

Effect of Fiber-Reinforced Composite Placement Site on Fracture Resistance of Premolar Teeth: an in vitro Study [Letter]

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Dear editor

We have read the paper written by Raghad Tariq AlJarboua et al on Effect of Fiber-Reinforced Composite Placement Site on Fracture Resistance of Premolar Teeth.¹ The use of Fiber-Reinforced Composite (FRC) in clinical dentistry has become a trend that offers an alternative to increase the fracture resistance of Mesio Occlusal Distal (MOD) cavities. The most commonly used FRC involves the placement of restorative materials in stages and this resin composite has been introduced in the market. This composite was developed to reduce the surgical time and simplify the restorative technique because it can be placed in the cavity preparation and cured with light in one 4 to 5 mm increment.²

The study conducted by Raghad Tariq AlJarboua et al used extracted maxillary premolars and were randomly divided into nine groups. The experimental group underwent MOD cavity preparation with or without root canal treatment, followed by FRC placed at the pulp base, proximal wall, or both. Fracture resistance was tested using an Instron Machine. The samples were visually inspected to analyze the fracture mode.¹ This method is in accordance with the intended purpose, but we would like to provide additional information regarding Polymer-based restorative materials used in FRC can experience aging and damage in the oral environment if a process occurs that can cause irreversible changes in their original properties. These changes can involve the chemical structure, physical properties, or aesthetic appearance of the restorative material, and thus affect its clinical performance. The complex and dynamic oral environment poses many biological, chemical, physical, and mechanical challenges. During the chewing cycle various loads can cause stress on the teeth and the restorative material.³

In this study, Raghad Tariq AlJarboua et al obtained the highest fracture resistance results observed in intact teeth, the placement of Ribbond fibers on the pulp floor significantly increased the fracture resistance compared to cavities restored with composite resin alone.¹ The results obtained are supported by other studies that found that the clinical relevance of the use of composite resins can increase the resistance of teeth to fracture. The use of high viscosity composite resins can be recommended because of its positive effect on the fracture resistance value of teeth. However, clinicians must still be careful in using flowable composite resins because in hollow tooth restorations it can reduce fracture resistance. This is because different restorative materials have different effects on tooth fracture resistance.⁴

In conclusion we agree that FRC is superior compared to conventional resin composite restorations. FRC Ribbond showed higher fracture resistance than conventional restorations in compromised upper premolars.¹ FRC has presented reduced polymerization pressure and high reactivity to photopolymerization due to changes in the composition and concentration of the organic matrix and also the presence of pressure inhibitors. However, polymerization must be taken into account in clinical practice, because if photopolymerization does not penetrate to the full depth of the resin, it can compromise its mechanics.²

Disclosure

All author reports no other conflict of interest in this communication.

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