INFLUNCE OF VENEERING AND HEAT TREATMENT ON FLEXURE STRENGTH OF LITHIUM DISILICATE-BASED CERAMICS

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The aim of the present study was to evaluate and compare the influence of subjecting both Empress 2 and Third generation Optimal Pressable Ceramic (3G OPC) core materials to the recommended firing cycles and application of the veneering porcelain on the flexure strength of tested materials .

Methods: Four group specimens for each material were prepared and a biaxial flexure test was conducted using a Universal Testing Machine (Model 1197, Instron Corp., Canton, Mass).Four groups from each material were prepared, each group consists of seven samples. Empress 2 material were used to prepare group L 11, IJI, IV and 3G OPC material were used to prepare group V, VI, VII, VIII. Samples were prepared as follows: Group 1& V: 2mm thick specimen pressed only without layering (control group), Group 11& VI: 1.5mm thick specimen veneered by adding one layer (0.5mm) of veneering porcelain and glazed, Group III&IIV: 1mm thick specimen veneered by adding two layers (0.5mm each) of veneering porcelain and glazed, Group IV & VIII: 2 mm thick specimen subjected to simulated layering and glazing firings.

Results: Tukey's post -hoc test showed that for Empress 2 groups there was a statistically significant difference between the mean flexural strength values of group 111 and group IV, while there was no significant difference among the other groups. For the 3G OPC there was a statistically significant difference between group VI and group VIII. While there was no significant difference among the other groups, in addition to that, there was a highly significant statistical difference between each pairs of comparable groups of the two tested materials using student T-test.

Conclusion: The mean flexure strength values of Empress 2 system are significantly higher than 3G OPC system. Veneering and heat treatment cycles did not affect the flexure strength of the two tested materials in comparison to the pressed only material, while core reduction reduced the flexure strength of these two systems significantly in comparison to the heat treated materials.

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