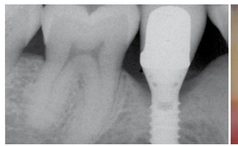
CLINICAL CASE

Depending on disease severity, a decision tree based on assessment of probing depth leads to both non surgical and surgical interventions. Following a systematic literature review of 26 studies, it was revealed that it is possible to obtain defect fill of peri-implantitis defects following surgical treatment modalities with concomitant placement of bone substitutes in such defects.[20] When defect fill of peri-implantitis defects is required, use of natural bone mineral in combination with a collagen membrane results in marked clinical improvements.[27] Bovine xenogenic biomaterial was found to provide more stable radiographic bone fill than autogenous bone.[28] Surgical regenerative treatment of peri-implantitis is shown, resulting in clinical improvements after 12 months with long-term favorable hard- and soft-tissue outcomes over 6 years (case by courtesy of Prof. G.E. Salvi).

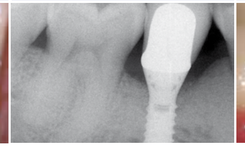


1) Radiological image showing the crater like peri-implant bone defect. Excess cement was previously removed in the non surgical phase.

2) Soft-tissue clinical situation with suppuration around implant in position 45. On patient request, the cemented crown was not removed.

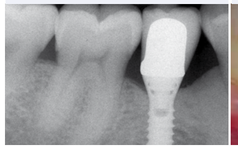
3) The peri-implant 4-wall bone defect.

4) Geistlich Bio-Oss® was used to fill the defect around the decontaminated implant surface. A Geistlich Bio-Gide®membrane was placed over the Geistlich Bio-Oss® granules, around the implant neck.



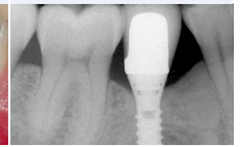
5) Post-op radiological image of the Geistlich Bio-Oss® filled peri-implant defect.

6) Clinical buccal image of implant in position 45, 2 years after regenerative surgery showing healthy soft-tissue conditions.



7) Radiographic image of implant in position 45, 2 years after regenerative surgery showing long-term favorable outcome.

8) Clinical buccal image 6 years after regenerative surgery showing a stable soft-tissue situation. The patient demonstrates excellent oral hygiene.



9) Radiographic image of regenerated bone around stable implant in position 45, 6 years after surgery.

How to treat peri-implantitis

PROF. GIOVANNI E. SALVI (SWITZERLAND)

«The treatment of peri-implantitis may require a surgical approach to fill the osseous defect.»

⇨ Visit this lecture on Saturday, May 4, 12.05 p.m. at the Main Symposium!

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LATEST INSIGHTS ON PERI-IMPLANT DISEASES

SESSIONS IN THE MAIN SYMPOSIUM

SCIENTIFIC PROGRAMME, SATURDAY, MAY 4, 2013
Clinical Forum 1

DEFINITION, DIAGNOSIS AND PREVALENCE

Peri-implant infections are pathological conditions surrounding dental implants. These infections range from mucositis lesions, reflecting a host response to a bacterial challenge, to peri-implantitis where alveolar bone around the implant is lost.[1] The typical signs and symptoms of mucositis and peri-implantitis were discussed in detail at various consensus conferences[2-8] and can be described as follows:

Signs and symptoms of MUCOSITIS:	Signs and symptoms of PERI-IMPLANTITIS:
- Bleeding upon probing (BOP)	- Bone defect with a crater-like shape (a)
- Redness and swelling of soft tissue	- Bleeding and/or suppuration upon probing (b)
- No loss of supporting bone	- Implant shows no mobility (c)
	- Probing into the peri-implant space >4mm depth

Prevalence: ~ 50 % of implants ~ 80 % of patients* *

Prevalence: ~ 10 % of implants ~ 20 % of patients[2]

Picture by courtesy of Dr. J.-L. Giovannoli and Prof. S. Renvert and Quintessence International.

a) c)

Pictures by courtesy of Prof. Andrea Mombelli

A reliable diagnosis of peri-implantitis requires the simultaneous presence of all above listed signs and symptoms. A single feature alone is not sufficient for the diagnosis.

« What is the right threshold in PPD values to diagnose peri-implantitis ? »

Picture by courtesy of Prof. Björn Klinge

Based on a recent review article, the prevalence of peri-implantitis after 5 -10 years has been reported to affect 10% implants and 20% patients.[2] Peri-implant mucositis was observed in approximately 50% of the implant sites and 80% of the subjects studied.[8,9] The number about prevalence needs to be taken with caution. The calculated prevalence depends on the disease definition and the differential diagnosis.[2,10] Among the reasons of the heterogeneity of the published results is e.g. the different thresholds for bone loss (≥ 2, ≥ 2.5 mm or 3 mm?)[11, 12] or inflammatory parameters (PPD with BOP ≥ 4 or ≥ 6 mm?).[12]

Diagnosis and monitoring – protocols for the clinic**

PROF. ANDREA MOMBELLI (SWITZERLAND)

«Peri-implantitis is a clinical challenge that needs to be addressed appropriately at all phases of patient care, beginning with treatment planning and ending with long-term maintenance and appropriate interceptive anti-infective therapy.»

How big is the problem?***

PROF. BJÖRN KLINGE (SWEDEN)

«Differences in the definition of peri-implantitis have resulted in a wide range of reported prevalence values and are still matter of academic dispute.»

⇨ Visit these lectures on Saturday, May 4, 10 a.m. and 9 a.m.*** at the Main Symposium!**

* The prevalence numbers are to be interpreted with caution as they are based on a single feature.

