

OP12 THE EFFECTS OF MICRO-OSTEOPERFORATIONS USING THE PROPEL APPLIANCE ON ORTHODONTIC ROOT RESORPTION – A MICROCOMPUTED TOMOGRAPHIC STUDY

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AIM: Micro-osteoperforation (MOP) is a novel technique involving controlled micro-trauma of the alveolar bone. Studies have demonstrated its potential efficacy in accelerating tooth movement by amplifying the expression of inflammatory markers. The aim of this investigation was to examine the effects of MOPs using the Propel appliance on orthodontic root resorption under microcomputed tomography (μ CT).

SUBJECTS AND METHOD: This prospective split-mouth controlled clinical trial involved 20 subjects requiring extractions of the maxillary first premolars as part of their orthodontic treatment. A buccal tipping force of 150 g was applied to both first upper premolars. Using the Propel appliance, MOPs were applied at a depth of 5 mm on the mesial and distal aspects in the mid-root region of the experimental side first premolar root while the contralateral side served as the control. After 28 days, both premolars were extracted. The teeth were scanned in a μ CT system and the volume of root resorption craters associated with MOP treated premolars were compared with that of control premolars, and paired *t*-tests were conducted to determine statistical significance using the IBM SPSS statistics program, version 21 (IBM Corporation, USA)

RESULTS: MOP treated premolars exhibited significantly greater average total root resorption than control teeth 0.576 mm³ versus 0.406 mm³, respectively with the total average volumetric root loss of MOP treated premolars being 42 per cent greater than that of control teeth.

CONCLUSIONS: This 28 day trial shows that the application of MOPs around orthodontically moved premolars resulted in more orthodontic root resorption. However the results should be tested on a patient sample that is undergoing full-length orthodontic treatment.