

EVALUATION OF THE ROUGHNESS OF COMPOSITE RESINS SUBMITTED TO DIFFERENT SURFACE TREATMENTS

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ABSTRACT

The aim of this study was to evaluate the surface roughness of restorative composite resins after polishing with aluminum oxide discs and applying an adhesive layer. The following composite resins were used: Filtek Z250 (hybrid, 3M ESPE, A2) and Filtek Supreme XT (nanofilled, 3M ESPE, A2E). Thirty specimens of each composite were made using a condensation silicone mold (5.0 x 2.0 mm) into which the composites were inserted and submitted to light pressure. After polymerization using the halogen light source Curing Light 2500 (3M) for 40 seconds, the specimens were assigned to the following groups: G1-Z250/CO – control, did not receive any treatment; G2-Z250/SL – the specimens underwent finishing and polishing with Sof-Lex discs; G3-Z250/ADE, application of an adhesive layer on the top of the specimen and light curing for 20 seconds. Groups G4, G5 and G6 followed the same treatment sequence, but using Filtek

Supreme XT. The specimens were stored in deionized water at 37°C for 24h. Three readings of surface roughness were made for each specimen. The results were submitted to variance analysis by Two-Way ANOVA Test and Tukey HSD Test. The mean values obtained were: G3 (0.2325 ± 0.1484 μm) and G6 (0.2266 ± 0.0463 μm), which were higher than the other groups and did not differ statistically from each other. Groups G1 (0.1023 ± 0.0464 μm), G4 (0.1083 ± 0.0241 μm), G5 (0.1160 ± 0.0252 μm) and G2 (0.1360 ± 0.0131 μm) had the lowest average roughness and did not differ statistically among each other. It was concluded that the Sof-Lex discs performed better for the surface treatment of the composites resins tested, producing similar values of surface roughness for both composites. Covering with dentin adhesive increased the surface roughness in both composites.

Keywords: Polymers, methacrylates, dental polishing.

EVALUACIÓN DE LA RUGOSIDAD DE RESINAS COMPUESTAS DESPUÉS DE DIFERENTES TRATAMIENTOS DE SUPERFICIE

RESUMEN

El propósito del presente estudio fue evaluar la rugosidad superficial de resinas compuestas después de ser pulidas con discos de óxido de aluminio y de aplicar una capa de adhesivo. Se utilizó resina Filtek Z250 y Filtek Supreme XT. Se fabricaron treinta especímenes de cada resina utilizando una matriz de silicona (5,0 x 2,0 mm). Después de su polimerización por 40 segundos, se formaron los siguientes grupos: G1-Z250/CO – control, que no recibió ningún tratamiento; G2-Z250/SL – los especímenes fueron acabados y pulidos con discos Sof-Lex; G3-Z250/ADE – se aplicó una capa de adhesivo en la parte superficial de los especímenes polimerizada por 20 segundos. Los grupos G4, G5 y G6 siguieron el mismo patrón, utilizando resina Filtek Supreme XT. Tres lecturas de rugosidad superficial fueron hechas en cada espécimen. Se

evaluaron mediante las pruebas de ANOVA Two-Way y Tukey HSD ($p = 0,05$), obteniendo los siguientes valores: G3 (0.2325 ± 0.1484 μm) y G6 (0.2266 ± 0.0463 μm) obtuvieron valores superiores a los otros grupos sin diferencia estadística. G1 (0.1023 ± 0.0464 μm), G4 (0.1083 ± 0.0241 μm), G5 (0.1160 ± 0.0252 μm) y G2 (0.1360 ± 0.0131 μm) obtuvieron los menores valores de rugosidad superficial sin diferencia estadística. Se concluyó que los discos Sof-Lex presentaron un mejor desempeño para el tratamiento superficial de las resinas compuestas, siendo capaces de producir valores similares de rugosidad de la superficie de ambos compuestos. La aplicación de una capa hidrofóbica de monómeros en las resinas produjo una elevada rugosidad superficial.

Palabras clave: Polímeros, metacrilatos, pulido dental