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Usage of different surface treatments on titanium for improving bond strengths between resin cement

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Purpose: To compare on effects of different surface treatments, such as acid etched and Laser treatments of titanium surfaces especially new alternatives on the adhesive strength between resin and titanium surfaces.

Methods: Sixty titanium grooved disks (makro etched) were prepared and they were separated into five groups as follows: 1) No treatment-control group; 2) Sandblasted group with aluminium oxide; 3) Tribochemical procedure group in the laboratory; 4) Tribochemical procedure group in the clinically; 5) Nd:YAG Laser-irradiated group. The topographic patterns were observed by scanning electron microscopy. After these tests, resin cement was applied to the titanium surfaces. Shear bond test was performed via a universal testing machine at a crosshead speed of 0.5 mm/minute. In addition, the correlation between the surface roughness and bond strength was checked using Spearman correlation test (The mean difference is significant at the 0.05 level).

Results: The highest mean shear bond strength was recorded with Tribochemical procedure group in the laboratory (rocatc plus-silan) 15.701 ± 2.62 and the lowest with the control group $(5.23 \pm 2.49 \text{ MPa})$.

Conclusion: All of the surface treatment methods that were used in present study increased the bond strength between resin and titanium surface.

Biography

Emre Mumcu has graduated from Eskişehir Anatolian High School and Istanbul University School of Dentistry in the years 1993 and 1998, respectively. He received his PhD degree with the dissertation titled as "Electromyographic Assessment of the Effects of Stabilization and Anterior Repositioning Splints on Masticatory Muscles in Disc Displacements with Reduction Therapies" from Istanbul University Faculty of Dentistry Department of Prosthodontics. He completed his military service from 2007-2008 at Gulhane Military Medical Academy of Dental Sciences Center located in Ankara. In 2012, he moved to Eskişehir as a faculty member at Eskişehir Osmangazi University School of Dentistry. 34 out of 80 of his articles were published in international peer-reviewed journals, which were cited over 400 times. He also has over 40 poster presentations presented in international conferences and symposiums.

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