

Comparative study of canine retraction with 13° angulation Roth bracket and Barbosa Braquete Versátil with angulation freedom by photoelastic analysis.

Abstract

The objective of this article was to compare, by means of photoelastic analysis, the stress distribution (1) along the root of the upper canine, after retraction activation with two brackets, the one with Roth's prescription (BPR) with 13° angulation (GAC) and the Barbosa Braquete Versátil (BBV) with angulation freedom (GAC); and (2) on the roots of the upper second bicuspid, canine and lateral incisor, simulating the action of a NiTi .014" wire in a malocclusion model with an uprighted canine. Three photoelastic models of an upper arch with resin teeth were customized for the tests. The first one for calibration, the second one for retraction - BPR on the right canine and BBV on the left canine, activated with chain elastic and a tensiometer - and the third to align and level the upper teeth with uprighted canines. After the image interpretation the conclusions were: (1) The BBV allowed distal angulation of the crown or the canine in the beginning of the retraction movement, while the BPR allowed only distal body movement (translation); the BBV may need a lower force to reach the same cervico-radicular stress level in the beginning of the retraction movement, what may imply the need of a lower force in the anchorage unit; (2) The BBV may induce lower root stress levels in the surrounding teeth, while the BPR may cause moderate extrusion and distal angulation of the root of the lateral incisor, mild intrusion and distal angulation of the root of the second bicuspid and distal angulation of the root of the canine.

Key-words: Dental Stress Analysis, Orthodontic Brackets, Orthodontic Space Closure, Tooth Movement, Orthodontic Anchorage Procedures

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