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Asif Ahmed
 MDS (Prosthodontics and
 Crown & Bridge), Global
 Diagnostics & Healthcare,
 Raniganj, West Bengal, India

Correspondence
Asif Ahmed
 MDS (Prosthodontics and
 Crown & Bridge), Global
 Diagnostics & Healthcare,
 Raniganj, West Bengal, India

Extended dental bleaching procedure: A case report

Asif Ahmed

Abstract

Dental bleaching offers a conservative, simplified, and low cost approach to change the color of discoloured teeth. Current bleaching techniques include a dentist-prescribed in-office technique, an at-home applied technique, or a combination of both. The pigments oxidation is responsible for tooth bleaching and can be carried out with two different products; carbamide peroxide and hydrogen peroxide. Usually the protocols for at-home bleaching include custom trays use and bleaching agents in lower concentrations. Carbamide peroxide is currently found in low concentrations for at-home technique and high concentrations for in-office technique are available. On the other hand, hydrogen peroxide was typically indicated in high concentrations for in-office bleaching but nowadays is available in low concentrations for at-home protocols. This paper describes clinical case performed with bleaching system technique by the use of hydrogen peroxide bleaching agent available in the market. The extended in office vital bleaching was effective with 35% hydrogen peroxide with satisfactory results no post treatment complications.

Keywords: In office bleaching dental bleaching. extended bleaching. hydrogen peroxide

Introduction

The dental professional must consider aesthetics and it is especially important when the patients have an increased interest to have perfect teeth and smile. The “bleaching” or “whitening” of teeth has an important role in this context. Christensen said that bleaching is a service aimed at improving patient appearance and self-esteem and has received unprecedented public interest and acceptance ^[1] Discolored teeth are linked to oral diseases and patients desire white teeth. McGrath *et al.* ^[2] affirmed that within the past decade there has been an enormous increase in the availability and use of tooth whitening products among the public. There are several bleaching techniques available: at-home dental bleaching performed with custom trays, supervised by dentists, which contain 5.5-7.5% hydrogen peroxide or 10-20% carbamide peroxide; commercially available home bleach systems using standard trays, which contains up to 6% hydrogen peroxide and 10% carbamide peroxide; plastic strips systems as Crest White strips which contains 5.5-10% hydrogen peroxide. In office bleaching contains 30-38% hydrogen peroxide or 35% carbamide peroxide (either alone or activated by heat or light); toothpastes with low concentrations of hydrogen peroxide or calcium peroxide; and also over-the-counter products with several delivery options, including custom-fit mouth trays, paint-on products, and film technologies^{1,3,4}. Mass marketed products typically contain low levels of whitening agent (ranging 3-6% hydrogen peroxide) and it is self-applied to the teeth via gum shields, strips or paint-on product formats and require twice per day application for up to 2 weeks⁵. A recent study performed with a prototype bleaching strip containing hydrogen peroxide gel at 13% and 16% concentrations shows a tendency of higher bleaching effect with higher concentration levels ⁶.

Actually tooth whiteners systems can be tailored to fit the individual needs of the consumer. The most common and popular bleaching agent is carbamide peroxide, which, concentrated at 10%, releases 3.5% hydrogen peroxide used in tray. However, the disadvantages of the tray method are as follows: requires impressions and trays; may take 2-4 weeks; compliance is a problem and; not user friendly. This paper describes a clinical case that achieved aesthetics results of whitening tooth by increasing the number of dental office visits, focusing in the upper anteriors (canine to canine) weekly recording (7; 14, and 21 days of treatment) and post treatment observations for another three weeks.

Case Report

A 24-year-old man reported to the clinic with a desire for bleach his teeth. The upper anteriors were classified as A3 according to Vita classic shade guide (Figure 1). Pola Office (SDI) was used as per manufacturer instructions (Figure 2). The procedure was repeated once every week for 3 weeks.

The change in color was weekly monitored until the desired level of color change was obtained. After 21 days of treatment the upper anteriors color was classified as A1 according to Vita shade guide (Figure 3). After three weeks of bleaching the treatment was considered complete and the final result was considered satisfactory.



Fig 1: Anterior shade: A3



Fig 2: Gingival guard and Pola Office applied



Fig 3: 21 days of treatment with pola Office shade: A1

Discussion

Color is described as three-dimensional entity of value, hue, and chroma. Hue refers to actual color of the object, Chroma refers to its saturation (intensity or strength), and value is associated with brightness. Chroma is the degree of colour saturation and describes the strength, intensity or vividness of a colour. Observed tooth color change is dependent on bleaching time, the initial tooth color, the specific tooth region, or the type of tooth being bleached.

Joiner said that hue is the attribute of a color that enables one to distinguish between families of different color, for example, red, blue and green. Value indicates the lightness of a color ranging from pure black to pure white.^[9]

Joiner *et al.*^[5] in a recent review of literature about bleaching of teeth affirmed that in-office bleaching uses higher levels of bleaching agent for shorter time periods. In this particular case soft tissues must be protected and the peroxide may be further activated by heat or light.

Microscopically, some authors^[4, 10, 11] pointed out controversial results in the effects of bleaching treatment on enamel surface but clinically bleaching technique is still the most conservative treatment to discolored teeth compared to facets and crowns.

There are various brands of bleaching agents with various concentrations are available in the market. Here in this case Pola office bleaching used and it has the most promising outcome. Along 35% hydrogen peroxide Pola office consist of potassium nitrate, so patients post-operative sensitivity reduced. Before starting bleaching procedure, proper clinical evaluation and history taking is very important to understand etiological factor responsible for tooth discoloration and degree of discoloration of teeth. Nonvital and traumatic tooth usually looks discolored hence before bleaching procedure electric pulp testing should be done to avoid misdiagnosis and wrong treatment. Dentists may also wish to consider prescribing NSAIDs prior to treatment since post-treatment sensitivity is unpredictable.

Nowadays there are multiple esthetic treatment options are available in the field of dentistry, bleaching is one them. There are various brands of bleaching agents with various concentrations are available in the market. Here in this case Pola office bleaching used and it has the most promising outcome. Along 35% hydrogen peroxide Pola office consist of potassium nitrate, so Patients post-operative sensitivity reduced. Before starting bleaching procedure, proper clinical evaluation and history taking is very important to understand etiological factor responsible for tooth discoloration and degree of discoloration of teeth.

Advantages of In Office bleaching

- Faster bleaching procedure.
- As procedure is under professional, risk factor is eliminated.
- Tooth sensitivity reduced due to use of desensitizers such as potassium nitrate and fluoride.

Disadvantages of In Office bleaching

- In office, bleaching procedure is most expensive than other bleaching procedure.
- Results can be unpredictable and depend on the factors like age, type of stains etc.^[12]

By the results observed in this clinical report it must be emphasized that if clinicians need to indicate dental bleaching, it would be prudent to use a system as efficacious as possible to achieve the patient expectations, however, with minimal side effects. So, clinicians might consider that in office bleaching technique with prolonged duration is one of the best choices to obtain an effective result with no unwanted complications present.

Conclusions

Nowadays tooth bleaching has grown in importance because

of a growing interest of the patients and consumers of whitening products. The general practitioner must understand the differences of current available techniques (supervised nightguard bleaching, in-office bleaching and mass market products); the whitening solutions (carbamide and hydrogen peroxide) and its different concentration. The use of an extended in-office system is effective, easy, and safe and achieves effective results without any complications.

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