

Different Cleansing Methods Effect to Bond Strength of Contaminated Zirconia

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Abstract

Saliva contamination on a restoration is unavoidable during a try-in procedure. Many studies have shown the negative effect of non-cleansing surface prior to cementation. The aim of this study is to investigate the efficiency of cleansing methods on the shear bond strength of zirconia surfaces. Sixty-six zirconia specimens size 7.5x5.5x0.8 mm were randomly divided into six groups: non-saliva contamination (PC), saliva contamination without surface cleansing (NC), saliva contamination then cleansing with Ivoclean (IC), 0.5 M NaOH solution (NaOH), sandblasting (SB) and sandblasting followed by 0.5 M NaOH solution (SB+NaOH). One specimen in each group was separated for SEM observation. The remaining zirconia specimens were bonded to a composite resin block with Panavia F2.0 and were stored in 37°C distilled water for 24 hours. All specimens were subjected to the SBS test. The data were analyzed by One-way ANOVA and Tukey HSD. The bonded surfaces were observed under stereomicroscope to identify the mode of failure. The results showed that the SBS of saliva contaminated zirconia without surface cleansing (NC) was the significantly lowest (4.62 ± 0.53 MPa) than that of the other groups ($p < 0.05$), while SB (14.14 ± 1.72 MPa) and SB+NaOH (15.41 ± 1.65 MPa) were significantly higher than the others ($p < 0.05$). However, SB and SB+NaOH showed no statistically significant difference ($p > 0.05$). Group PC, IC and NaOH showed no significant difference ($p > 0.05$). The mode of failure revealed a greater amount of mixed failure for the majority of SB and SB+NaOH but other groups reveal adhesive failure between zirconia and resin cement for the majority. SEM showed surface morphology changing in SB and SB+NaOH when compared to other group. The saliva contaminated zirconia should be cleaned by Ivoclean, 0.5 M NaOH solution, sandblasting or sandblasting followed by 0.5 M NaOH solution prior to cementation.

Keywords: Bond strength, Saliva contamination, Sodium hydroxide, Surface cleansing, Zirconia

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