The effect of CO2 laser treatment on shear bond strength between zirconia ceramics and resin cement.

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Abstract: The purpose of this in-vitro study was to evaluate the effects of CO2 Laser treatment on the shear bond strength of resin cement to zirconia-based ceramic. Thirty disc of ziconia divided into two groups randomly. In the test group the surface of zirconia disc were irradiated by CO2 laser with output Power of 3w and energy Density of 265.39 J/cm2. No surface reatment was applied in control group. Composite resin discs were cemented on the surface of disks with a self etch dual cure resin cement and stored in distilled water. Shear bond strength was measured by universal testing machine. The failure mode was assessed by examination of the debonded surfaces with a stereomicroscope at 40× magnification. Surface morphology of two specimens of the test group were evaluated by scanning electron microscopy before and after of laser pretreatment. Data was analyzed by T-test. The mean shear bond strength of laser pretreatment group was more than control group. Statistical analysis revealed that significantly increased shear bond strength between resin cement and zirconia ceramic. CO2 laser surface treatment methods improved the bond strength between resin cement and the zirconium oxide ceramic surface.

Presentation: Oral