

VITAL TEETH BLEACHING – Review & Case Report

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ABSTRACT:

The Perfect SMILE is one of the most important expression of a person, but it can be marred by something like fluorosis ...!! Various techniques have been evolved to restore the normal colour of the tooth, amongst which bleaching is one of the most effective and conservative procedure. Rapid innovation in vital bleaching has increased the popularity of tooth whitening & has led to an increased number of treatment options available to patients.

The present article reviews the various procedures & case report for vital teeth bleaching.

Key words: fluorosis, vital teeth bleaching, carbamide peroxide, hydrogen peroxide

INTRODUCTION

One of the questions asked most frequently in the dental office is, “How can I have whiter teeth?” Nothing could be more desirable than a beautiful, sparkling, white smile. The appearance of teeth, health and fitness are equally important for patients of all ages. Discoloured teeth, specially in the anterior region, can result in considerable cosmetic impairment.

Besides invasive therapies, such as crowns or veneers, **bleaching** in contrast is a non-invasive and conservative procedure. Vital teeth can be whitened by utilizing **carbamide peroxide**.

A broad range of peroxide-based treatments are currently available:

1. Professionally-administered (in-office)
2. Professionally-dispensed (custom-tray-based systems), and
3. Self-directed (over-the-counter).

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TOOTH DISCOLORATION – CLASSIFICATION :

1. By Abbot 1997

- A. Extrinsic
- B. Intrinsic
- C. Combination of both

2. Extrinsic stains further classified by Nathoo & Gaffar 1995

- **N 1 – type dental stain** (direct dental stain).The chromogen binds to the tooth surface to cause tooth discoloration. Eg stains caused by tea, coffee and wine.
- **N 2 – type dental stain** (direct dental stain).The chromogen changes colour after binding to the tooth. Eg age-related formation of yellowish discoloration on the interproximal or gingival areas .
- **N3-type dental** (indirect dental stains). The pre chromogen binds to the tooth and undergoes a chemical reaction to cause a stain. Eg browning of teeth by cooking oils or therapeutic agents containing stannous fluoride.

HISTORY

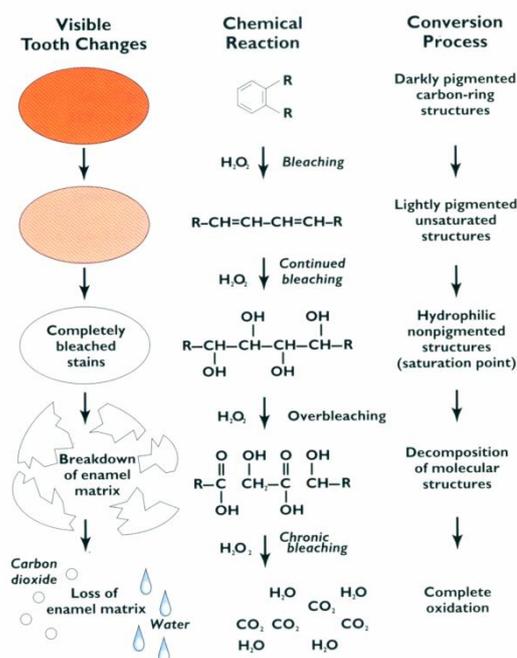
Date	Name	Material Used
1860	Truman	Chloride and acetic acid for non vital teeth
1884	Harlan	Used H ₂ O ₂ for first time for all discoloration
1958	Pearson	35% H ₂ O ₂ inside tooth & 25% H ₂ O ₂ and 75% other activated by lamp
1961	Spasser	Walking bleach technique for non vital teeth
1965	Stewart	Thermocatalytic technique for non vital teeth
1968	Klusmier	Home-bleaching for vital teeth
1982	Abou-Rass	intentional RCT with internal bleaching for tetracycline stains
1988	Munro	First commercial bleaching product white + brite (Omni international)
1989	Croll	Microabrasion technique for vital teeth
1989	Haywood and Heymann	Nightguard vital bleaching for all stains
1991	Garber and Goldstein	Combination bleaching (power and home)
1996	Reyto	Laser tooth whitening for vital teeth
1997	Settembrini	Inside/outside bleaching for non vital teeth

