Microleakage and Bond Strength of Three Glass Ionomer Restoratives
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Objectives: This study evaluated the bond strengths and microleakage of three different glass-ionomer restoratives (GIRs) to dentin. Materials and Methods: Three commercially available GIRs (Chemfil Rock, Dentsply Caulk; Ionofil Molar AC/Quick, Voco; and Equia Fil, GC) were used in the study. Disc-shaped dentin specimens (n=30) were obtained from recently extracted non-carious human molars and embedded in acrylic resin for shear bond test. Following preparation, two-split plexiglass molds (inner diameter and height of 4.25 mm) were fixed onto the bur-cut dentin surfaces and filled with the GIRs (n=10 per GIR) according to the manufacturers’ instructions. Samples were stored in water for one week until testing. Samples were subjected to shear bond test in a universal testing device with a load cell of 50 kg and a crosshead speed of 1 mm/min. For microleakage evaluation, standardized Class V cavities (3 x 2 x 2 mm) were prepared on the buccal surfaces of molar teeth and restored with the GIRs (n=10 per GIR) following the manufacturers’ instructions. After finishing and polishing, the teeth were stored in distilled water for one week, coated with nail varnish, immersed in 0.5% basic fuchsin dye for 24 h, and sectioned longitudinally. Dye penetration was examined under a stereomicroscope and scored on a 0-3 ordinal scale. Data were analyzed statistically using one-way ANOVA, Tukey HSD and chi-square tests (p<0.05). Results: Although the highest shear bond strength values were obtained with Ionofil Molar AC/Quick, no statistically significant differences were observed among the shear bond strength values of the test GIRs. Similarly, there were no significant differences in microleakage among the test materials. Conclusions: All the test materials showed similar performances in regards of adhesion and microleakage. Clinical Significance: The test GIRs seemed to exhibit comparable adhesion and microleakage properties.