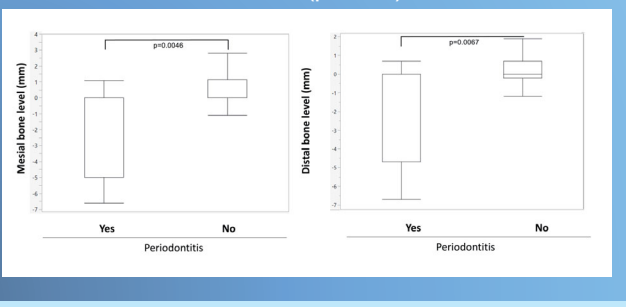
Secondary outcome

Oral Health Impact Profile (OHIP) **2.97 ± 4.19**

Influence of factors on bone loss:

- ~~Gender~~
- ~~Smoking~~
- ~~Diabetes~~
- ~~Previous exposures (or size of exposure)~~
- Professional regular maintenance
- **Periodontitis**

Periodontitis was significantly associated with bone loss mesial and distal (p<0.05).



Conclusions

- CBR® results in high implant survival rate and stabilized augmented marginal bone after follow-up of minimum 5 years
- Quality of life was unaffected by surgical procedure and remained stable after 5 years.
- Periodontitis seems to play the mayor role for long-term stability indicated by BOP, suppuration, and percussion sound.

Literature cited
[1]Chiapasco, M., et al. (2021). *Customized CAD/CAM titanium meshes for the guided bone regeneration of severe alveolar ridge defects: Preliminary results of a retrospective clinical study in humans.* Clin Oral Implants Res, 32(4), 498-510.

Contact
amely.hartmann@implantologie-stuttgart.de