



Treatment concept of Dr. Michael R. Norton, London, England

> Management of periimplantitis using Geistlich Bio-Oss® and Geistlich Bio-Gide®



1. Indication profile

Region	<input checked="" type="checkbox"/> aesthetic region <input type="checkbox"/> single tooth gap Remark: Procedure also possible in single tooth gap.	<input checked="" type="checkbox"/> non-aesthetic region <input checked="" type="checkbox"/> multiple tooth gap	
Bony situation	<input type="checkbox"/> no bone defect present Remark: Bone dehiscence and fenestration labial to implant, 10 months after implant insertion. <input checked="" type="checkbox"/> bone augmentation indicated	<input checked="" type="checkbox"/> bone defect present	
Soft tissue situation	<input checked="" type="checkbox"/> no recession <input type="checkbox"/> thin Remark: The tissue appears rather thin. Procedure also possible in uneventful situations without recessions. <input checked="" type="checkbox"/> soft tissue augmentation indicated	<input type="checkbox"/> recession <input type="checkbox"/> thick <input checked="" type="checkbox"/> inflamed <input type="checkbox"/> inadequate keratinised mucosa	<input checked="" type="checkbox"/> infected <input type="checkbox"/> uneventful
Status of implant	implant stable explantation indicated	<input checked="" type="checkbox"/> yes <input type="checkbox"/> yes	<input type="checkbox"/> no <input checked="" type="checkbox"/> no

Background information

Dr. Michael R. Norton:

«Periimplantitis is an inflammatory process that affects both the hard and soft tissues around an implant in function and results in marginal bone loss which may eventually lead to loss of osseointegration. Bacterial infections play a major role in the aetiology^{1,2,3}. Therefore control of the infection is a major factor when treating periimplantitis. In the literature different criteria for implant success have been used. Therefore it is difficult to estimate the prevalence of peri-implantitis. However, Schwarz et al conclude from various studies^{4,5,6,7} that the prevalence of peri-implantitis may vary between 10 and 29 %⁸. I have seen no more than 6 patients presenting with periimplantitis in my own practice over the last 16 years. This may be related to the fact that I use implants without a porous coating such as TPS or HA.

The use of Geistlich Bio-Oss® and Geistlich Bio-Gide® has been described to be an adequate means to aid restoration of the osseointegration of the implant⁸ and certainly has a role to play in the reconstruction of periimplantitis-induced defects. However, before embarking on surgery it is appropriate to use a non-interventive antimicrobial therapy. I routinely use systemic antibiotics along with sub-mucosal irrigation of 10mL 0.12% chlorhexidine followed by sub-mucosal topical application of 2% w/w Minocycline HCL (Dentomycin™). However, when there are radiographic changes to the extent seen in the case presented, I plan for immediate surgical intervention.

After raising a full thickness flap on a wide base, local degranulation and thorough curettage are undertaken as a fundamental principle of debridement. The use of chlorhexidine arose as a result of my early concerns for using citric acid which has been previously recommended but which demineralizes the surrounding bone. Also the fact that at a concentration of 0.12% with an exposure time of 5 minutes, chlorhexidine is a very effective antibacterial agent. In addition Tetracycline which is quite often used in oral surgery is used as a solution to rehydrate the Geistlich Bio-Oss®. This is an anecdotal concept, based on the knowledge that tetracycline binds to hydroxapatite.

Sometimes we take smears for bacterial culturing but we always use a combination of Amoxicillin / Metronidazole as a cover even if we are to take swabs for culturing and antibiotic sensitivity testing. If a further course of antibiotics is indicated I typically use Clindamycin or Azithromycin.»

2. Aims of the therapy

- > Therapy of the bacterial infection
- > Regeneration of the bone lost around the implant by using Geistlich Bio-Oss® and Geistlich Bio-Gide®

3. Surgical procedure



Fig. 1 Clinical situation: At the 5-year review the patient (65 years, male) complains of recent soreness at position 13. On examination tissues are pink and healthy in appearance but on palpation a purulent exudate is apparent from around the peri-implant sulci of 2 out of 3 implants in the right quadrant. The patient is prescribed a combined course of Amoxicillin 500mg TDS and Metronidazole 200mg TDS for 5 days. Prosthesis type: Non-resilient milled bar, precision attachment-retained overdenture.



