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Continuous versus interrupted continuous orthodontic force related to early tooth movement and root resorption

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ABSTRACT

The aim of the present clinical investigation was to assess the effects of continuous and interrupted continuous forces of the same magnitude (50 cN ≈ 50 g) on orthodontic tooth movement and related adverse tissue reactions, i.e., root resorption. Thirty-two maxillary first premolars in 16 patients, 8 boys and 8 girls (mean age 13.9 years), were moved buccally by means of a fixed orthodontic appliance with a sectional arch. The patients were divided into two groups of 8, for experimental periods of 4 and 7 weeks. The continuous force was checked and reactivated weekly to 50 cN. The interrupted continuous force applied to the contralateral premolars was left uncontrolled for 3 weeks, after which the arch was made passive for 1 week for tissue rest and recovery. Tooth movements were studied on dental casts using a coordinate measuring machine (Validator 100, TESA SA, Renens, Switzerland). Horizontal tooth movement with continuous force was more effective than with interrupted continuous force after 7 weeks. Histological sections of the experimental teeth, however, showed no difference in the amount or severity of root resorption between the two forces. Individual variations in both the magnitude of tooth movement and the amount and severity of root resorption for both of the two force systems were great.

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