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BLEACHING OF NON VITAL ANTERIOR TOOTH A CASE REPORT

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ABSTRACT:

Aim&Background: Discoloration of anterior teeth can greatly affect a patient's appearance, making it a challenging issue for clinicians. Various treatment options for discolored non-vital teeth include bleaching, crowns, and veneers. Bleaching is a simple and conservative method for eliminating intrinsic stains. The present article reports the successful bleaching of discolored non-vital endodontically tretaed tooth using walking bleach technique,where there was no evidence of reversible discoloration or cervical root resorption.

Case Description: A 30-year-old female patient presented with discoloration in the anterior maxillary region that had persisted for the past 7 years. She provided a history of dental trauma that occurred 8 years prior and noted that she had received root canal therapy one month before. Radiographic imaging revealed radio-opaque structures within the canal spaces of teeth 12 and 11, indicative of prior endodontic treatment. The diagnosis of non-vital teeth was confirmed using an electric pulp tester and cold testing. Conventional endodontic therapy was performed, followed by treatment with the walking bleach technique.

Conclusion: Effective results have been seen, with no return of discolouration and no external cervical resorption concerning the tooth that has been bleached. The walking bleach procedure is a non-invasive, safe, and effective therapy option for treating teeth that have undergone endodontic treatment that are discolored.

Clinical Significance: In contrast to other post-endodontic treatment choices such as complete veneer crowns, non-vital bleaching is considered a cautious approach.On the other hand, non-vital bleaching is a non-invasive treatment. Not only is it less expensive and time-consuming, but most significantly, the patient's natural tooth structure is kept intact.

keywords:Tooth discolouration,walking bleach,non vital

INTRODUCTION:

Dental dyschromia is a discernible and its clinically evident deviation from the typical shade of teeth [1,2]. Patients may get quite concerned about the aesthetic issue that this causes. Teeth colour can vary depending on a number of factors, both internal and external. Physiological aging, drugs, progressive dystrophies, and traumatic events are examples of intrinsic causes. External influences, whether from dietary intake, habits, or both, might have an impact on teeth's external surfaces [3].

One of the primary reasons of a non-vital tooth with discoloration is trauma to the anterior teeth. Bleaching of discolored teeth, whether they are vital or not, has gained popularity in the modern era of cosmetic dentistry. Applying a chemical or bleaching agent to the interior or surface of the tooth is regarded as a conservative therapeutic strategy. To lighten a discolored tooth that has had root canal therapy, non-vital or internal bleaching is utilized [4].

Teeth discolored in the esthetic zone as a result of trauma or endodontic treatment can be conservatively and cosmetically bleached with not vital bleaching methods like the walking bleach procedure, which minimizes coronal tooth structure loss [5]. Four The fundamental idea behind bleaching is the formation of free radicals, which is a powerful oxidizing agent that breaks long-chained, dark-hued chromophore molecules into smaller, less pigmented, and more diffusible molecules [6].

In the current article, the walking bleach technique is used to successfully bleach a discolored, non-vital tooth that has had endodontic treatment.

CASE DESCRIPTION:

A 30 year old female patient reported with the complaint of discoloured and unesthetic appearance of upper right front teeth for the past 7 years. She gave a history of dental trauma that had happened 8 years before and said that she had had root canal treatment done one month earlier. Clinical and radiological examinations were done. Intraoral examination revealed discoloured 11 with no fracture and Radio opaque structure present in canal space of 12,11 suggests they have undergone root canal treatment (Fig 1). A cold vitality test (endo frost) was conducted, utilizing adjacent and opposite teeth as reference points, confirming the tooth's non-vital status. Consequently, a treatment plan incorporating endodontic therapy and walking bleach procedure was formulated.

Fig 1: pre-operative IOPA

Following endodontic therapy in tooth #11, a subsequent appointment was made two weeks later. Access was regained, and the gutta-percha filling was partially removed using a Peeso reamer, stopping 2mm short of the cemento-enamel junction (Fig. 2). A protective barrier of glass ionomer cement (GC Gold Label Universal Restorative Powder) was then placed to seal the gutta-percha and prevent bleaching agent seepage into the cervical and apical areas (Fig. 3)


Fig 2: after removing gutta percha


Fig 3: GIC barrier placement

A bleaching mixture consisting of sodium perborate and 30% hydrogen peroxide was placed within the cavity and compressed using a damp cotton pellet. This was followed by a dry cotton pellet, and the access cavity was sealed GIC. The patient returned weekly for three consecutive appointments, allowing for replacement of the bleaching agent and assessment of tooth color progression. Satisfactory color improvement was achieved after the third visit. Upon completion of bleaching, the sodium perborate-hydrogen peroxide mixture was removed from the pulp chamber, and the access cavity was restored with Filtek Z350 XT composite resin (Ivoclar Vivadent) (FIG 5, 6, 7)."

