Effect of Luting Cement Opaqueness on the Final Colour of Titanium- Base Supported Lithium Disilicate Abutments

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Objective

Current approach in individualized abutments is to use titanium bases (Ti-bases) for supporting zirconia or lithium disilicate ceramic abutments to achieve both esthetics and mechanical resistance against intrusive forces. The opacity and high value of the currently used zirconia led to an increased use of more translucent, thus more close-to-nature lithium disilicate materials as implant abutments. Ti-bases might lead to greyish reflections from the highly translucent glass-ceramic abutments. To avoid this, an opaque luting resin cement use for adhering the individualized glass-ceramic abutment to the titanium base might be a solution for this clinically overlooked situation. The aim of this study was to compare two resin luting cements with different opaqueness on the final colour of lithium disilicate abutments supported by titanium bases.

Materials and Methods

Twenty titanium bases (Conelog Ti-base, Camlog) were divided into two lutin greis cement groups (n=10/group) (Panavis F 2.0 (P), Kuraray; Multilink Hybrid Abutment Cement (M), Ivoclar Vivadent). Twenty identical abutments with a standard ceramic thickness of 2 mm in the gingival portion were milled out (Cerec MCXL, Sirona) from lithium disilicate blocks (e.max CAD abutment solutions MO, Ivoclar Vivadent). Ten abutments for each cement group were luted to the titanium bases according to the manufacturers’ instructions. A sample for further colour difference measurements as a reference was prepared from an e.max CAD MO block. The reference values for CIE Lab calculations were obtained from this sample. A dental contact type spectrophotometer (Vita Easyshade, Vita Zahnfabrik, Germany) was used to measure the mean colour differences of both cement groups before locating the abutments on titanium bases and after luting on these bases by CIE Lab formula. The interaction of ∆E values were analyzed by a one-way analysis of variance at 5% level.

Results

The final color of the abutment crowns were significantly affected by the translucency of both tested adhesive cements. M cement resulted in a ∆E value of 6.7±1.9 (P<0.05). Cement M resulted in less color difference than P (P>0.05); that had a ∆E value of 2.14±0.6.

Conclusion

The final color of lithium disilicate abutment crowns was influenced from the opaqueness of the luting cement. In clinical situations where lithium disilicate abutments are preferred; a more opaque adhesive luting cement should be preferred in order to mask the underlying metal show-through of the titanium base.

References