Effect of Finishing Materials on The Color Stability of Composites

Fikri ÖCAL[1], Tuba SARICI[2], Enis ŞİMŞEK[2], Burak DAYI[2]

[1]*Van Ağız Ve Diş Sağlığı Merkezi*

[2]*İnönü Üniversitesi*

Corresponding Author: fikriocal@hotmail.com

Objective

The aim of this study is to evaluate the roughness values on the surfaces of composite resins applied with different composite finishing materials after polishing and the color changes that occur after coloring with coffee.

Methods

A total of 100 disc-shaped samples prepared from nanohybrid composite (Polofil NHT, Voco [N]) and microhybrid composite (Herculite Classic, Kerr [M]) resin were divided into 5 subgroups (n=10) for each composite. After one group of the prepared samples was separated as the control group, different finishing processes were applied to the other subgroups; bur+polishing (BP), arkansas+polishing (AP), bur+polishing with paste (BPP) and disc+polishing (DP). No procedure was applied to the control group. The samples, whose surface roughness (Ra) were determined by profilometer device and color determination by spectrophotometer device, were exposed to the coloration process with freshly prepared coffee solutions every 24 hours. After 2 days, color measurements were made again. Color change (ΔE) was calculated using the CIEDE2000 system. Mann-Whitney U test, Kruskal Wallis test and One-way analysis of variance were used for statistical analysis. The correlation between Ra and ΔE was statistically evaluated.

Results

DP on the M surface and DP and BPP on the N surface produced significantly less Ra than the other treatments and the control group ($p<0.05$). While BPP application in M group showed the least ΔE value compared to other applications, this value was not significantly different from BP and DP groups ($p>0.05$). In the N group, BPP application showed a significantly lower ΔE value than all other groups ($p<0.05$). A statistically significant correlation was found between Ra and ΔE values ($p<0.05$).

Conclusions

Composite finishing materials used before polishing affect the surface roughness and color stability of composites. The use of discs and polishing with paste in the finishing of both nanohybrid and microhybrid composites can reduce surface roughness and reduce discoloration due to coffee consumption.

Keywords: *Composite, surface roughness, colour change, polishing*

-