



Research Paper

## Brightening the smile with in office vital teeth bleaching: a case report

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### ABSTRACT -

The color of teeth is determined by the translucency and thickness of the enamel, the thickness and color of the underlying dentin, and the color of the pulp. Alterations in the color may be physiologic or pathologic and endogenous or exogenous in nature. Tooth discoloration is seen commonly due to extrinsic or intrinsic stains. Intrinsic stains can be treated with bleaching, veneers or crowns. The most non invasive and conservative treatment for these stains is tooth bleaching.

**KEYWORDS :** Tooth discoloration, extrinsic or intrinsic stains, bleaching.

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### I. INTRODUCTION

The normal color of primary teeth is bluish white. The color of permanent teeth is grayish yellow, grayish white, or yellowish white. Teeth of elderly persons are usually more yellow or grayish yellow than those of younger persons. Alterations in the color may be physiologic or pathologic and endogenous or exogenous in nature. With age, the enamel becomes thinner because of abrasion and erosion, and the dentin becomes thicker because of the deposition of secondary and reparative dentin, which produces color changes in teeth during one's life.

Discolored teeth, especially in the anterior region, can result in considerable cosmetic impairment. Tooth whitening procedure can be a effective way of lightening the natural color of teeth without removal of any tooth structure. It cannot make a complete color change, but it may lighten the existing shade. In general dental practice tooth whitening is known as tooth bleaching procedure[1].

#### Advantages of In Office bleaching:

- bleaching procedure is fast.
- As procedure is done by professional, risk factor is eliminated.
- Post bleaching tooth sensitivity is reduced by using desensitizers such as potassium nitrate and fluoride.

#### Disadvantages of In Office bleaching:

- In office, bleaching procedure is expensive compared to other bleaching procedure.

- Results are unpredictable and depend on different factors like age, type of stains etC[2].

## II. CASE REPORT

A 20-years-old male was referred to the Department of Operative Dentistry and endodontic with the chief complaint of dark brown teeth. After taking patient's history & doing clinical examination, a diagnosis of dental fluorosis was established (Figure 1).

In office, bleaching procedure was then decided for the same patient. First tooth vitality was carried out by using electronic pulp vitality tester for maxillary anterior teeth, and all teeth were found to be vital.

Oral prophylaxis and macro-microabrasion were carried out before starting the bleaching procedure. For this patient, Pola Office was chosen. This material contains 35% hydrogen peroxide and potassium nitrate which acts as a desensitizer. Figure 2 shows the result after macro-microabrasion. First isolation of field is done then Vaseline is applied. Gingival barrier was applied and light cured for 20 seconds (Figure 3).



Figure 1



Figure 2



Figure 3

Equal part of bleaching gel and powder was taken and mixed until thick homogeneous mixture was formed and applied over teeth using applicator tip. Photo curing done using light curing unit for 8 min. (Figure 5 & 6).



Figure 4



Figure 5

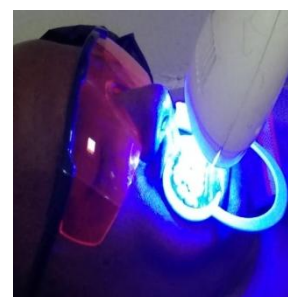


Figure 6

2 cycles were performed in 1 session. Bleaching agent was removed using air water syringe and suctioned and final polishing was done (Figure 7).



Figure 7

The patient was recalled after 1 week for evaluation of result Patient noticed marked improvement in tooth color & patient was satisfied with final result.

## III. DISCUSSION

Bleaching procedure can be indicated in almost all conditions where tooth discoloration occurs, such as: decomposition of the pulp tissue, internal hemorrhage, trauma cases, use of medicines, restorative materials and systemic conditions such as: fluorosis, jaundice and fetal erythroblastosis. Main contraindications of

bleaching procedure are: application in pregnant women, infants, children under 10 years of age, patients who have teeth with exposed dentinal tubules and individuals who cannot quit smoking during the treatment period<sup>3</sup>. Regardless of the use of bleaching technique or product, the mechanism of action of bleaching agents is based on the release of active forms of oxygen, as a function of the interaction of hydrogen peroxide with tooth structure. Hydrogen peroxide is an oxidizing agent capable of producing free radicals, releasing oxygen (O<sub>2</sub>), reducing the complex carbonic chain of the pigment (which absorbs the blue spectrum of light), into smaller molecules with free hydroxyls (which do not absorb blue light) and thus reflect the blue light along with the green and red spectra; the color mixture gives the H<sub>2</sub> whitening effect[4],[5],[6].

Before starting the treatment, some guidelines are made to avoid discomfort along with the treatment, such as avoiding too hot as well as too cold foods and beverages, low pH foods and beverages, stop smoking (quitting is desirable) and every activity that can hyper stimulate tooth sensitivity. A new generation of bleaching agents with a low concentration of hydrogen peroxide (3.5% and 15%) was introduced in the market to perform dental office whitening, with greater safety and efficiency.

Nowadays there are multiple esthetic treatment modalities available in dentistry, bleaching procedure is one of them. There are different brands of bleaching agents with different concentrations available in the market. Here in this case Pola office bleaching is used and it has the most promising result. Along with 35% hydrogen peroxide Pola office consists of potassium nitrate, so patient's post bleaching sensitivity is reduced. Prior to the bleaching, proper clinical evaluation and history taking is much important to know the etiological factor responsible for discoloration of tooth and degree of discoloration of teeth. Non-vital teeth and traumatic injuries to teeth causes discoloration of teeth therefore prior to bleaching procedure vitality testing should be done in order to avoid improper diagnosis and improper treatment.

Increased concentration of bleaching agent has deleterious effect on pulp tissue. Different in vitro studies have shown that penetration of bleaching agent into the pulp chamber when bleaching agent has exposed to tooth surface for 60 minutes. Hanks et al. concluded that penetration of bleaching agent into pulp chamber depends on the original concentration of the bleaching agent and time period for which it has been applied to the surface of tooth, he also concluded that it took around 15 minutes for bleaching agent to reach into the pulp chamber<sup>7</sup>. Molecular size and weight of peroxide, molecule is very low and has the ability to denature the protein present in dentin that is the reason why it moves easily through dentinal tubules and reach to the pulp chamber. But in vivo studies show an opposite result that of in vitro studies. In vivo studies carried out by Cohen and Robertson showed either no or very less inflammation of pulp when exposed to 35% hydrogen peroxide. Enzyme Peroxidase and Catalase present in the pulp gives protection against bleaching agent by degrading hydrogen peroxide molecule. Other factor which is responsible for the diffusion of bleaching agent into the pulp chamber is positive pressure inside the pulp chamber and osmotic pressure of the bleaching agent[8].

#### **IV. CONCLUSION**

As per newer bleaching material evolution into the field of dentistry, in office bleaching is safe without any deleterious effect on tooth structure when proper concentration of bleaching agent is used and proper instructions to be followed.

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