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Comparison of Shear Bond Strength between Composite Resin and Porcelain Using Different Bonding Systems

E.Yassini, K.Tabari

Abstract:

Statement of Problem: Ceramics as in ceramo-metallic and all ceramic tooth restorations have grown popular owing to their high tissue compatibility and esthetic advantages. Such restorations have the capability to deliver valuable services over a long period of time; however, failures under intraoral conditions are not unanticipated. Purpose: The purpose of this in-vitro study was to investigate the shear bond strength of composite resin to porcelain using different bonding system materials. Materials and Methods: In this experimental study forty porcelain blocks were prepared and randomly divided into four equal groups. The porcelain surfaces were then etched with HF for 2 minutes, washed with water for 2 minutes and treated with a silane layer. The silane treated porcelain surfaces were left for one minute and then the specimens were bonded to composite resin as follow: Group 1 (control group), hybrid composite Z100 was applied and light cured from four directions for 20 seconds. Group 2, flowable composite was applied and light cured for 20 seconds. Group 3, unfilled resin was used and photo cured for 20 seconds. Group 4, (Dentin bonding agent) adhesive resin was used followed by 20 seconds photo curing. Hybrid composite resin Z100 was subsequently applied on all porcelain surfaces of groups 2, 3 and 4, and light cured for 20 seconds from four directions. Specimens were then subjected to thermocycling 1000 times. Shear bond strength was determined by a Universal testing machine. The data obtained was subjected to a one-way ANOVA test. Results: The results indicate that there is a statistically significant difference between adhesive group and the other three groups of hybrid, flowable and unfilled resin ($P < 0.05$). Conclusion: The results from this study showed that the shear bond strength of composite resin to porcelain was significantly higher for porcelain bonded surfaces using a dentin bonding agent than that of other materials tested.

Keywords:

[Ceramic](#) , [Dentin bonding](#) , [Silane](#) , [Porcelain](#)

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