# PIEZON® PS

# **On Natural Teeth**



**CLINICAL EVIDENCE** Edition 03/2022

#### GUIDED BIOFILM THERAPY (GBT) PROTOCOL

Supra- and subgingival calculus removal up to 10mm

- PIEZON® PS Instrument with PERIOFLOW®1 provides for maximum comfort.2
- PIEZON® PS Instrument produces approximately 40 % less roughness on amalgam, composite and porcelain restorations in comparison to instrument A.3
- PIEZON® PS in combination with AIR-FLOWING® is safe with comparable clinical outcomes<sup>4</sup> in comparison to traditional SRP and is suitable for the treatment of periodontal pockets.5
- During GBT, PIEZON® PS delivers better patient compliance and generates less pain perception in nonsurgical periodontal therapy or supportive periodontal therapy<sup>6</sup> in comparison to SRP.
- AIR-FLOWING® with erythritolbased PLUS Powder and ultrasonic debridement with PIEZON® PS was more comfortable than ultrasonic debridement and polishing group.7



#### **CLINICAL OUTCOMES**

Removes calculus supra- and subgingivally in periodontal pockets<sup>2,8-12</sup>

- Bleeding On Probing (BOP)<sup>2</sup> is decreased, better results in terms of Probing Pocket Depth (PPD) and Clinical Attachment Level (CAL)<sup>2,9,12</sup> than hand instrumentation, in initial treatment of chronic periodontitis.8
- Best interproximal access<sup>13,14</sup> and effectiveness in comparison to competition. 15,16



- Significantly contributes to reducing Full-Mouth Plaque Score (FMPS) and Full-Mouth Bleeding Score (FMBS).<sup>10</sup>
- Significantly reduces Probing Pocket Depth (PPD)<sup>2,9,12</sup> during supportive periodontal therapy
- Better penetration than pressure-controlled probe and curettes in case of periodontitis.17

#### MICROBIOLOGICAL BENEFITS

Reduces the bacteria load, especially the bacteria responsible for periodontitis and bleeding:

- AA (Aggregatibacter Actinomycetemcomitans) but lower reduction than PERIOFLOW®.8
- Red complex bacteria: P. gingivalis, 2,12 T. forsythia, 2,12 T. denticola,<sup>2,12</sup> Orange complex bacteria.<sup>2</sup>

### MINIMAL INVASIVENESS, MAXIMUM COMFORT

- Minimal pain on Visual Analog Scale (VAS), in Supportive Periodontal Therapy (SPT).16
- Minimum pain intensity<sup>14,18</sup> and minimum defect depth<sup>19,20</sup> due to its linear movement in comparison to magnetostrictive technology.
- Slim design enhances patient comfort and supragingival compliance. 14,21
- Reduces sensitivity significantly more than conventional curettes<sup>10</sup> in mild to moderate periodontitis
- Preserves 80-84 % of coronal and apical cementum compared to hand instruments1,11,22 and air scalers.



Smoother surface than hand instrumentation, limiting surface scratches and gouges. 11,14



### PIEZON® PS On Natural Teeth

## References

- 1 Preservation of root cementum: a comparative evaluation of power-driven versus hand instruments. Bozbay, E. et al. International journal of dental hygiene 16, 202–209 (2018).
- 2 Subgingival air-polishing with erythritol during periodontal maintenance: randomized clinical trial of twelve months. Müller, N., Moëne, R., Cancela, J. A. & Mombelli, A. Journal of clinical periodontology 41, 883–9 (2014).
- **3** The comparison of the effects of three types of piezoelectric ultrasonic tips and air polishing system on the filling materials: an in vitro study. Arabaci, T. et al. International journal of dental hygiene 5, 205–10 (2007).
- 4 One-Stage Full Mouth Instrumentation (OSFMI): Clinical Outcomes of an Innovative Protocol for the Treatment of Severe Periodontitis.

