

[\[Print Version\]](#)

[\[PubMed Citation\]](#) [\[Related Articles in PubMed\]](#)

The Angle Orthodontist: Vol. 69, No. 5, pp. 457–462.

Comparison of shear bond strength of three bonding agents with metal and ceramic brackets

Bülent Haydar, DDS, MS;^a Simten Sartkaya, DDS, MS;^b Zafer C. Çehreli, DDS, PhD^c

^aDr. Bülent Haydar, Hacettepe University, Faculty Of Dentistry, Department Of Orthodontics, Sıhhiye, 06100, Ankara, TURKEY. Bülent Haydar, associate professor, Hacettepe University, Faculty of Dentistry, Department of Orthodontics, Ankara, Turkey.

^bSimten Sankaya, research assistant, Hacettepe University, Faculty of Dentistry, Department of Orthodontics, Ankara, Turkey.

^cZafer C. Çehreli, research assistant, Hacettepe University, Faculty of Dentistry, Department of Pedodontics, Ankara, Turkey.

ABSTRACT

Shear bond strengths of a light-cured composite resin, a light-cured glass ionomer cement, and a light-cured compomer used with metal and ceramic brackets were compared, and ARI scores were evaluated. Ceramic brackets showed statistically higher shear bond strengths than metal brackets when bonded with all test materials ($p < 0.001$). When used with metal brackets, the light-cured glass ionomer cement (LCGIC) and compomer materials demonstrated statistically lower shear bond strengths than the light-cured composite ($p < 0.01$ and $p < 0.001$, respectively). When used with ceramic brackets, LCGIC was found to have significantly lower shear bond strength than the composite material ($p < 0.001$). Despite its relatively low shear bond strength, LCGIC demonstrated optimal bonding values (8.39 ± 3.24 MPa) with ceramic brackets. Bond failures within the LCGIC groups occurred at the adhesive-tooth interface, whereas in the compomer and composite groups, failures were detected at the adhesive-bracket interface. In the metal bracket group, clinically acceptable shear bond strength was obtained only with the composite resin (7.06 ± 1.65 MPa). Compomer and LCGIC demonstrated values well below the accepted standard for metal brackets (4.32 ± 1.75 MPa and 4.45 ± 1.06 , respectively), while in the ceramic bracket group, values for composite and compomer were above the desired level (14.40 ± 5.88 MPa and 12.31 ± 6.09 , respectively). LCGIC showed reasonably good bond strength with ceramic brackets, suggesting that this material may be considered suitable for use with ceramic brackets in clinical situations where moisture cannot be controlled.

KEY WORDS: Ceramic and metal brackets, Shear bond strength, Glass ionomer cement.

Submitted: July 1998

Submitted: September 1998

