

OP28 VIBRATIONAL FORCE DOES NOT CAUSE GREATER ROOT RESORPTION DURING ORTHODONTIC ALIGNMENT: A MULTICENTER RANDOMIZED CLINICAL TRIAL

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AIMS: A multicenter parallel three-arm randomized clinical trial was carried out in two teaching and one university hospital in the United Kingdom to investigate the effect of supplemental vibrational force on the level of orthodontic-induced inflammatory root resorption (OIIRR) during the initial alignment phase of fixed appliance therapy.

SUBJECTS AND METHOD: Eighty-one subjects <20 years-old with mandibular incisor irregularity undergoing extraction-based fixed-appliance treatment were randomly allocated to supplementary (20-minutes/day) use of an intra-oral vibrational device (AcceleDent®) (n = 29); an identical non-functional (sham) device (n = 25) or fixed-appliances only (n = 27). OIIRR was measured blindly from long cone periapical radiographs of the upper right central incisor taken at the start of treatment (T1) and end of alignment (T2) when a 0.019 × 0.025-inch stainless steel wire was placed (mean follow-up: 201.6 days; 95% CI: 188.6 to 214.6 days). Data were analyzed blindly on a per-protocol basis (since losses to follow-up were minimal with descriptive statistics) using ANOVA and univariable/multivariable regression modelling.

RESULTS: Nine subjects were excluded from the analysis, which were evenly distributed across groups. Overall mean OIIRR was 1.08 mm (95% CI: 0.89 to 1.27 mm) amongst the 72 subjects analyzed. Multivariable regression indicated no significant difference in OIIRR for AcceleDent (difference: 0.22 mm; 95% CI: -0.20 to 0.64; *P* = 0.300) or sham groups (difference: 0.26 mm; 95% CI: -0.28 to 0.80; *P* = 0.339) compared to the fixed-appliance only group, after accounting for patient gender, age, alignment time (T1-T2), maximum pain experienced, history of dento-alveolar trauma and initial root length of the upper right central incisor. No other side-effects were recorded apart from pain and OIIRR.

CONCLUSION: Supplemental vibratory force during orthodontic treatment with fixed appliances does not affect OIIRR during the initial alignment phases of orthodontic treatment.