

Correlation Between Dental Implants, Natural Teeth and Periodontal Disease

Dr. Gadi Schneider - D.M.D, Specialist in Periodontics



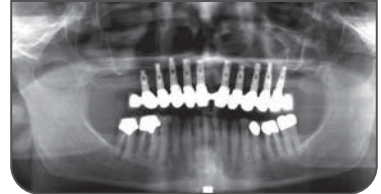
Patient with generalized
severe chronic periodontitis



Abutment placement
and suturing



2 Years follow up



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Teeth anatomy and histology compared to implants

Teeth Cementum	Implants
<ul style="list-style-type: none">■ Presence of cement and PDL■ Collagen fibers attached in horizontal orientation■ Same epithelial attachment (JE)■ Same biological space (3 mm)	<ul style="list-style-type: none">■ No cementum or PDL■ Collagen fibers in vertical orientation not attached to the implant■ More collagen fibers, fewer fibroblasts and fewer blood vessels in the peri-implant connective tissue■ Same epithelial attachment (JE)■ Same biological space (3 mm)

Etiology of peri-implantitis versus periodontitis

- Peri-implantitis has the same etiological, clinical, radiographic and histological characteristics as periodontitis.
- Bacteria play a vital role in the multi-factorial etiology of periodontitis and peri-implantitis.
- The bacterial composition which causes periodontitis and peri-implantitis is identical.
- The bacterial composition related to the healthy state of periodontal and peri-implant tissues is identical.

Periodontal and peri-implant soft tissue reaction to plaque accumulation

Comparative studies examined periodontal and peri-implant plaque accumulation and the tissue reaction to plaque accumulation, over a 3-week and a 3-month period, and found that:

- The amount and composition of peri-implant plaque which accumulated up over 3 weeks and 3 months were identical to those of periodontal plaque.
- The rate and quantity of peri-implant and periodontal early bacterial colonization were identical.
- After 3 weeks - identical extent and localization of peri-implant and periodontal inflammatory response.
- After 3 months - the peri-implant inflammation was more deeply advanced than the periodontal inflammation, penetrating the alveolar bone, and was likely to cause implant failure.

The rationale behind implant success or failure due to periodontal disease

- Potentially pathogenic bacteria detected around teeth populate the soft tissues surrounding implants within 6 months of the date of implant insertion.
- Proliferation of these periopathogenic bacteria may cause an inflammatory response around the implants, eventually leading to failure.

Implants inserted in patients with periodontal disease - a review of the literature

Longitudinal studies conducted over a 10-year follow-up of implants inserted into patients with periodontal disease who did not receive regular treatment resulted in the following conclusions:

- Over the years, a positive correlation was found between peri-implant bone loss and periodontal bone loss.
- A higher percentage of implant failure was found in patients with periodontal disease than in healthy subjects.
- A higher percentage of biological complications (peri-implantitis) over 10 years was found in periodontal patients than in healthy subjects.
- A positive correlation was found between the attachment level, periodontal pockets and marginal bone level around the implant and the periodontal pockets and attachment level of the entire mouth.

(Christoph R. E. Hardt, COIR 02, Ioannis K. Karoussis, COIR 03, Ioannis K. Karoussis, COIR 04, Brägger et al. 1997).

On the other hand, longitudinal studies conducted over a 10-year follow-up of implants inserted into patients with periodontal disease who received regular treatment resulted in the following conclusions:

- No relation was found between ongoing periodontal disease and peri-implant bone loss.
- The presence of periopathogenic bacteria around implants did not cause loss of attachment or implant failure as predicted.
- Similar rates of success and amount of peri-implant bone loss were found in periodontal patients who received regular treatment and care and in healthy subjects.

(Quirynen, COIR 01, Quirynen, COIR 02, Åsa Leonhardt, COIR 02, Ellegaard et al. 1997, Sbordone et al. 1999).

Summary and conclusions

- Peri-implantitis has the same etiological, clinical, radiographic and histological characteristics as periodontitis; however, inflammation spreads more rapidly and deeply into the bone.
- Periopathogenic bacteria migrate from residual periodontal pockets to peri-implant tissues and can cause peri-implantitis and even implant failure.
- There is contradictory evidence as to whether there are more peri-implant failures, bone loss or biological complications around implants in patients with periodontal disease who receive regular treatment and maintenance than in healthy subjects.
- It is imperative to achieve periodontal health prior to implant insertion in periodontal patients and to maintain regular preventive maintenance subsequent to implant insertion.

Recommended treatment sequence in periodontal patients who are candidates for implant insertion

- Enhancement of patient awareness of periodontal disease and its relation to implants
- Instruction in oral hygiene
- Scaling and root planing
- In cases of aggressive periodontal disease, adjuvant antibiotic therapy is indicated (Moxypen 500 mg + Flagil 250 mg TID for 8 days is the recommended therapy in current literature)
- Conservative treatment, root canal therapy and posts with temporary crowns
- Re-evaluation
- Periodontal surgery as necessary (pocket reduction, regeneration, flap elevation for debridement)
- Phase II re-evaluation
- Insertion of implants, sinus elevation and bone augmentation as necessary, and final rehabilitation
- Regular preventive maintenance every 3 months

Definitions

- Peri-implant mucositis - reversible inflammatory response in peri-implant soft tissue.
- Peri-implantitis - irreversible inflammatory lesion involving the tissue surrounding implants which has undergone osseointegration, causing soft and hard tissue destruction around the implants.

Case 1 - Implantation and immediate loading in periodontally compromised patients

Dr. Gadi Schneider and Dr. Yoram Bruckmayer

Patient with generalized severe chronic periodontitis

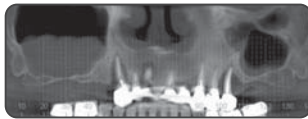


Fig. 1



Fig. 2

After initial preparation including scaling + root planing + extractions

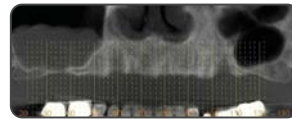


Fig. 3



Fig. 4

Phase 2 - implant treatment plan

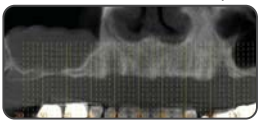


Fig. 5



Fig. 6

Implant placement



Fig. 7



Fig. 8

Abutment placement and suturing



Fig. 9



Fig. 10

Immediate loading with temporary bridge



Fig. 11



Fig. 12

Final rehabilitation and maintenance care every 3 months



Fig. 13



Fig. 14



Fig. 15

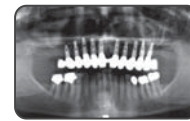


Fig. 16

2 Years follow up - continued periodontal maintenance care, bone level around teeth > 4 mm, and implants maintained and stable



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