



DIRECT RESTORATIONS OF ANTERIOR TEETH: A REVIEW

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ABSTRACT

The demand of direct restorations is increasing nowadays. Direct composite resin bonding procedures are growing in popularity as conservative and predictable restorative treatment alternatives. It not only has a good success rate but also is aesthetic for patient. This article tells us about the different type of composite available for us and its proper application in clinics.

Key words: Composite, Direct, Types of Composite etc.

INTRODUCTION

Significant improvements in composite resin technology have occurred in past few years [1]. Various new composite resin systems have been developed in response to clinicians increasing demand for materials with enhanced physical properties and aesthetics. These materials contain more diverse ranges of shades with greater mechanical properties. The development of these composite materials has provided clinicians with the ability to directly restore fractured and misshapen teeth and to repair defective enamel. Direct resin veneers are recommended as an immediate treatment option for patients who will eventually require extensive restoration [2]. Since preparation for direct veneers is often conservative and minimal and if any tooth structure is removed, these materials can often be used to augment the existing tooth structure with clinically reversible results. The use of composite restorations is also indicated for the treatment of younger patients with immature gingival crests. Limitations associated with direct resin veneer restorations include increased chair time and the necessity for a high-quality aesthetic composite resin system. A comprehensive understanding of material strengths and characteristics is required for successful application, and the oral habits of the patient must be identified prior to treatment [3].

Types of Composites

Hybrid Composites

In extensive restorations, the hybrid composite is the first layer that contacts the natural tooth structure [4].

This material is highly filled with ground particles and is the material of choice for posterior restorations. Hybrid composite materials can be successfully used for the restoration of Class IV anterior restorations and any restoration where a high amount of stress is anticipated. The radiopacity of hybrid materials is particularly important during the placement of Class II posterior restorations to radio-graphically determine if the margin is sealed or becomes decayed in the future. These restorations are contraindicated for the treatment of Class III and Class V defects and in labial veneers that require a high surface polish [5]. Hybrids have high compressive strength and tensile strength. Hybrid composites are available in opaque and translucent shades. Translucent materials are ideal for the restoration of incisal edges, and opaque hybrid composites have the ability to mask darkness in the underlying tooth structure. This opaque material effectively restores the dentin layer of the tooth [6].

Microfill Composites

It is used as the surface layer for anterior restorations. Microfill composite are less highly filled, have smaller particle size and are less fracture resistant. The inorganic filler of most microfilled composite systems is colloidal silica [7]. Microfill composites are generally filled with inorganic filler materials at approximately 50% by weight. Microfills are also more translucent. Incisal shades of microfill resin should be selected if incisal translucency is required to replicate natural tooth structure. It is indicated for anterior restorations that require a high

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polish i.e. Class III, Class V, small Class IV and labial veneers. They should not be used for restorations that undergo heavy loading i.e. large Class IV composites, posterior restorations and core buildups [8].

Tints and Opaquers [9]

Tints and opaquers are used for intrinsic staining and characterization of the composite restoration. Opaquers are highly pigmented, light cured liquids that can be used to conceal dark tooth structure, translucency and metal and even to change color. Incisal translucency is simulated using violet, gray and blue tints. Slight gingival shade change can be accomplished with brown, orange, or honey-yellow tints. A complete composite restorative system should include an enamel and dentin replacement, tints and opaquers.

Clinical Technique

First of all the shade of the tooth should be determined [10]. A color map should be made to indicate the intended shade of the gingiva, middle and incisal thirds. The clinician should then decide the amount of incisal translucency, opacities, stains and additional optical features necessary to provide a natural, aesthetic result. A deep facial reduction (0.75 mm to 1 mm) should be performed to simulate deficient clinical teeth and enable subsequent restoration with the hybrid and microfill composite layering technique. The incisal edge can also be reduced by 1.5 mm to simulate a deficient incisal aspect and demonstrate the creation of proper translucency [11]. The preparation should extend halfway into the contact area. Restoring one tooth at a time allows the clinician to develop a more ideal inter-proximal contact area and overall shape and contour. The indicated tooth should be isolated using a matrix band or plastic strip and then be acid-etched; an adhesive agent should subsequently be applied. A cylinder of hybrid composite is then added to the tooth and evenly distributed. Care must be taken not to over contour the inter-proximal areas. This hybrid layer is applied using a composite instrument and dentinal lobes are established [12]. The violet tint can be added to the lobe concavities and inter-proximal region to provide a more translucent effect prior to polymerization. Sufficient space should be left on the facial aspect for subsequent placement of the microfill layer following application of a translucent hybrid on the incisal region. The body and incisal regions of the hybrid layers are light cured for 20 seconds; a brown or yellow tint may be added to the cervical one third to provide a more natural appearance. A cylinder of body shaded microfill resin can then be placed over the entire facial surface. The material should be placed in one increment and evenly spread out to avoid air entrapment that may result in white lines and pits on the

final surface [13]. The composite material should be directly applied to the adjacent tooth without the use of a plastic strip. If the adjacent tooth is highly polished, the composite material should not adhere to this region and a very tight and natural contact will be achieved. If the restorations are not highly polished inter-proximally, the composite material will stick together and result in chipping or a poor contact area. While a smooth surface is desirable, a thin plastic strip can be used to provide sufficient surface smoothness if a rough or unpolished surface exists.

The body microfill must be thinned and sculpted at the incisal one third to provide space for the incisal layer. A thin coat of unfilled resin can subsequently be placed and the translucent incisal microfill can then be added. Care should be taken to push the incisal microfill into the grooves to again avoid pits in the final restoration. The restoration must be completely light cured from all directions prior to contouring, finishing and polishing. A football-shaped carbide bur should first be used to contour the lingual aspect. The facial contours are created with a flame-tipped carbide bur and the coarse finishing disc, which can also facilitate even reduction of the composite surface [14]. The tooth thickness and the position of the incisal edge are then established. The tooth should be viewed incisally to verify the accuracy of the three planes of facial contour. Once the basic tooth shape is established, the line angles and heights of contour should be created. The incisal embrasures should be equivalent from right to left, and a successively larger incisal embrasure space from the central incisors that increases in size to the premolar region should be evident. The gingival embrasures should also be symmetrical. In order to maintain the contours during the polishing process, a smooth facial surface should be created prior to the establishment of facial dentinal lobes or developmental depressions. The coarse polishing disc should be used to initiate the polishing sequence, followed by the medium, fine, extrafine and superfine polishing discs. A successive series of smaller and smaller scratches should be created until they finally disappear and leave a highly polished surface. The subtle surface characterizations should be evaluated and a high polish should be established on the final surface layer [15]. Once this restoration is completed, the same process would be followed for the adjacent tooth.

CONCLUSION

Optimal clinical success can be accomplished by use of composite layering techniques, tints and opaquers and contouring and polishing protocols. Sometimes the direct resin restoration may be difficult and frustrating but care should be taken while performing with them so that it can benefit the patient.

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