IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

NON VITAL BLEACHING: A NON INVASIVE ENDO TOUCH UP

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Abstract:

Discoloration of tooth can be extrinsic or intrinsic based on its etiology, site, appearance, and severity. It poses esthetic problem which is a prime concern for many patients, especially in anterior region of teeth that may be compromised due to previous trauma, caries, or failed restorations. Bleaching is a more conservative approach which is non-invasive as compared with other options like crowns or veneers. Among various bleaching techniques, "Walking bleach technique" is preferred, as it provides better cosmetic outcome with limited side effects. However, some modifications of it were also introduced. This article aims at presenting a case report on walking bleach method performed on endodontically treated teeth focusing on minimal destruction of tooth structure.

Keywords: discoloration, bleaching, walking bleach, esthetics

Introduction

With the growing concern toward cosmetics, especially in young adults, increased cases of tooth-whitening procedure have been noted in dental practice over the last decade with more preference to minimal invasive technique.[1,2]

Among various reasons of tooth discoloration, the main etiological factor has to be diagnosed that is directly related to the type of treatment plan and its outcome. Internal bleaching procedures such as the "walking bleach" technique can be used for whitening of discolored root-filled teeth, which is simple and time-saving method with good esthetic and safety and best prognosis. Walking bleach technique is performed by application of a paste consisting of sodium perborate and distilled water or 3% hydrogen peroxide (H_2O_2), in the pulp chamber. [2,3]This mixture releases H_2O_2 which reacts with the staining substances. The first description of the walking bleach technique with a mixture of sodium perborate and distilled water. The present article reports the successful bleaching of discolored non-vital, endodontically treated tooth using walking bleach technique with good prognosis.

Traditionally, full veneer crowns are preferred for restoring esthetics in anterior endodontically treated teeth, but in cases with sound tooth structure and mild-to-moderate discoloration, bleaching is a better option, as it is non invasive, less time-consuming, and economical.[4]

Case Report

A 30 years old male patient reported to the Department of Conservative Dentistry and Endodontics with complaint of discolored upper right anterior tooth. Patient had a history of trauma with 10 years back and had undergone root canal treatment for the same. Intraoral examination revealed brownish discoloured maxillary right central incisor. An intraoral radiograph showed obturation and normal periapical tissue with 11, and the patient was explained about the treatment of bleaching for the tooth and informed consent was taken. To determine the shade of teeth preoperatively, Vita classic porcelain shade guide (Vita zahafabi) was used under normal daylight and preoperative photographs were taken (Fig. 1 (a)). The pulp chamber was prepared prior to application of bleaching agent by removing 2 mm of gutta-percha near orifice and placing a base of 1 to 2 mm glass ionomer cement (GIC) over the gutta-percha to create a mechanical barrier between the sealed root canal and bleaching agent to be used in pulp chamber (Fig. 1(b)). Non-vital bleaching with a mixture of sodium perborate and 3% hydrogen peroxide [sodium perborate and 3% H_2O_2 in ratio of 2:1 (gm/mL)] was decided for this patient and bleaching procedure was performed. After placement, the cavity was sealed with temporary restorative material and the patient was recalled every week for repeating the bleaching procedure so as to obtain the desired results. Before proceeding ahead, in each visit, the result was clinically evaluated comparing the teeth shade with the previous one using Vita shade guide and photographs taken earlier. After a few visits, the shade of the teeth gets lightened to a superior esthetic shade with accepted clinical success; thereafter, the teeth were permanently restored using composite resin. The tooth showed significant changes in shade after 2 weeks (Fig. 1(e)) and after 4 weeks (Fig. 1 (f).

