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Abstract

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The aim of this study was to qualitatively demonstrate surface micro-morphological changes after the employment of different surface conditioning methods on high-alumina and glassy-matrix dental ceramics. Three disc-shaped high-alumina specimens (In-Ceram Alumina, INC) and 4 glassy-matrix ceramic specimens (Vitadur Alpha, V) (diameter: 5 mm and height: 5 mm) were manufactured. INC specimens were submitted to 3 different surface conditioning methods: INC_1 - Polishing with silicon carbide papers (SiC); INC_2 - Chairside air-borne particle abrasion (50 祄 Al_2O_3); INC_3 - Chairside silica coating (CoJet; 30 祄 SiO_x). Vitadur Alpha (V) specimens were subjected to 4 different surface conditioning methods: V_1 - Polishing with SiC papers; V_2 - HF acid etching; V_3 - Chairside air-borne particle abrasion (50 祄 Al_2O_3); V_4 - Chairside silica coating (30 祄 SiO_x). Following completion of the surface conditioning methods, the specimens were analyzed using SEM. After polishing with SiC, the surfaces of V specimens remained relatively smooth while those of INC exhibited topographic irregularities. Chairside air-abrasion with either aluminum oxide or silica particles produced retentive patterns on both INC and V specimens, with smoother patterns observed after silica coating. V specimens etched with HF presented a highly porous surface. Chairside tribochemical silica coating resulted in smoother surfaces with particles embedded on the surface even after air-blasting. Surface conditioning using air-borne particle abrasion with either 50 祄 alumina or 30 祄 silica particles exhibited qualitatively comparable rough surfaces for both INC and V. HF acid gel created the most micro-retentive surface for the glassy-matrix ceramic tested.

Keywords : Air abrasion; dental; Hydrofluoric acid; Acid etching; dental; Ceramics.

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