

**Effects of two different methods of non-surgical periodontal therapy on patient perception of pain and quality of life: a randomized controlled clinical trial**

Journal of Periodontology, June 2008

Madeleine Aslund, Jean Suvan, David R. Moles, Francesco D'Aiuto, Maurizio S. Tonetti

Significant decrease of perceived sensitivity in the piezo-ceramic (P, PL4, PL5) group after treatment (1, 4 and 8 weeks) compared to the curet group.

Treatment with the piezo-ceramic device led to a small but significant improvement in the function and psychosocial domain that subjects expressed as a positive effect on their quality of life.

**Efficiency of 10 Instruments for Subgingival Scaling Regarding Speed and Surface Roughness**

Poster International Association of Dental Research (IADR), March 2007, New Orleans (USA)

Nergiz, Schultz, Platzer, Schmage

Lowest surface roughness values with PM400 regardless of the surface area

**Substance Loss and Root Surface Structure Effected by 10 Deep Scaling Instruments**

Poster International Association of Dental Research (IADR), March 2007, New Orleans (USA)

Schmage, Schultz, Platzer, Maisch, Nergiz

For maintenance therapy the combination of minimal substance loss with a homogenous surface structure should be preferred which was offered also by PM400

**Comparison of 10 Instruments for Subgingival Removal of Artificial Calculus**

Poster Europerio 5, June 2006, Madrid

Schmage, Schultz, Platzer, Nergiz

Excellent cleaning efficacies for buccal, oral and proximal surfaces with PM400

**Distribution of different morphologic types of subgingival calculus on proximal root surfaces**

Quintessence International, March 2005

Vol. 36: 202-208

Gürkan, Bilgin (Turkey)

Scaling and root planning are the procedures by which plaque and calculus are removed from both supragingival and subgingival tooth surfaces to create a smooth, hard and clean surface. Calculus was found more frequently on the coronal thirds than on the apical regions.

**Thermal imaging of ultrasonic scaler tips during tooth instrumentation**

J. Clin Periodontology 2004

Vol. 31: 370-375

Lea, Landini, Walmsley (Birmingham, England)

The maximum heat is generated at the tip/tooth contact point.  
Increasing load will lead to an increase of heat generated.

Heat generation is minimised by using light loads in conjunction with low/medium generator power settings and water flow rates of at least 20ml/min.

**A systematic review of efficacy of machine-driven and manual subgingival debridement in the treatment of chronic periodontitis (\*)**

J. Clin. Periodontology 2002

Vol. 29: 72-81

Tunkel, Heinecke, Flemmig (Münster, Germany)

The available data do not indicate a difference between ultrasonic/sonic and manual debridement in the treatment of chronic periodontitis for single-rooted teeth (but this evidence is not very strong). Ultrasonic/sonic subgingival debridement requires less time than hand instrumentation

**A comparative in vitro study of a magnetostrictive and a piezoelectric ultrasonic scaling instrument**

J of Clin. Periodontol. 2001

Vol. 28: 642-649

Busslinger, Lampe, Beuchat, Lehmann (Zurich, Switzerland)

Hand curette (Deppeler, Switzerland), Cavitron Jet SPS (Dentsply), Sonosoft 5 (KaVo, Germany)

All three scaling instruments tested can produce a smooth surface after instrumentation. Piezoelectric ultrasonic scaler was more efficient than the magnetostrictive ultrasonic scaler in removing calculus but left the instrumented tooth surface rougher.

**CRA status report: Automated Scaler (Ultrasonic & Sonic)**

Vol. 22, Issue 6

EMS Perio Slim tip (PS) had best interproximal & subgingival access

**Working parameters of a magnetostrictive ultrasonic scaler influencing root substance removal in vitro**

J of Periodontology 1998

Vol. 69: 547-553

Flemmig, Petersilka, Mehl, Hickel, Klaiber (Würzburg, Germany)

CaviMed 200, Dentsply and P12 tip.

Combination of the assessed working parameters showed synergistic effects resulting in a wide range of defect depths ( $14.1 \pm 1.7 \mu\text{m}$  to  $410.5 \pm 51.1 \mu\text{m}$  at 40s) and volumes ( $0.0084 \pm 0.0057 \text{ mm}^3$  to  $1.3 \pm 0.079 \text{ mm}^3$ ).

Overall, defect depth was affected by lateral force and tip angulation, whereas instrument power setting had a minor impact.

**The effect of working parameters on root substance removal using a piezoelectric ultrasonic scaler in vitro**

J of Clin. Periodontol. 1998

Vol. 25: 158-163

Flemmig, Petersilka, Mehl, Hickel, Klaiber (Würzburg, Germany)

EMS PM400 with PS tip.

Greatest defect depth of  $226.8 \pm 63.2 \mu\text{m}$  at 40s. Defect volume may be a relevant parameter for the instrument efficacy, defect depth appears to be a parameter indicative of root

damage. Overall, defect depth was affected most severely by tip angulation followed by lateral force and then power.

To prevent severe root damage, it is crucial to use the assessed scaler at a tip angulation of close to 0°.

### **Comparison of root substance removal by magnetostrictive and piezoelectric ultrasonic and sonic scalers in vitro**

Abstract No.70 / J Clin. Periodontol. 1997

Vol. 24: 864

Petersilka, Flemmig, Mehl, Hickel, Klaiber (Würzburg, Germany)

Overall, the magnetostrictive ultrasonic scaler resulted in greater defect volume and defect depth than the piezoelectric ultrasonic scaler at low, medium and high power setting, respectively.

### **Working parameters of a sonic scaler influencing root substance removal in vitro**

Clin. Oral Invest 1997

Vol. 1: 55-60

Flemmig, Petersilka, Mehl, Rüdiger, Hickel, Klaiber (Würzburg, Germany)

Study assessed defect depth and volume using a KaVo Sonicflex Lux 2000L with a slim scaling tip (Perio Tip N°8, Perio extra long)

Combination of force and angulation showed synergistic effects resulting in a wide range of defect depths ( $21.9 \pm 0.96 \mu\text{m}$  to  $174 \pm 28.8 \mu\text{m}$  at 40s) and volumes ( $0.056 \pm 0.019 \text{ mm}^3$  to  $0.68 \pm 0.1 \text{ mm}^3$  at 40s).

Overall, defect depth was affected similarly by lateral force and tip angulation.

### **Hydrodynamik oszillierender Scaler**

Dtsch Zahnärztl Z 49: 415 (1994)

Griesinger, Menne, S. Jepsen, Albers, K. Jepsen

Transportation of fluids into crevices was significantly enhanced by oscillation of the instrument. First direct evidence for transient cavitation induced by oscillating scalers.

### **Effects of ultrasonic and sonic scalers on dental plaque microflora in vitro and in vivo**

J. of Clin. Periodontol. 1992

Vol. 19: 455-459

Baehni, Thilo, Chapuis, Pernet

In vivo and in vitro. Significant and more pronounced changes were observed with the ultrasonic than the sonic scaler.

### **In vivo scaling and root planing forces**

J. of Periodontology 1991

Vol. 62: 335-340

Zappa, Cadosch, Simona, Graf, Case (Berne, Switzerland)

For Hygienists (Switzerland):

Scaling forces: mean 5.38N (range 1.52 to 15.73N)

Root planing forces: mean 4.58N (range 1.56 to 10.59N)

No statistically differences between scaling forces and root planning forces, nor between foces used by dentists and hygienists.

Modifications			
Rev	Description	Date	Author
a	Scaling/Perio list created	23 July 2008	ERM