

عنوان مقاله:

Effect of storage time of a ceramic primer on microshear bond strength to zirconia

محل انتشار:

پنجمین همایش پژوهشی سالیانه دانشگاه علوم پزشکی استان سمنان (سال: 1397)

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خلاصه مقاله:

Introduction: Recently developed ceramic primers play an important role in bond to zirconia ceramics and other substrates. Hydrolysis of silane and unfavorable structural changes decrease the shelf life of primers. This study sought to assess the effect of shelf life of a ceramic primer containing 10- methacryloyloxydecyl dihydrogen phosphate (10-MDP) on microshear bond strength of zirconia ceramic to composite resin. **Methods:** Sixty-four sintered zirconia samples (Mamut Dental Inc.) (1.5×5×7mm) were pretreated with Clearfil ceramic primer at baseline and at one, two and six months. Composite cylinders were fabricated using Tygon tubes (1mm in height and 0.7mm in diameter) and placed on treated zirconia blocks and light-cured for 40 seconds. Samples were then subjected to microshear bond strength test. Mode of failure was determined under a stereomicroscope. Fourier transform infrared spectroscopy (FTIR) was also performed at the four time points. The data were analyzed using one-way ANOVA and Tukey's test. **Results:** The mean ($\pm$ standard deviation, SD) bond strength values were 25.88 ± 4 , 25.43 ± 7.08 , 23.02 ± 4.77 and 18.38 ± 5.68 MPa at baseline and at one, two and six months, respectively. Significant differences were noted in microshear bond strength at baseline and one and six months ($P < 0.05$). Significant differences were also noted in FTIR spectra at the four time points. The peaks at 3432cm^{-1} and 902cm^{-1} attributed to Si-OH bonds increased while the peak at 815cm^{-1} attributed to Si-O-CH₃ bond decreased during the study period. The peak at 1717cm^{-1} attributed to 10-MDP also decreased. The peak at 1087cm^{-1} increased, which indicated the formation of siloxane bond. **Conclusion:** The results showed that shelf life of Clearfil ceramic primer significantly affected the microshear bond strength of zirconia to composite in a time-dependent manner. Visible new peaks and changes noted in FTIR spectra over time indicated alterations in the composition of ceramic primer.

کلمات کلیدی:

Shear Strength; Ceramic Primer; Zirconia

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