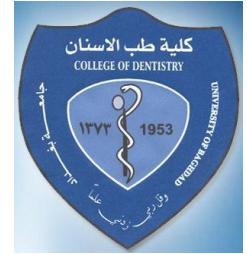


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Gingival Marginal Leakage of Different Tooth Colored Materials Combination as an Intermediate layer in Class II Composite Restoration

(A comparative in vitro study)

A thesis
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Abstract

Development of composite resin materials is considerably continuous and aims to reach a high quality of performance and long-term longevity offering an ease of work and saving of clinical time. A new material Vertise Flow™ having properties of self-etching and self-bonding have been introduced in the last few years in an attempt to reduce the micro leakage which is one of the major problems associated with composite resin filling materials. Microleakage of this new material was evaluated in the present study and compared to the other conventional composite materials which are Filtek Z250, Riva resin modified glass ionomer cement, and sure full SDR. When used as an intermediate layer in class II composite restoration

Forty sound maxillary first premolar teeth were divided into four groups of ten teeth each. Each tooth received a cavity. A standardized Class II box only cavity was prepared in the mesial surface (3mm bucco lingual width, 6 mm height, and 2.0 mm mesio distal depth) with gingival margin 1mm above the cemento-enamel junction. The four groups of this study were as following:

1. **GROUP I:** restored with **FILTK Z250** composite in 3 layers of 2mm for each.
2. **GROUP II:** restored with 4.0mm **SDR** composite and covered with 2mm Filtek Z250 composite.
3. **GROUP III:** restored with 4.0mm **Vertise™Flow** composite in three layers (0.5, 1.5, 2.0mm) and covered with 2 mm Filtek Z250.
4. **GROUP IV:** restored with 4mm **Riva resin modified -glass ionomer cement** (2 layers for each) and covered with 2mm Filtek Z250 composite. .

After the restoration of the teeth, they were stored in distilled water at 37°C for 7 days. All teeth were then subjected to thermo cycling at (5° and 55 °C) for 500 cycles then immersed in methylene blue for 24 hours, sectioned and examined under digital microscope at 20 X. Data were analyzed statistically by **Kruskal-Wallis test** and **Mann-Whitney U-test**.

Under the restrictions of this study, none of the materials showed zero score of microleakage. The **group II** showed the highest degree of micro leakage, followed by **group I** then **group IV** and the lowest microleakage score was observed in **group III** composite material.

According to this study, we can conclude that limiting factor for marginal leakage is material dependent and that Vertise flow is a promising material to be used in clinic as it saves both time and effort and gives high degree of performance from the microleakage point of view.