COMMENTARY

TWO-YEAR CLINICAL EVALUATION OF NONVITAL TOOTH WHITENING AND RESIN COMPOSITE RESTORATIONS

Howard E. Strassler, DMD*

In recent years there has been a trend in dental practices to provide esthetic services. One of the most significant changes has been in the area of tooth whitening. Although bleaching is not new, the many different methods of delivery have expanded. This article presents the reader with a return to the roots of bleaching, a clinical evaluation of the lightening of shade for discolored endodontically treated teeth. The authors take a unique perspective in not only evaluating the clinical performance of a nonvital tooth-bleaching technique, but by also addressing how the use of a conservative adhesive resin composite technique can restore an endodontically treated tooth without the need for posts and full-coverage restorations.

Discoloration of endodontically treated teeth is usually associated with trauma. The discoloration is an intrinsic dentin stain that occurs because the trauma to the tooth causes a hemorrhage of the pulp into the dentinal tubules. The blood products remaining in the dentinal tubules and discolor over time, leaving the tooth with a darkened, usually yellow-brown appearance. For this study all the teeth treated were shade A3 on a Vita shade guide or darker and had at least one Class III or IV restoration with the endodontic access preparation. To maintain a coronal seal of the gutta-percha endodontic treatment, temporary and existing restorations were removed as was the gutta-percha endodontic filling to a level at least 1 mm below the cementoenamel junction. The gutta-percha endodontic filling was then sealed and restored with a resin-modified glass ionomer placed only at the cementoenamel junction to allow for access for the nonvital bleaching treatment.

The nonvital bleaching treatment used in this study, an inside/outside bleaching technique, has been described in the dental literature for patients that desire tooth whitening for not only the endodontically stained nonvital tooth but for the adjacent vital teeth as well.[1–3] Although these articles have been case reports, the current authors have provided the reader with a true clinical evaluation of the results of inside/outside bleaching with a 2-year recall. Whenever nonvital tooth bleaching is performed, there is always the concern that there will be a bleaching relapse and that the tooth discoloration will return. The authors' data support the technique by demonstrating statistically using a post hoc test that there was a significant shade change between baseline and 2 weeks and baseline and 2 years; although there was some minor shade rebound, there was no significant difference between the tooth shade change at baseline and 2 weeks and baseline and 2 years. Looking at the raw data, the shade changes for the 20 patients (25 teeth) treated and recalled was an average of 13.4 shades, with all shade changes being visually apparent when viewing the Vita shade guide.

The second portion of this study was the use of adhesive resin composite restorations to restore the existing Class III or IV preparations and access openings of the teeth. After 2 years, the microhybrid Vit-l-escence, placed using a total-etch technique with a single component adhesive, PQ1, and a pulse curing technique at the final increment, demonstrated excellence clinical performance using modified US Public Health Service criteria for the restorations.

This study is an important one because it supports the use of a combined inside/outside approach for tooth whitening. Also, clinicians need to reevaluate the trend for the need for posts and full-coverage restorations to restore endodontically treated teeth with small Class III and IV restorations and access openings, and consider the use of an adhesive composite restoration only.

REFERENCES

1. Poyser NJ, Kelleher MG, Brigss PF. Managing discoloured non-vital teeth: inside/outside bleaching technique. Dent Update 2004; 31:204–214.
2. Caughman WF, Frazier KB, Haywood VB. Carbamide peroxide whitening of nonvital single discolored teeth: case reports. Quintessence Int 1999; 30:155–161.
3. Settembrini L, Gultz J, Kaim J, Scherer W. A technique for bleaching nonvital teeth: inside/outside bleaching. J Am Dent Assoc 1997; 128:1283–1284.

*Professor, Department of Endodontics, Prosthodontics and Operative Dentistry, University of Maryland Dental School, Baltimore, MD, USA