



Clinical procedure of Dr Georgios Nikou, Dr Peter Thoolen, and Prof. Anton Sculean, University of Nijmegen, Netherlands

> Peri-implant bone atrophy and soft tissue recession in the aesthetic area. Treatment with Bio-Oss®, Bio-Gide® and a soft tissue graft.



1. Indication profile

Region	<input checked="" type="checkbox"/> aesthetic region <input type="checkbox"/> non-aesthetic region
	<input checked="" type="checkbox"/> single tooth gap <input type="checkbox"/> multiple tooth gap
Bony situation	<input type="checkbox"/> no bone defect present <input checked="" type="checkbox"/> bone defect present comment: bone dehiscence and fenestration labial to implant, 10 months after implant insertion
	<input checked="" type="checkbox"/> bone augmentation indicated
Soft tissue situation	<input type="checkbox"/> no recession <input checked="" type="checkbox"/> recession <input type="checkbox"/> inflamed <input type="checkbox"/> infected <input type="checkbox"/> uneventful
	<input checked="" type="checkbox"/> thin <input type="checkbox"/> thick <input type="checkbox"/> inadequate keratinised mucosa comment: The tissue appears rather thin.
	<input checked="" type="checkbox"/> soft tissue augmentation indicated
Status of implant	implant stable <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
	explantation indicated <input type="checkbox"/> yes <input checked="" type="checkbox"/> no

Background information

Georgios Nikou, Peter Thoolen, Anton Sculean:

«When a tooth is lost and an implant is planned for replacing the tooth, the amount of available alveolar ridge is an important factor. Inadequate bone height and width may compromise the implant placement and jeopardize the aesthetic outcome. Therefore augmenting ridge defects will allow for proper implant placement. In case an implant is placed in a defective ridge, additional augmentation will be necessary in order to improve the aesthetic appearance.

For implant-supported restorations an adequate zone of attached gingiva or thickened tissue is desirable to avoid complications such as mechanical tissue trauma, inflammation and poor aesthetics. In recessions around implants as presented here, a connective tissue graft as described by Azzi et al. (1) corrects the mucogingival deficiencies by thickening the existing mucosa and creating a collagenous collar around implants to enhance the soft tissue restoration at the implant surface.»

2. Aims of the therapy

- > Lateral ridge augmentation to improve peri-implant osseous condition, restore the deformed ridge and build up the hard tissue basis for adequate soft tissue («soft tissue follows hard tissue»).
- > Soft tissue augmentation with connective tissue graft to achieve adequate soft tissue thickness.

3. Concept of Georgios Nikou, Peter Thoolen & Anton Sculean

- > Lateral ridge augmentation using Bio-Oss® and Bio-Gide® and soft tissue augmentation with connective tissue graft.

4. Surgical procedure

- > Case: A 38 year old patient was referred to the department of Periodontology & Biomaterials for treatment due to unaesthetic appearance of the tooth restoration in the region of 21.

Suspected reasons for failure: The implant has been placed into an inadequately augmented site. In addition, the implant has been placed rather labially.



Fig. 1 Clinical view of the initial situation. Peri-implant recession and implant exposure are obvious and jeopardize the aesthetic appearance.



Fig. 2 Radiographic view of the implant with peri-implant radiolucency. Plastic reconstructive surgery with hard tissue and soft tissue augmentation is chosen as the treatment plan.



Fig. 3 According to the classification of Tinti & Parma-Benfenati (2) there is a class I dehiscence and a class I fenestration.

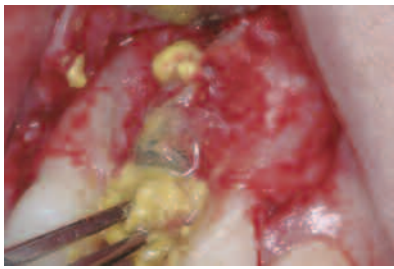


Fig. 4 Decontamination of the implant surface by means of topical application of tetracycline, according to a case series of Mellonig et al. (3).



Fig. 5 Perforation of the cortical bone will allow for easier access of desired cells from the bone marrow presumably leading to a higher rate of bone regeneration according to Hämmerle (4).



Fig. 6 Application of Bio-Oss® granules.



Fig. 7 Bio-Gide® membrane application in order to hold the granules in place and prevent soft tissue in-growth.



Fig. 8 Connective tissue graft applied above the membrane in order to increase the width of the soft tissue and improve the aesthetic appearance. The graft has been harvested from the left side of the palate at the region mesial to 26 and 6 mm from the gingival margin. The length of the graft is 15 mm, the width 8 mm and the thickness 2 mm approximately.



Fig. 9 Suturing of the flap in coronal position after mobilizing the soft tissue with periosteal incisions. The suture material is non-resorbable ePTFE (Gore-Tex®). Horizontal mattress sutures are used to release tension and interrupted single sutures are used on the margins.

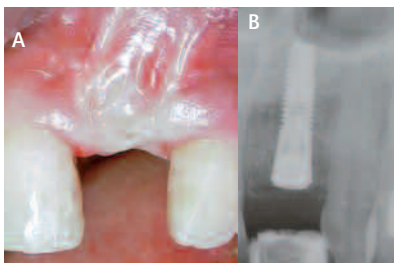


Fig. 10 Situation after 6 months healing: adequate soft tissue has been created clinically (A) while almost no radiolucency is visible radiographically anymore (B).



Fig. 11 The Modified Roll Technique, as described by Scharf & Tarnow (5), is used for healing abutment placement during the second stage in order to additionally improve the soft tissue condition. The healing abutment and sutures are then placed.

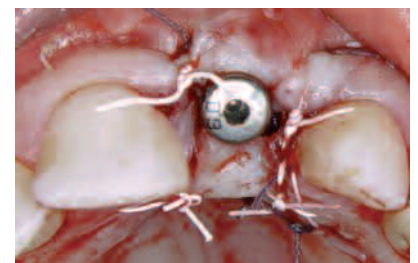


Fig. 12 Healing abutment positioning and suturing



Fig. 13 Clinical view 1 year after surgery. The final restoration is already cemented.



Fig. 14 Radiographic appearance 1 year after surgery.



Fig. 15 Profile appearance of the treated region after hard and soft tissue augmentation. The profile shows considerable width.

Literature References

- 1 Azzi R, Etienne D, Takei H, Fenech P: Surgical thickening of the existing gingiva and reconstruction of interdental papillae around implant-supported restorations. *Int J Periodontics Restorative Dent* 2002, 22, 71-77
- 2 Tinti C, Parma-Benfenati S: Clinical classification of bone defects concerning the placement of dental implants. *Int J Periodontics Restorative Dent* 2003, 23, 147-155
- 3 Mellonig JT, Griffiths G, Mathys E, Spitznagel J: Treatment of the failing implant: case reports. *Int J Periodontics Restorative Dent* 1995 Aug, 15(4), 384-395.
- 4 Hämmerle CHF: Membranes and bone substitutes in GBR. *Proceedings of the 3rd European Workshop on Periodontology: Implant Dentistry Quintessence Berlin 1999*, 468-499
- 5 Scharf DR, Tarnow DP: Modified Roll Technique for localized alveolar ridge augmentation. *Int J Periodontics Restorative Dent* 1992, 12, 415-425

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