

Improving Esthetics of Discoloured Teeth Using Opaquers Under Direct Composite Resin Veneers

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Abstract

The desire for aesthetics in our society has spawned the development of dental materials that provide the strength for function and the appearance of natural teeth. Discoloured anterior teeth as a result of previous trauma are encountered often in dental clinics. Because of high cost and the need for greater tooth structure removal, full coverage crowns are not the preferred treatment option for most patients. An alternative conservative treatment option is to restore such teeth with full veneer preparations using direct composite resins where the dark colour is masked by the use of an opaquer. This paper presents a treatment modality for discoloured teeth and discusses its problems and solutions.

Key Words : Opaquer, Veneer, Discolored teeth

Introduction

Knowledge of dental materials and their application, hand skills and an artistic eye are necessary to restore proper contour, shape and surface texture to the involved teeth.¹⁻⁴ These requirements are especially demanded when the procedure involves a dark background such as the conservative restoration of a dark tooth.^{5,6} Direct

composites are currently used successfully for the correction of minor esthetic defects such as unsightly anterior teeth with poor color and shape, faulty restorations, and minor lack of alignment.⁷ Direct composites have inherent limitations when it comes to their opacification ability. Opaquers are fluid dimethacrylate resins, typically light cured, that contain strong pigments to give them a distinct hue, saturation and opacification potential. Opaquers are used to mask a dark axial wall that would otherwise be visible or to incorporate subtle tones in the restoration. Without the use of opaquers, a thicker increment of restorative material is necessary to mask the dark colour of the tooth. This can be achieved by either cutting more tooth (increasing the depth of the preparation) or by overcontouring the restoration.

The purpose of this article is to describe the use of opaquers (masking agent) when restoring a discolored tooth with a composite resin veneer.

Case Report

A 30 year old female patient reported to the department of Conservative Dentistry with the chief complaint of having discoloured teeth in the front region of the mouth (fig. 1). On examination it was

noticed that:

- the maxillary lateral incisors on both sides were discoloured,
- all four maxillary incisors and both canines had horizontal abrasion lesions in the middle third of the crown,
- the abrasion lesions on maxillary lateral incisors were restored with glass ionomer cement, and
- both maxillary lateral incisors had been root canal treated 2 years back.

All the possible treatment options were discussed with the patient including:

- non-vital bleaching (walking bleach) for lateral incisors
- ceramic veneers
- full coverage restorations (crowns).

Because of the economic reasons and time constraints, we decided to restore the teeth conservatively with direct composite resin veneers since the crown portion was intact, under the guidelines of minimal intervention dentistry.

After proper isolation with rubber dam and protection of the gingival tissue with retraction cord, tooth preparation was started. A full veneer preparation that was restricted only in enamel was done on the lateral incisors, while a window preparation was done on the central incisors and canine

COMMON ERRORS WHEN USING OPAQUERS	CAUSES	MANAGEMENT
1. Grayish surface tone	<ul style="list-style-type: none"> • inefficacy of the opaquer to mask a dark background, or • insufficient amount of opaquer 	<ul style="list-style-type: none"> • a strong opaquer should be selected and applied in appropriate amounts • opaquer should mask not more than 70% of the dark tooth area.^{10,11}
2. Matte surface	<ul style="list-style-type: none"> • opaquer too strong for the selected case • Opaquer too close to the surface of the tooth • Excessive amount of opaquer 	<ul style="list-style-type: none"> • strong opaquers can be diluted with Bis-GMA or fluid resin, without any solvent • Invest the opaquer with a layer of hybrid or microhybrid composite that has a minimum thickness of 0.3 mm • 2 thin layers of opaquer should be applied with a brush, or • use a strong opaquer
3. Spotted surface	<ul style="list-style-type: none"> • nonuniform application of the opaquer to the dark axial wall of tooth preparation. 	<ul style="list-style-type: none"> • Apply opaquer carefully • Step-away 1-2 m from the tooth to have more general view of working field

Table No.1: (Adapted from Felipe LA et al. Using opaquers under direct composite resin veneers: An illustrated review of the technique. *J Esthet Restor Dent* 2003; 15:327-337.)

teeth (fig. 2).

Following tooth preparation, the individual prepared teeth were isolated with mylar matrix strips and adhesive protocol was started with one tooth at a time. Each tooth was etched with 37% phosphoric acid for 15 seconds and washed with distilled water for 10 seconds and dried gently. Two coats of one-bottle adhesive system (Adper Single Bond, 3M ESPE, St. Paul, MN, USA) were applied and light cured for 20 seconds. For masking the discolouration on the lateral incisors, a uniform coat (0.25 -0.5 mm) of a universal masking agent (Masking agent: Universal shade, 3M ESPE, St. Paul, MN, USA; fig. 3) was applied and light cured for 20 seconds.

Each tooth was then restored with direct composite resin of appropriate shade (Filtek™ Z250 Universal Restorative, 3M ESPE, St. Paul, MN, USA). The restorations were then finished and polished using disks (Sof-Lex™ Pop-on, 3M ESPE). The rubber dam and retraction cord were removed. The patient was satisfied with the treatment done (fig. 4).

Discussion

Composite resins have been proved to have many excellent aspects, such as reduced cost, versatility, advantageous chairside control, and potential for repair.⁸ The technique presented in this article

offers an esthetic and extremely conservative solution for the restoration of dark anterior teeth. This technique is adequate only for selected cases in which it is possible to increase tooth thickness or to create slight overcontour of about 0.3 mm and not compromise periodontal health.⁹ The common errors that are encountered while using opaquers and their possible management has been listed in table no.1. The mentioned errors should be avoided while doing such restorations by appropriate case selection and vigilant treatment planning.

Conclusion

For restoration of the discolored teeth, the use of composite resin veneer along with a masking agent/opaquer as described in this article, presents a conservative treatment option to restore a tooth's color with minimal tooth preparation. Thorough knowledge of principles of esthetics and adequate skill of application of newer restorative materials cannot be underemphasized.

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Legends

- Fig. No.1: Preoperative photograph
- Fig. No.2: Tooth preparation
- Fig. No.3: Masking agent, opaquer
- Fig. No.4: Postoperative photograph