RISK INDICATORS

A systematic review was performed in order to identify potential risk indicators for peri-implant disease.[13] The following risk indicators were identified:

There is **substantial evidence** that the following factors are associated with peri-implant diseases:	There is **limited evidence** that the following factors are associated with peri-implant diseases:	There is **conflicting and limited evidence** for an association with peri-implant diseases and:
1. Poor oral hygiene	1. Diabetes	1. Genetic traits
2. History of periodontitis	2. Alcohol consumption	2. Implant surface
3. Cigarette smoking		

The role of the implant surface for development of peri-implantitis as well as its treatment has been examined. Although similar bone loss was seen with both SLA and polished implants during the "active" breakdown period, differences were observed in the plaque accumulation period. The animal model revealed greater bone loss at SLA sites vs. polished implant sites. This suggests that peri-implantitis may progress more significantly around implants with a moderately rough surface than at implants with a polished surface.[14]

The influence of implant surfaces on peri-implantitis*

PROF. TORD BERGLUNDH (SWEDEN)

«Experimental models with spontaneous progression of peri-implantitis demonstrated that certain types of implants are more susceptible to peri-implantitis related bone loss.»

PREVENTION & MAINTENANCE CARE PROTOCOLS

There are five key factors involved in prevention of peri-implantitis:

1. Treatment planning phase
2. Preparation of the patient
3. Placement of the implant
4. Design of the prosthesis
5. Prophylaxis

Additionally important are the skills of the dental surgeons, the restorative dentists, the dental technicians, and the hygienist as well as patient compliance. In order to maintain an aesthetic and functional implant restoration, repeated monitoring of the peri-implant tissues and maintenance care are essential. Practical clinical guidelines for designing maintenance care protocols are available today and focus on the following aspects:

1. When and how to probe around implants
2. When to take a radiograph
3. How to debride around an implant
4. How frequently to monitor the implant patient

An objective of therapy should be the prevention of mucosal inflammation around the functioning dental implants and the absence of bleeding upon probing.

Peri-implantitis – Prevention is better than cure**

PROF. LISA HEITZ-MAYFIELD (AUSTRALIA)

«Considering the unpredictable outcomes of peri-implantitis treatment, a focus on preventing peri-implant disease is of utmost importance.»

⇨ Visit these lectures on Saturday, May 4, 9.30 a.m.* and 11.35 a.m. at the Main Symposium!**

TREATMENT OF PERI-IMPLANTITIS

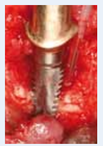
In treating of peri-implant infections, an analogous approach to systematic periodontal therapy should be considered, including: the systemic phase, hygiene phase, corrective phase, and supportive phase. The removal of bacterial plaque is a prerequisite to prevent disease progression. Either non surgical or surgical therapy approaches can be implemented[15]:

Pictures by courtesy of Dr. J.-L. Giovannoli

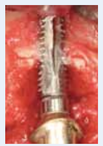
Picture by courtesy of Prof. A. Sculean

Picture by courtesy of Prof. F. Schwarz

Picture by courtesy of Prof. F. Schwarz



Picture by courtesy of Prof. F. Schwarz



Picture by courtesy of Prof. F. Schwarz

Curettes (e.g. plastic, carbon-fiber) or air powder flow (e.g. sodium bicarbonate or glycine powder)	Antibiotic treatment	Oscillating titanium brush	Er:YAG Laser	Implantoplasty

Non surgical therapy:

Mechanical submucosal debridement alone has a limited effect on the clinical signs of peri-implantitis. Adjunctive locally delivered or systematically administered **antibiotics** have been found to improve clinical outcomes (BOP and PPD), relative to submucosal debridement alone.[16,17] Submucosal debridement with adjunctive local delivery of antibiotics, submucosal **glycine powder air polishing or Er:YAG laser** treatment may reduce clinical signs of peri-implant mucosal inflammation to a greater extent relative to submucosal debridement using curettes with adjunctive irrigation with chlorhexidine.[18] Decontamination methods, such as **air-powder abrasion, saline application, laser therapy, peroxide treatment, ultrasonic/manual debridement and application of topical medication** have all been evaluated but no definite gold standard has been identified.[19] The available information is insufficient to suggest whether or not any of the assessed non-surgical treatments arrest bone loss in implants with peri-implantitis.[18]

Surgical therapy:

Surgical therapy for treating peri-implantitis is a predictable method for treating peri-implant disease and patients receiving this therapy have benefited from it in the short term.[20] **Access flap, removal of granulation tissue and implant surface decontamination** is a common denominator prior to any use of regenerative materials.[20] **Metal curettes and ultrasonic tips**, although more effective than the non-metallic alternatives in achieving adequate debridement, have been shown to damage the titanium surface.[21] **Laser decontamination**, use of abrasive devices or implantoplasty[23,24], of the exposed part of the implants surface as adjuncts to **surgical respective or regenerative therapies** may lead to somewhat better clinical results than conventional treatment alone.[20,23]
Available data indicate that it is possible to obtain defect fill of peri-implantitis defects following surgical treatment modalities with concomitant placement of bone or bone substitutes[25,26], and that the obtained healing outcomes may be retained long term.[20]

Decontamination of the implant surface

PROF. FRANK SCHWARZ (GERMANY)

«Bone grafting techniques primarily attempt to fill and subsequently obstruct the osseous defect, rather than to address disease resolution, the latter aspect might primarily be achieved by a proper method of surface debridement and decontamination.»

⇨ Visit this lecture on Saturday, May 4, 12.35 p.m. at the Main Symposium!