Fig. 2 Occlusal view of the infected site.



Fig. 3 On completion of the course of antibiotics, flap reflection reveals large crater-like infrabony defects and plaques of calculus-like material visible on the surface of the implants. All soft tissues are thoroughly degranulated.



Fig. 4 The bone is initially curetted taking care not to over-instrument the surface of the implants (except with non-metallic scalers) and then decontaminated, firstly by packing gauze soaked in 0.12% chlorhexidine around the implants and into the defects which is left in situ for 5 minutes.



Fig. 5 Afterwards decontamination is proceeded by direct irrigation with a 1g in 20ml sterile saline solution of tetracycline.



Fig. 6 The resulting bone surface appears clean and healthy and the implant surfaces while showing some evidence of instrumentation are also free of debris.



Fig. 7 A Geistlich Bio-Gide® membrane is prepared by punching holes through it, so that it drapes accurately around the implants.



Fig. 8 Geistlich Bio-Oss® is now rehydrated in the tetracycline solution and packed into the defects and around the implants.



Fig. 9 Geistlich Bio-Oss® in situ. The membrane is placed over the Geistlich Bio-Oss®.



Fig. 10 The membrane is then tucked under the reflected flap to fully cover the grafted area.



Fig. 11 Flaps are repositioned and sutured and the milled bar secured back into place. The patient was prescribed Azithromycin 500mg o.d. for 3 days.



Fig. 12 & 13 The pre- and 2-month post-operative radiographs demonstrate the change in appearance at the defect site. Clinically there is an absence of any further pain or purulence.



Fig. 14 Healthy clinical situation after 1 month.



Fig. 15 Clinical situation with final prosthetic restoration in place.

Literature reference

- 1 Mombelli, A., Buser, D. & Lang, N. P. (1988) Colonization of osseointegrated titanium implants in edentulous patients. Early results. *Journal of Periodontology* 69, 857–864.
 - 2 Becker, W., Becker, B. E., Newman, M. G. & Nyman, S. (1990) Clinical and microbiologic findings that may contribute to dental implant failure. *In Oral and Maxillofac Implants* 5, 31–38.
 - 3 Alcoforado, G. A., Rams, T. E., Feik, D. & Slots, J. (1991) Microbial aspects of failing osseointegrated dental implants in humans. *Journal Parodontol* 10, 11–18.
 - 4 Brägger, U., Hugel-Pisoni, C., Burgin, W., Buser, D. & Lang, N. P. (1996) Correlations between radiographic, clinical and mobility parameters after loading of oral implants with fixed partial dentures. A 2-year longitudinal study. *Clinical Oral Implants Research* 7, 230–239.
 - 5 Buser, D., Mericske-Stern, R., Bernard, J. P., Behneke, A., Behneke, N., Hirt, H. P., Belser, U. C. & Lang, N. P. (1997) Long-term evaluation of non-submerged ITI implants. Part 1: 8-year life table analysis of a prospective multi-center study with 2359 implants. *Clinical Oral Implants Research* 8, 161–172.
 - 6 Karoussis, I. K., Brägger, U., Salvi, G. E., Burgin, W. & Lang, N. P. (2004) Effect of implant design on survival and success rates of titanium oral implants: a 10-year prospective cohort study of the ITI Dental implant system. *Clinical Oral Implants Research* 15, 8–17.
 - 7 Karoussis, I. K., Salvi, G. E., Heitz-Mayfield, L. J., Brägger, U., Hämmerle, C. H. & Lang, N. P. (2003) Long-term implant prognosis in patients with and without a history of chronic periodontitis: a 10-year prospective cohort study of the ITI Dental implant system. *Clinical Oral Implants Research* 14, 329–339.
 - 8 Schwarz F, Bieling K, Latz T, Nuesry E, Becker J. Healing of intrabony periimplantitis defects following application of a nanocrystalline hydroxyapatite (Ostim) or a bovine-derived xenograft (Geistlich Bio-Oss®) in combination with a collagen membrane (Geistlich Bio-Gide®). A case series. *J Clin Periodontol* 2006; 33: 491–499.
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Contact

- > Dr. Michael R. Norton, No. 98 Harley Street, W1 London, England
 phone: +44 207 486 9229, fax: +44 207 486 9119, e-mail: drnorton@nortonimplants.com
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