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Research Paper

Management of Discoloration of Teeth by Using Nightguard Vital Bleaching Technique: A Case Report

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ABSTRACT:
Nightguard vital bleaching", this out-of-the-office technique for lightening teeth also has been referred to as home bleaching, matrix bleaching, mouthguard bleaching. This is a simple, apparently safe, and comparatively inexpensive bleaching alternative for patients. The technique involves the application of a mild bleaching agent to the teeth through the wearing of a custom-made, vacuum-formed appliance. The bleaching agent typically employed is 10% to 16% carbamide peroxide.

KEYWORDS: *Carbamide peroxide, Vacuum-formed appliance, Bleaching*

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I. INTRODUCTION

Discoloration of teeth is described as 'any change in the hue, color or translucency of tooth due to any cause'. It can be intrinsic, that is from within the tooth or extrinsic that is externally attached to the tooth surface. The various etiologies of intrinsic tooth discoloration are pulp necrosis, pulpal hemorrhage, pulp tissue remnants, restorative materials, intracanal medicaments, root canal filling materials, dental caries, calcific metamorphosis, root resorption, ageing, genetic, systemic & metabolic disease & drug related causes.Whereas the causes of extrinsic discolorations are food, beverages or smoking related superficial stains, tobacco & its preparation like gutkha, misri etc. For whiter teeth there are number of treatment options, from microabrasion to bleaching, veneers crowns, lumineers[1]. By far the most conservative treatment, which requires no tooth removal is bleaching Literature suggests that bleaching mechanisms of tooth whitening by peroxide occur by the diffusion of peroxide through enamel to cause oxidation and hence lightening of discoloration of teeth, particularly within the dentinal regions. Because of efficiency and simplicity, nightguard bleaching therapy using low concentrations of carbamide peroxide has become a widespread technique to whiten discolored teeth[2].The night guard bleaching technique offers many advantages:self administration by the patient, low cost, high degree of safety, less chair time. Disadvantage of excessive use by overzealous patients is also possible, which frequently causes thermal sensitivity. Other disadvantages are gingival irritation, soft tissue irritation, altered taste sensation.[4] This case report reflects the remarkable change of tooth colour by nightguard vital bleaching technique.

II. CASE REPORT

▶ A 19 year old female reported to Conservative Dentistry & Endodontics with chief complaint of discoloration in front teeth. History of the patient has revealed the presence of yellowish brown patches on the teeth since childhood. She also gave history of drinking water from tube well in her childhood. The patient gave a positive history of staying in Marathwada region of Maharashtra, which is considered to be a part of fluorosis belt in India.

▶ On intraoral examination the discolorations were opaque, non-pitted, generalized with respect to 11,21 and were classified as a moderate variety of dental fluorosis.

➢ With thorough examination & discussing with patient about her expectation regarding treatment & patient had lack of time and not interested to go for in-office bleaching procedure & invasive treatment like porcelain laminates and crown,so microabrasion and macroabrasion followed by nightguard vital bleaching technique was decided as treatment.

➢ Brownish yellow discoloration with 11&21 (Figure1). As a first step a thorough oral prohylaxis was planned for the patient. This helps in removal of any superficial stains, debris and plaque which helps in identifying the intrinsic stains to be treated.

Figure 1: Preoperative view

➢ After oral prophylaxis microabrasion was done using a slurry of 11% HCL and pumice using a rubber cup in a conta-angle handpiece at slow speed (Figure2) and macroabrasion was done using 12 fluted long taper carbide bur(Figure3) was done.

Figure 2: Microabrasion was done

Figure 3: Macroabrasion was done

After microabrasion and macroabrasion procedure there was very little change in degree of discoloration (figure4) so Nightguard vital bleaching technique was planned.

Figure 4: Postoperative intraoral view after microabrasion and macroabrasion procedure.

Upper & lower jaw alginate impression was taken(Figure5). A stone cast is fabricated(Figure6). Nail paint applied on the labial surface of the teeth to be bleached i.e 11 & 21 to form a reservoir for the bleaching agent.(Figure7)

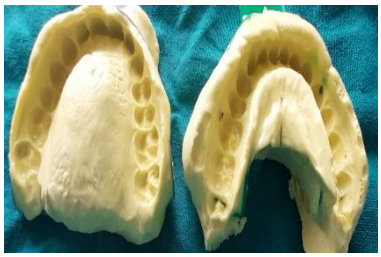

Figure 5:Alginate impression

Figure 6: Dental stone model cast

Figure 7: Reservoir on labial surface with 11 & 21 (0.5mm)

A heat/vacuum tray-forming machine was used to fabricate the nightguard tray. The machine needs to warm up for 10 minutes prior to fabrication of the nightguard to ensure uniform heating of the thermoplastic sheet(Figure8). The nightguard tray was fabricated using a thin 0.09mm soft bleaching thermoplastic sheet(Dentmark)(figure9). Upon softening to the point that the material sags about one inch, the vacuum is engaged, and the heated nightguard tray material (Ethyl vinyl acetate thermoplastic sheet) lowered slowly onto the cast to avoid generating wrinkles or folds in the material. Ample time was given under vacuum for the material to be well-adapted to the cast.

