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Effects of Dental Adhesive Cement and Surface Treatment on Bond Strength and Leakage of Zirconium Oxide Ceramics

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Abstract:
To evaluate the interactive influence of adhesive materials and surface treatments on bond strength of zirconium oxide ceramics, six types of adhesive resin cements (RelyX ARC (RA), Super-Bond C & B (SB), Linkmax (LM), Panavia Fluoro Cement (PF), Bistite II (BT), and Imperva Dual (ID)), three types of resin-reinforced glass ionomer cements (Xeno Cem Plus (XC), Vitremer Luting (VR), and Fuji Luting (FL)), as well as four types of surface treatments (#600 polishing, sandblasting, silane, and Rocatec system) were used in this study.
Results of this study indicated that all the tested adhesive materials treated with Rocatec system achieved the highest shear bond strength (31.9—67.1 MPa). In particular, the highest shear bond strength value of 67.1 MPa was found for Linkmax and Rocatec treatment combination, while the lowest shear bond strength value of 5.4 MPa was found for RelyX and #600 polishing combination. Furthermore, results showed that Rocatec treatment was an effective way to prevent marginal leakage.

Key words:
Zirconium oxide, Resin cement, Bond strength

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