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Frictional resistances using Teflon-coated ligatures with various bracket-archwire combinations

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ABSTRACT

Static frictional resistances were compared between Teflon-coated stainless steel and clear elastomeric ligatures used with various combinations of brackets and archwires. Stainless steel metal, polycrystalline ceramic and single crystal ceramic 0.022-inch slot brackets were used in combination with stainless steel and nickel titanium archwires, 0.018 inch and 0.016 × 0.022 inch. Friction was measured in the dry state at bracket-archwire angulations of 0, 5, 10, and 15 degrees. Moments induced by engagement of the archwires into the brackets were measured for each archwire type and bracket-archwire angulation. Teflon-coated ligatures produced less friction than elastomers for all bracket-archwire combinations. The ceramic brackets generally elicited greater frictional resistances than stainless steel brackets. Regarding both friction and control of tooth movement, these data suggest that sliding mechanics are best executed with stainless steel brackets and stainless steel archwires. Moreover, these data reveal the usefulness of Teflon-coated ligatures in minimizing the high friction of ceramic brackets when an esthetic appliance is imperative.

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