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Microleakage of "All-in-One" Adhesive Systems on Enamel and Dentinal Margins: An *In Vitro* Study

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Abstract:

Objective:

The use of presently available dentin bonding systems has greatly reduced microleakage; however, the ideal situation where the adhesive resin completely penetrates the demineralized dentin is not yet achieved. The purpose was to compare the microleakage of fifth and sixth generation bonding agents at enamel and dentinal margins.

Materials and Methods:

Class V cavities were prepared at the CEJ of thirty extracted human premolars. The teeth were divided into three groups (n=10). In group I, cavities were treated with Prime&Bond NT; in group II, UniFil Bond; and in group III, Prompt LPop bonding agents were used following which composite resin (Z100) was placed incrementally. The specimens were stored in an environment of 100% humidity, immersed in a fresh solution of 50% Silver Nitrate each for 24 hours and then placed in a developing solution for 8 hours. After rinsing and being sectioned buccolingually through the center of the restoration, the samples were evaluated under a stereomicroscope at x50 magnification for microleakage along occlusal and gingival margins. The data were analyzed using Kruskal-Wallis and Multiple Comparison tests.

Results:

There was a significant difference between the three groups. The fifth generation dentin bonding agent (Prime&Bond NT) showed the least amount of microleakage, while the sixth generation ones (UniFil Bond and Prompt L-Pop) showed higher amounts at enamel and dentinal margins.

Conclusion:

Fifth generation bonding agents seem to generate better results than those of sixth generation.

Keywords:

Dentin-Bonding Agents; Dental Leakage; Prompt L-Pop; Prime and Bond NT; Unifil Bond; Z100 composite resin

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