「補綴誌論文集」の訂正について

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つきましては、アンダーライン部分のとおり、各自ご修正のほどお願いいたします。

日本補綴歯科学会編集委員会
The Fracture Resistance of Machinable Composites and Ceramics Compared with Indirect Composites

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Purpose: The purpose of the current study was to evaluate physical properties of four prosthodontic materials for esthetic restorations and to investigate the fracture resistance of crown-shaped specimens fabricated from CAD/CAM machine.

Materials and Methods: The Knoop hardness, compressive strength, diametral tensile strength, flexural strength and elastic modulus of Estenia (ET, Kuraray), Artglass (AG, Heraeus Kulzer), GN-I composite (GCO, GC) and GN-I ceramics (GCE, GC) were evaluated using Micro Hardness Tester and Universal Testing Machine. The data were compared using analysis of variance (ANOVA) and post-hoc Tukey-Kramer test at p=0.05.

Standardized premolar crown-shaped specimens for four materials with the wall thickness of 1.0 and 1.5 mm were fabricated from a dental CAD/CAM machine (GN-I, GC). Ramp loading were applied on each specimen on occlusal surface until either load reaches 1.5 kN or a specimen was broken down. Moreover, the standardized digital photographs were taken with time to detect specimen deformation.

Results: The AG material showed significantly lower physical properties than the other three materials. The GCE and ET materials represented relatively higher physical properties among four materials. The fracture resistance of crown-shaped specimen increased with the thickness of crown wall. Within the same thickness, higher fracture strength was obtained from the ET, GCE, GCO and AG materials in order. The ET material containing higher amount of filler showed high fracture strength as similar to the GCE material. The fracture tipping at the margin of crown-shaped specimen was observed for the ET and GCE materials due to its low ductility. While the AG and GCO materials had almost the same amount of filler, the GCO material showed higher fracture strength. The GCO block is manufactured at a condition of heat and high pressure. Therefore, the GCO material might show higher polymerization rate and promote the bond more strongly between the filler and matrix resin than the AG material.

Conclusion: These results indicated that the machinable composite for esthetic restorations was available for clinical use.