Re-RCT and Non-Vital Bleaching of Endodontically Treated Teeth –A Case Study

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Abstract: Discolored anterior teeth are often perceived as an esthetic and social detraction, because of increasing needs of looking beautiful. Treatment options for discolored Non-vital teeth are bleaching, crowns or veneers. However, this restorative crown or veneer approach has a significant drawback of being an invasive technique. Intervention should be minimal destruction of tooth structure and should not compromise future restorative options. The advantage bleaching over crown is that it offers simple conservative approach in removal of stain and whitening discolored teeth without damaging tooth structure.

INTRODUCTION

Discolorations can be of extrinsic or intrinsic origin. Several intrinsic and the extrinsic factors can influence tooth color.¹ While intrinsic discoloration of the tooth may be caused following trauma, loss of vitality, endodontic treatment, and restorative procedures apart from known local and systemic factors.²,³,⁴ Extrinsic tooth stains occur due to poor tooth brushing techniques, smoking, dietary intake of tannin-rich foods, excess use of chlorhexidine mouth wash, and/or consumption of metal salts.¹,⁵ The bleaching of nonvital teeth was first mentioned by Garretson in 1895, who used chlorine as the bleaching agent (Fasanaro 1992). However, it wasn’t until 1951 that hydrogen peroxide was used to bleach nonvital teeth (Pearson 1951).⁶ Many techniques have been evolved for the purpose of managing discolored non-vital teeth.⁷ Amongst these techniques inside bleaching is much effective.

CASE REPORT

A 28-year-old female patient reported to the institution with a complaint of discolored upper front tooth and desired the discolored tooth be treated [Figure 1].

On examination, maxillary central incisors teeth were structurally intact and firm. Mild surface abrasion and vitality test was negative. Intra oral periapical radiograph with maxillary central incisors revealed an improper root canal obturation without periapical pathology, as shown in figure 2.

Figure 1. Discolored maxillary central incisors

Figure 2: Pre-operative IOPA showing improper root canal obturation.
Hence, there is a need of performing re-RCT as the above improper obturation may lead to coronal-to-periapical seepage of oral fluids.

Patient was explained about the bleaching procedure and consented for the power bleaching therapy to correct discolored tooth.

Using rubber dam, the tooth to be bleached was isolated and cleaned with pumice and the shade was recorded [Figure 4].

The obturated material was removed from the tooth up to 2 mm below the gingival margin, as shown in fig 3. Stains in the pulp chamber were removed using round bur with the minimal destruction. 1 mm glass ionomer cement was placed over the gutta-percha.

Using 37% phosphoric acid, pulp chamber was etched for 30-60 s, washed and dried, which resulted in the opening of dentinal tubules. Following this, 38% hydrogen peroxide, bleaching agent was mixed into thick paste and placed immediately in the pulp chamber and on the external labial surface of the tooth. After 10-15 min, the tooth was cleansed and the residue bleach inside was removed with water using a high suction unit. The procedure was repeated four times. Following the final wash, tooth shade was evaluated, which matched with adjacent tooth and satisfactory results were achieved.

The access and the partially empty pulp chamber were restored using tooth colored composite resin.

**DISCUSSION**

Different options are used in the treatment of discolored endodontically treated anterior tooth. For a tooth that had discolored following devitalization, bleaching is preferable to the crown placement when the tooth is relatively intact. A sealed root canal filling is an important requirement for allowing an endodontically treated tooth to be bleached off. The tooth must be symptom free.

Prior to bleaching technique, each case should be photo documented, to objectify the results and to make treatment verify.

In this bleaching technique, sodium perborate in mixed with hydrogen peroxide into a paste and then inserted into the access cavity. Hydrogen peroxide releases oxygen that breaks down conjugated bonds associated with the stains into a single bond, which in turn can be washed out with...
water and hence effectively removes the stains. This leads to more absorption of color wavelengths, resulting in tooth whitening effect.

When anterior tooth is discolored and non-vital, but is structurally intact, it should be preferentially endodontically treated with the minimal access cavity opening and using inside and outside bleach. This approach is minimally invasive than complete ceramic, ceramic fused to metal, or veneers, which removes substantial amount of tooth structure, leading to irreversible damage, and are expensive. This kind of bleaching provides good esthetics and economical benefits to the patients.

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%. However, there is a possibility of recurring discoloration, which means that the initial results cannot be considered permanent. Several authors have evaluated the incidence of color regression one to six years after internal bleaching and reported different percentages of darkening. While Holmstrup et al and Brown both reported a success rate of 75% or more after one to five years.

CONCLUSION
The type of intrinsic stain can play a significant part in the ultimate outcome of tooth bleaching, and choice of treatment depends on clinical experience and judgment of dentist in context of patient's circumstances.

REFERENCES