

# Quick Tips

## Nightguard Vital Bleaching and In-Office Bleaching



**Van B. Haywood, DMD**  
Professor  
Department of Oral  
Rehabilitation  
School of Dentistry  
Medical College of Georgia  
Augusta, Georgia  
Phone: 706.721.2554  
Fax: 706.721.8349  
E-mail:  
VHAYWOOD@mail.mcg.edu

**N**ow that nightguard vital bleaching has become an accepted modality for bleaching vital teeth, questions often arise about its comparison to in-office bleaching. Nightguard vital bleaching involves bleaching the teeth with a 10% carbamide peroxide applied nightly in a custom-fitted tray.<sup>1</sup> Treatment time is generally 2 to 6 weeks, depending on discoloration, compliance, and sensitivity.<sup>2</sup>

In-office bleaching historically involves isolation of the teeth with a rubber dam, followed by application of a 35% hydrogen peroxide solution, possibly activated by heat or light, for 30 to 45 minutes.<sup>3</sup> Treatment is generally weekly, from four to six visits.

Although there was a time when etching of the teeth was advocated, that has been shown to provide no benefit.<sup>4</sup> Recently, claims have been made for a light-activated 35% hydrogen peroxide, which may only take one appointment to bleach the teeth.<sup>5</sup>

The purpose of this clinical report is to compare a single session of in-office bleaching using a light-activated 35% hydrogen peroxide with nightguard vital bleaching using a 10% carbamide peroxide.

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### COMPARATIVE CASE STUDY

#### Patient Selection

Patients were selected based on stains that appeared to be easily removable with either nightguard vital bleaching or in-office bleaching. One patient is shown in Figure 1 on initial examination. The patient was informed of the risks and benefits of the bleaching procedure and consented to participate in in-office bleaching first.

#### In-Office Bleaching

##### Hi Lite™ Application

The four anterior teeth were isolated with a rubber dam (Figure 2) according to standard procedures. A 35% hydrogen peroxide (Hi Lite™, SHOFU® Dental Corp.), which is photo-activated, was used.

The material was brought to the clinical site by the manufacturer and applied under the manufacturer's direct supervision for four 8- to 15-minute application times in an hour to the incisors. The material was light-activated using a composite curing light.

#### Rubber Dam Removal and Results

The photograph in Figure 3, which would demonstrate the effects of both the bleaching solution and dehydration by the application of the rubber dam, was taken immediately on removal of the rubber dam.

This patient did experience a tissue burn during the treatment with 35% hydrogen peroxide; however, no photograph was taken after this dehydration from the rubber dam had abated. Figure 4 displays the teeth 3 months after the 35% hydrogen peroxide treatment.

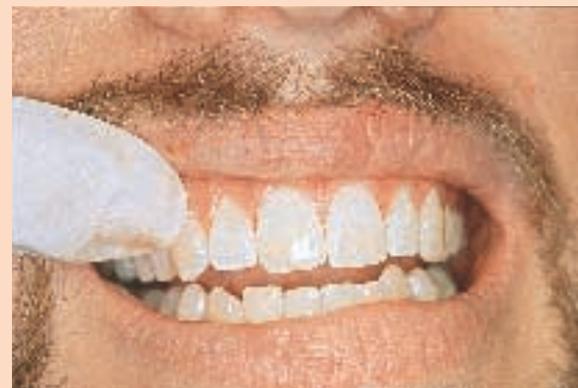
**Figure 1**—Pretreatment photographs of this young man show discolorations of the incisor teeth.



**Figure 2**—In-office bleaching requires isolation with a rubber dam. Only the incisors were isolated to have the other maxillary teeth as a control.



**Figure 3**—Light-activated 35% hydrogen peroxide was applied for 1 hour in 4 applications, then the rubber dam was removed. Clinical results were not readily obvious, and a tissue burn was present.



Shofu Dental  
Corp/Highlite 2

# Quick Tips *continued*



**Figure 4**—Three months after the single in-office bleaching treatment, there is no obvious color change in the maxillary incisors compared to the maxillary canines or mandibular teeth.



**Figure 5**—After additional treatment using a 10% carbamide peroxide in a custom-fitted, scalloped, reservoired tray, an obvious difference can be seen between the bleached maxillary teeth and the untreated mandibular teeth.



**Figure 6**—Fourteen months after the completion of the nightguard vital bleaching, and with no further treatment, the color change is still stable.

## Nightguard Vital Bleaching *Opalescence® Application*

Subsequently, a maxillary alginate impression was made of the patient's dentition, and a scalloped, reservoired tray was fabricated on the resultant stone cast from a soft-tray material (Soft-Tray®, Ultradent Products, Inc.). A 10% carbamide peroxide material was applied in the tray (Opalescence®, Ultradent Products, Inc.) to bleach the teeth.

## Five-Week Treatment and Results

The patient wore the prosthesis in the nightguard vital bleaching format either every night or every other night for 5 weeks. Alternating nights of treatment avoided any side effects.<sup>6</sup> Results for the patient are shown in Figure 5. The patient had completed treatment about 2 months before this picture was taken.

Figure 6 demonstrates the color stability from nightguard vital bleaching at 14 months post-treatment with no "touch up" or interim bleaching treatment. The patient was pleased with the final results.

## DISCUSSION

Obviously, in this situation, one appointment for in-office bleaching with a light-activated 35% hydrogen peroxide did not compare to the results from the nightguard vital

bleaching treatment with 10% carbamide peroxide.

## Flexibility

The office time invested for both treatments was essentially the same (about 1 hour). However, after the office visit with the nightguard vital bleaching treatment, the patient had the flexibility to continue treatment for as long as necessary with no additional cost, or for the cost of additional material only.

