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Microtensile Bond Strength of Indirect Resin Composite to Resin-coated Dentin: Interaction between Diamond Bur Roughness and Coating Material

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Abstract: This aim of this study was to determine the effect of type of bur and resin-coating material on microtensile bond strength (μTBS) of indirect composite to dentin. Dentin surfaces were first ground with two types of diamond bur and resin-coated using UniFil Bond (UB) or Adper Single Bond (SB), and then bonded to a resin composite disc for indirect restoration with adhesive resin cement. After storage for 24 hr in distilled water at 37°C, μTBS was measured (crosshead speed 1 mm/min). When UB was applied to dentin prepared using the regular-grit diamond bur, μTBS was significantly lower than that in dentin prepared using the superfine-grit bur. In contrast, no significant difference was found between regular-grit and superfine-grit bur with SB. However, more than half of the superfine-grit specimens failed before μTBS testing. These results indicate that selection of bur type is important in improving the bond strength of adhesive resin cement between indirect resin composite and resin-coated dentin.

Key words: Diamond bur roughness, Resin coating, Microtensile bond strength, Indirect composite restoration

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