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The fractographic analysis of three dentin bonding agents on tooth surface

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Abstract

The dentin bonding agent is hydrophilic resin that can strongly bind to dentin surface, both in chemical and physical-mechanical ways. The dentin surface is good for the resin bonding when the surface is in moist condition. Three types of dentin bonding agents: Voco, Prime & Bond NT and Excite were used in this research and their application methods are called as total-etched technique. The objective of this research is to examine the difference of tensile bond strength of the three bonding agents on the moist dentin surface. Bovine incisivus teeth were cut and sharpened using diamond bur then smoothened with sandpaper. Dentin surfaces were etched with 37% phosphoric acid, washed with 20 cc aquadest, and dried with blot-dry technique. The preparation teeth were inserted into desiccator with minimum humidity 60% and maximum 90% for one hour. After removed from the desiccator, the Voco agent was applied on the teeth in first group, and then followed by the Prime & Bond NT and Excite agents, respectively. The resulting sample was stored within the room temperature. After 24 hours, the tensile bond strength was tested using Autograph instrument. The results indicated that the tensile bond strength of Voco and Prime & Bond NT agents were higher than Excite both at humidity 60% and 90% (p ≤ 0.05). In conclusion, the dentin bonding agents with acetone solvents have a higher tensile bond strength compared with those with alcohol solvents.

Keyword : dentin, bonding, agents, dentin, collagen, blot-dry, technique, fractographic, analysis,

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