عنوان مقاله:

Effect of Different Formulations of Dentin Replacement Materials and Aging on the Flexural Strength of the Overlying Resin Composite

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خلاصه مقاله:

Introduction: This study aimed to evaluate the flexural strength (FS) of dentin replacement materials, including; fiber-reinforced composite, bulk-fill flowable composites, and resin-modified glass ionomer (RMGI), layered with nanohybrid composite (NH) at different storage times. Methods: A total of ۱۰۰ specimens were prepared (n=۱۰) and divided into five groups depending on the dentin replacement material used, and a control group with conventional NH incrementation. Each group was further subdivided into two groups according to the time of the FS testing; ۲۴ hours or ۶ months. The specimens were subjected to a ۳-point bending test till failure. The comparison between the base materials and time was made using the two-way ANOVA, while the comparison between the base materials within each time interval was made using the one-way ANOVA and the Tukey's post hoc test. Additionally, the comparison between the immediate and aged FS within each group was made using the Student's t-test. Results: After ۲۴ hours, the resin-based, bulk-fill dentin substitutes layered with NH and the incrementally placed NH, showed a higher FS than the RMGI. However, after ۶ months, all groups showed a significant decrease in FS, with the exception of the RMGI group, which showed a significant increase. Conclusion: Resin-based dentin replacements showed better or similar reinforcement effects compared to conventional composite incrementation, when tested immediately or after ۶ months. Aging over ۶ months had a deteriorating effect on the FS of all composite resin materials, while it improved the FS of the overlying composite resin in the RMGI group

کلمات کلیدی:

Flexural strength, Composite resins, Dental materials, Fiber-Reinforced Composite