

Masterclass in Clinical Practice

Endodontics with

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Non-vital bleaching for discoloured endodontically treated teeth

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Introduction

Tooth discolouration has varying etiological factors and differs in its severity, location and clinical appearance. Tooth discolouration can be defined as being either of intrinsic or extrinsic origin or even a combination of both factors.

Trauma, aging, pulpal necrosis, resorption, intrapulpal bleeding as well as endodontic and restorative procedures and its associated materials are some of the leading causes of local post-operative intrinsic staining.

Not only does tooth discoloration present an aesthetic concern to the patient, but it also poses a clinical challenge to the dental practitioner. Different bleaching materials and effective treatment modalities to address tooth discolouration are well described in literature.

Non-vital walking bleaching is one such treatment option considered an effective non-invasive endodontic treatment to lighten discoloured non-vital teeth as a result of intrinsic staining. This is achieved by the placement of chemical oxidising agents within the coronal aspect of the tooth.

In this series of "Masterclass in clinical practice" the authors will demonstrate the walking bleaching technique using 35% hydrogen peroxide gel, in combination with vital bleaching, in a discoloured anterior tooth, post endodontic treatment.

Preliminary treatment

- Pre-operative and post-operative clinical photographs to show the patient the results obtained at the end of the treatment is a useful tool to assess the outcome of the treatment (Figures 1 and 2).
- A good quality pre-operative periapical radiograph or CBCT scan is required to evaluate the standard of the endodontic treatment and obturation quality prior to the non-vital bleaching procedure.

Preparation of access cavity and cervical seal

- Apply a rubber dam to protect the adjacent structures.
- Gutta percha in root canal should be reduced 1–2mm below the CEJ (Figure 3a). This can be determined by using a periodontal probe placed in the pulp cavity, while reproducing the corresponding external probing to the CEJ.
- Prepare access cavity and include the mesial and distal pulp horns as they often contain necrotic pulpal remnants which can cause further discoloration.
- Air-polishing with bicarbonate soda powder (Figure 3b) can be useful to remove remnants of restorative and root-filling materials.
- Place a 2-mm layer of glass-ionomer cement (eg. Vitrebond, 3M ESPE) (Figures 3 c-d) up to the level of the CEJ to avoid leakage of bleaching agents into the periodontium.
- Additional conditioning of the dentine surface of the access cavity with 37% orthophosphoric acid (Figure 3e) is suggested to remove the smear layer and to open the dentinal tubules. This promotes enhanced penetration of the bleaching agent deep into the tubules and increases its effectiveness.

Application of bleach and temporary seal of access cavity

- Prior to the application of the bleaching gel, take a scissor and cut small Peli Tim sponges no.1 (Voco) into thin wafers (Figure 4 a-c).
- Dispense some bleaching material (eg. Opalescence Endo,



Figure 1: (a) Preoperative view of patient that presented with a discoloured root canal treated maxillary left central incisor; (b) post-operative view after non-vital bleaching.

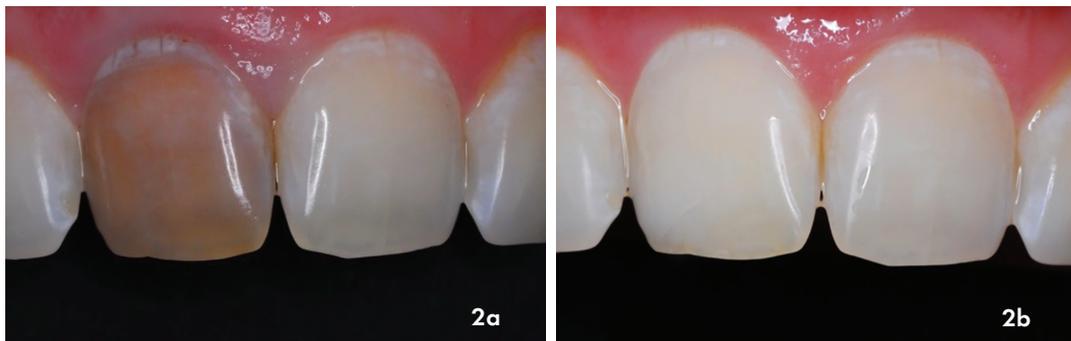


Figure 2: (a) Preoperative view of patient that presented with a discoloured root canal treated maxillary right central incisor; (b) post-operative view after non-vital bleaching.

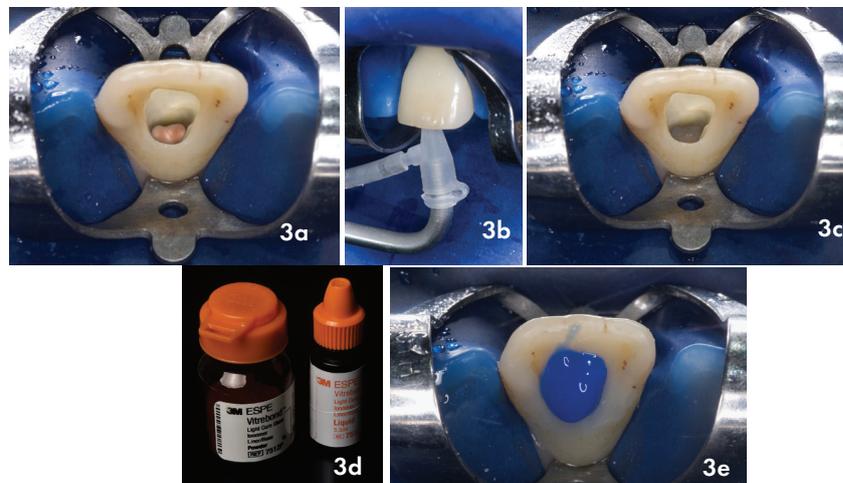


Figure 3: (a) Gutta percha reduced 1–2mm below the CEJ; (b) Air-polishing with bicarbonate soda powder in AquaCare unit (Velopex) to remove remnants of restorative and root-filling materials; (c) A 2-mm layer of glass-ionomer cement (eg. Vitrebond, 3M ESPE) placed to the level of the CEJ; (d) Vitrebond (3M ESPE); (e) Additional conditioning of the dentine surface of the access cavity with 37% orthophosphoric acid.

