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Pain relief by single low–level laser irradiation in orthodontic patients undergoing fixed appliance therapy

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Introduction: The objective of this study was to analyze the effect of single low–level laser therapy (LLLT) irradiation on pain perception in patients having fixed appliance treatment.

Methods: Seventy–six patients (46 women, 30 men; mean age, 23.1 years) enrolled in this single–blind study were assigned to 2 groups. The patients in group 1 (G1; 38 patients, 13 men, 25 women; mean age, 25.1 years) received a single course of LLLT (Mini Laser 2075, Helbo Photodynamic Systems GmbH & Co KG, Linz, Austria; wavelength 670 nm, power output 75 mW) for 30 seconds per banded tooth. The patients in group 2 (G2; 38 patients, 17 men, 21 women; mean age, 21.0 years) received placebo laser therapy without active laser irradiation. Pain perception was evaluated at 6, 30, and 54 hours after LLLT by self–rating with a standardized questionnaire.

Results: Major differences in pain perception were found between the 2 groups. The number of patients reporting pain at 6 hours was significantly lower in G1 ($n = 14$) than in G2 ($n = 29$) ($P < .05$), and the differences persisted at 30 hours (G1, $n = 22$; G2, $n = 33$) ($P < .05$). At 54 hours, no significant differences were seen between the number of patients reporting pain (G1, $n = 20$; G2, $n = 25$), although the women had a different prevalence between G1 ($n = 11$) and G2 ($n = 15$) ($P = .079$). At 6, 30, and 54 hours, more than 90% of the subjects in both groups described the pain as “tearing.”

Conclusions: LLLT immediately after multibanding reduced the prevalence of pain perception at 6 and 30 hours. LLLT might have positive effects in orthodontic patients not only immediately after multibanding, but also for preventing pain during treatment.