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Bacterial and inflammatory behavior of implants in the early healing phase of chronic periodontitis”*

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Panoramic radiograph after implant insertion

GCF sampling with a paper strip at the implant site

Microbial sampling with a paper point at the implant

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ABSTRACT.

Objectives

To assess the pattern of early bacterial colonization at implants and teeth in patients with a history of chronic periodontitis compared with a group of healthy subjects. Furthermore, the presence of host-derived markers at teeth and implants in the two subject groups was determined.

Materials and methods

Subgingival and submucosal plaque and gingival crevicular fluid samples from 37 nonsubmerged healing dental implants and the deepest tooth sites per quadrant were analyzed 2 to 5 months after implant insertion. The presence of periodontal pathogens was assessed by means of real-time polymerase chain reaction. Further, the levels of interleukin (IL)-1β, IL-8, and IL-10; secretory leukocyte protease inhibitor; and the neutrophil elastase activity were determined.

Results

Eleven patients with chronic periodontitis and 13 subjects without periodontitis were recruited for this study. Bacterial species associated with periodontitis were detectable at both the teeth and implants. The presence was always higher in the chronic periodontitis group; the difference was significant for Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans at both the implants and teeth. The levels of IL-1β were higher at teeth than at implants; in contrast, more IL-10 was measured at the implants.

Conclusion

The present results indicate that (1) dental implants inserted in periodontally compromised patients are colonized with periodontal pathogens within the first weeks of healing; (2) inflammatory markers (IL-1β) are present in higher levels at teeth as compared with implants, whereas at implants, anti-inflammatory cytokines (IL-10) might play the important role; and (3) the importance of periodontal treatment prior to implant insertion to reduce bacterial load and inflammation should be emphasized.