

On approaches to periodontal infection control

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av

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Avhandlingen baseras på följande delarbeten:

- I. Wennström, J.L., Tomasi, C., Bertelle, A. & Dellasega, E. (2005) Full-mouth ultrasonic debridement versus quadrant scaling and root planing as an initial approach in the treatment of chronic periodontitis. *Journal of Clinical Periodontology* **32**: 851-859.
- II. Tomasi, C., Bertelle, A., Dellasega, E. & Wennström, J.L. (2006) Full-mouth ultrasonic debridement and risk of disease recurrence: a 1-year follow-up. *Journal of Clinical Periodontology* **33**: 626-631.
- III. Tomasi, C., Leyland, A.H. & Wennström, J.L. (2007) Factors influencing the outcome of non-surgical periodontal treatment: a multilevel approach. *Journal of Clinical Periodontology* **34**: 682-690
- IV. Tomasi, C. & Wennström, J.L. (2004) Locally delivered doxycycline improves the healing following non-surgical periodontal therapy in smokers. *Journal of Clinical Periodontology* **31**: 589-595.
- V. Tomasi, C., Koutouzis, T. & Wennström, J.L. (2007) Locally delivered doxycycline as an adjunct to mechanical instrumentation at re-treatment of periodontal pockets. *Journal of Periodontology* (Submitted)



ABSTRACT

ON APPROACHES TO PERIODONTAL INFECTION CONTROL

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The purpose of the project was to gain understanding of clinical possibilities and applicability of non-surgical periodontal therapy.

A clinical study was designed to compare a full-mouth ultrasonic debridement approach with the traditional approach of consecutive sessions of quadrant-wise scaling/root planing with respect to the clinical outcome and long term stability. A second study evaluated the outcome of locally delivered doxycycline as an adjunct to initial subgingival instrumentation in smokers and non-smokers. A third study was designed to evaluate the clinical outcome of mechanical re-treatment of non-responding pockets, with or without the use of adjunctive locally delivered doxycycline. Furthermore, a multilevel analysis was performed to investigate factors affecting the clinical outcome of pocket debridement at initial as well at re-treatment phase.

In patients with moderate to advanced periodontitis an initial, 1-hour session of full-mouth ultrasonic debridement resulted in clinical improvements that were not significantly different from those following the traditional treatment approach. No significant difference with regard to the risk for recurrence of diseased periodontal pockets between the two treatment approaches was found, which lends support to the concept that the full-mouth ultrasonic approach to pocket/root debridement is as effective as quadrant-wise SRP in the initial treatment phase.

Locally applied, controlled-release doxycycline gel partly counteracted the negative effect of smoking on periodontal healing following initial non-surgical therapy. However, when used as an adjunct to mechanical debridement in the re-treatment of periodontal pockets, locally delivered doxycycline did not significantly improve the treatment outcome compared to mechanical debridement alone.

The multilevel analysis demonstrated that smoking habits, presence of supra-gingival plaque at the tooth site and location of the pocket at a molar were significant factors for an inferior outcome of *initial* non-surgical periodontal treatment.

Molars, furcation sites, presence of plaque and presence of angular bony defects were associated with an inferior clinical result after *re-treatment*.

The findings show that a full-mouth debridement approach is justified as an initial treatment modality. Furthermore, the results point to the importance of considering factors associated with the individual tooth site in the decision-making process regarding the selection of treatment procedures, particularly for sites showing poor healing response following initial pocket/root debridement. Locally applied controlled-release doxycycline gel may partly counteract the negative effect of smoking on periodontal healing following initial non-surgical therapy, but showed no significant benefit when applied in conjunction with re-treatment of remaining diseased sites.

Keywords: periodontitis, scaling and root planing, ultrasonic, randomized controlled trial, doxycycline, local drug delivery, smoking, plaque, multilevel analysis

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