

EFFECT OF USING ADHESIVE RESIN CEMENTS ON THE RETENTION OF FIXED RESTORATIONS CEMENTED TO PREPARATIONS HAVING SEVERAL CONVERGENCE ANGLES

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ABSTRACT

Objectives: To compare the retention and mode of failure of cast crown restorations bonded to prepared natural teeth and cast core build up of different convergence angles using different luting cements.

Materials & Methods: Lathed natural molar teeth and cast core specimens were constructed with different convergence angles 6°, 12°, 18°, 24°. Cast crown restorations were fabricated to fit on prepared specimens and cemented using two types of adhesive resin cements (Super-bond C&B and Panavia 21) and zinc phosphate cement as a standard. The cemented specimens were stored in water at 37°C for 7 days prior to application of a tensile pull-off force. The loads at failure were recorded and statistically analyzed using one way analysis of variance (ANOVA) and Scheffe multiple comparison test ($p < 0.05$). The mode of failure was also investigated.

Results: Statistical analysis showed significant differences between cements investigated and also between different convergence angles of each cement. The mode of failure for casted cores was adhesive between the lathed surfaces and the luting cements while for prepared natural teeth, it was adhesive/cohesive in nature for resin cements and adhesive for zinc phosphate cement.

Conclusions: Super-bond C&B has the highest retention load for all the cements investigated.

Increasing the convergence angle reduced the retention load for each cement.

Significance: Resin adhesives especially Super-bond C&B can compensate for reduced retention as in cases of short clinical crowns or preparations with higher convergence angles.

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