

0612 Bond Strength of Resin Cements to Zirconia Ceramic Using Primer

S. KITAYAMA¹, M. IKEDA¹, T. NIKAIDO¹, R.M. FOXTON², T.F. WATSON², and J. TAGAMI³, ¹Tokyo Medical & Dental University, Japan, ²King's College London, United Kingdom, ³Tokyo Medical & Dental University; COE Program, FRMDRTB at TMDU, Tokyo Medical & Dental University, Japan

Objective: The purpose of this study was to evaluate the effect of pretreatment on bonding of resin cements to zirconia using primer.

Methods: Specimens of zirconia ceramic (Cercon Base, Degudent) were fabricated according to the manufacturer's instructions. The specimens in each group (n=7) were ground with #600-grit SiC paper and then air-abraded with 50 µm alumina particles. Before bonding, they were treated as follows; no-treatment, conditioned with primer. Five resin cements and six primers which come with each resin cement were used in this study. The combinations were as follows; Bistite II and Tokuso Ceramic Primer (Tokuyama Dental), LINKMAX and GC Ceramic Primer (GC), RelyX ARC and RelyX Ceramic Primer (3M ESPE), and Panavia F2.0 and Clearfil Ceramic Primer (Kuraray Medical). For ResiCem, one of two primers; Porcelain Primer and AZ Primer (Shofu) were used. After bonding, the specimens were stored in water at 37°C for 24 hours and then tensile bond strengths were measured using a universal testing machine at a crosshead speed of 1 mm/min. Statistical analysis of tensile bond strength was analyzed using one-way ANOVA and Tukey's HSD test (p=0.05).

Results: The results of the tensile bond strengths to zirconia are shown below. In each resin cement, pretreatment with each primer significantly improved the bond strengths compared with Control. The combination of ResiCem with AZ Primer, and the combination of Panavia F 2.0 and Clearfil Ceramic Primer showed higher bond strengths than the other groups.

Conclusions: Pretreatment of zirconia surface with primer is effective on initial bonding of resin cements to zirconia. Acidic monomers contained in AZ Primer and Clearfil Ceramic Primer may be effective for improving the bonding of resin cements to zirconia

Table. Tensile Bond Strength of Resin Cements to Cercon Base (MPa)

	Primer (-)	Primer (+)
Bistite II	9.9±2.0 ^{ab}	Tokuso Ceramic Primer 14.8±2.1 ^{c,d,e}
LINKMAX	9.5±1.4 ^{ab}	GC Ceramic Primer 15.1±3.0 ^{c,d,e}
RelyX ARC	7.1±1.1 ^a	RelyX Ceramic Primer 14.0±1.6 ^{b,c,d}
Panavia F2.0	10.9±2.5 ^{ab,c}	Clearfil Ceramic Primer 19.1±2.9 ^{e,f}
ResiCem	9.8±1.4 ^{ab}	Porcelain Primer 15.6±2.7 ^{d,e} AZ Primer 22.3±4.6 ^f

Means ± SD. The same superscript letters demonstrate no significant differences (p=0.05).

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