

## Permanent Cements: The Ones That Stick It Out (5/03)

Retentive properties of five different cements on base and noble metal copings. Ergin S, Gemalmaz D. J Prosthet Dent 2002;88:491-497.

Using the most retentive permanent cement for luting indirect restorations is often very important to successful prosthodontic treatment. This is especially the case when restorations are cemented to overtapered and/or short preparations. This study evaluated the retentive properties of five luting cements on base and noble metal copings to short and overtapered preparations. Eighty extracted human premolars were prepared to receive a full-metal coping. Preparations included a 33-degree convergence angle, flat occlusal surface, and 3-mm height. Half of the copings were cast using a gold/silver/palladium alloy (AuroLloyd KF, Bego), while the other half were cast with a nickel/chromium alloy (Wiron 99, Bego). Cementation was done under standardized conditions using one of five cements: a zinc phosphate (Phosphate Cement, Heraeus Kulzer), glass ionomer (Meron, Voco), two resin/glass-ionomer hybrids (Fuji Plus, GC; Principle, Dentsply/Caulk), and a resin (Avanto, Voco). After cementation, the specimens were stored in distilled water at 37 degrees Centigrade for 24 hours and then thermocycled.



After thermocycling, a vertical tensile force was applied using a testing machine until separation occurred. Means for the various groups were calculated and statistically analyzed. **The researchers found that for the noble-metal alloy, Fuji Plus and Avanto resulted in significantly greater retention. For the base-metal alloy, Fuji Plus was significantly more retentive than the others.**

**DIS Comment:** This well-designed study looked at a clinically relevant question: what permanent cement provides the best retention of castings to less-than-ideal preparations. Not infrequently, clinicians are faced with cementing a casting or prosthesis to overtapered, short preparations. In such cases, the retention afforded by the cement becomes critical. The results of this study indicated that, for both types of alloys, the hybrid resin/glass-ionomer cement (Fuji Plus, GC), performed best. One minor error in this study concerns the authors' classification of Principle (Dentsply/Caulk) as a similar type of cement. Actually, it is a compomer cement and behaves more like a resin than a glass-ionomer cement. The true hybrid cements have many positive characteristics. Compared to traditional glass-ionomer cements such as Ketac-Cem and Fuji Ionomer Type I, they are easier to use, have greater tensile strength, and are less brittle, less soluble, and less sensitive to moisture contamination. They also leach at least as much fluoride as the glass-ionomer cements. This study indicates that we can also add "excellent retention" to the list.