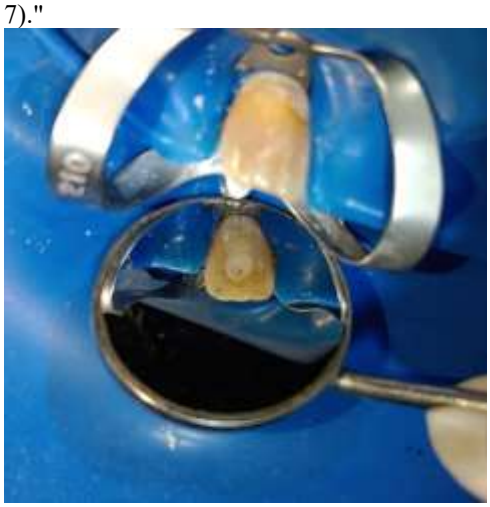
Fig 4: sodium perborate and 30% hydrogen peroxide was placed inside the cavity

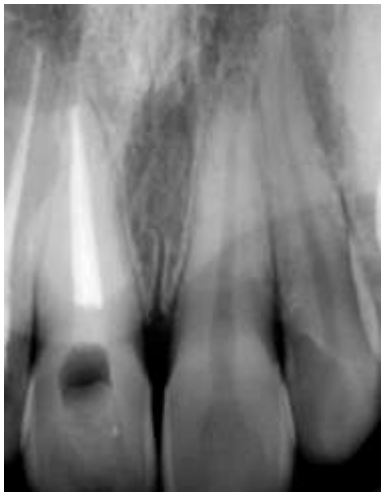

FIG 5: one week later

FIG 6: two week later

FIG 7: three week later

The patient had regular checkups to assess for color stability and the incidence of external cervical resorption. For the purpose of comparison during the next follow-up visits, radiographs were taken. Following a year, the aesthetic outcome was still excellent with no a recur of the discolouration, and the periapical radiograph revealed that there was no external cervical resorption with respect to the tooth that had been bleached.

DISCUSSION:

When a tooth is reasonably intact, bleaching is preferred to crown placement for a discolored tooth that resulted from devitalization [7]. The "walking bleach" approach was first introduced in 1961. It entailed filling the pulp chamber, which was sealed off in between the patient's appointments to the clinician, with a mixture of water and sodium perborate (Spasser, 1961). To increase the whitening effect, the process was later changed and water was substituted with 30–35% hydrogen peroxide (Nutting and Poe, 1963) [8].

In the walking bleach technique, a paste consisting of distilled water, sodium perborate, and 3% hydrogen peroxide (H2O2) is applied within the pulp chamber. The staining agents react with the H2O2 that is released by this combination [9].

Non-vital bleaching has three main benefits: (1) it is more conservative; (2) it is more successful at removing stains; and (3) it greatly enhances the appearance of tooth color.

Following internal bleaching procedures, external cervical resorption is a significant side effect.After trauma and intracoronal bleaching of non-vital teeth, cervical root resorption—an external resorption of the root caused by inflammation—can be seen [10]. By using the appropriate barrier placement techniques, cervical root resorption can be avoided.

By placing the intra-coronal bleach barrier in accordance with Steiner and West's protocol, extra radicular diffusion of the bleaching agent can be avoided. Because the protective barrier produced more aesthetically pleasing outcomes, especially in the cervical region, it was placed 2 mm below the facial CEJ [5].

The literature has suggested numerous examples of additional barriers and barrier materials. Materials such as Cavit, glass ionomer cement, calcium hydroxide, resin-modified glass ionomer cement, and modified zinc oxide eugenol (IRM) are among them. A 2-mm layer of glass-ionomer cement was shown by Rotstein et al. to be efficient in preventing 30% hydrogen peroxide solution from penetrating the root canal. Because of this, using this material as a base during bleaching has the added benefit of allowing it to remain in place and act as a base for the final restoration [8].

