

## تأثیر فیلر بر ریزش آدهزیوهای سلف اچ با عاج و بررسی نمای مرفولوژی ناحیه حدفاصل با میکروسکوپ الکترونی

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**Title:** The Effect of Filler on Microleakage of Self-etch Adhesives with Dentin and SEM Interfacial morphology evaluation

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**Introduction:** One of the most important disadvantages of using of tooth colored restorations is microleakage. This is more noticeable when there is a cavity with dentinal walls. Despite all improvements in dentin bonding agents, thusfar, no adhesive has been able to overcome microleakage between resin-dentin. The purpose of this survey is investigating the effect of filler on microleakage of self-etch adhesives with dentin and SEM interfacial morphology evaluation.

**Materials & Methods:** Class V cavities were made on extracted human premolars (n=60). Then the teeth were randomly divided into 6 groups based on type of adhesives used. Next teeth were grouped as filled adhesive (Xeno III, Clearfil SE Bond, Excite) and three grouped as unfilled adhesive (iBond, Bistite II, Single Bond). After restoration, specimens were treated by thermocycling and a dye penetration test was done. Then longitudinal sections were made toward the direction of the buccal lingual and were observed carefully under a stereomicroscope for any leakage. From each group, 2 samples were prepared for investigating micromorphology of resin under an SEM electronic microscope. Data was analyzed by the Kruskal-Wallis test and Mann-Whitney test with an accuracy level of 0.05%.

**Results:** Using the Mann-Whitney test, it was clear that in the one-step self-etch adhesive, the filled type (Xeno III) had reduction in microleakage compared to the unfilled type (i Bond). On the two-step self-etch and total etch adhesives, there was no significant difference between filled and unfilled adhesive in reduction of microleakage. In SEM investigations self-etch adhesives make thinner hybrid layers, but there are more resin tags with more regularity in this system and resin is well penetrated in the spaces due to demineralization and was polymerized.

**Conclusion:** The filled type of one-step self-etch adhesive (Xeno III) had more reduction in microleakage than other groups. There was no significant difference between the two types (filled and unfilled) two-step self-etch and total etch adhesives in reduction of microleakage. It was clear that if self-etch adhesive is used carefully give better sealing compared to total etch adhesive. Because they can infiltrate the spaces made due to demineralization and get polymerized.

**Key words:** Dentin, self-etch adhesive, microleakage, scanning electron microscope.

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### چکیده

**مقدمه:** یکی از مهمترین عیوب کاربرد ترمیم های هم رنگ دندان، ریزش است. این قضیه بخصوص زمانی آشکارتر خواهد بود که حفره ای با دیواره های عاجی جهت اتصال، وجود داشته باشد. با تمامی پیشرفت های صورت گرفته بر روی عوامل اتصال دهنده عاجی، هنوز هیچ آدهزیوی نتوانسته است ریزش را در حد فاصل رزین - عاج از بین ببرد. هدف از این مطالعه بررسی اثر فیلر بر ریزش آدهزیوهای سلف اچ با عاج و بررسی نمای مرفولوژی ناحیه حد فاصل با میکروسکوپ الکترونی می باشد.