

1919 A New Enamel Restoring Agent for Use after Bleaching

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Objective: In-office bleaching is widely practised and appears to have little adverse effect on the teeth. But hypersensitivity and relapse of discoloration often occur, requiring regular follow-up to ensure patient well-being. We postulated that sensitivity and relapsed discoloration result from microstructural changes to the enamel surface during the bleaching process, and developed a new enamel restoring agent and examined its effect on the post-bleach enamel surface. **Method:** Specimens of extracted human anterior teeth without previous restorative treatment, caries or white-spot lesions were subjected to bleaching with Hi-Lite (Shofu), according to the maker's instructions. After bleaching, the teeth were polished with a newly developed hydroxyapatite-based agent designed to restore the enamel surface (PRTC Super Fine, SANGI). The microstructure of the enamel surface was observed before bleaching, after bleaching, then after post-bleach polishing with the enamel restoring agent, using a scanning probe microscope (SPM) (SPI4000, Seiko Instruments) and a scanning electron microscope (SEM) (S-4500, HITACHI). SPM observation allowed both qualitative (three dimensional) and quantitative (computed) evaluation of the enamel surface at each stage of processing. **Result:** SPM observation showed some coarseness in the enamel surface prior to bleaching, believed to result from toothbrushing and other normal abrasion. In comparison, the enamel surface after bleaching was much coarser, suggesting that damage to the microstructure had occurred. After post-bleach polishing with the enamel restoring agent, the surface resembled that of the original enamel surface prior to bleaching, suggesting that restoration of the microstructure had occurred. SEM observation also showed that the enamel surface was rougher after bleaching than before, and that after post-bleach polishing with the enamel restoring agent, the surface resembled that of pre-bleach enamel. **Conclusion:** We concluded that treatment of bleached enamel with the hydroxyapatite-based agent PRTC Super Fine restored the enamel surface to a condition similar to that of pre-bleach enamel.