

Microtensile bond strength between a lithium disilicate glass-ceramic or a Y-TZP zirconia ceramic bonded to dentin when using two self-etch, self-adhesive resin cements compared with an adhesive resin cement

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Abstract

Objective: To investigate the microtensile bond strength between lithium disilicate glass-ceramic and dentin when using 3 different adhesive resin cement and the effect of thermocycling on the microtensile bond strength.

Materials and methods: 42 human teeth were prepared and bonded to lithium disilicate glass ceramic whose surfaces were prepared by sand blasting, etching, rinsing with water and coating with prehydrolyzed silane. Three bonding agents used in this study were VariolinkII, RelyX Unicem and Maxcem. The bonded specimens were kept in distilled water at 37°C for 24 hours before cut into 1x1 mm.² Half of the specimens were randomly selected from each lot to undergo microtensile testing immediately after incubation and the other half to undergo themocycling for 500 cycles in a water bath at 5°C and 55°C prior to microtensile testing. Two-way ANOVA and Dunnett T3 were performed for statistical analysis at $\alpha=0.05$. The failure mode was investigated under light microscope.

Results: Two-way ANOVA revealed that the type of cement had significant influence on the microtensile bond strength. The microtensile bond strength of VariolinkII (16.1 ± 9.0 MPa) was the highest followed by RelyX Unicem (11.0 ± 4.0 MPa) and Maxcem (5.5 ± 2.0 MPa). The 500 cycles thermal cycling had no significant influence on microtensile bond strength. The failure mode of all specimens was at the interface (99%).

Conclusion: The microtensile bond strength of total-etch adhesive system has higher bond strength than self-adhesive system. And the microtensile bond strength is different in each brand.

Keywords: Microtensile bond strength, Resin cement, Adhesive system

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