Peri-implantitis and periodontitis
Experimental and clinical studies

Avhandlingen baseras på följande delarbeten:


Abstract

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Peri-implantitis is an increasing problem in implant dentistry. The current series of studies employed a translational approach with the aim to compare peri-implantitis and periodontitis lesions and evaluate the influence of implant surface characteristics and the adjunctive use of systemic antibiotics/local antiseptics on healing following surgical treatment of peri-implantitis.

Tissue reactions following ligature removal in experimental periodontitis and peri-implantitis were analyzed in a dog model (Study I). Histopathological characteristics in human peri-implantitis and periodontitis lesions were evaluated in 80 patients (Study II). Labrador dogs were used to analyze the effect of surgical treatment of experimental peri-implantitis at implants with different surface characteristics using different anti-infective procedures (Study III). 100 patients with severe peri-implantitis were treated surgically with or without adjunctive systemic antibiotics or the local use of chlorhexidine for implant surface decontamination. Treatment outcomes were evaluated after 1 year. A binary logistic regression analysis was performed to identify factors influencing the probability of treatment success (Study IV).

It was demonstrated that:

- the amount of bone loss that occurred during the period following ligature removal was significantly larger at implants with a modified surface than at implants with a non-modified surface and at teeth. The histological analysis revealed that peri-implantitis sites exhibited inflammatory cell infiltrates that were larger, extended closer to the bone crest and contained larger proportions of neutrophil granulocytes and osteoclasts than in periodontitis. (Study I)
- peri-implantitis lesions were more than twice as large and contained significantly larger area proportions, numbers, and densities of CD138-, CD68-, and MPO-positive cells than periodontitis lesions. (Study II)
- the local use of chlorhexidine has minor influence on resolution of peri-implantitis following surgical treatment. (Study III)
- treatment outcome was influenced by implant surface characteristics. (Study III and IV)
- the adjunctive use of systemic antibiotics increased the probability for treatment success at implants with modified surfaces but not at implants with a non-modified surface. (Study IV)

Key words: dental implant, animal experiment, biopsy, radiology, histology, immunohistochemistry, inflammation, peri-implant disease, periodontal disease, treatment, systemic antibiotics, antiseptics.

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