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*Vital Teeth Bleaching Treatments with In-Office Bleaching: The Case Reports**

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Case Report

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ABSTRACT

Dental bleaching is one of the preferred treatments by patients to improve facial attractiveness. It is a relatively simple and conservative technique that makes possible to change dental colour by removing discolorations. Four different patients applied to Ankara Universty Faculty of Dentistry for whitening treatment at different times. In clinical examinations, we detected extrinsic discoloration of the teeth. For this reason, we decided to apply office bleaching treatment (Opalescence BOOST, Ultradent Products INC., USA). First of all, measures (gums were covered with gingival barrier (OpalDam Green, Ultradent Products INC., USA), isolation was provided with cotton pellets) were taken to protect the lips, gums and oral mucosa. 40% hydrogen peroxide was applied to the maxillary and mandibular teeth inculuding between the second premolars. After 20 minutes of application, hydrogen peroxide was carefully removed with water and cotton pellets have been replaced. After that, a second 20 minutes application was made with the whitening agent. When the application period was over, it was removed with water and the gingival barrier has been removed. Patients were advised to stay away from products containing coloring dark colors such as cigarettes, tea, coffee, chocolate, red wine, cherries, tomato paste for two weeks. At the controls two weeks later, it was seen that the aesthetic expectation of the patients was met.

Keywords: Hydrogen Peroxide, In-office Bleaching, Tooth Discoloration, Vital Bleaching.

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Introduction

Nowadays, concerns about tooth discoloration have increased[1-3] as more emphasis is being placed on having a ''beautiful smile'' as an expression of health and vitality, mainly by media and dental manufacturers of tooth-whitening products.[4,5] This has increased the popularity of and demand for dental bleaching.[2,3,6] Tooth bleaching is the most frequently requested procedure by patients because it is a highly effective and conservative way to improve the appearance of a patient's smile when compared to invasive restorative treatments.[2] Additionally, dental bleaching increases the oral health–related quality of life.[7,8] In-office dental bleaching has been practiced for more than 100 years and has some advantages over at-home bleaching. In-office bleaching allows close dentist control, avoids material ingestion, and is associated with reduced total treatment time, with great potential for achieving some degree of whitening after one clinical appointment, which enhances patient satisfaction and motivation.[9,10]
The aim of this multiple case reports is to demonstrate the in-office bleaching treatment in vital discolored teeth.

Bleaching procedure

After the whitening procedure was explained in detail, a signed informed consent form was obtained from the patients who applied to the Department of Restorative Dental Treatment of the Faculty of Dentistry of Ankara University with a request for whitening treatment. A photo record of the treatment was taken from the patients. The initial tooth color was measured with the VITA color scale. Color determination was performed with spectrophotometer from the anterior teeth to be whitened and recorded in the patient's file. Before the whitening treatment, the teeth were cleaned with pumice. 40% hydrogen peroxide containing whitening gel (Opalescence BOOST, Ultradent Products INC., USA) for whitening treatment was applied to patients in accordance with the instructions of the manufacturer. In order to provide isolation and protect the tissues, lip retractor, cotton pellets, and dental saliva ejector were used in the treatment. Before the vital whitening treatment, a 1-2 m thick, 4-6 mm wide gum protector (OpalDam Green, Ultradent Products INC., USA) was

applied from the enamel-gum border to the gum to protect the gums and polymerized with an LED light source. Then, the whitening gel in the form of two adjacent tubes was mixed and applied to the buccal surfaces of the teeth to be whitened with a thickness of 1 mm. It was left for 20 minutes. At the end of this period, the gel that lost its effectiveness was washed off with air water spray and removed from the teeth surfaces and the teeth surfaces were dried. After the gingival barrier control, the bleaching agent was applied for the second time for 20 minutes. At the end of the period, the gel that lost its effectiveness was removed with air-water spray and the gingival barrier was removed. After the treatment, tooth color was determined again according to the vita color scale.

Case 1

In the clinical examination of 32-year-old female patient who applied to our department due to the dark color of her teeth, it was determined that her periodontal health was good, no caries were found, and she did not have any pain complaints. It was determined that she did not have any hereditary disease in her anamnesis and did not use any systemic medication. The patient's pre-treatment tooth color was A3 according to the vita color scale. The tooth color of the patient who underwent the whitening procedure was recorded as A1 according to the vita color scale after treatment. (Figure 1,2)

Figure1: Photograph of case 1 before the bleaching treatment

Figure 2: Photograph of case 1 after the bleaching treatment

Case 2

In the clinical examination of 27-year-old female patient who applied to our department due to the dark color of her teeth, it was determined that her periodontal health was good, no caries were found, and she did not have any pain complaints. It was determined that she did not have any hereditary disease in her anamnesis and did not use any systemic medication. The patient's pre-treatment tooth color was A3 according to the vita color scale. The tooth color of the patient who underwent the whitening procedure was recorded as A1 according to the vita color scale after treatment. (Figure 3,4)

Figure 3: Photograph of case 2 before the bleaching treatment

Figure 4: Photograph of case 2 after the bleaching treatment

Case 3

In the clinical examination of 42-year-old female patient who applied to our department due to the dark color of her teeth, it was determined that her periodontal health was good, no caries were found, and she did not have any pain complaints. It was determined that she did not have any hereditary disease in her anamnesis and did not use any systemic medication. The patient's pre-treatment tooth color was A3 according to the vita color scale. The tooth color of the patient who underwent the whitening procedure was recorded as A1 according to the vita color scale after treatment. (Figure 5,6)

Figure 5: Photograph of case 3 before the bleaching treatment

Figure 6: Photograph of case 3 after the bleaching treatment

Case 4

In the clinical examination of 24-year-old female patient who applied to our department due to the dark color of her teeth, it was determined that her periodontal health was good, no caries were found, and she did not have any pain complaints. It was determined that she did not have any hereditary disease in her anamnesis and did not use any systemic medication. The patient's pre-treatment tooth color was A3 according to the vita color scale. The tooth color of the patient who underwent the whitening procedure was recorded as A1 according to the vita color scale after treatment. (Figure 7,8)

Figure 7: Photograph of case 4 before the bleaching treatment

Figure 8: Photograph of case 4 after the bleaching

Discussion

In modern societies, the external appearance of the individual plays an important role in social relations between individuals. As a result, the aesthetic concerns of individuals are increasing day by day. Today, with the development of restorative materials, all kinds of color, shape, position disorders and problems can be easily solved. However, whitening of teeth with color problems by chemical methods is preferred primarily because it is a more conservative procedure.

