

EFFECT OF SURFACE CONDITIONING METHODS ON BOND STRENGTH OF RESIN CEMENT TO ZIRCONIA-REINFORCED CERAMIC

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ABSTRACT

This study was conducted with the objective of evaluating the effect of three surface conditioning methods on bond strength of resin cement to zirconia reinforced ceramic. The literature was electronically searched in PUBMED, MEDLINE, EMBASE, and SCOPUS to select relevant articles that evaluated the bond strength between zirconia and composite cements. A manual search was performed by scanning the reference lists of included studies. All articles were published online before March 2020, and in English. From electronic database and manual searches, the key word phrases used were zirconia and its bonding with resin cements 439 and surface treatment of zirconia 385 studies were identified 385. N articles with test results met the inclusion criteria and were selected on the resin bond to silica-based ceramics, on the bond to aluminum-oxide ceramics, and 3 on the bond to zirconium-oxide ceramics. Additional references were included to accompany statements of facts. Comparison of the bond strength of the three groups (I, II, III) by one-way ANOVA was done. It was seen that there was a statistically significant difference within the groups ($P < 0.05$) with Group II, that is laboratory silica coating showing the highest mean bond strength (28.23 ± 1.53 MPa), followed by Group I that is laboratory grit blasting (20.2 ± 2.33 MPa). Group III that is hydrofluoric acid-etching showed the least mean bond strength (10.41 ± 1.46 MPa). The effect of three surface conditioning methods on the micro tensile bond strength of resin cement to a glass infiltrated zirconia reinforced alumina-based core ceramic was variable. Roughening the ceramic surfaces with air particle abrasion with $110\mu\text{m Al}_2\text{O}_3$ followed by coating of silica particle with size of $110\mu\text{m SiO}_2$ and silanization prior to cementation provided higher bond strength when compared with air particle abrasion with $110\mu\text{m Al}_2\text{O}_3$ and salinization. Hydrofluoric acid gel used for conditioning the reinforced ceramics showed the least mean shear bond strength.

KEYWORDS: Zirconia; Surface Conditioning, Shear Bond Strength

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