COMMENTARY

BOND STRENGTH OF TWO RESIN CEMENTS ON DENTIN USING DIFFERENT CEMENTATION STRATEGIES

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This paper reminds us that resin composite adhesion to dental structures is highly influenced by the adhesive choice. In this particular case, two dual-cure resin cements were used to cement simulated indirect resin composites to dentin using either the cement's respective bonding agent or a three-step etch-and-rinse adhesive. Both cements produced significantly higher bond strengths when used with the three-step etch-and-rinse adhesive.

Another important clinical issue brought up by the paper is the possible occurrence of compromised bonding between simplified, acidic, and hydrophilic adhesive systems and chemical- or dual-cured resin composites. In some clinical situations, when such bonding assembly is applied to vital, freshly cut, and mostly deep dentin, the overall bond can be compromised and clinical failure may occur. This article addresses the findings by claiming such adverse effects as responsible for the lower bond strength obtained when the cements were bonded with their respective, simplified, hydrophilic, and likely acidic bonding agents. The statement, however, could be further supported had the authors included a group in which an additional layer of a hydrophobic, non-acidic resin had been applied on top of the simplified adhesives. One could argue that the higher bond strengths obtained when the three-step etch-and-rinse adhesive was used could simply be due to the improved bond produced when compared to simplified systems. When adverse effects are the cause of compromised bond strength, the phenomenon leaves behind traceable features that can be recognized upon careful examination of the failed interfaces. The argument that adverse effects were the cause of lower bond strength when cements were used according to instructions could also be supported by failure analysis.

The article suggests that bond strength of resin cements to dentin can be improved by using a three-step etch-andrinse adhesive instead of the respective bonding agents provided by the manufacturers of the cements. As the results showed, this was true for the materials used in the study but may not apply to other combinations of materials. Three-step etch-and-rinse adhesives are regarded as the most reliable but can also be highly technique sensitive due to the need for proper moisture control. Inability to control this variable could lead to different results.

This study and other similar studies also raise a difficult question for clinicians who purchase resin cements and learn that their expensive luting material works best with an adhesive other than the one in the box. The choice for a simplified system is justified by the ease of use but has been recognized as a compromise of the best result possible. The lower bond strength, however, may not imply unsuccessful clinical results.

In summary, the article offers important confirmatory knowledge that improved bond strengths of resin cements can be accomplished if a proper combination of adhesive and resin cement can be used. Luckily, clinicians have the tools and evidence to accomplish that goal.

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This commentary is accompanied by article, "Bond Strength of Two Resin Cements on Dentin Using Different Cementation Strategies," Renata Marques Melo, MS, Mutlu Özcan, Dr. Med. Dent., PhD, Silvia Helena Barbosa, MS, Graziela Galhano, MS, Regina Amaral, MS, Marco Antonio Bottino, MS, PhD, Luiz Felipe Valandro, MS, PhD, DOI 10.1111/j.1708-8240.2010.00349.x

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