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### **Minimally-Invasive Periodontal Treatment Impact on Endothelial Dysfunction and Arterial Stiffness**

A. Polizzi<sup>1</sup>, S. Santonocito<sup>1</sup>, L. Zanolì<sup>2</sup>, G. Spagnuolo<sup>3</sup>, G. Isola<sup>1</sup>

<sup>1</sup>Department of General Surgery and Surgical-Medical Specialties, School of Dentistry, University of Catania, Catania, Italy, <sup>2</sup>Department of Clinical and Experimental Medicine, Unit of Nephrology, University of Catania, Catania, Italy, <sup>3</sup>Department of Neurosciences, Reproductive and Odontostomatological Sciences, University of Naples "Federico II", Catania, Italy

**Objectives** Growing evidence suggests that the approach of periodontal treatment could differently influence the reduction of key cardiovascular risk and endothelial dysfunction ultrasound mediators in periodontitis patients. This randomized, controlled clinical trial compared the impact of minimally invasive non-surgical periodontal treatment (MINST) with quadrant-wise subgingival instrumentation (Q-SI) on Carotid Intima-Media Thickness (CIMT), pulse wave velocity (PWV), distensibility coefficient (DC), advanced glycated end-products (AGEs) and on clinical periodontal outcomes in patients with periodontitis as early indicators of cardiovascular disease risk and endothelial dysfunction. Moreover, it was evaluated if baseline DC levels impacted the efficacy of NSPT protocols.

**Methods** Forty-five periodontitis patients were enrolled and randomly treated by means of MINST (n=22) or Q-SI (n=23). The outcomes assessed were CIMT, PWV, DC, AGEs and periodontal parameters (probing depth, PD; clinical attachment level, CAL; full-mouth bleeding score, FMBS; full-mouth plaque score, FMPS), at baseline, 1-, 3-, 6-months, and at 1-year follow-up after treatment.

**Results** At 1 year, in comparison to Q-SI, MINST significantly reduced mean CIMT (p= 0.024), DC (p= 0.012) and periodontal outcomes mean PD (p= 0.009), and the number of pockets >4 mm (p= 0.012), ≥6 mm (p= 0.033), and n° patients with FMBS <10% (p= 0.004) and FMPS <10% (p= 0.013). The generalized multivariate analysis evidenced that high baseline DC (p= 0.019) and baseline AGEs (p= 0.009) levels and treatment with MINST (p= 0.024) were significant predictors of PD reduction at 1-year follow-up. Furthermore, the Jonckheere-Terpstra test showed that patients with high baseline median DC levels gained more benefits from MINST treatment at 1-year follow-up (p= 0.032) than they did from Q-SI approach.

**Conclusions** Patients receiving MINST showed a greater reduction in CIMT and DC mean levels than patients with Q-SI after 1-year follow-up. Moreover, patients with high baseline levels of DC gained more benefits from the MINST approach at 1-year follow-up.