

Nonvital Tooth Bleaching, Noninvasive Technique: A Case Report

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Abstract: Discoloration of the tooth, especially the anterior, can result of considerably cosmetic impairment in young patients. To treat such kind of patient is a challenge for the dental practitioners. The variety of post endodontic restorations options are full veneers, laminates, crowns, bleaching which is non invasive technique. This article describes a case of nonvital bleaching which was performed on a root canal treated tooth with successful result within two months with no reversible discoloration or cervical root resorption.

I. Introduction

Trauma to the anterior tooth results in a nonvital tooth and discoloration which is great challenge to the clinician to treat such young patients. As esthetic is more important in young patients as discoloration is become great challenge. expectations of patients is high when we treat such cases without any invasion. By doing proper treatment of the teeth, we can re established patient's good smile and esthetic without affecting natural dentition of the patients. In the era of esthetic dentistry, bleaching of discolored teeth, either vital or nonvital, has become popular. Nonvital bleaching which is noninvasive technique has many benefits over other treatment options like full veneer crowns. Nonvital bleaching technique is non invasive procedure, very economical, less time consuming and economical.² 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 (H₂O₂), in the pulp chamber.¹ This mixture releases H₂O₂ 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 and no side effects.³

II. Case report

A 24-year-old girl, reported to the hospital with history of discolored and unaesthetic appearance of his upper left central incisor. A diagnosis of non vital tooth was done by performing an electric pulp tester. The shade guide of the discolored tooth was assessed under normal daylight with a Vita porcelain shade guide (Vita Zahafabrik). Pre- and post-bleaching photographs were taken. Conventional endodontic treatment was performed followed by the bleaching using sodium perborate in 2:1 (gm/ml). Before applying the bleaching agent, 1–2 mm of the gutta-percha was removed in an apical direction. The tooth was then washed with 3% hydrogen peroxide solution, rinsed and dried. A base of 1–2 mm glass ionomer cement was placed over the root filling material to assure a mechanical barrier between the sealed root canal and the bleaching agent. Procedure was repeated until desired results were obtained. Clinical evaluation was recorded by comparing the tooth shade with its original one before treatment using the Vita porcelain shade guide and photographs. The tooth had lightened to a suitable degree with accepted clinical success. As shown in Figure, periapical radiographs were taken prior to bleaching of teeth, immediately after bleaching, and at 1, 3, 6, and 9 months after bleaching. The pre-bleaching assessment for the tooth was diagnosed as having periapical pathosis; during the follow-up period, there were signs of healing since the start of root canal treatment.



Preoperative photograph of discoloured Tooth



Photograph of the tooth after placing bleaching agent intra coronally



Preoperative radiograph



Postoperative radiograph



Postoperative photograph after 2 months

III. Discussion

Many studies have been done on bleaching whether vital or nonvital but very few studies have their scientific evidence. Most reports have very low initial results after bleaching, with complete color matching of the bleached tooth with the adjacent one.⁶ However, occasionally darkening after internal bleaching can be observed which is presumably caused by diffusion of staining substances and penetration of bacteria through marginal gaps between the filling and the tooth.⁷

Some modifications have been done in an attempt to minimize the risk of cervical or apical resorption; thus, a base of 1–2 mm glass ionomer cement was placed over filling material of the root to have a mechanical barrier between the sealed root canal and the bleaching gel, which is in agreement with other studies Friedman et al. as they did not use an intermediate lining prior to the bleaching material.⁸ Another modification added to the bleaching technique was that on reaching the desired shade guide; thus, the pulp chamber was filled by calcium hydroxide for seven days before the final filling material. This was necessary to allow for elimination of residual oxygen, which interferes with the polymerization of the filling material and to neutralize and render the medium alkaline that reduces the risk of cervical resorption⁹.

Non vital bleaching has not found much favour amongst the clinicians because of the fear of resorption following the procedure, which has a poor prognosis. But in this case report adhering to the proper barrier placement methods can definitely prevent the development of the resorption. The protective barrier was placed 1 mm below the facial CEJ because it resulted in more acceptable aesthetic results, particularly in the cervical region. However, this procedure exposed more dentinal tubules, leading towards the approximal cervical parts of the periodontal ligament. But the placement of the intra-coronal bleach barrier based on Steiner and West's protocol prevents the extra radicular diffusion of the bleaching agent¹⁰.

Non vital bleaching has several advantages over other post endodontic treatment options like full veneer crowns¹¹. Difficulties in shade matching and achieving the life like appearance and the emergence profile of the natural teeth are the possible drawbacks of the full coverage restorations. In contrast, non vital bleaching is a non invasive procedure and it is also less time consuming and economical and the patient's natural tooth structure is preserved.¹²

IV. Conclusion

The causes of discoloration of endodontically treated teeth are well recognized, and techniques of bleaching have proved their efficacy over the years. These procedures provide a much safer bleaching technique in the course of maintaining the integrity of the tooth and above the surrounding tissue. Nevertheless, this treatment involves minimal risk. So this case report has the best results to have a product providing the benefits of effective bleaching agent while eliminating the associated risks.

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