Effect of Ultrasonic Toothbrushing in Periodontal Maintenance Treatment

A. MAY, T. LANG, B. JENNES and P. GAENGLER – ORMED Institute for Oral Medicine at the University of Witten/Herdecke, Witten, Germany

OBJECTIVES
- It has been demonstrated that exclusively ultrasound-activated toothbrushing is an effective oral hygiene approach to control dental plaque, completely avoiding the risk of abrasive lesions on teeth and gums (S. Denda, JDR 91, Spec Iss B, 2008).
- Inflammation of the tooth attachment with bone loss and often gum bleeding are widespread and increasing among the population, finally resulting in tooth loss.
- Bacterial etiology of dysbiotic biofilms and usually powerful host responses, mediated by genetic and immunologic factors, play a major role.
- Periodontitis is, like dental caries, a life-long disease. Therefore, a life-long dental follow-up including oral hygiene home care is needed.
- Consequently, a very soft but nevertheless highly effective toothbrushing technique with polishing or non-abrasive effects is important to avoid tooth wear.

METHODS
- After scaling and root planing of periodontitis teeth with shallow pockets 16 subjects aged 45 – 54 years were included in the ultrasonic test group, using ultrasonic toothbrush Emmi®-dental Professional and 17 subjects in the control group, using manual toothbrush Denttabs® and Denttabs® tooth cleaning tablets, undergoing a 4-day training period.
- Baseline and follow-up data of all teeth after 2, 4, 8 and 12 weeks comprised six-point pocket depth, planimetric plaque index (Lang et al., 2011) at 9 fields per vestibular and oral sites of teeth and Gingiva Index. For statistical approval teeth 16, 26, 11, 36, 46, 31 were selected.
- The ultrasonic toothbrushing, used 2 times per day for 3 min., was exclusively ultrasound activated. Data underwent statistical analysis (U-test, Wilcoxon-test, χ²-test).
- The control-group was evaluated with the same parameters at the beginning and 12 weeks later.

RESULTS
- There was a significant plaque reduction from baseline to the end of the study after 40 days.
- The plaque reduction at all planimetric fields, buccally as well as lingually, was highest immediately after supervised brushing, later slightly increasing but statistically stable over the whole study period.
- This effective plaque control was documented in both groups, and there was no statistical difference between the test and the control group.

CONCLUSIONS
- The ultrasonic toothbrushing contributes to gingival health and avoids completely the risk of abrasive wear at teeth and gums.
- The outcome of scaling and root planing concerning the reduction of the number of shallow pockets is markedly improved by ultrasonic toothbrushing up to 3 months after treatment.

![Ultrasonic toothbrushing](image1.png)

![Manual toothbrushing](image2.png)

Percentage of plaque reduction (Example of one vestibular tooth site at incisor 11)

- Baseline 100% (Ultrasonic)
- T1 30.56 40.58 35.42 52.78
- T2 42.36 7.64 27.08 23.61
- T3 20%
- T4 80%
- T5 100%

![Study protocol](image3.png)