

A comparative evaluation of bracket bonding with 1-, 2-, and 3-component adhesive systems.

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INTRODUCTION: Today, 1- and 2-component adhesives are available for bracket bonding that could diminish the possibility of contamination during the bonding procedure and save the clinician chair-side time. Our aim in this study was to compare the shear bond strengths and the adhesive remnant index (ARI) scores of 1-, 2-, and 3-component adhesives after thermocycling. **METHODS:** Fifty stainless steel brackets (10 per adhesive group) were bonded to extracted third molars with 5 adhesives. Group 1 was a 1-component adhesive, RelyX Unicem (3M Espe, Seefeld, Germany). Group 2 was a 1-component adhesive, Maxcem (Kerr, Orange, Calif). Group 3 was a self-conditioning 2-component adhesive system, Multilink (Ivoclar-Vivadent, Schaan, Liechtenstein). Group 4 was a 2-component adhesive system, Transbond Plus primer (self-etching) and Transbond XT adhesive (3M Unitek, Monrovia, Calif). Group 5 (control group) was a conventional 3-component adhesive system consisting of an etchant, Transbond XT primer, and XT adhesive (3M Unitek). All samples were thermocycled (6000 x 5 degrees C/55 degrees C) in a mastication device before shear bond strength testing and evaluation with the ARI. **RESULTS:** No significant differences of shear bond strength between the 2- and 3-component adhesive systems were found. Significant decreases of shear bond strength were observed with 1-component adhesives, RelyX Unicem and Maxcem, compared with 2- and 3-component systems. The ARI scores indicated no significant differences between the groups. **CONCLUSIONS:** With enhanced shear bond strength, 1- component adhesives have the potential to compete successfully with 2- or 3-component adhesives.

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