

Effect of Pre-Heating Composite on Microleakage in Class II Restorations

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Flowable resins have been suggested to improve adaptation in composite restorations. A device (Calset, AdDent Inc.) has been introduced that lowers the viscosity of composites by preheating them to 130°F. Objectives: The aim of this study was to evaluate the effect of preheating composite on microleakage in Class II composite restorations. Methods: Class II cavities were prepared on the mesial and distal surfaces of third molars. Ten preparations were restored with resin composite (Esthet-X, Caulk Dentsply) using four techniques: **Control** (Esthet-X + Prime & Bond NT), **Flowable** (Control + Esthet-X Flow) **Experimental** (Preheat of control to 130°F) **Delay** (Experimental with 15 sec delay cure). Teeth were restored, finished, stored in distilled water for 24 hours and then thermocycled between waterbaths of 5 and 55 °C with a 1-minute dwell time for 1000 cycles. Tooth apices were sealed with epoxy and varnish applied to within 1 mm of margins. Teeth were placed in 0.5% basic fuschin dye for 24 hours, rinsed and embedded in self-curing resin. Embedded teeth were sectioned mesio-distally with a slow-speed diamond saw, providing multiple sections per restoration. Microleakage was rated (0-4 ordinal scale) at occlusal and cervical margins of each restoration by 2 evaluators with a light microscope (40X). Data were analyzed with Kruskal-Wallis ANOVA and pairwise testing with the Sign test ($\alpha=0.05$). Results: There was a statistically greater amount of leakage at the cervical compared to the occlusal, and no difference among materials was observed at the occlusal @ $p<0.05$. Ranked sum scores for the cervical were **D** (4516), **C** (3974), **F** (2756) > **E** (1958) @ $p<0.05$. Conclusions: In the current study, the preheating of the composite investigated resulted in significantly less microleakage at the cervical margin compared to the control or the use of the corresponding flowable resin. Funded in part by AdDent, Inc.

[Seq #73 - Microleakage](#)

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