

Effect of two different Materials; Microgel p(NIPAM) and Sodium Fluoride on the Depth and Degree of Occlusion of the Dentinal Tubules at Different Dentin Depths.

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Abstract

Objectives: To evaluate the effect of two different desensitizing materials microgel p(NIPAM) and 5% sodium fluoride (NaF) on the degree of occlusion and depth of penetration of the dentinal tubules on superficial and deep dentin after immediate application and thermocycling using environmental scanning electron microscope.

Materials and Methods: 20 non- carious, non-restored molars were included. Each tooth was cut in order to obtain four quadrants with total of 80 specimens. Specimens were divided into two groups according to aging. Then they were further sub-divided into two subgroups according to dentin depths. Specimens were further subdivided into four divisions according to the desensitizing material. After application of materials were completed according to each manufacturer's instructions, the specimens were evaluated for the depth of penetration and degree of occlusion of each material using environmental scanning electron microscope. One-Way ANOVA followed by Tukey post hoc test was used to compare between more than two groups in non-related samples. Independent sample t-test was used to compare between two groups in non-related samples.

Results: p(NIPAM) showed the highest mean value without statistically significant difference with the varnish group regarding the degree of occlusion, either on immediate evaluation or after thermocycling.

Conclusion: Better occlusion of dentinal tubules was shown on immediate testing rather than after thermocycling regardless the dentin type, however, the three desensitizing materials showed more depth of penetration after thermocycling regardless the dentin type. All the

desensitizing materials showed better occlusion and depth of penetration in superficial dentin than in deep dentin.

Clinical relevance: p(NIPAM) microgel is a promising material in the treatment of dentin hypersensitivity, however further in-vivo studies are needed.

Keywords: Dentin hypersensitivity, Varnish, Thermocycling, Degree of occlusion, p(NIPAM), Depth of penetration