The agent that is frequently used in the in-office whitening treatment of vital teeth is hydrogen peroxide. Hydrogen peroxide has been scientifically proven to be harmless and it has been reported that there is no harm in the use of concentrations >35%, and it does not pose a toxic or carcinogenic risk to humans.[11] In this study, we used 40% hydrogen peroxide as a bleaching agent.

In order for the bleaching treatment to achieve effective results in a short time, the rate of decomposition of hydrogen peroxide should be increased. Thus, the disintegration of colored molecules by free oxygen radicals is accelerated.[7] For this purpose, various heat and light sources are used in office bleaching applications.[8,10] However, pulpal irritation and tooth sensitivity may occur with the use of light or heat application with whitening agents, so it is recommended to be very careful in heat and light applications.[12,13] Therefore, we did not use any heat light source together with hydrogen peroxide, which we used as a bleaching agent in our study. We did not detect tooth sensitivity in any of our patients after treatment.

In various studies, the average number of in-office visits for whitening has been recommended as 1-6, and the maximum number of bleaching agent applications in one session has been reported as 3.[14,15] In our study, we applied 40% hydrogen peroxide for 20 minutes in 2 sessions in all cases and achieved the desired color at the end of the treatment. Patients were advised to stay away from products containing coloring dark colors such as cigarettes, tea, coffee, chocolate, red wine, cherries, tomato paste for two weeks. At the controls two weeks later, it was seen that the aesthetic expectation of the patients was met.

Conclusions

In office vital tooth bleaching is an effective treatment modality that can significantly change the appearance of teeth. Patient satisfaction has been demonstrated after use of professionally dispensed bleaching treatment. Based on the clinical results reported with professional vital tooth bleaching, it is a viable, esthetic treatment for the discolored dentition its conservative nature and little, if any, risk makes it an important part of an esthetic dentistry treatment plan.

References

1. Shulman JD, Maupome G, Clark DC, & Levy SM (2004) Perceptions of desirable tooth color among parents, dentists and children Journal of the American Dental Association 135(5) 595-604.
2. Joiner A (2004) Tooth colour: A review of the literatüre Journal of Dentistry (Supplement 32) 3-12.
3. Tin-Oo MM, Saddki N, & Hassan N (2011) Factors influencing patient satisfaction with dental appearance and treatments they desire to improve aesthetics BioMed Center Oral Health 23(11) 6.
4. Mehta D, Venkata S, Naganath M, LingaReddy U, Ishihata H, & Finger WJ (2013) Clinical trial of tooth desensitization prior to in-office bleaching European Journal of Oral Science 121(5) 477-481.
5. Pale´ M, Mayoral JR, Llopis J, Valle`s M, Basilio J, & Roig M (2014) Evaluation of the effectiveness of an in-office bleaching system and the effect of potassium nitrate as a desensitizing agent Odontology 102(2) 203-210.
6. Samorodnitzky-Naveh GR, Geiger SB, & Levin L (2007) Patients' satisfaction with dental esthetics Journal of the American Dental Association 138(6) 805-808.
7. McGrath C, Wong AH, Lo EC, & Cheung CS (2005) The sensitivity and responsiveness of an oral health related quality of life measure to tooth whitening Journal of Dentistry 33(8) 697-702.

8. Meireles SS, Goettems ML, Dantas RV, Bona AD, Santos IS, & Demarco FF (2014) Changes in oral health related quality of life after dental bleaching in a double-blind randomized clinical trial Journal of Dentistry 42(2) 114-121.
9. Tay LY, Kose C, Loguercio AD, & Reis A (2009) Assessing the effect of a desensitizing agent used before in-office tooth bleaching Journal of the American Dental Association 140(10) 1245-1251.
10. He LB, Shao MY, Tan K, Xu X, & Li JY (2012) The effects of light on bleaching and tooth sensitivity during in-office vital bleaching: A systematic review and meta-analysis Journal of Dentistry 40(8) 644-653.
11. Weitzman SA, Weitberg AB, Stossel TP, Schwartz J, Shklar G. Effects of hydrogen peroxide on oral carcinogenesis in hamsters. J Periodontol 1986;57:685-688.
12. Buchalla W, Attin T. External bleaching therapy with activation by heat, light or laser—a systematic review. Dent Mater 2007; 23: 58696.
13. Baik JW, Rueggeberg FA, Liewehr FR. Effect of lightenhanced bleaching on in vitro surface and intra pulpal temperature rise. J Esthet Restor Dent 2001; 13: 370-378.
14. Auschill TM, Hellwig E, Schmidale S, Sculean A, Arweiler NB. Efficacy, side-effects and patients' acceptance of different bleaching techniques (OTC, in-office, at-home). Oper Dent 2005; 30: 156-163.
15. Matis BA, Cochran MA, Wang G, Eckert GJ. A clinical evaluation of two in-office bleaching regimens with and without tray bleaching. Oper Dent 2009; 34: 142-149.