

Original article

The Effect of Polymerization Technique on Marginal Index of Composite Fillings in Dentin

Stefan Dačić¹, Aleksandar Mitić¹, Marija Nikolić¹,
Milica Cenić², Nenad Stošić³, Dragica Dačić-Simonović¹

¹University of Niš, Faculty of Medicine, Clinic of Dentistry,
Department for Restorative Dentistry and Endodontics, Niš, Serbia

²Military Hospital of Niš, Serbia

³University of Niš, Faculty of Medicine, Niš, Serbia

SUMMARY

Polymerization contraction of composite resins has been one of the most extensively studied phenomena in dentistry in recent years. Initial polymerization by low intensity light followed by polymerization high intensity light improves marginal adaptation of composite in tooth cavities. A number of studies have verified that less marginal leakage and lower marginal index (MI) exist in relation to standard polymerization (continuous high intensity light).

The aim of the study was to quantitatively evaluate the bond of composite materials to dentin and determine the MI values in dentin after the application of two techniques of light polymerization in two composite systems.

Twenty V class cavities were restored on extracted teeth for scanning electron microscopic (SEM) analysis of composite to dentin junction. Adhesion to dentin was achieved using *Adper Single Bond 2-ASB/ 3MESPE*, that is, *Adper Easy One-AEO/3MESPE*. Light polymerization of composite materials *Filtek Ultimate-FU/3MESPE* was performed using standard halogen light (HIP) or *soft start* program (SOF).

Marginal index of dentin was determined by measuring the length and width of marginal gap at the junction of composite filling to dentin, using scanning micrographs and *Autodesk AutoCAD* program.

Two-way ANOVA test was used for statistical processing of the obtained results. Differences in MI index between different light polymerization techniques (HIP- 8,18 and SOF-7,12) were not statistically significant ($p > 0,05$), while the differences between composite systems (ASB/FU- 3,67 i AEO/FU- 7,69) were statistically significant ($p < 0,05$).

The polymerization technique showed no significant effect on the composite to dentin junction. Lower MI dentin was established in composite system with the application of adhesive etch and rinse procedure in both polymerization techniques.

Key words: composite resins, light polymerization, adhesives, dentin

Corresponding author:

Stefan Dačić

e-mail: stefandacic1978@yahoo.com