

Nightguard vital bleaching removes brown discoloration for 7 years: A case report

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Nightguard vital bleaching with 10% carbamide peroxide was used to remove a brown stain from the maxillary central incisor of a 13-year-old boy. After 7 years, during which there was no touch-up treatment, the discoloration had not returned. This conservative technique should be considered before more invasive procedures for the treatment of discolored vital teeth in young patients. (Quintessence Int 1998;29:450-451)

Key words: carbamide peroxide, conservative treatment, discolored tooth, nightguard vital bleaching

In nightguard vital bleaching (NGVB), a 10% carbamide peroxide is applied nightly in a custom-fitted tray to whiten teeth.¹ Dentists who prescribe NGVB may not have considered the use of this modality for removing brown discolorations.² Although not all brown discolorations can be removed by this technique, the estimated 80% success rate warrants its consideration,³ as is evidenced by the following case report.

Case report

A 13-year-old boy was brought to the University of North Carolina Dental Research Clinic by his parents, who sought conservative treatment of a single brown discoloration on the boy's right central incisor (Fig 1). The brown area had been present since eruption of the tooth, and no evidence of similar discoloration was found on other teeth. One possible etiology included a disturbance in the enamel-dentin matrix formation, as either an isolated brown discoloration resulting from ingestion of high levels of fluoride or an interruption to the permanent tooth formation associated with an abscessed or traumatized primary tooth.

Because it was not obvious that the discoloration would be confined to the surface only, and because of the hard, whitish-characterized areas on all the teeth,

microabrasion was not desirable. Microabrasion involves the selective removal of enamel from the tooth; the enamel is dissolved with hydrochloric acid and sanded with pumice in a geared-down prophylaxis cup application technique.⁴ Microabrasion would result in removal of the surface characteristics as well as the fluoride-rich enamel and could result in a yellower, mismatched tooth or might not remove the discoloration. However, microabrasion would be the next choice if NGVB did not work.⁵

Resin composite bonding was also an undesirable treatment modality because of the difficulty in matching the surface characteristics while masking the discoloration. In addition, it was not thought desirable to lead such a young patient into a life of replacement restorations too early. However, resin composite bonding was to be the choice, should microabrasion not be successful. The decision was made to attempt nightguard vital bleaching first because all other options would still be available if that treatment proved unsuccessful.

A nonscalloped, nonreservoired, custom-fitted tray⁶ (0.02-inch) was fabricated so that a 10% carbamide peroxide solution of honeylike consistency (the original formulation of Proxigel [Reed & Carnrick] now unavailable⁷) could be used nightly for up to 6 weeks. The patient was given a log form to record the number of hours worn per day or night and to record tooth sensitivity and/or gingival irritation experienced during the procedure. Active whitening exposure time was 284 hours over a 4-week period (Fig 2). No attempt was made to isolate the bleaching material to the discolored tooth because the other teeth were relatively white and not expected to change drastically from the bleaching.⁸⁻¹⁰

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Fig 1 The right central incisor of a 13-year-old boy exhibits brown discoloration of unknown etiology.



Fig 2 Four weeks' use of 10% carbamide peroxide, applied nightly in a custom-fitted tray, has removed the brown discoloration.



Fig 3 At the 3-year recall appointment, with no interim treatment, the brown discoloration has not returned.



Fig 4 At the 7-year recall appointment, with no interim treatment, there has been no return of the brown discoloration.

No evidence of the brown discoloration remained after 4 weeks' whitening. The patient reported that at the end of the eighth day of whitening (92 hours) the brown spot was barely visible and that no shade change was noted during the fourth week of whitening. Only 1 day of tooth sensitivity was reported during the active whitening phase, and no intervention was needed.

Typically, patients are told to expect 1 to 3 years of stability with their whitening, although some color changes may be more long lasting or even permanent. This patient was examined at a 3-year recall (Fig 3). No evidence of the brown discoloration was noted. The patient had not applied any carbamide peroxide since the termination of the initial treatment.

The patient was again examined at a 7-year recall (Fig 4). Again, no evidence of the brown discoloration was noted clinically, and no touch-up treatment with carbamide peroxide had been applied since the clinical treatment. No tooth sensitivity or gingival irritation was reported by the patient at either the 3-year or the 7-year postwhitening appointment.

Discussion

Whether or not the brown discoloration will ever return is unknown. Certainly 7 years of longevity make nightguard vital bleaching an extremely successful conservative treatment option that still leaves all other options available. Rather than attempting to remove brown dis-

coloration with microabrasion or covering the discoloration with bonding or veneers, dentists should consider nightguard vital bleaching as the first treatment option. Children and teenagers may benefit from nightguard vital bleaching techniques.¹¹

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