Figure 8: Vacuum/pressure moulding machine.

Figure 9: Ethyl vinyl acetate thermoplastic sheet.

Then nightguard tray is removed from the cast. Sharp, curved, nonserrated scissors is used to trim and refine the periphery of the nightguard. The edge of the nightguard tray extend approximately 2 mm from the gingival crest onto the gingival tissue. (Figure10)

The finalized nightguard tray was trial-positioned in the patient's mouth and closely evaluated for overall fit, tissue adaptation, and retention. Patient is trained to place the gel in the reservoirs for the teeth to be

treated and for the insertion and removal of the tray . The agent used for home bleaching technique was 16% carbamide peroxide(figure11)

Figure 10: BLEACHING TRAY

Figure 11: 16% carbamide peroxide

Instructions for the Patient

- The patient was instructed to clean her teeth prior to the application of the tray.
- The patient was instructed to place enough bleaching agent i.e 1 to 2 drops per tooth to be treated into the tray.
- After seating of the tray, excess bleaching material extruding on to the gingival surface to be carefully wiped away.
- The tray should be worn for a time period of 4 hours for initial 2-3 days and then overnight for 7 days.
- Instructions given to the patient to report back if there is severe pain or any other untoward incident.
- Patient cautioned to reduce the time period if sensitivity is experienced.
- After every bleaching session, the patient was instructed to rinse off the bleaching agent from the surfaces of the teeth.
- The tray should be gently brushed to remove the bleaching agent and stored in cool place or at room temperature until the next use.
- She was also told to self assess the process of bleaching and stop the procedure if the desired effect is obtained.

The next appointment of the patient was scheduled after 2 days, and thereafter recalled every 7th day till 3 weeks. Patient was recalled after 1 week to check sensitivity, gingival irritation and result of bleaching procedure. Patient was asked to continue the same for 14 days**.**

After 1st week Intraoral View

The whole schedule was uneventful and the desired effect for this particular patient was obtained in a 3 week period.

Postoperative intraoral view (After 3 weeks)

Post-operative 3 months follow-up photograph

III. DISCUSSION

This report describes a case of moderate fluorosis(according to Dean classification) of teeth with presence of brownish discoloration on teeth and absence of pitting. Many treatment options are available for tooth whitening. It is important that the patient understand these options and be educated on the best treatment for his or her situation. Home-use whitening treatments contain carbamide peroxide at a lower concentration than in-office whitening treatments. The results achieved are equal to those obtained with in-office treatments, although they take longer to achieve[5]. Office-dispensed whitening agents are available that use custom-fabricated trays, standard trays or preloaded disposable trays. Custom-fabricated trays are usually made with a thermoplastic material and are vacu-formed. These are moulded over a model of the patient's dentition, with or without a spacer between the model and the tray. Using a spacer creates a reservoir for the whitening agent and results in less gel leakage from the tray during use. The tray is trimmed such that it covers the teeth for maximum contact of the whitening agent without impinging on the gingivae, and is either scalloped to mimic the gingival form or covers the gingivae. The comfort and success of these trays depends on a good impression and the fabrication technique[6]. Advantages of custom trays are the intimate fit to the patient's arch and the limited amount of gel that can leak out. Disadvantages include the laboratory/fabrication process, the need for the patient to dose the whitening agent correctly into the tray and the increased cost associated with fabrication of the tray.

Tooth whitening has proven to be safe and effective. The most common side effect is transient tooth sensitivity during the whitening process. With the introduction of whitening agents containing fluoride and/or potassium nitrate, tooth sensitivity has become more manageable[7].

IV. CONCLUSION

Night guard vital bleaching using 16% carbamide peroxide in a custom-fitted tray has proven to be one of the most cost-effective, safe and effective treatments to whiten teeth. The technique initially requires examination, diagnosis and a treatment plan relative to the patient's needs and then continued supervision during the time taken for the patient to bleach his/her teeth.

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