

POWER BLEACHING – A SOLUTION FOR DISCOLOURED TEETH

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Bleaching is an effective method for restoring the colour of the discoloured teeth. It is a safe procedure with few side effects, and is much less invasive than other techniques such as veneering or crowning of teeth, which require tooth preparation. This article focuses on the in office bleaching method called power bleaching with discussion of two cases using this method.

KEY WORDS: Vital Bleaching, Hydrogen peroxide, Silicondioxide. Discoloured teeth, Sensitivity

INTRODUCTION

Discoloration of teeth is a cosmetic problem that is often the patient's primary concern. Although many restorative procedures are available, discoloration can often be corrected totally or partially by a more conservative approach i.e. bleaching, which is relatively simple to perform and less expensive. Bleaching has become an integral part of esthetic dental service, recently becoming the single most requested esthetic procedure for adults.¹ Tooth bleaching accounts for the majority of the more than 60 million cosmetic dental procedures performed in the United States every year. In olden days bleaching was done by means of a liquid of 35% hydrogen peroxide and the application of heat. This was very laborious for the patients and the dentist. There are three forms of vital bleaching: clinically administered, dentist supervised, and dentist prescribed at-home bleaching.² Clinically administered bleaching is also referred to as in-office or power bleaching. The introduction of the faster and safer light-activated units for power bleaching has popularized the in-office technique. **BEYOND** (Beyond Dental & Health USA Inc) is one of the successful commercially available power bleaching systems in which the harmful ultraviolet light and heat are filtered out and a Powerful 150 watt halogen bulb emits a high-intensity blue light (480-520 nanometers wavelength) for faster whitening results is utilized. The advantages of this system include increased

patient comfort levels and decreased risk of developing tooth sensitivity.

Armentarium (Fig.1)

- Polishing *sand*
- Lip protection *cream*
- Cotton rolls and swabs
- Gauze face cover
- Syringe light-cure gingival protection dam with tip 1.0ml
- Bottle 35% *hydrogen peroxide*
- Silicon dioxide catalyst
- Mixing spatula & brush
- HVE Tip
- 1.1% Neutral sodium fluoride gel
- Cheek retractor
- Light curing unit
- VITA Shade guide
- Dual barrel syringe Beyond whitening gel

Case report 1

A 24 year old male patient came to the Department of Conservative Dentistry with a chief complaint of discoloration of his teeth (**Fig.2**). The patient's medical history was noncontributory. Extensive clinical and radiographic examination was done, a diagnosis of dental flourosis was

established. Treatment options were considered and the power bleaching suited the condition aptly. Pre operative photographs were taken, the shade was assessed using a vita shade guide and the shade was found to be D3. protective eye goggles were worn by the patient to avoid any harmful effect by the light used for power bleaching. Polishing sand was applied to the teeth prior to the application of moist gauge and face cover. Lip protection cream was applied on to the lips. The cheek retractor and the cotton rolls were placed. The gingival protective dam was placed along the cervical margins of the teeth (**Fig.3**) using the tip attached to the syringe available in the kit and light cured to stabilize the dam in the place. A fresh mix was prepared by mixing, 35 % hydrogen peroxide and silicon dioxide catalyst and the mix was applied on to the teeth using a brush(**Fig.4**). A 2 mm layer of whitening agent was applied on the incisors canines and first premolars as the smile line was extending upto the first premolars. The high intensity blue light emitted was kept for 8 minutes(**Fig.5**). The unit automatically turned off after 8 minutes as the cycle completed. Post bleaching instructions were given. The post treatment photographs shows the desired result(**Fig.6**)

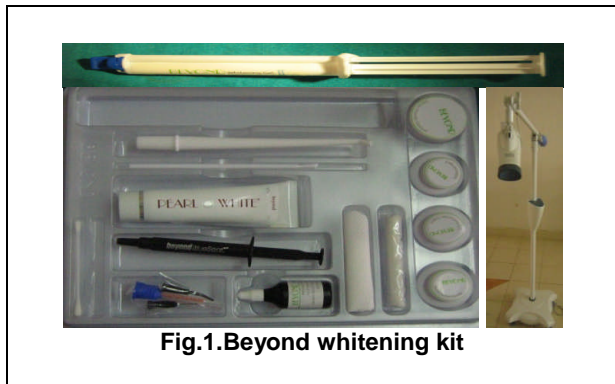


Fig.1. Beyond whitening kit

Case report 2:

A 19 year old male patient visited the dental clinic with the chief complaint of discoloration of his teeth and wanted the treatment(**Fig.7**). Patient's medical history was noncontributory. Extensive clinical and radiographic examination was done; a diagnosis of dental flourosis was established. Treatment options were considered and the power bleaching suited the condition apply. All the steps of power bleaching as mentioned in the case 1 were performed and a satisfactory result was achieved as illustrated below. (**Fig.8 and Fig.9**)

Discussion

In office bleaching has various names like chairside bleaching, power bleaching, laser bleaching, dentist administered bleaching, and dentist supervised bleaching.^{3,4}

There are various materials available for power bleaching⁵

1. 35% hydrogen peroxide liquid, liquid/powder products or gels called power gel or laser gel
2. 35% Carbamide peroxide
3. Dual activated bleaching systems.