CONTRAINDICATIONS

- Poor patient and case selection
Psychological or emotional patient
- Dentin hypersensitivity
- Extensively resorted teeth
- Teeth with hypoplastic cracks
- Defective / Weak restorationS
 - Defective obturation
 - Discoloration from metallic salts as mercury

MECHANISM

The oxidation-reduction reaction that takes place in the bleaching process is known as "Redox Reaction". The oxidizing agents (e.g. hydrogen peroxide) has free radicals with unpaired electrons, which it gives up and thus becomes reduced. The reducing agent (the substance being bleached) accepts electrons and become oxidized.



VITAL BLEACHING TECHNIQUES

- At Home** – 10% carbamide peroxide
- In Office** – 35% hydrogen peroxide (can be combined with heated bleaching lamp / Lasers)
- Over The Counter** – 5.3% hydrogen peroxide gel / hydrogen peroxide strips

CASE REPORT

A 25 year old male patient reported to Department of Conservative Dentistry & Endodontics at Modern Dental College with the chief complaint of discolored teeth. After taking patient's history & doing clinical examination, a diagnosis of

dental fluorosis was established. This discoloration could be easily removed, hence treatment planning for “at-home bleaching” with 10% carbamide peroxide was proposed and accepted by the patient.



Fig.1 Pre Operative

Alginate impressions and study models were made. Labial surface of each tooth of the model was blocked out to create a reservoir for placing bleaching gel, and a custom tray was vacuum formed. The tray was trimmed to minimize the tissue contact and fitted - to ensure patient comfort and eliminate any contact of the bleaching gel with the gingival tissue which if occurred might result in tissue irritation.



Fig.2 Model & Tray Fabricated

In the second appointment, the tray was positioned in the patient's mouth and tissue adaptation, retention, and occlusion were checked. The patient was instructed to apply the bleaching material in one drop

per tooth of 10% carbamide peroxide (Colgate Platinum Overnight)

The change in color was monitored weekly. After 7 days of treatment, it was considered that bleaching was achieved & after 14 days the desired level of color change was obtained. Follow ups were carried out 7 days & 15 days post-treatment.



Fig.3 Post Operative

DISCUSSION

Visible tooth color change is dependent on bleaching time, the initial tooth color, the specific tooth region and the type of tooth being bleached.

Myers et al affirmed that the effectiveness of bleaching with 10% carbamide peroxide to produce a change in color is widely accepted.

In the present case report, it was observed that the most notable shade lightening was achieved mainly in the first week of treatment, as specified in ADA Guidelines.

The choice for the at-home technique was based on its advantages ; high frequency of using a bleaching agent but in low concentration there by reducing post operative side effects (sensitivity , taste alteration, soft tissue soreness) in comparison to in-office power bleaching which uses higher levels of bleaching agent for shorter time periods .

Donly et al compared have compared 10% polyethylene strips (Over The Counter) with 10% carbamide peroxide tray system. There were no significant differences between the two groups in any color parameters.

Clinically bleaching technique is still the most conservative treatment to discolored teeth when compared to veneers and crowns.

By the results observed in this case report and supported by literature review, it is affirmed that if clinicians need to plan for dental bleaching, it should be done using a system as effective as possible, however, with minimal side effects. So at-home bleaching technique is one of the best choices.

CONCLUSION

Nowadays tooth bleaching has gained popularity because of the growing awareness & increased esthetic desires of the patients. The dentist must understand the differences amongst the currently available bleaching techniques and the difference in concentration of various products. The use of at-home system is effective, easy, safe and achieves satisfactory results.

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