



The Expression of Collagen Type-I in the Tension Area of Orthodontic Tooth Movement with Adjuvant of Hyperbaric Oxygen Therapy

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Abstract : Objective: To verify the effect of Hyperbaric Oxygen Therapy (HBO) towards the expression of type I collagen on the tension area of orthodontic tooth movement in remodeling process of periodontal ligament.

Meaterial and Methods: Twenty four Caviacobaya males were divided into three groups. (X1) negative control. (X2) orthodontic groups, 0.0474 kN force was applied to the maxillary incisors, (X3) orthodontic force 0.0474 kN with addition of 7 session HBO 2.4 ATA 90 minutes. The expression of type I collagen was measured by using immunohistochemistry technique and analyzed by ANOVA followed by LSD test ($p < 0.05$).

Results: After 14 days of treatment, immunohistochemistry analysis revealed that addition of 7 session HBO 2.4 ATA 90 minutes increased the expression of type 1 collagen on the tension area. The mean of groups (X1), (X2), and (X3), were (8.87 ± 2.232) , (10.00 ± 2.138) , and (15.37 ± 1.685) . ANOVA test showed a significant difference in all the groups ($p < 0.05$).

Conclusions: Hyperbaric Oxygen therapy in seventh days effectively increasing the expression of type I collagen in the tension area of the periodontal ligament, this approach might be a feasible treatment strategy to accelerate orthodontic tooth movement.

Keywords: Orthodontic tooth movement, Hyperbaric Oxygen Therapy, Type I collagen.