

OP30 EVALUATION OF ROOT RESORPTION CRATERS FOLLOWING RAPID MAXILLARY EXPANSION USING MICROCOMPUTED TOMOGRAPHY

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AIMS: To evaluate root resorption and to quantitatively measure volume and numbers of resorption craters following rapid maxillary expansion (RME) with different screw activation protocols using microcomputed tomography (μ CT).

SUBJECTS AND METHOD: Fifteen patients (11 girls, 4 boys) who had maxillary constriction and required extraction of the maxillary first premolars as part of their orthodontic treatment. The mean age was 14.18 years; range, 12.1-15.3 years. A Hyrax type banded RME appliance was used in all subjects. The patients were randomly divided into three groups of five each. Group I one turn screw activation daily, group II two turns daily and group III one turn every other day. Active treatment was followed by a retention period of 3 months for all patients, after which the left and right premolars were extracted. The extracted samples were scanned with μ CT (SkyScan 1172) using a 10 micron slice width. Statistical analyses were performed with Kruskal Wallis one-way ANOVA, Bonferroni's adjusted Mann-Whitney *U*, and Wilcoxon signed rank tests. Volumetric analyses of root resorption and number of craters were defined with CTAn (SkyScan) software analysis program.

RESULTS: No statistically significant difference was found in terms of numbers of craters among the groups. For all groups, the mean volume of resorption crater was more at the buccal root surface than the lingual surface. The mean volume of resorption craters was 0.263 mm³ for group I, 0.257 mm³ for group II and 0.153 for group III, significantly less resorption craters in group III ($P < 0.05$). Cervical buccal, total buccal and total resorption volume was statistically different among Groups I and III and Groups I-III ($P < 0.05$). There was no significant difference between groups I and II ($P > 0.05$).

CONCLUSION: A screw activation protocol every other day results in significantly less root resorption than one or two screw daily activations. A slower screw activation protocol during the active RME phase might be safer and minimise root resorption.