Effect of Surface Roughness of Subsequent Staining on Polished Resin Composite Material

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Abstract

Purpose: The purpose of this study was to examine how differences in the surface roughness of composite resin from dental abrasives used in professional mechanical tooth cleaning affect discoloration of the tooth surface.

Materials and methods: Cylindrical tooth specimens were fitted with rings with a diameter of 5 mm and a height of 3 mm that were filled with Clearfil Majesty LV and irradiated with light to harden. After hardening was confirmed, the specimen was immersed in 37°C distilled water for 24 hours. The surface was then polished under water with waterproof abrasive paper up to 1,000 grit, and the resulting surface was used as the standard polished surface. Specimens were then placed in a 37°C incubator filled with coffee (group C) or red wine (group W) for four weeks, after which the color of the surface was measured with a VSS300H micro spectrophotometer and evaluated with an L*a*b* surface color system.

Results: We observed less unevenness forming on the surface with a decreasing relative dentin abrasion value of the final polishing paste used. There were no statistically significant color differences in either the group C or group W specimens due to differences in surface roughness.

Conclusion: Although the degree of discoloration of the composite resin surface differed greatly between the coffee and red wine stained specimens, it did not differ with varying degree of surface roughness among specimens stained with the same pigment.

Key words: Resin composite, Surface roughness, Staining