  Mensi, M. et al. Journal of the International Academy of Periodontology 22, 129–136 (2020)
- 5 Infection Control in Adult Periodontal Patients Using Ultrasonic Debridement and Erythritol Powder: A Randomized, Controlled, Split-Mouth Clinical Study. Cardaropoli, D., Albano, M. & Tamagnone, L. The International journal of periodontics & restorative dentistry 41, 675–681.
- **6** Novel Approach to Dental Biofilm Management through Guided Biofilm Therapy (GBT): A Review. Shrivastava, D. et al. Microorganisms 9, (2021).
- 7 Clinical outcomes of using erythritol powder by means of air polishing with ultrasonic debridement in the treatment of initial periodontal pockets in hand of dental students: A split-mouth, randomized, comparative, controlled study. Part I. Albonni, H. et al. International journal of dental hygiene 19, 262–272 (2021).
- 8 Full-mouth ultrasonic debridement versus quadrant scaling and root planing as an initial approach in the treatment of chronic periodontitis. Wennström, J. L., Tomasi, C., Bertelle, A. & Dellasega, E. Journal of clinical periodontology 32, 851–9 (2005).
- 9 Subgingival debridement of periodontal pockets by air polishing in comparison with ultrasonic instrumentation during maintenance therapy. Wennström, J. L., Dahlén, G. & Ramberg, P. Journal of clinical periodontology 38, 820–7 (2011).
- 10 Effects of two different methods of non-surgical periodontal therapy on patient perception of pain and quality of life: a randomized controlled clinical trial. Aslund, M., Suvan, J., Moles, D. R., D'Aiuto, F. & Tonetti, M. S. Journal of periodontology 79, 1031–40 (2008).
- 11 The effect of various ultrasonic and hand instruments on the root surfaces of human single rooted teeth: A Planimetric and Profilometric study. Mittal, A., Nichani, A. S., Venugopal, R. & Rajani, V. Journal of Indian Society of Periodontology 18, 710–7 (2014).

- **12** Pilot study on the clinical and microbiological effect of subgingival glycine powder air polishing using a cannula-like jet. Kargas, K., Tsalikis, L., Sakellari, D., Menexes, G. & Konstantinidis, A. International journal of dental hygiene 13, 161–9 (2015).
- 13 CRA CLINICAL RESEARCH ASSOCIATES. Clinical Newsletter June, (2018).
- 14 Influence of scaler tip design on root surface roughness, tooth substance loss and patients' pain perception: an in vitro and a randomised clinical trial. Abdul Hayei, N. A. et al. BMC oral health 21, 169 (2021).
- **15 Calculus Removal of Various Ultrasonic Driven Devices with Universal Tips.** Schmage, P., Blochberger, B., Nergiz, I., Pfeiffer, P. & Platzer, U. in 2011 IADR/AADR/CADR General Session (San Diego, California) (2011).
- **16** Pain perception during debridement of hypersensitive teeth elicited by two ultrasonic scalers. Müller, S., Huber, H., Goebel, G., Wimmer, G. & Kapferer-Seebacher, I. Clinical oral investigations 21, 1559–1564 (2017).
- 17 Penetration depths with an ultrasonic mini insert compared with a conventional curette in patients with periodontitis and in periodontal maintenance. Barendregt, D. S., van der Velden, U., Timmerman, M. F. & van der Weijden, F. Journal of Clinical Periodontology 35, 31–36 (2007).
- **18** Patients' perception of pain during ultrasonic debridement: a comparison between piezoelectric and magnetostrictive scalers. Muhney, K. A. & Dechow, P. C. Journal of dental hygiene: JDH 84, 185–9 (2010).
- **19** Substance loss and root surface structure effected by **10** deep scaling instrument. Schmage, P., Schultz, Y., Platzer, U., Maisch, S. & Nergiz, I. in EuroPerio No. 2959 (2017).
- **20** Comparison of root substance removal by magnetostrictive and piezoelectric ultrasonic and sonic scalers in vitro. Petersilka, G. J., Flemmig, T. F., Mehl, A., Hickel, R. & Klaiber, B. J Clin Periodontol 24, 864 (1997).
- **21** Subjective intensity of pain during ultrasonic supragingival calculus removal. Braun, A., Jepsen, S. & Krause, F. Journal of clinical periodontology 34, 668–72 (2007).
- **22** Roughness and loss of substance of tooth surfaces after biofilm removal with different processing methods. Haas, M., Koller, M. & Arefnia, B. Paro Zahnoberflchen Pilotstudie Dental Journal 52–58 (2019).



