

WALKING BLEACH: A CASE REPORT

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ABSTRACT

Tooth discoloration is defined as being extrinsic or intrinsic on the basis of localization and etiology, appearance, severity and adhesion to the tooth structure. Discoloration of teeth is a cosmetic problem & bleaching procedures are more conservative than restorative methods, reasonably simple to perform & less expensive. Discoloration of tooth, especially treated endodontically is a point of concern to the patient & a dentist. Among the various bleaching techniques the "walking bleach" technique with sodium perborate & distilled water stands out because of its superior esthetics results with no side effect. This paper presents a case of tooth discoloration in non-vital tooth which was successfully bleached using walking bleach method. After 2 months follow up the prognosis was good with no reversal of tooth discoloration and absence of external cervical resorption.

KEYWORDS: Endodontically treated abutments; Discoloration; Walking bleach; Esthetics; Sodium perborate

INTRODUCTION

Today, with advanced dentistry, society is more concerned about their dental treatment & having norms to have straight, white teeth, which leads to increased cases for tooth whitening in dental practice over the last decade & an extensive approach to achieve this goal is bleaching. The proper diagnosis of the cause of discoloration of a particular tooth is very essential because it will directly relate to treatment & its outcome. Traditionally endodontic treated teeth have been restored with full coverage crown. However if there is sound tooth structure and little

discoloration then, bleaching has been advocated as a more conservative option.

CASE REPORT

A 72 year old male patient reported complaining of missing teeth and caries in upper right anterior teeth and lower right posterior teeth. Intraoral examination (Fig. 1) revealed ELLIS class IV fracture irt right maxillary 1st, 2nd premolar and an intraoral periapical radiograph was taken which revealed periapical abscess irt 13 14. A treatment plan of endodontic therapy with obturation and walking bleach was planned irt 13 (Fig. 2), RCT with post & core irt 14 15, PFM bridge irt 31 32 33 41 42 43 44 45, cast partial irt 35 46 & RPD irt 11 16 21 22 23 24 26. After 20 days of RCT irt 13 14 15, access cavity opened irt 14 15 and approximately 3 mm of gutta purcha filling was removed from the access cavity. The cavity of 13 was irrigated with sodium hypochloride and saline (Fig. 3) to remove smear layer, debris. A mixture of sodium perborate and distilled water was placed inside the cavity and restored with glass inomer cement. Face bow transfer (Fig. 4) and post and core made irt 14 15 (Fig. 5). Patient recalled every 7 days once for changing bleaching agent. After 7 days, in the 2nd visit first we changed bleaching agent. After that teeth preparation irt 33 43 45 and temporization done, post and core cemented irt 14 15 (Fig. 5). After 7 days, in the 3rd visit bleaching agent was changed after that metal try in done irt 31 32 33 41 42 43 44 45 & PFM crown cemented irt 14 15 (Fig. 6). After 3rd visit there was a drastic change in the tooth colour from cavity A4 to A3 (Fig. 7). In 4th visit PFM bridge irt 31 32 33 41 42 43 44 45 cemented and made rest seat for cast partial irt 35 46 (Fig. 8). By the time of final delivery of the cast partial denture the shade of fracture 13 was stabilized at A3 (vita) (Fig. 9). The access cavity was restored with GIC and patient was monitored in regular recall visits in which no discomfort was



Fig. 1: Pre-operative view



Fig. 2: Walking bleach initiated with A4 (vita) shade of 13



Fig. 3: Saline and Sodium perborate



Fig. 4: Face bow transfer



Fig. 5: Post and core cemented irt 14 15



Fig. 6: PFM bridge cemented irt 31 32 33 41 42 43 44 45, PFM crown cemented irt 14 15 and RPD trial irt 11 16 21 22 23 24

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Fig. 7: Sodium perborate changed irt 13 after every 7 days (Till 4th visit)



Fig. 9: Final shade of fracture 13 stabilized with A3 (vita)



Fig. 8: Post-operative view



reported.

