

Internal Bleaching Techniques: A Review

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Abstract

With the advancement in science and technology, Cosmetic dental treatments have been revolutionized. Tooth discoloration appears as a significant cosmetic problem that might require bleaching procedures. Intrinsic discoloration is commonly observed in endodontically treated teeth. The objective of this review was to discuss the clinical recommendations of using different internal bleaching techniques for treating intrinsic tooth discoloration based on the available evidence in the literature. Non vital bleaching technique is a minimally invasive procedure to treat intrinsic discoloration of endodontically treated tooth. However, certain protocols and precautions are necessary to minimize post operative complications. Further prospective researches are required to improve the quality of evidence.

Keywords: Internal bleaching; non vital bleaching; walk bleach technique; internal discoloration; intrinsic discoloration.

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INTRODUCTION

With the advancement in science and technology, Cosmetic dental treatments have been revolutionized. Tooth discoloration appears as a significant cosmetic problem that might require bleaching procedures. Tooth discoloration has been classified as intrinsic or extrinsic in nature based on the underlying causes. Intrinsic discoloration is commonly observed in endodontically treated teeth. Walking bleach techniques, thermocatalytic technique, or a combination of different techniques might alleviate the internal tooth discoloration in endodontically treated anterior teeth. Walking bleaching procedure is also known as Internal beaching or Non-vital bleaching technique. It is the most common technique in clinical practice as it doesn't require special equipment and the cost of material is minimal.

The objective of this review was to discuss the clinical recommendations of using different internal bleaching techniques for treating intrinsic tooth discoloration based on the available evidence in the literature.

OVERVIEW

Walking bleach technique is considered as the conventional technique for treating internal tooth discoloration. It involves the application of a bleaching agent to the dentin of the pulp chamber between the dental visits. A mixture of sodium perborate and

distilled water can. Be effectively used as an agent for intra-coronal bleaching. To further enhance the bleaching efficacy, 30% hydrogen peroxide (HP) was suggested as a substitute for water. Moreover, a concentrated hydrogen peroxide (25-35%) is effective for bleaching teeth with or without vital pulp. Nevertheless, carbamide peroxide 35-37% is also considered an effective agent for both in-office and intra-coronal bleaching. Moreover, intracoronal hydrogen peroxide was found to cause cervical root resorption as demonstrated by some laboratory studies. A study was conducted by et al to evaluate the Extra radicular diffusion of hydrogen peroxide associated with intracoronal teeth bleaching using different bleaching agents. The author concluded that carbamide peroxide and sodium perborate-water mixture are the most suitable and effective bleaching materials that might be used for intra-coronal bleaching due to its low extra radicular diffusion of hydrogen peroxide [1].

A case report by Maj R. Srinivasan stated that "Walking bleach" is a valuable treatment modality for a single discolored tooth if procedural protocol and precautions have strictly adhered when compared against direct and indirect restorative modalities [2]. Therefore, Non-vital bleaching is a minimally invasive procedure to restore the aesthetics of a discolored non-vital tooth. However, care should be taken to prevent any post-operative complications [3].

To counteract the drawbacks such as cervical root resorption by Internal bleaching technique, a case study discussed the intra-coronal bleaching of non-vital discolored maxillary central incisor in a 13 years old male patient using 35% hydrogen peroxide gel along with the use of glass ionomer cement. After nine months if follow up, radiographically there was no evidence of cervical or apical resorption during the study period. Hence, glass ionomer cement can act as a mechanical barrier to minimize the undesirable drawbacks of intra-coronal bleaching [4].

Another study was conducted to evaluate the sealing properties of the calcium-enriched mixture (CEM) in comparison to mineral trioxide aggregate (MTA) as a cervical barrier in intra-coronal bleaching. Endodontic treatment was performed on 69 extracted human incisors and canines without any defects or lesion. The teeth were randomly divided into two experimental groups and control groups respectively. CEM cement and MTA were then applied as an intra-orifice barrier in the experimental groups. A mixture containing sodium perborate and 30% hydrogen peroxide bleaching agents were placed within the pulp chamber for around one week. Moreover, Dye penetration method was used to evaluate the sealing ability of agents. Authors concluded that CEM cement can be used as a cervical barrier with sealing properties comparable to that of MTA during intra-coronal bleaching procedures [5].

However, there are certain drawbacks associated with barriers such as calcium silicate-based cement exhibit color changes and are known to cause discoloration. Nevertheless, Biodentine was found to be an effective barrier material, and more whitening could be obtained with a bleaching treatment [6].

On the other hand, Ledermix paste might discolor the tooth structure but discoloration could be reversed when bleached with both Sodium perborate and Sodium tetraborate to the same extent. [7].

CONCLUSION

Non-vital bleaching technique is a minimally invasive procedure to treat intrinsic discoloration of endodontically treated tooth. However, certain

protocols and precautions are necessary to minimize postoperative complications. Further prospective researches are required to improve the quality of evidence.

Conflict of Interest

The authors declare no conflict of interests.

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