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LASER DOPPLER FLOWMETRY OF PULPAL BLOOD FLOW DURING THE DENTAL LEVELING

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Background and Objectives: The evaluation of the pulp blood flow during orthodontic movements has been accomplished by using indirect and destructive techniques (e.g., histological studies, fluorescent markers). Although the laser Doppler flowmetry makes it possible the study of the pulp blood flow into the real clinical conditions, the information available in the literature is limited to intrusive and retractive movements. This work aimed to study the pulp blood flow of central incisors of patients submitted to an orthodontic treatment, during the leveling phase.

Study Design/Materials and Methods: Using a laser Doppler flowmeter, LowLab, Moor Instruments (UK), the pulp blood flow of 12 patients was measured before the application of the force, immediately after, 48 hours, 72 hours, and 1 month later.

Results: The obtained results indicate that the mean flow during the leveling significantly decreases immediately after the force application (61.7% of the initial value, $P = 0.001$, Mann-Whitney), decreasing up to 37.7%, $P < 0.001$, (72 hours), returning to the initial value 1 month later.

Conclusions: The result agrees with the expectation that, during orthodontic movements, the pulp blood flow can decrease, initially by the arteries strangulation, and latter by a pulp inflammation induced by a periodontal inflammation process.

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