

## **Abstract**

The purpose of this *in-vitro* study was to determine if packable resin composite with/without flowable composite had the ability to prevent coronal leakage in restored endodontic access openings in porcelain fused to non-precious (Ni-Cr) metal specimens. Eighty simulated standardized access cavities of porcelain-fused-to-metal crowns were fabricated and fixed on Vitrebond filled cavities by an epoxy resin. The specimens were randomly divided into two main groups; (A) Control group: Access cavities filled with packable composite (Filtek™ P60); and (B) Experimental group: Access cavities filled with Filtek P60 and a flowable composite (Filtek™ Z350) as liner. Each main group was further subdivided randomly into 4 sub-groups according to water storage and thermocycling periods. All the specimens were immersed in blue ink solution for 24 hours and then sectioned into quadrants. The extension of ink along the porcelain-fused-to-metal-composite resin interface was measured linearly using image analyzer and analyzed by 3-way ANOVA and independent t-test with a Mann-Whitney test for comparisons.

Results: All tested groups demonstrated different levels of microleakage. There was no significant difference related to restorative technique. However, there was a significant difference related to water storage and thermocycling.

Conclusions: All tested techniques and materials in this study showed microleakage. Packable composite with a flowable liner showed marginally better result than packable composite alone.

Clinical Significance: All the tested restorations showed coronal microleakage. Thermocycling increased coronal microleakage among the tested materials.

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