

Marginal Sealing Property of Temporary Restorative Materials: A Comparative Study

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Abstract

This study compared the marginal sealing property Provifil (Promedica, Germany), a new light-cured one-component temporary filling material with IRM (Dentsply-Caulk) and Cavit (3M ESPE). Standard box-shaped cavity preparations were completed in 40 caries-free anterior bovine teeth. The teeth were randomly assigned to 4 groups ($n = 10$) and were filled with one of the three restorative materials. In five teeth (Positive control), no restorative material was placed; while five teeth of the negative control group had no restorative material but were filled with sticky wax. After thermocycling in water baths with temperatures of $5\pm 5^{\circ}\text{C}$ and $55\pm 5^{\circ}\text{C}$ (dwell time, 30 seconds) for 200 cycles, the teeth were coated with nail varnish, leaving an area of 1 mm short of the cavity margin uncovered. The samples were immersed in 2% Methylene blue dye solution for 10 days, sectioned and then digital pictures were taken. Dye penetration along the walls was measured using the UTHSCA Image Tool software. The greatest depth of dye penetration was considered the score of the specimen. Data was analyzed using One-way ANOVA ($p < 0.05$) and Tukey's HSD Post Hoc Test. Results showed that all the materials tested leaked at the tooth-restorative material interface. Provifil had the lowest mean leakage value (1.609 mm) while Cavit had the next lowest (2.028 mm). IRM demonstrated significant leakage values (4.587 mm) signifying complete dye penetration on all the samples. There was no statistical significant difference between the marginal sealing property of Cavit and Provifil ($p > 0.05$). The marginal sealing property of Provifil was better than that of IRM.

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