

Restoration of Post-Bleach Enamel Gloss Using a Non-Abrasive, Nano-Hydroxyapatite Conditioner

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Objective: Increasing demand for esthetic dentistry has led to an increase in recent years in the spread of vital tooth bleaching. The aim of bleaching is to improve the color and brightness of teeth, but it can result in postoperative changes such as roughness in the enamel surface which are seen as white turbidity or lack of gloss to the naked eye. We developed a non-abrasive, nano-hydroxyapatite conditioning agent designed to restore tooth enamel by mineral replacement, and examined its effect on the post-bleach enamel surface, in particular enamel gloss.

Method: Sound extracted human teeth were cut into approximately 4×5×3 mm blocks and polished under running water with successive levels of abrasive paper (Buehler UF1200, UF800 and #600) to a standard enamel surface gloss of 200±10, as measured by surface gloss analyzer (SGA) (806H Tricor Systems Inc.). The specimens were then bleached with Hi-Lite (Shofu), according to the maker's instructions, and divided into two groups, one of which was then immersed in a solution of Renamel® nano-hydroxyapatite conditioner (Sangi) overnight. All specimens were observed by SPM (Seiko Instruments) at the start of the experiment, after bleaching and, for the second group, after treatment with the nano-hydroxyapatite conditioner. SGA was repeated for both groups at the close of the experiment.

Result: SPM and SGA showed surface roughness increased and glossiness decreased in all specimens after bleaching. But in the group then treated with nano-hydroxyapatite conditioner, surface roughness decreased and glossiness was seen to improve.

Conclusion: Our results showed a correlation between the gloss and smoothness of surface enamel. We concluded that the nano-hydroxyapatite conditioner is effective in restoring smoothness and gloss to post-bleach enamel, and could be a useful adjunct to the bleaching process, improving both its esthetic outcome and customer satisfaction.