

In Office Teeth Whitening: Case Report

Himanshu Dixit¹, Mayank Bachkaniwala², Shahebaz khan³, Hema Yadav⁴, Varsha Pandit⁵, Jyoti Mandlik⁶

1-4-Postgraduate student, Department of Conservative and Endodontics, Bharati Vidyapeeth Deemed University Dental College and Hospital, Pune, Maharashtra, India. 5,6- Department of Conservative and Endodontics, Bharati Vidyapeeth Deemed University Dental College and Hospital, Pune, Maharashtra, India.

Correspondence to:

Dr. Himanshu Dixit, PG student, Department of Conservative and Endodontics, Bharati Vidyapeeth Deemed University Dental College and Hospital, Pune.
Contact Us: www.ijohmr.com

ABSTRACT

Tooth discoloration is seen commonly due to extrinsic or intrinsic stains. Intrinsic stains can be treated with bleaching, veneers or crowns. The most non invasive and conservative treatment for these stains is tooth bleaching. Now a day's patients demand quick results, so in-office bleaching techniques are getting popular. Till date there are very few in office bleaching agents and light sources available like plasma arc and relatively newly introduced laser light for bleaching purpose. Also self activated bleaching agents are equally effective with minimal adverse effect on tooth structure.

KEYWORDS: In office Bleaching, Pola Office, Discoloration

INTRODUCTION

Tooth whitening can be a very effective way of lightening the natural color of your teeth without removing any of the tooth surfaces. It cannot make a complete color change, but it may lighten the existing shade. In general dental practice tooth whitening known as tooth bleaching procedure.¹

Nowadays the society has been influenced by the picture perfect white smiles in the media. Self-awareness of discolored teeth has risen by color quality of television, movies, electronic and print media. Intrinsic color of the tooth and external stain are in combination responsible for the tooth color.^{2,3} Dentin has major role in intrinsic tooth color because of the properties like light scattering and adsorption.^{4,5} usually Extrinsic stains tend to form in areas of the teeth that are less accessible to cleaning procedure by toothbrush and also associated with smoking, dietary intake of tannin-rich foods (e.g. red wine, tea) and the use of certain cationic agents such as chlorhexidine, or metal salts such as tin and iron.^{6,7} there are various method to remove the surface discoloration which includes the scaling, polishing, whitening toothpastes, bleaching, micro abrasion of enamel, veneers, crowns etc.^{8,9}

Advantages of In Office bleaching:

- Faster bleaching procedure.
- As procedure is under professional, risk factor is eliminated.
- Tooth sensitivity reduced due to use of desensitizers such as potassium nitrate and fluoride.

Disadvantages of In Office bleaching:

- In office, bleaching procedure is most expensive than other bleaching procedure.
- Results can be unpredictable and depend on the factors like age, type of stains etc.¹⁰

Mechanisms Of Tooth Bleaching: The understood mechanism of bleaching by H₂O₂ is diffusion of free radicals produced by H₂O₂ through enamel and dentin, which interact with the pigment and cause whitening effect. The free radicals break down the double between the pigment molecules and change its configuration, because of change in configuration optical properties of tooth get change and tooth appears whiter¹¹. Besides action by radicals, there few another factor responsible for tooth whitening, one is cleaning and polishing before and after bleaching procedure and dehydration of tooth by bleaching agent makes tooth whiter¹².

Final outcome of bleaching influenced by patients age, original shade of tooth color, age, concentration of bleaching agent, time for which bleaching agent exposed to tooth surface etc.¹³

CASE REPORT

A 22-years-old female was referred to the Department of Operative Dentistry and endodontics with the chief complaint of yellowish discoloration of teeth. It was the first time she requested for this cosmetic procedure, and after clinical examination, it was observed that the patient had her teeth only moderately yellowed (Figure 1) with the report of high consumption of coffee & tea. In office, bleaching procedure was then decided for the same patient. First tooth vitality was carried out by using electronic pulp vitality tester for maxillary and mandibular anterior teeth, and all teeth found to be vital. Radiographic examination was also carried out for the same teeth to check the presence of periapical pathologies. After that tooth color shade was verified using a color shade guide (Vita Classical) by visual examination, and the color shade A3 was chosen as the best match with the patient's natural teeth (Figure 3). Oral prophylaxis and polishing were carried out before starting the bleaching procedure. (Figure 2)

How to cite this article:

Dixit H, Bachkaniwala M, Khan S, Yadav H, Pandit V, Mandlik J. In Office Teeth Whitening: Case Report. *Int J Oral Health Med Res* 2016;3(3):70-72.



Figure 1: Pre-operative



Figure 4: Gingidam application



Figure 2: pre-polishing



Figure 5: bleaching gel application



Figure 3: shade selection



Figure 6: Pola bleaching agent

For this patient, Pola Office was chosen. This material contains 35% hydrogen peroxide and potassium nitrate which acts as a desensitizer. All teeth were cleaned using pumice slurry and air dried after that gingival barrier was applied and light cured for 20 seconds (Figure 4). Equal part of bleaching gel and powder was taken and mixed until thick homogeneous mixture was formed and applied over teeth using applicator tip for 8 minutes (Figure 5,6), 2 cycles were performed in 1 session. Bleaching agent removed using air water syringe and suctioned and final polishing was done. The patient was recalled after 10 for evaluation of result and patients tooth shade has now change to A1 (Figure 7). Patient noticed marked improvement in tooth color with more enhanced smile.



