

CASE REPORT

Management Of Anterior Teeth Discoloration With Bleaching And Macroabrasion: A Case Report

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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 could be a prime concern for many patients, especially in anterior region of teeth that may be compromised due to previous trauma, caries, or failed restorations. Macroabrasion is a technique for the removal of localized white spots using a high-speed, intermittent high speed turbine finishing diamond tip. It is fast, safe, efficient, and an alternative to enamel microabrasion. Bleaching is a more conservative approach which is noninvasive as compared with other prosthodontic options like crowns or veneers. Among various bleaching techniques hydrogen peroxide is preferred, as it provides better cosmetic outcome with limited side effects. This article aims at presenting a case on macroabrasion method followed by vital bleaching performed on maxillary anterior teeth, after which a satisfactory aesthetic result was achieved.

Keywords: macro abrasion, bleaching, discoloration, hydrogen peroxide, vital bleaching

INTRODUCTION

According to Sturdevant¹, a technique for removing localized white spots, not subject to remineralizing therapy, is called macroabrasion. Macroabrasion simply uses a finishing diamond tip or multilaminated drill on a high turbine to remove the defect. Light and intermittent pressure should be used carefully when removing the dental structure to avoid the formation of a cavity unnecessarily.¹

During macroabrasion, irrigation is recommended to keep the tooth in a hydrated state to facilitate the assessment of stain and/or defect removal. This is because teeth that have white stain defects are particularly susceptible to dehydration, resulting in other apparent white stains that are not normally seen when the tooth is hydrated. Dehydration exaggerates the appearance of white spots and makes it difficult to assess the removal of defects.¹

Macroabrasion is considerably fast, safe, and efficient. It is an alternative to enamel microabrasion and can be associated with procedures such as whitening, closing of diastemas, and cosmetic remodeling.^{2,3}

However, when the stain is deeper, a cavity can be generated in the buccal surface of the teeth. In such cases, small spots or localized intrinsic defects that are surrounded by healthy enamel can be ideally treated with partial direct veneers.¹

The professional should use a thick, elliptical, or spherical diamond tip with air-water cooling to prepare the tooth to an extent and depth sufficient to mask the defect or stain with the restorative material without generating overcontour and, normally, does not involve an area subgingival or incisal angle. In addition, finishing the cavo-superficial angle is recommended and essential to remove the outer layer of enamel that may be more resistant to acid etching, to create a favorable surface for adhesion, and to establish a transition between the restoration/tooth.

The etiology, appearance, localization and severity of discolored teeth vary, and the discoloration is classified as intrinsic, extrinsic, or both according to its location and etiology.⁴

Extrinsic discoloration is caused by the habitual intake of chromogenic dietary sources such as, wine, coffee, tea, carrots, oranges, chocolate, tobacco, mouth rinses, or plaque on the tooth surface.^{5,21}

As for intrinsic discoloration, it can either be caused by systemic or local factors. Systemic causes include drug-related (tetracycline), metabolic, fluorosis, and genetic (hyperbilirubinemia, amelogenesis imperfecta, and dentinogenesis imperfecta).^{6,20}

Local causes include pulp necrosis, intrapulpal hemorrhage, pulp tissue remnants after endodontic therapy, endodontic materials, coronal filling materials, root resorption, and aging.⁷

Bleaching of discolored teeth, either vital or non-vital, has become one of the highly popular approaches to resolve this problem. Therefore, it is considered as one of the least invasive economical procedure for discoloration treatment.^{7,8,9} Multiple dental bleaching materials have been used for example, oxalic acid, calcium hypochlorite, hydrogen peroxide, carbamide peroxide, and sodium perborate.^{9,19} 30%-35% hydrogen peroxide and sodium perborate either in combination or separately are the most used agents for non-vital bleaching of endodontically treated teeth, in which oxidation reaction and degradation of pigment molecules are resulted.^{10,11,18}

CASE REPORT

A 32-year-old male patient reported to the Department of Conservative Dentistry and Endodontics of the DeshBhagat Dental College & Hospital, MandiGobindgarh with chief complaint of discolored and unaesthetic appearance of his upper anterior tooth. The patient was free from systemic disorders and was not under any medications that cause staining of the teeth. Patient had a history of discoloration of upper anterior teeth from past 15years.

The patient was explained about the treatment of macroabrasion and bleaching for the tooth and informed consent was taken. Preoperative photograph was taken (Fig. 1).

FIG. 1 preoperative photograph



Macroabrasion was done from tooth #13 to #23 with the help of Tapered fissured bur so as to remove the superficial white spots present on the labial surface of upper anteriors (fig. 2)

FIG. 2 macroabrasion from #13 to #23



Isolation with rubber dam was obtained from tooth #13 to #23

Bleaching agent was applied on # 13,12,11,21,22,23 for 15 min and then was rinsed with water (fig. 3)

FIG. 3 application of bleaching agent #13,12,11,21,22,23



Patient was sent home and was advised to use mouthwash twice a day and was recalled after 1 week. Postoperative photograph was taken. (fig. 4)

FIG. 4 postoperative pictures of #13,12,11,21



DISCUSSION

Restoring the dental aesthetics has been considered one of the chief purposes of modern dental medicine. Novel materials and treatment methods are being developed every day to reach this goal.^{12,17} Dental bleaching is a conservative treatment compared to other treatment methods used for treating discoloration, such as, laminate veneers and full crowns. The bleaching mechanism works on the principle that hydrogen peroxide penetrates the tooth and generates free radicals that oxidize the organic stains.^{11,16}

Macroabrasion, as demonstrated in the case presented, is a technique for the removal of localized superficial white stains, simply and quickly using simply a high-speed fine-grained diamond tip to remove the defect. Because it is high speed, care must be taken to use light and intermittent pressure to carefully monitor the removal of the tooth structure. It is an alternative to the enamel microabrasion technique that uses low speed, thus allowing greater control of the worn structure to avoid irreversible damage to the tooth.^{1,12,13} Another advantage is that it does not require absolute isolation to perform the procedure. Refrigeration during macroabrasion is essential, not only to avoid sensitivity due to heating but also to keep the tooth in a hydrated state to facilitate the assessment of defect removal. Teeth that have white stain defects are particularly susceptible to dehydration, resulting in other apparent white stains that are not normally seen when the tooth is hydrated.^{1,15}

CONCLUSION

Nowadays, restorative treatment has achieved high aesthetic standards. Among minimally invasive treatments, dental bleaching has gained importance due to its safety and great aesthetic results. This article aims at highlighting the efficiency of the vital bleaching method along with macroabrasion to attain successful and predictable cosmetic outcome. However, it depends on the endodontist's expertise to proceed ahead with a good case selection and to prevent any post procedural problems that may occur.

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