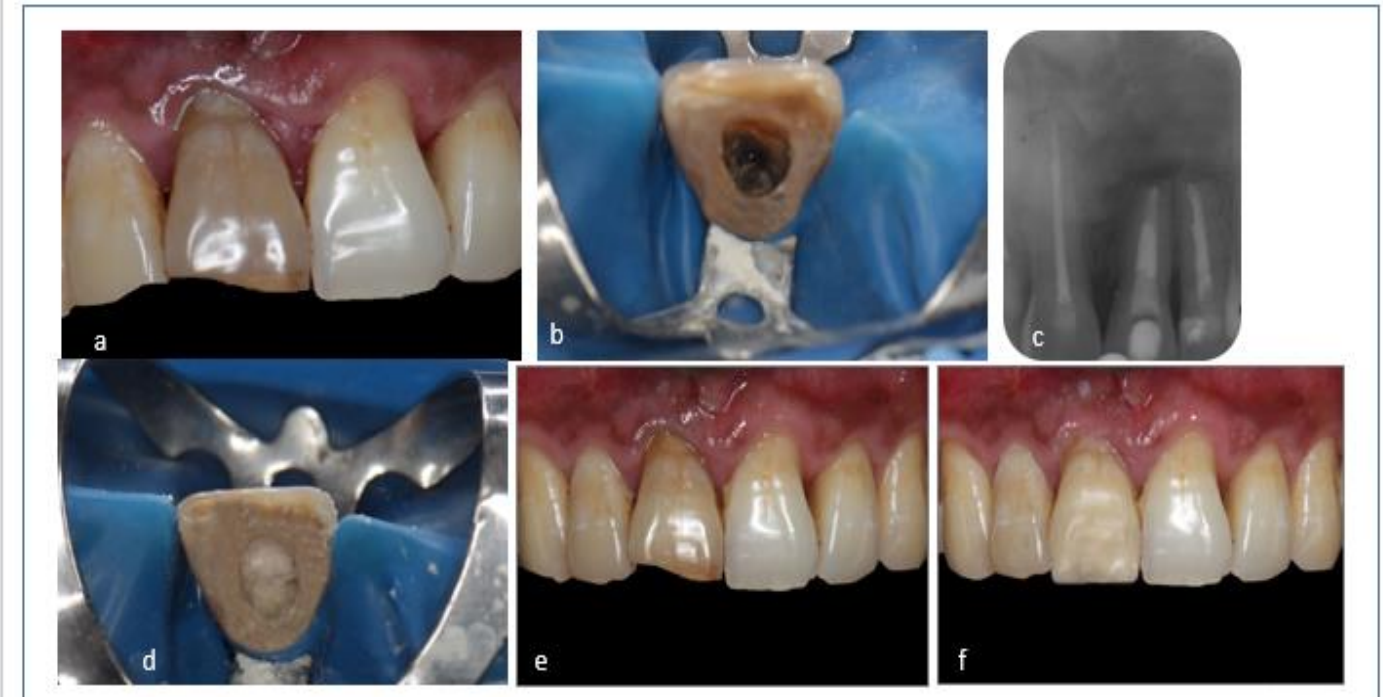

Figure 1 (a) Pre operative labial view (b) Access cavity and GP removal (c) Placement of RMGIC barrier (d) Placement of bleaching agent on labial surface (e) After 2 weeks f) After4 weeks

Discussion

Bleaching of discoloured non vital teeth was first reported during the mid-19th century for which the bleaching agent of choice was chloride of lime, and other agents described for bleaching of pulpless teeth included aluminium chloride, oxalic acid initially, until tooth bleaching effect of H_2O_2 was discovered in 1884 to be used for bleaching.[7,8] Sodium perborate was also introduced in bleaching application. It is an oxidizing agent containing 95% perborate which occurs in the form of mono, tri ($NaBO_2 \cdot H_2O_2 \cdot 3H_2O$) or tetrahydrate.[9,10] The pigmentation that causes intrinsic discoloration from necrotic pulp consists of long chain of organic molecule. Bleaching using H_2O_2 oxidizes these long-chain molecules and transform them into carbon while releasing H_2O and oxygen.[8]

Walking bleach method involves application of a thick paste of sodium perborate mixed with H_2O_2 or water into pulp chamber for a period of 3 to 7 days followed by recall visits for review and repeat of procedure till desired results are achieved. When the bleaching agent is applied inside the pulp chamber and sealed, the bleaching occurs between dental appointments through this walking bleach technique. Other modifications in this technique can be using higher concentration of H_2O_2 or 10% carbamide peroxide with sodium perborate or additionally adding thermocatalytic action with this, but it poses the risk of external cervical resorption which could become a serious complication.

Conclusion:

In the modern era of cosmetic dentistry that aims for esthetics and simultaneously at conservative approach for successful restorative outcome, use of walking bleach technique for whitening of discolored teeth can be considered as a relatively unchallenging, effective, and expedient method that can be used in clinical favor for patient as well as the clinician.

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