COMMENTARY

Translucency of Value Resin Composites Used to Replace Enamel in Stratified Composite Restoration Techniques

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Achieving appropriate levels of translucency is a key factor in creating imperceptible direct restorations especially in challenging clinical situations where the natural adjacent teeth show high characterizations such as bluish or grayish areas of incisal translucencies and halo effects. To replicate these characterizations or simply to achieve a good blending or chameleon effect, clinicians need to be familiar with the shades as well as the various translucencies and opacities of the composite resin systems.

The use of the "layering technique" facilitates the placement of composite layers in a natural way, replicating the level of translucency of the adjacent tooth structures to create an esthetic and harmonic optical effect especially in cases of high esthetic demands.[1] This technique commonly uses high or medium opacity materials to replace dentin and more translucent enamel materials to replace enamel. In some composite systems the traditional enamel shades have been modified in an attempt to reproduce better enamel properties as explained by the authors of this article. These shades provide a range of high value and low chroma that allows the highly chromatic dentin to shine through. These enamel shades are known as value resin composites.[1]

This study evaluated the influence of the enamel layer thickness and value on the translucency of high, medium, and low value resin composites (4 Seasons, Ivoclar Vivadent, Schaan, Liechtenstein). The main results showed that value slightly affects translucency but that thickness of these enamel layers has a greater influence on translucency affecting the final appearance of the restoration. They also found that high value composites are more translucent than medium and low value composites regardless of the thickness. Schmeling and colleagues[1] discussed in a previous article that translucency can also be affected by the fillers, dyes, and other chemicals. Therefore, highly chromatic shades were associated with lower translucency. These observations, within the limitations of an invitro study, provide relevant information about the properties and characteristics of value enamel shades and how the thickness variation can significantly affect the esthetic outcome of the restorations.

It would have been interesting to add other manufacturers' enamel composite shades as a comparison in this study. Ryan, Tam, and McComb[2] have recently reported a wide range of variation in translucency values between different products. They also compared these values with natural human enamel and dentin translucency. Da Costa and colleagues[3] had also reported significant variations in color and opacity of several composite bleaching shades. This information may be helpful to the clinicians in the selection of a specific composite system and its correct use in different clinical situations.

The authors clearly discussed the limitations of this in vitro study. Many other factors may also affect the translucency of the enamel composite materials, including surface morphology, moisture, light source, and polymerization. The use of the 4 Seasons system from Ivoclar Vivadent provided the opportunity to better understand value enamel shades and

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their effect on translucency. This composite system has been recently replaced with IPS Empress Direct (Ivoclar Vivadent, Schaan, Liechtenstein) with stated improved optical properties. Future studies using this new system as well as other new composite systems would be beneficial to get a better understanding of the optical properties of the various shades, and therefore facilitate their clinical use in the layering technique.

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