Figure 7: post bleaching view

DISCUSSION

Nowadays there are multiple esthetic treatment options available in the field of dentistry, bleaching is one them. There are various brands of bleaching agents with various concentrations are available in the market. Here in this case Pola office bleaching used and it has the most promising outcome. Along 35% hydrogen peroxide Pola office consist of potassium nitrate, so patients post operative sensitivity reduced. Before starting bleaching procedure, proper clinical evaluation and history taking is very important to understand etiological factor responsible for tooth discoloration and degree of discoloration of teeth. Nonvital and traumatic tooth usually looks discolored hence before bleaching procedure electric pulp testing should be done to avoid misdiagnosis and wrong treatment. Dentists may also wish to consider prescribing NSAIDs prior to treatment since post-treatment sensitivity is unpredictable.¹⁴

Pulpal irritation and tooth sensitivity may be higher with the use of bleaching lights or heat application, and caution has been advised with their use.¹⁵ Pola office is self - activated bleaching agent and does not require light for activation or it's optional. High concentration bleaching agent has an adverse effect on underlying pulp tissue. Many in vitro studies have shown that penetration of bleaching into the pulp chamber when bleaching agent has exposed to tooth surface for 60 mins. Hanks et al. concluded that bleaching agent penetration into pulp chamber depends on the original concentration of the bleaching agent and duration for which it has been exposed to the tooth surface, he also concluded that it took around 15 mins for bleaching agent to reach into the pulp chamber.¹⁵ As molecular size and weight of peroxide, molecule is very low and has the ability to denature the protein present in dentin that's why it moves easily through dentinal tubules and reach to the pulp chamber. But in vivo studied shows a reverse result of in vitro studies. In vivo studies by Cohen and Robertson shows either no or very minimal inflammation of pulp when exposed to 35% hydrogen peroxide. The protective mechanism of pulp against bleaching agent is by breakdown of peroxide molecule by enzyme peroxidase and catalase. Anderson reported heameoxygenase 1 enzyme is protective enzyme present in endothelial cell and odontoblasts present near bleached enamel and prevents the diffusion of bleaching molecule into the pulp chamber. Another factor responsible for the diffusion of bleaching molecule into the pulp chamber is positive pressure within the pulp chamber and osmotic pressure of the bleaching agent.¹⁶

CONCLUSION

In-office tooth, bleaching procedure is one of the safe and

fastest procedure for teeth whitening. As per newer bleaching material evolution into the field of dentistry, in office bleaching is safe without any adverse effect on tooth structure when proper concentration is bleaching agent and instructions to be followed.

REFERENCES

1. Mulay S, Band A. Comparative Evaluation of Two in - Office Bleaching Agents Using Two Different Light Sources- In Vivo Study. (IOSR-JDMS) p-ISSN: 2279-0861. Volume 13, Issue 6 Ver. II (Jun. 2014)
2. Watts A, Addy M. Tooth discolouration and staining: a review of the literature. *British Dental Journal* 2001;190:309-16.
3. Joiner A. Tooth colour: a review of the literature. *Journal of Dentistry* 2004;32(Suppl. 1):3-12.
4. Ten Bosch JJ, Coops JC. Tooth color and reflectance as related to light scattering and enamel hardness. *Journal of Dental Research* 1995;74:374-80.
5. Muia PJ. The four dimensional tooth color system. Chicago: Quintessence Publishing Co., Inc.; 1985.
6. Nathoo S. The chemistry and mechanisms of extrinsic and intrinsic discoloration. *Journal of the American Dental Association* 1997;128:6S-10S.
7. Joiner A, Jones NM, Raven SJ. Investigation of factors influencing stain formation utilizing an in situ model. *Advances in Dental Research* 1995;9:476.
8. Sarrett DC. Tooth whitening today. *Journal of the American Dental Association* 2002;133:1535-8.
9. Berman LH. Intrinsic staining and hypoplastic enamel: etiology and treatment alternatives. *General Dentistry* 1982;484-8.
10. Linda dyett, In office teeth whitening professional advantages, option and cost. *Consumer guide to dentistry*.
11. Li Y. Safety controversies in tooth bleaching. *Dent Clin N Am* 2011; 55: 255-263.
12. Tavares M, Stultz J, Newman M, Smith V, Kent R, Carpino E, Goodson J M. Light augments tooth whitening with peroxide. *J Am Dent Assoc* 2003; 134: 167-175.
13. Li Y, Lee S, Cartwright S, Wilson A. Comparison of clinical efficacy and safety of three professional at-home tooth whitening systems. *Compend Contin Educ Dent* 2003; 24: 357-364.
14. Charakorn P, Cabanilla LL, Wagner WC, Poong WC, Shaheen J, Pregitzer R, Schneider D. The effect of preoperative ibuprofen on tooth sensitivity caused by in-office bleaching. *Oper Dent*. 2009; 34:131-135.
15. A.R Benneti et al In vitro penetration of the bleaching agents into the pulp chamber. *Internation endodontic journal* 2004
16. Samira Esteves Afonso Camargo, MSc,* Marcia Carneiro Valera, MSc, PhD, Penetration of 38% Hydrogen Peroxide into the Pulp Chamber in Bovine and Human Teeth Submitted to Office Bleach Technique. *JOE—Volume 33, Number 9, September 2007*

Source of Support: Nil
Conflict of Interest: Nil