Effects Of Desensitizing Agents On The Bond Strength Of A Luting Cement To Dentin Of Permanent Teeth

Anfal Almoqbel*, Asma Alowaiwid, Hala Alsharekh, Faika Abdelmegid *

(King Saud University, College Of Dentistry)

Deanship of Scientific Research

INTRODUCTION

In a fixed partial denture, abutment teeth need to be prepared to receive restorations and to provide retention for replacing missing teeth. Preparation of vital teeth results in millions of dentinal tubules being exposed with increased postoperative dentin hypersensitivity. The desensitizing agents are frequently used with resin cementation of fixed partial dentures. Although desensitizers are helpful in reducing the patient's discomfort, their effects on bonding performance of adhesive cementation to dentin cannot be ignored. There is lack of literature reporting the bond strengths of different kinds of desensitizers when used with the newly developed resin cement. Therefore, the present study aimed to compare the effect of two different desensitizing agents on shear bond strength between tooth and a recently introduced resin cement.

PURPOSE

The purpose of this study was to evaluate and compare the shear bond strength (SBS) of resin- modified glass ionomer (RelyX™ Unicem Aplicap) after application of two desensitizing agents (Ultra-EZ and Therma-Trol) to dentin of permanent teeth in vitro.

MATERIALS&METHODS

• Human permanent molars were mounted in acrylic resin blocks and ground flat exposing the dentin surfaces and were randomly divided into 5 groups of 9 sections each.

• The specimens in the experimental groups 1-4 were treated with one of the two desensitizing agents. The specimens in group 5 was served as untreated controls. • Desensitizing agents were applied to the exposed dentin according to manufacture instructions.

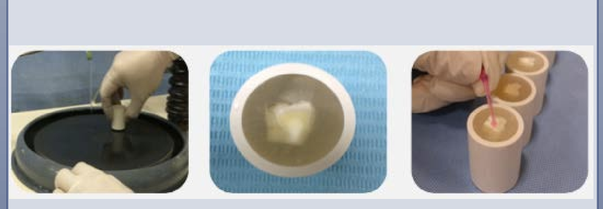
• The resin-modified glass ionomer (RelyX™ Unicem Aplicap) was applied according to the manufacturer's instructions in a standard polyvinyl chloride tube that was placed perpendicularly on the dentin surface and the cement was inserted into the tube and cured.

• The specimens were prepared for SBS test.

• The shear bond strength (MPa) was measured using a universal testing machine at a 0.5 mm/min crosshead speed.

• A one-way analysis of variance (ANOVA) used to compare mean values of SBS. Tukey's test used for multiple comparisons. A p-value <0.05 was considered as statistically significant. .

• The types of bond failure was assessed using a stereomicroscope.



RESULTS

• The average (+SD) highest SBS was determined for Therma-Trol/2 min (7.387+2.37) and the lowest for Ultra-EZ/15 min (3.473+2.68). While the average for Ultra-EZ/1 h, Therma-Trol/14 min, and control/No treatment were 3.714 (+2.27), 4.946 (+0.74), and 3.966 (+2.13) respectively.

• Tukey HSD Post Hoc Tests showed that Therma-Trol/2 min was significantly different than Ultra-EZ/15 min (P=0.003), Ultra-EZ/1 h (P=0.007) and control/No treatment (P=0.013).

• No significant difference was found between Therma-Trol/14 min and all other groups (P>0.05).

• Bond failures showed 31 (68.9%) mixed, 11 (24.4%) cohesive, and 3 (6.7) adhesive. No adhesive fracture was observed for ThermaTrol/2 min and Therma-Trol/14 min.

CONCLUSION

• Applying Therma-Trol desensitizing agent for 2 or 14 minutes increased SBS of RelyX™ Unicem Aplicap cement to dentin of permanent teeth compared to control and Ultra-EZ groups.

• Applying Ultra-EZ desensitizing agent for 15 min and 1 h does not reduce the SBS of RelyX™ Unicem Aplicap cement to dentin of permanent teeth.

• Bond failures were mainly mixed.

REFRENCES

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