COMMENTARY

EVALUATION OF SIDE EFFECTS OF PATIENTS' PERCEPTIONS DURING TOOTH BLEACHING

Bruce A. Matis, DDS, MSD*

The objective of this study was to compare tooth sensitivity, gingival irritation, and other side effects, using an experimental 5 and 7% hydrogen peroxide (HP) bleaching solution, with another commercially available bleaching agent with 10% carbamide peroxide. Based on the data generated, the authors concluded the "the HP bleaching solution evaluated can be safely used to treat teeth."

There are many different kinds of safety issues. Generally, when safety is referred to in the literature, it is in the context of clinical safety. Clinical safety can be divided into effects on physical properties (i.e., microhardness, surface morphology, and shear bond strength of resins bonded to bleached surfaces) and immediate biological responses (i.e., tooth sensitivity and gingival irritation). However, we must also consider long-term biological effects. This is the safety that the American Dental Association (ADA) was referring to in its original "Guidelines for the Acceptance of Peroxide-Containing Oral Hygiene Products." Those biological safety guidelines are still required for acceptance of a tooth whitening agent by the ADA.[1] We can review the literature and come to the conclusion as Munro and colleagues that these products are not carcinogenic,[2] but the fact is that no product greater than 10% carbamide peroxide has ever been approved by the ADA as biologically safe as outlined by the ADA's guidelines. We must rely on human in vivo testing to determine the safety of agents and their concentrations, and often that is not possible. Therefore, it is important to differentiate between clinical and biological when referring to safety with tooth whitening agents. Biological safety concerns remain an issue for all peroxide-based bleaching materials, except for the 10% carbamide peroxide products.

This study is very well done, and I am convinced that it represents what would be found in any cross-section of young adults with the mean age of 28. However, we might find less tooth and gingival sensitivity if the subject population were mainly elderly. It is also important that we develop objective criteria to determine tooth and gingival sensitivity. It has been shown in studies that subjects are influenced very easily when surveys or self-reporting data are used. Bias may be introduced by background conversations that patients overhear. Subjects want to help researchers succeed and will often tell us what they believe we want to hear.

A telling point in this study that is not stressed is that higher concentrations cause more sensitivity. Therefore, it is generally advisable to start with a low concentration when initiating bleaching. If patients are not sensitive to low concentrations, then the concentration can be increased. However, if we start with high concentrations and our patients have sensitivity, they may be disillusioned and elect to cease bleaching without trying a lower concentration.

The authors state that the addition of potassium nitrate was a possible reason for reducing the post-bleaching sensitivity by half. However, the control product does not include any potassium nitrate, and the sensitivity was cut in half in those subjects as well.

This study confirmed what has been shown before—that symptomatology, which sometimes occurs during the bleaching process, reverses over time. Another important issue clearly addressed is that we must tailor the bleaching regimen to the patient, so that the procedure will "satisfy the patients' needs," with minimal side effects.

DOI 10.1111/j.1708-8240.2007.00137.x

REFERENCES

1. Council on Dental Therapeutics. Guidelines for the acceptance of peroxide-containing oral hygiene products. J Am Dent Assoc 1994;125:1140–3.

2. Munro IC, Williams GM, Heymann HO, Kroes R. Use of hydrogen peroxide-based tooth whitening products and its relationship to oral cancer. J Esthet Restor Dent 2006;18:119–25.

Professor and director of the clinical research section, Indiana University School of Dentistry, Department of Restorative Dentistry, 1121 West Michigan Street, Indianapolis, IN 46202