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Bond of acrylic teeth to different denture base resins after various surface-conditioning methods.

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Abstract

The study examined the bond between different denture base resins and highly cross-linked acrylic denture teeth with different base surface-conditioning methods. One hundred fifty highly cross-linked resin denture teeth (SR-Antaris, No. 11, Ivoclar-Vivadent, FL) were divided into five groups with different surface-conditioning methods of the base surfaces of the teeth (C = control, no surface conditioning, MM = application of methyl methacrylate monomer, SB = sand blasting, SBB = sand blasting + bonding agent, TSS = tribochemical silica coating + silanization). Teeth were bonded to either a cold-cured denture base resin (ProBase Cold, Ivoclar-Vivadent, FL) or heat-cured denture base resins (SR Ivocap Plus, Ivoclar-Vivadent, FL and Lucitone 199, Dentsply, USA). After 24 h of storage in distilled water, compressive load was applied at 90° on the palatal surface of each tooth until fracture. Median failure load ranged between 103 and 257 N for Probase Cold groups, 91 to 261 N for Lucitone 199, and 149 to 320 N for SR Ivocap Plus. For Probase Cold, significant highest failure loads resulted when teeth were treated with SB, SBB, or TSS. For Lucitone 199, significant highest failure loads has been found with MM and TSS treatment. For SR Ivocap Plus, highest failure loads resulted using SBB and TSS. Conditioning of the base surfaces of the teeth prior to denture base processing is highly recommended. Tooth bond is significantly affected by the surface-conditioning method and applied denture base resin. Tribochemical silica coating + silanization method can be recommended for pre-treatment of teeth applying either heat-cured or cold-cured denture base resin.

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