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Bright Smiles Ahead: A Case Series On The Walking Bleaching Technique

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Abstract

An efficient and least invasive way to treat discoloration in non-vital teeth is the walking bleaching technique. Its clinical use, results, and safety profile in restoring aesthetics are highlighted in this case series. Without sacrificing tooth structure or patient comfort, significant increases in tooth shade were made possible by a methodical procedure utilizing hydrogen peroxide and sodium perborate. The outcomes show the method's dependability, patient pleasure, and function as a conservative substitute for more invasive operations.

Index Terms - Discolored teeth, hydrogen peroxide, Walking bleaching

I. INTRODUCTION

As concerns about cosmetics rise, particularly among young adults, over the past ten years, there has been a noticeable rise in tooth-whitening operations performed in dentist offices, with a preference for more conservative techniques. Bleaching is frequently the best option for mild to moderate color change because it is simple to use, economical, and time-efficient(1)

Hydrogen peroxide, which is produced by this combination of substances, reacts with the pulp's breakdown products to yellow the tooth (2,3). The bleaching agent's concentration, its capacity to reach the chromogenic molecules, and the frequency and duration of application all have a significant impact on how effective bleaching is (4).

Both general and local factors can cause intrinsic discolouration. Medication (such as tetracycline), metabolic fluorosis, and genetic disorders (such as hyperbilirubinemia, amelogenesis imperfecta, and dentinogenesis imperfecta) are examples of systemic causes. Pulp necrosis, intrapulpal hemorrhage, pulp tissue leftovers after endodontic therapy, endodontic materials, coronal fillings, root resorption, and aging are examples of local variables.(11)

This paper provides a number of examples showing how the walking bleach technique can be used to successfully bleach discolored, non-vital endodontically treated teeth. It highlights two distinct methods that produced positive results without any negative side effects. Finding the root cause of tooth discolouration is crucial since it has a direct impact on the efficacy of the treatment strategy. Although complete laminate crowns have historically been used to improve the appearance of teeth that have had anterior endodontic treatment, they might not be required when the tooth structure is still intact.

II. CASE 1

A sixteen-year-old patient had complaints of a stained front tooth when they came to the outpatient unit of Balaji Dental College and Hospitals.

Patient revealed that he had undergone root canal treatment 4 years back due to trauma following a road traffic accident. Upon intraoral inspection, the maxillary left central incisor was found to be stained and brownish. Radiograph revealed obturation in 21 with intact periapical bone. patient was explained about the non-vital bleaching procedure and written agreement was obtained.

The VITA simple shade guide was used to take preoperative shade photos of the teeth. Gutta percha was removed 2 mm below the CEJ to prepare the chamber of pulp for the intra-coronal bleaching chemical.

GIC barrier was given till the CEJ for creating a mechanical barrier. Opalescence Endo (40% hydrogen peroxide gel) was used as the non-vital bleaching agent. It was sealed into the chamber using GIC cement. Patient was recalled on 1,2 and 3 weeks for measurement if the bleached shade. Once the desired colour was achieved, the bleaching agent was flushed out and the pulp chamber was temporized for 2 weeks. Then composite restoration was done under rubber dam isolation.

III. CASE 2

26-year-old male patient complained of a stained front tooth when he arrived at the Balaji Dental College and Hospitals' outpatient unit. The patient disclosed that he had received root canal therapy two years prior as a result of trauma sustained in a fall. Upon intraoral assessment, the maxillary left central incisor was found to be stained and brownish. Obturation was seen on radiograph 21 with the periapical bone intact. Written agreement was obtained after the patient was informed about the non-essential bleaching operation.

The shade guide was used to take preoperative shade photos of the teeth. The pulp chamber was prepared to receive the intra-coronal bleaching agent by removing gutta percha 2 mm below the CEJ. GIC barrier was given till the CEJ for creating a mechanical barrier. Opalescence Endo (40% hydrogen peroxide gel) was used as the non-vital bleaching agent. It was sealed into the chamber using GIC cement. Patient was recalled on 1,2 and 3 weeks for measurement if the bleached shade. Following the removal of the bleaching product, the pulp space was temporized for two weeks until the required color was reached. Then, under rubber dam isolation, composite restoration was completed.

IV. DISCUSSION

The first records of discolored nonvital tooth bleaching date back to the middle of the 1800s. with chloride of lime as the primary bleaching agent (2). Other early agents included aluminum chloride and oxalic acid until hydrogen peroxide (H2O2) was found effective for tooth bleaching in 1884. This method was later modified by Nutting and Poe, who replaced water with 30% H2O2 to enhance results, though this also elevated chance of resorption of external cervical roots, necessitating cautious use (3). The intrinsic discoloration caused by necrotic pulp involves long chains of organic molecules, which H2O2 oxidizes into carbon, releasing water and oxygen.

In vitro improvements were noticed when peroxide of carbamide and sodium perborate were used in place of distilled water, at concentrations ranging from 10% to 35%. Carbamide peroxide, which contains both hydrogen peroxide and urea, releases 3.5% hydrogen peroxide. For effective internal whitening, periodontal tissues in good condition and a well-treated root canal are vital to stop the bleaching ingredient from seeping into the periapical region(5,6).

Thermocatalysis, walking bleach, or a mix of the two are examples of whitening methods. It is not recommended to employ the thermocatalytic approach with 30% H2O2 because it may cause the bleaching agent to leak into the tubes of the dentin and induce irritation. In contrast, heat is used to activate the bleaching agent within the pulp, releasing nascent oxygen (7). The walking bleach technique involves applying a thick paste of sodium perborate mixed with H2O2 or water into the pulp chamber for 3 to 7 days, with follow-up visits to monitor progress and repeat the procedure as needed. This technique allows bleaching to occur between appointments. (8,9)

Modifications to this technique may include higher concentrations of H2O2 or combining it with carbamide peroxide, but these pose risks of external cervical resorption, that can lead to serious complications. According to Howell, the walking bleach approach has an 89.5% success rate right away.(10)

Other chemicals, such as potassium cyanide, were used in the past but were highly toxic and could cause adverse effects if not handled properly(11). As early as 1890, a 3% pyrozone liquid was used as a safe rinse to lighten stained teeth and prevent cavities. Sodium perborate, an oxidizing agent with 95% perborate, exists in various forms, including mono-, tri-, and tetrahydrate. The walking bleach method was first described by Spasser, who explained that sodium perborate combined with distilled water releases H2O2, making it effective for bleaching applications.

V. CONCLUSION

In today's cosmetic dentistry, which prioritizes aesthetics while promoting conservative methods for successful restorations, the walking bleach technique for whitening stained teeth is regarded as an effective, straightforward, and efficient approach that benefits both patients and clinicians.

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