

عنوان مقاله:

Optimized Er: YAG Laser Irradiation Distance to Achieve the Strongest Bond Strength Between Orthodontic Brackets and Zirconia-Ceramics

محل انتشار:

مجله لیزر در علوم پزشکی، دوره 11، شماره 3 (سال: 1399)

تعداد صفحات اصل مقاله: 5

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Abstract Introduction: In recent decades zirconium oxide has been introduced in the field of dentistry as a high-strength ceramic. Unlike its mechanical advantages, however, due to its inert chemical properties, it bonds poorly to other substrates, so improving bonding strength to an adhesive material is necessary. **Methods:** In this experimental study, ۷۰ ceramic zirconia blocks were prepared and distributed randomly among ۷ groups. Then the shear bond strengths were determined and the samples were examined by a scanning electron microscope (SEM). Statistical analysis was performed by one-way ANOVA and multiple Tukey comparisons. **Results:** One-way analysis of variance (ANOVA) showed that laser irradiation distance has a significant effect on orthodontics brackets bond strength to zirconia-ceramics. Based on the Tukey post hoc test, each group was compared with other groups and the contact mode and ۲ mm distance groups showed significantly higher bond strength than other groups (P -value < 0.05). **Conclusion:** Orthodontic bracket bond strength to zirconia-ceramics will be reduced by increasing Er: YAG laser irradiation distance from samples. The highest bond strength will be achieved when the laser irradiation distance is ۲ mm or when the laser beam is in contact with samples. **Keywords:** Orthodontic bracket bond strength Zirconia surface Laser radiation distance Er YAG Laser

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/2051972>

