Marginal Microleakage Evaluation of Four Temporary Restorative Materials Used as Double Seal in Endodontics: An In Vitro Study

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Abstract

Placing a double-seal in endodontics using temporary restorative cements is a common practice however the sealing capabilities against marginal leakage of these materials have not been revealed. The study was conducted to determine which combination of cements is going to be more effective in providing provisional barrier in between endodontic appointments. A quantitative comparative research design was employed in this study. Four cements were selected to be used as double seal in 60 endodontically prepared teeth. The 60 specimens were grouped into five: 10 specimens on the first four groups and 20 specimens on the fifth group. Group A was filled with Caviton and IRM©; Group B, with Cavit and IRM©; Group C, with Caviton and Hy-bond Zinc Phosphate Cement; Group D, with Cavit and Hy-Bond Zinc Phosphate Cement; and Group E, with the combination of groups A, B, C, and D. All specimens were mounted in Portland cement up to their cervical lines, exposing their crowns. All specimens underwent thermocycling for 100 cycles by placing them alternately in distilled water baths at a temperature range of 5ºC and 55ºC, 30 seconds in each bath. After thermocycling, the specimens were immersed in methylene blue dye solution for leakage assessment. Groups A, B, C, and D were immersed for 30 minutes, while Group E was immersed for 1 hour. The teeth were then rinsed under tap water and dried and then sectioned mesiodistally. The greatest depth of dye penetration was measured using a periodontal probe and was recorded.

Keywords: *double-seal, marginal leakage, temporary restorative cements, endodontics, dye penetration*