The Beyond Power Whitening system utilizes a proprietary 35% hydrogen peroxide bleaching gel that has a pH of about 5.5. The protocol for the Beyond whitening system includes the use of a halogen bleaching light (named the "Power Whitening Accelerator"). When the light is placed into position, it is capable of simultaneously illuminating all of the patient's teeth being treated (both upper and lower). The wavelength of the light emitted from this unit is in the range of 480 to 520nm (meaning that the light has a blue-green coloration). The company suggests that the use of their bleaching light assists with the effectiveness of their bleaching gel and therefore the tooth whitening process as a whole.

Indications for power bleaching⁵

- 1: Developmental or acquired stains
- 2: Stains in enamel or dentine
- 3: For removing yellow or brown stains
- 4: Age - yellowed smiles
- 5: For blending white color changes
- 6: Mild to moderate tetracycline stains.

Our cases were indicated for power bleaching as mentioned above.

Advantages of power bleaching⁵

1. Patient prefer power bleaching over home bleaching because
 - They do not have time for home bleaching.
 - Inability to tolerate wearing the trays.
 - Gagging reflex
2. Less teeth sensitivity
3. Less procedure time
4. Immediate results

Case report 1



Fig .2.Pre operative photograph with vita shade guide showing D3



Fig .3.Application of gauge and face cover



Fig. 4. Light cured gingival protection dam and the application of whitening agent

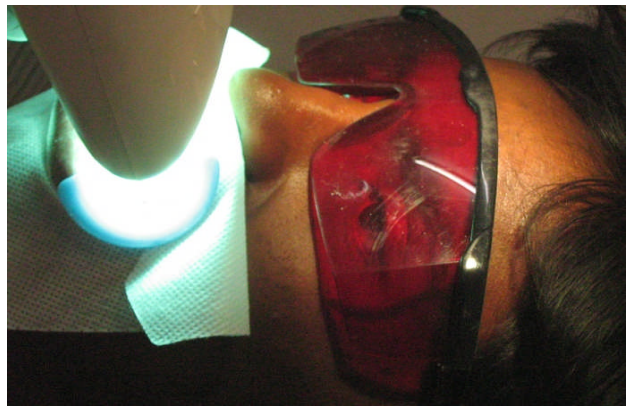


Fig .5. Intensifying light directed at 90 degrees with protective eye wear to the patient



Pre Operative Photograph



Post Operative Photograph

Fig.6.D3 shade to A1 shade

Case report 2

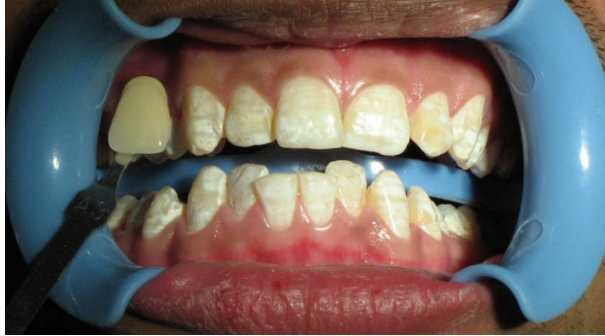


Fig.7. Pre operative photograph



Fig .8. Light cured gingival protection dam and the application of whitening agent



Pre Operative Photograph



Post Operative Photograph

Fig.9. A3 shade to B1 shade

Disadvantages of power bleaching⁵

1. Expensive
2. Frequent appointment needed
3. Dehydration of teeth leading to false evaluation of shades
4. Caustic effects on the oral tissues
5. Dental assistants also subjected to tissue burns during handling
6. Short shelf life of hydrogen peroxide
7. Greater cost of retreatment compared with home bleaching

Mechanism of action of power bleaching

This technique works by lightening the enamel to give appearance of whiteness.⁶ The exact mechanism is still unknown, but various theories are given in literature. One theory suggests that large organic molecules responsible for stains are reduced to less noticeable molecules by process of oxidation. Hydrogen peroxide acts as an oxidant and an oxygenator. Stain removing process is selective with lesser side effects⁶. Another theory is that peroxide penetrates into enamel and dentine and oxidizes tooth discoloration. The passage of nascent oxygen into the tooth structure occurs first in enamel and then in dentine.⁷

CONCLUSION

We presented treatment of discolored teeth by new in office bleaching technique called as Beyond which is a type of power bleaching. Power bleaching provides a white healthy smile in a short span of time with limited shortcomings. Power bleaching is latest in cosmetic smile technology and is overcoming the limitations of home bleaching.

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