35% hydrogen peroxide gel, Ultradent) on the facial aspect of the access cavity (Figure 5 a-b)

- Cover the bleaching gel with a sectioned Pele Tim sponges (Figure 5c). Some of the bleach will be absorbed into the porous sponge material.
- Ensure that the bleach does not push up to the access cavity margins and leave enough space for placement of a temporary material in the access cavity. The walking bleach technique requires a sound seal around the access cavity to ensure its effectiveness and to avoid leakage of

the bleaching agent into the oral cavity. This step is key to the success of the procedure and for the rate at which the bleaching takes place. With adequate seal the teeth generally bleach within 24-72 hours.

- The authors recommend to use a capsulated glass-ionomer material (eg. Ketac Molar, 3M ESPE)(Figure 5d-e) to allow for easy dispensing over the saturated Pele Tim sponges. This will ensure limited pressure on the sponge and no contamination on the access cavity margins. After the material has set it is trimmed with a round diamond bur.

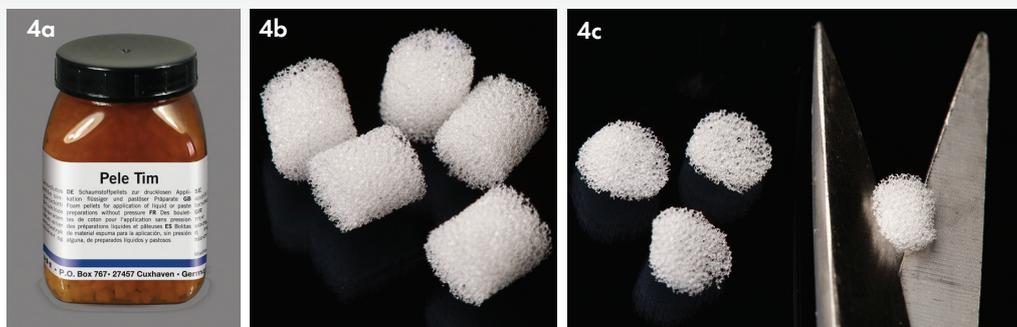


Figure 4; (a) Bottle of Pele Tim sponges; (b) High magnification view of the Pel Tim sponges; (c) Sponges cut into thin wafers with a scissors

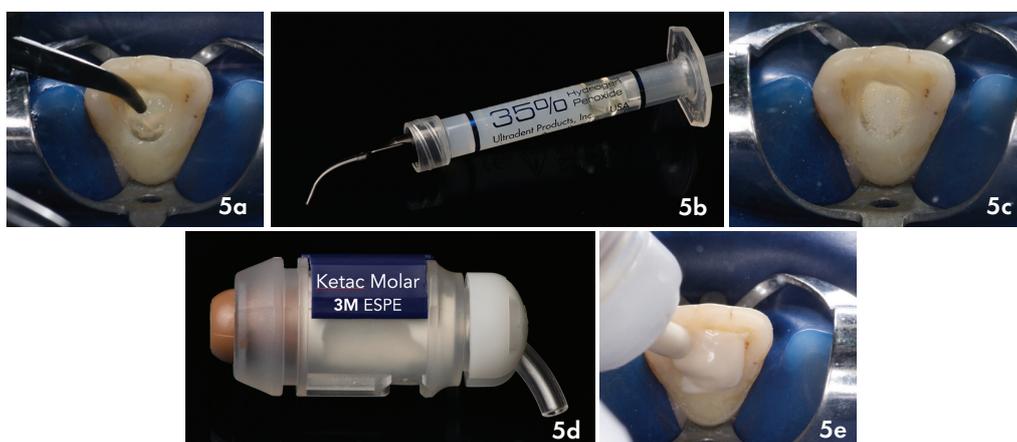


Figure 5:(a and b) OpalEndo, 35% hydrogen peroxide gel (Ultradent) is dispensed onto the facial aspect of the access cavity; (c) Bleaching gel is covered with a sectioned Pele Tim sponges; (d and e) Capsulated glass-ionomer material, Ketac Molar (3M ESPE) is dispensed over the saturated Pele Tim sponges



Figure 6:(a) Postoperative view of patient that presented with a discoloured root canal treated maxillary right central incisor that was over bleached; (b) Preoperative view of patient that presented with a discoloured root canal treated maxillary left central incisor; (b) Post-operative view after “over bleaching” of the maxillary left central incisor followed by vital bleaching of the surrounding teeth to achieve a more aesthetic result.

- Patients should be instructed to evaluate the tooth colour on a two hourly basis and return when the bleaching is acceptable to avoid “over-bleaching”(Figure 6a). In the event of “over bleaching” it would be advised to do vital bleaching on the surrounding teeth in order to achieve an acceptable aesthetic outcome (Figure 6b-c).

Conclusion

In conclusion, non-vital bleaching is a safe, effective and non-invasive treatment option to restore the colour and aesthetics of endodontically treated teeth. Aftercare and regular follow-up visits however remain important to ensure the longevity of non-vital bleaching procedures.