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Effect of coping thickness and background type on masking ability of a zirconia ceramic

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Statement of problem: There is limited information about the masking ability of zirconia ceramics as copings.

Objective: The objective of this study was to evaluate the effect of coping thickness and background type on masking ability of a zirconia ceramic and to determine zirconia coping thickness cut offs for masking the investigated backgrounds.

Material & Methods: 30 zirconia disk samples, in three thickness groups of 0.4, 0.6 and 0.8 mm, were placed onto nine different backgrounds in order to measure L*, a* and b* color attributes using a spectrophotometer. The backgrounds included the A1 shade composite, A2 shade composite, A3.5 shade composite, A3 shade zirconia, nickel-chromium alloy, non-precious gold alloy, amalgam, black and white. ΔE values were measured to determine color differences between the samples on the A2 shade composite background and the same samples on the other backgrounds in each thickness group. The ΔE values were compared with an acceptability threshold (ΔE=5.5) and a perceptibility threshold (ΔE=2.6). Repeated Measures ANOVA, Bonferroni and One-sample t-test were used to analyze the data (P<.05).

Results: The means of ΔE values ranged from 1.44 to 7.88. The zirconia coping thickness, the background type and their interaction affected the L*, a*, b* and ΔE values (P<.0001).

Conclusions: The tested zirconia ceramic showed an ideal masking ability on the backgrounds of the A1 shade composite, A3.5 shade composite, A3 shade zirconia, nickel-chromium alloy, non-precious gold alloy and amalgam with the minimum thicknesses of 0.4, 0.4, 0.4, 0.8, 0.4 and 0.6, respectively.

Biography

Farhad Tabatabaian is graduated from School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran in 1998 (DDS), post-graduation from Department Of Prosthodontics, School of Dentistry, from the same university in 2008 (MS in Prosthodontics). He is an Assistant Professor at Department of Prosthodontics, School of Dentistry, Shahid Beheshti University of Medical Sciences since 2009. He is a Speaker in EPA (European Prosthodontic Association Conference) 2012, the Netherlands; EPA 2015, Czech Republic; EPA 2016, Germany; ICD 2017, Spain; EXCIDA and FDA congress 2016 and 2017, Iran; EXCIDA 2015, Iran; IAP Conference 2010-16, Iran. He has 15 published articles and his research field is about the color in zirconia restorations.

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