DISCUSSION

Bleaching of discoloured non-vital teeth were first reported during the middle of the 19th century. The bleaching agent of choice was “chloride of lime”.^[1] Other agents described for the bleaching of pulpless teeth included aluminium chloride and hydrogen peroxide used either alone or in combination with heat. Some chemicals used were very poisonous such as cyanide of potassium. A 3% solution of pyrozone was used safely as a mouthwash as early as 1890, which not only reduced caries but also whitened tooth.^[2] Advocating different chemical agents, sodium perborate is a white crystalline odourless powder and occurs in a variety in the form of depending on the content of water crystallization. Monohydrate, trihydrate or tetrahydrate is used as a hydrogen peroxide releasing agents and it has been used since 1907 as an oxidizer and bleaching of sodium perborate monohydrate, trihydrate mixtures with either water or hydrogen peroxide is not very different. The walking bleach technique that was introduced in 1961 involved placement of a mixture of sodium

perborate and water into the pulp chamber, which was sealed into place between dental visits. This method was later modified by replacing water with 30-35% hydrogen peroxide to improve the whitening effect.^[3] However, according to several authors, external cervical root resorption has been reported to occur following intracoronal bleaching of discoloured pulpless teeth with the walking bleach technique when hydrogen was used. Therefore, it is recommended that sodium perborate should be used mixed with water rather than hydrogen peroxide in order to prevent or minimize the occurrence of bleaching related external root resorption. The most commonly used intracoronal bleaching materials are an aqueous solution of 30% hydrogen peroxide and sodium perborate. These materials may be used either separately or in combination. Bleaching techniques include the thermocatalytic methods, walking bleach and combined method. In the thermocatalytic technique a heat source is used to activate the bleaching agent placed in the plup chamber through the release of nascent oxygen. In the walking bleach technique, a thick paste of sodium perborate mixed with hydrogen peroxide

or water is placed in the pulp chamber and sealed for periods of 3 to 7 days. When the bleaching agent is applied inside the pulp chamber and sealed, the bleaching occurs between dental appointments via the walking bleach technique. This technique traditionally has been used to treat discoloured non-vital teeth. The other bleaching options involve the thermocatalytic technique and in-office external bleaching technique using high concentrated hydrogen peroxide and carbamide peroxide gel. It is not advisable to use the thermocatalytic method with heating of a 30% H₂O₂ solution, as this procedure increases the risk of external cervical resorption which is a serious complication.^[4] For the same reason, 30% H₂O₂ should not be used for the walking bleach technique. External cervical resorption is mostly asymptomatic and is usually detected only through routine radiographs. However, sometimes swelling of the papilla or percussion sensitivity of bleached teeth can be observed. One month after bleaching, no changes in the tooth substance could be detected. It is also caused by lack of cervical seal. Because H₂O₂ can diffuse through dentinal tubules as far as the cervical periodontal ligament, altering these structures and generating inflammatory root resorption. It has been proved that formation using either 30% H₂O₂ alone or in combination with sodium perborate are more toxic for periodontal ligament cells as compared to a perborate-water suspension, presumed that application of bleaching agents led to denaturation of dentine in the cervical region of tooth. There is a paucity of evidence based literature that shows the prognosis of bleached non-vital teeth. According to Howell, walking bleach techniques have an immediate success rate of 89.5%.^[5] However, there is a possibility of recurring discoloration, which means that the initial results cannot be considered permanent. Some authors have suggested that teeth that have been discolored for several years do not respond as well to bleaching as teeth that are stained for a short period of time. Brown reported that trauma or necrosis-induced discoloration can be successfully bleached in about 95% of the cases, compared with lower percentages for teeth discolored as a result of medicaments or restorations.

CONCLUSION

A case has been presented in which there was need for rehabilitation due to missing teeth and some carious teeth. Although full coverage restoration have been traditionally advocated to restore endodontically treated teeth however, in this case bleaching was planned in the maxillary canine following root canal treatment because of minimal tooth loss. Out of the many methods proposed for bleaching of non-vital teeth, the walking bleach method enjoys popularity because of easy technique and consistent results. This paper provides information that, the walking bleach technique can lead to successful whitening of non-vital root filled teeth without harmful side effects.

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