Abstract #2946

Shear bond strength to silver diamine fluoride treated dentin
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ABSTRACT

Objectives: To measure and compare the shear bond strength of composite resin to carious dentin before and after treatment with a 38% silver diamine fluoride and potassium iodide (SDF+KI).

Methods: The enamel of freshly extracted carious human teeth was removed from all teeth using a model grinder to expose the carious lesion. Soft caries was carefully removed until resistance was felt using a spoon excavator. Gr1 (control) received a coat of Scotchbond Universal (SBU) without prior etchant. Gr2-4 had a coat of SDF (Riva Star) applied followed by scrubbing a K1 solution. SBU was then applied directly to Gr2 and applied to Gr3 following 15sec phosphoric acid etching. Gr4 was stored in PBS for 2 weeks and then received a coat of SBU without etchant. A 1.5mm diameter tube containing Filtrek Supreme Ultra was applied over the dentin, and light-cured with a LED curing light (Deep Cure, irradiance>1000mW/cm2). All specimens were then stored in PBS/0.5% in an incubator to place into a fixture attached to the Instron Universal Testing machine. A shear load was applied at 1mm/min until failure. Shear bond strength was calculated. Data analyzed with analysis of variance (ANOVA) (alpha=0.05).

Results: No statistical difference was found between groups (p>0.05) (means±SD): Gr1 (12.9±7.4MPa), Gr2 (16.5±10.3MPa), Gr3 (12.4±4.9MPa), Gr4 (14.6±7.2MPa).

Conclusion: Within the limitations of this study it can be concluded that applications of Riva Star (SDF+KI) does not affect bond strength of a Universal Adhesive (SBU) in either a self-etch or total-etch mode. Delayed application of the adhesive after SDF+KI does not affect the bond of the adhesive to carious dentin.

INTRODUCTION

• Silver diamine fluoride (SDF), a clear liquid that combines the antibacterial effects of silver and the remineralizing effects of fluoride, is a safe and effective therapeutic agent for managing caries lesions in young children. The clinical application of this material has been limited by black staining on teeth which can cause esthetic concern. Immediate application of potassium iodide (KI) reacts with free silver ions (remaining after the application of SDF) to produce silver iodide, a creamy white reaction product, as distinct from a black tooth surface.1

• Many studies have been done to determine shear bond strength of GIC and composite to normal caries-free dentin. Selvaraj et al. (2016)2 and Quock et al. (2012)3 reported no decrease in the bond strength to SDF-treated dentin; whereas Latgen et al. (2018)4, Kucukyilmaz et al. (2016)5, Knight et al. (2006)6, and Soeno et al. (2001) reported a decrease in shear bond strength to SDF-treated dentin. But there is no information to show what effect the application of KI after SDF treatment will have on the bond strength of composite to caries-affected dentin. The objective of this study is to measure and compare the shear bond strength of composite resin to carious dentin before and after treatment with a 38% silver diamine fluoride and potassium iodide (SDF+KI).

MATERIALS AND METHODS

The enamel of freshly extracted carious human teeth was removed from all teeth using a model grinder to expose the carious lesion. Soft caries was carefully removed until resistance was felt using a spoon excavator.

CONCLUSIONS

1. Applications of Riva Star (SDF+KI) does not affect bond strength of a Universal Adhesive (SBU) in either a self-etch or total-etch mode.
2. Delayed application of the adhesive after SDF+KI does not affect the bond of the adhesive to carious dentin.

REFERENCES


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