Egyptian Prosthodontic Association
(EPA Newsletter)

Shade Reproduction in Laminate Veneers Challenges & Practical Solutions

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Challenge in laminate veneers preparation lies in maintaining a conservative preparation within enamel while obtaining a predictable change in the final shade of the teeth is a complex procedure. In addition, effective masking underlying tooth color to satisfy the popular demand of patients for lighter teeth, further complicates the procedure. (1)

The Triology of Veneers shade.

"The ceramic, substrate & cement"

The Ceramic used for fabrication of laminate veneers plays a key role in the determination of the final shade. Two main criteria are considered, which are the optical properties of the used ceramic especially the translucency whether high or low (HT & LT), in addition to its thickness. These criteria are very critical especially when alteration of shade to a lighter one or masking of underlying discolored tooth structure are required, where substrate masking with 1.5 or 2mm of ceramic thickness is an easier task, challenges are present in case lower thicknesses. (2)

Increasing ceramic thickness dictates more preparation for the tooth structure which may deprive it of its main advantage which is conservation of tooth structure. (3)

The substrate tooth structure or the abutment color (fig.1) under the veneer has a significantly detectable clinical effect, especially when the ceramic is reduced to range of thickness of 0.4 to 0.7 which commonly used for laminate veneers fabrication. (4)

A special shade guide is used to record the shade of the underlying substrate or abutment color referred to as ND shade guide (fig.2).

The cement is the third part of the shade trio, which can help to determine to determine the final veneer shade and also can be used for masking underlying tooth discoloration. Three criteria affect the role of the resin cement used in cases of veneers which are the nature of its polymerization process (light or dual cured), the color of the cement and the cement layer thickness. (5)

Light cured resin cements are particularly used for cementation of laminate veneers due to this color stability after curing, compared to that of dual cured resin cements. Another factor that complicates the process of resin cement selection, which is the difference between manufacturers, as cements could have the same nominal shade but can clinically alter the final shade of the laminate veneers. (6)

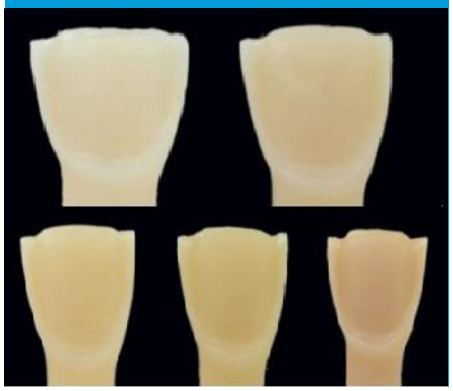

Fig.1: Abutment colour after laminate veneer preparation

Fig.2: ND shade guide used to record the abutment or substrate color after preparation

Adjustment of the Veneer shade.

"Solving the dilemma of the trio"

Dealing with the previously mentioned factors requires knowledge of the impact of each factor on the final colour or shade. Practical and clinical tools were introduced to the dental practice to help in integration of ceramic, substrate and cement together.

Manufactures of ceramics started to introduce applications like shade navigation app SNA (Ivoclar Vivadent, Switzerland) (fig 3 a & b). The mobile app takes into account desired final shade, preparation shade, material thickness, type of restoration and type of material to provide the best possible match.

Simply input the parameters, and the app calculates the ideal material choice. This saves the dental technician time in the early steps of fabrication and drastically reduces the chances for costly remakes due to shade mismatch upon seating.

Another tool that helps in solving the dilemma is the cement try in paste that is provided by the resin cement manufacturers, with the same final shade of the light cured resin cement.

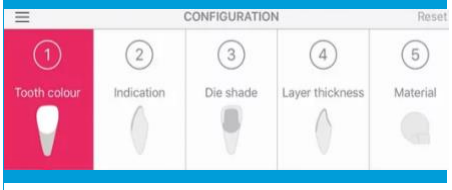

Fig 3a: User interface of SNA mobile app showing different inputs entered in the app.

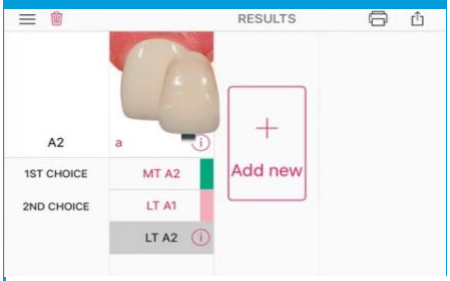

Fig 3b: Final result of ceramic shade that can give optimal final colour for veneers.

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