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Repairability of Compomers with Different Methods of Surface Conditioning

P.Samimi, K.Amiri, K.Fathpour

Abstract:

Statement of Problem: Considering the cost and amount of time and also the quantity of tooth loss in the process of cavity preparation, repair of the restoration instead of its replacement would be much more efficient. Purpose: The aim of this study was to determine the effect of different methods of surface conditioning on the shear bond strength of repaired compomers. Materials and Methods: Sixty blocks of compomer were prepared in acrylic molds and then they were randomly divided into five groups of 12. Group I (control group) received no treatment. The remaining samples were immersed in 37 °C distilled water for one week, then the surfaces were roughened with a coarse diamond bur. Samples in each group were prepared by different surface treatment and conditioning: In group II specimens were conditioned with 35% phosphoric acid for 20s. Specimens in group III were etched with 10% polyacrylic acid for 20s. In group IV 1.23% acidulated phosphate fluoride was applied for 30s, and compomer surfaces were sandblasted with 50µm Al₂O₃ powder in group V. After the initial preparations, all groups were treated with silane and resin before bonding of the second mix of compomer. Shear forces were applied with a universal testing machine at a cross-head speed of 5mm/min. The data were analyzed using one-way ANOVA and Duncan's multiple range tests. Results: The mean shear bond strengths and standard deviations (in parentheses) for groups I to V were 31.56(10.86), 20.02(5.49), 17.74 (7.34), 19.31(4.31) and 27.7(6.33) MPa, respectively. The mean bond strengths for Groups I and V were significantly higher than that of the other groups (P<0.05). Conclusion: The results showed that among the surface treatments used in this study, sandblasting with alumina could be the best surface preparation method for repairing compomer restorations.

Keywords:

[Surface conditioning](#)

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