

OP51 OBLIQUE LABIAL AND PALATAL ROOT RESORPTION OF MAXILLARY INCISORS DURING ORTHODONTIC TREATMENT

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AIMS: To evaluate and compare the amount of orthodontically induced root resorption on the labial, mid-radicular and palatal surfaces of the upper incisors during treatment with fixed appliance. Furthermore, to identify possible correlations between the extent of root resorption and the amount of root movement, inclination changes and the proximity of the root to cortical bone.

MATERIALS AND METHOD: Two hundred and fourteen incisors (108 centrals, 106 lateral incisors) from 60 patients treated with fixed appliances and extraction of four premolars. Cone beam computed tomographic (CBCT) data from a previous study on root resorption, approved by an ethical and a radiation protection committee, were available from before and after treatment. The CBCT scans were reformatted and images were obtained from the sagittal cut on the mesio-distal centre of the root and perpendicular to the incisal edge. Reference points were determined to measure the resorption on the labial, mid-radicular and palatal surfaces of the root. Root movement was measured by the changes in the distance from the root surfaces to the buccal and palatal cortical bone. The inclination was measured by the angle between the tooth long axis and palatal plane.

RESULTS: There was a significant difference between the mean amounts of root resorption between the three sagittal surfaces. The resorption was largest on the palatal followed by the mid-radicular and labial surfaces. The mid-radicular and the palatal resorption both showed a significant correlation with the amount of root movement. There was a significant correlation between the palatal and mid-radicular root resorptions and the final proximity of the root tip to the palatal cortical bone-plate ($P < 0.01$) indicating that more resorption was seen when the root tip ended up close to the palatal compact bone.

CONCLUSION: There was a significantly larger amount of root shortening on the palatal surfaces of the maxillary incisor roots which results in oblique root resorption. This causes an underestimation of the extent of resorption seen in two-dimensional frontal periapical radiographs