On the prognosis of bleached non-vital teeth, multiple studies have been published in the literature. Howell claims that the instant effectiveness rate of walking bleach procedures is 89.5%. It cannot be said that the initial effects are permanent, though, as there is a chance of recurrent discolouration [11]. several authors have examined the frequency of color regression between one and six years following internal bleaching, with varying degrees of darkening observed [11]. A success rate of at least 75% was observed after one to five years by both Brown[13] and Holmstrup et al[12].We saw a success rate of over 90% in this particular example, all without any periapical or color changes to the tooth.

According to certain studies, discolored teeth in younger patients are reportedly easier to bleach than those in older patients. This is probably because the bleaching agent may diffuse more readily via the large dentinal tubules found in younger teeth [14,15]. According to Brown et al. [13], teeth discolored due to trauma or necrosis may be effectively bleached in about 95 percent of instances, however the percentages for teeth discolored due to medicaments or restorations are lower.

CONCLUSION:

Anterior tooth damage may or may not affect the pulp, with or without a fracture. Selecting the procedure, restorative material, and tooth preparation method takes into account the degree of discolouration, the location of the fracture, and the amount of tooth structure lost.

An anterior tooth that is structurally sound but discolored and non-vital should be treated endodontically with preference, employing internal as well as external bleach and a minimum access cavity opening. This method requires less tooth structure to be removed than full ceramic, ceramic fused to metal, or veneers, which are more expensive and remove a significant amount of tooth structure, causing irreversible damage. Patients benefit economically and aesthetically from this type of bleaching. The type of intrinsic stain can have a big impact on how well teeth bleaching turns out, and the dentist's clinical expertise and experience in the patient's circumstance will determine the best course of action.

REFERENCES:

1. Attin T, Paqué F, Ajam F, Lennon A. M."Review of the current status of tooth whitening with the walking bleach technique". International Endodontic Journal vol. 1 Num. 36. January 2003.P.313- 29.
[2]. Oliveira M, Bittencourt JA, Salgado IO, Chaves F. Non vital teeth bleaching: Current considerations. (Blanqueamiento dental en dientes no vitales; Consideracionesactuales) Int J Odontostomatol 2008;2:61–6.
[3]. Durán M, Martínez M, Fabián N. In vivo comparison of the effectiveness of carbamide peroxide and sodium perborate, in non-vital discolored teeth. Universidad Autónoma de Santo Domingo. 2009-01. Thesis. Dominican Republic. 2009. P. 8-81
4.Eiger R. "In Vitro Comparison of Various Types of Sodium Perborate Used for Intracoronal Bleaching of Discolored Teeth". International Endodontics Journal. Vol. 35 Num. 5 May 2002.P. 433-36.
5. Neelakantan P, Jagannathan N. Non Vital Bleaching – A Non Invasive Post Endodontic Treatment Option – A Case Report. Journal of Clinical and Diagnostic Research[serial online. 2012:1-3
6. Dietschi D. Nonvital bleaching: general considerations and report of two failure cases. Eur J Esthet Dent. 2006;1(1):52-61
7. Standlee JP, Caputo AA, Hanson EC. Retention of endodontic dowels: Effects of cement, dowel length, diameter, and design. J Prosthet Dent 1978; 39:400-5.
8. Plotino G, Buono L, Grande NM, Pameijer CH, Somma F. Nonvital tooth bleaching: A review of the literature and clinical procedures. J Endod. 2008;34(4):394-407
9. Ingle J, Bakland: Endodontics, ed 5. Philadelphia, Lea and Febiger,1976
10. Dahl JE, Pallesen U. Tooth bleaching- A critical review of the biological aspects. Crit Rev Oral Biol Med. 2003;14(4):292-304.
11. Howell RA. The prognosis of bleached root filled teeth. Int Endod J. 1981;14:22-26.
12. Holmstrup G, Palm AM, Lambjerg-Hansen H. Bleaching of discolored root-filled teeth. Endod Dent Traumatol. 1988;4:197-201.
13.Brown G. Factors influencing successful bleaching of the discolored root-filled tooth. Oral Surg Oral Med Oral Pathol. 1965;20:238-44.
14. Abou-Rass M. The elimination of tetracycline discoloration by intentional endodontics and internal bleaching. J Endod. 1982;8:101-6.
15.Niederman R, Ferguson M, Urdaneta R, Badovinac R, Christie D, Tantraphol M, et al. Evidence based esthetic dentistry. J Esthet Dent. 1998;10:229-34.