With the 35% hydrogen peroxide technique, each additional treatment would incur an additional cost far exceeding nightguard vital bleaching, without any clear indication of the number of visits necessary to complete the in-office bleaching.

## No Fixed Time Interval

It is important to allow continued bleaching for as long as necessary on the patient's discolored teeth, rather than choose a fixed time interval. Patients may take as little as 1 to 2 nights, or as long as 6 to 10 months, to achieve successful whitening of their teeth.<sup>7</sup>

To expect all teeth and all types of discolorations to respond after 2 weeks of treatment is unrealistic and unfair to the technique.<sup>8</sup> Likewise, to expect one in-office bleaching treatment to successfully whiten all teeth is also

unrealistic and unfair, as well as unsupported by the vast amount of literature on in-office bleaching.

At this time, only one in-office 35% hydrogen peroxide bleaching material has received the approval of the American Dental Association [Star Brite® Power Whitening System, Interdent, Inc.], and it is not light-activated.

## Re-treatment

Another distinction between in-office and nightguard vital bleaching involves re-treatment. Because all bleaching treatment has a tendency to relapse, the in-office bleaching would require an additional "same cost as the initial" visit to touch up. However, nightguard vital bleaching would only require a minimum of additional material, assuming the tray has been retained and still fits.

## In-Office Bleaching: Obsolete?

The observations from this case report do not mean there is not a place for in-office bleaching. Many authorities on in-office bleaching recommend one office treatment only, followed by the nightguard vital bleaching protocol to give patients a "quick start" on the bleaching.<sup>9</sup>

## A Positive Approach

Proponents of in-office bleaching often like to boost the

patient at the beginning of treatment to give the patient a positive experience and head start on the color change. They feel this approach encourages compliance with the home treatment, because adherence to treatment is the major shortcoming of the home systems.

## Cost-Effectiveness

Repeated office visits are not cost-effective to the patient unless the patient cannot follow the nightguard vital bleaching protocol. Various reasons for not following the nightguard vital bleaching system would include the inability to tolerate wearing the tray, taste, or sensitivity.

However, in this case and others, a single visit for in-office bleaching was not sufficient for maximum color change. Whether this boost is worth the cost to the patient is debatable.

Another indication for the in-office start would be to possibly shorten the treatment time for the patient.

## Disadvantages

**Hydrogen Peroxide**—Disadvantages of in-office bleaching mostly relate to the dangers of handling the highly caustic concentration of hydrogen peroxide.

**Rubber Dams**—Rubber dam placement must be precise to avoid tissue burns. An additional

problem with the use of the rubber dam is that only the anterior six or eight teeth can be well isolated, and primarily for facial application; ie, the material is not typically applied to the lingual because of access problems and an increased chance of a leaky dam. Today's esthetic demands require the ability to lighten all the teeth that show in the smile, from the facial to the lingual.

**Sensitivity**—Sensitivity may be increased by the higher concentration application, and as a result, the patient may need to wait a few days before initiating the home-bleaching treatment.

**However, published reports confirm that the combination of in-office and nightguard vital bleaching can be more effective in certain situations than either treatment alone.**

## Some Options

### Nightguard Vital Bleaching Alone

This author's preference is to use the nightguard vital bleaching alone as the first option. Then, if there is a tooth that resists whitening, it can be assisted with an in-office booster. The only occasion where in-office bleaching is the first choice is when time is of utmost importance, or when the fee for the procedure is of no concern to the patient and they prefer to have the dentist perform the entire procedure.

### The Combined Approach

If the dentist does wish to use in-office bleaching, the combined approach seems the most reasonable option. In this case, the assis-

tant can take the impression and pour the cast. During cast stone setting, the assistant applies the rubber dam for the office treatment.

While the tray is being fabricated, the patient receives one in-office treatment. In about 45 minutes, the patient is released with slightly whiter teeth, armed with the tray and material to immediately continue the process at home.

This approach offers some nice treatment options to the dentist:

- ▶ It allows the office to incorporate two appointments (impression and insertion), saving the patient a trip and parking.

- ▶ It procures some immediate results while offering encouragements for the continuation of the home bleaching.

- ▶ It uses the office time wisely while the tray is being fabricated.

The only liability to the combined approach is the increase in fee, but that is certainly less than the cost of multiple 35% hydrogen peroxide in-office bleaching visits.

### 35% Carbamide Peroxide

Other safer options include the use of 35% carbamide peroxide for a 1-hour bleaching quick start.<sup>10</sup> The 35% carbamide peroxide can be applied with the paint-on rubber dam, in the bleaching tray, or as a warmed solution.

These 35% carbamide peroxide solutions, which are only approximately 10% hydrogen peroxide, are safer to use and more stable to store. A noticeable change may achieve the same behavioral encouragement for the patient.

### Documentation

Whether an in-office bleaching shortens the clinical time for nightguard vital bleaching or increases the immediate change has not been researched to date. Whether using the higher concentration increases sensitivity has

also not been documented. However, published reports confirm that the combination of in-office and nightguard vital bleaching can be more effective in certain situations than either treatment alone. This is especially true for a single dark tooth where the rest of the teeth are also being bleached.<sup>11</sup>

## CONCLUSION

A clinical test of a 35% light-activated hydrogen peroxide failed to lighten teeth in one office visit. Subsequent treatment of the patients by nightguard vital bleaching using a 10% carbamide peroxide in a custom-fitted tray showed marked lightening far exceeding the single in-office treatment.

Practitioners should expect in-office bleaching to require more than one visit, even with the newer light-activated materials. Unless the patient is demanding faster results and is willing to pay for that treatment, nightguard vital bleaching is still the most effective, cost-efficient method for whitening teeth. It should be the first treatment of choice.

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