

OP31 THREE-DIMENSIONAL EVALUATION OF TOOTH MOVEMENT IN CLASS II MALOCCLUSIONS TREATED WITHOUT EXTRACTIONS BY ORTHODONTIC MINI-IMPLANT ANCHORAGE

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**AIM:** To analyze tooth movement and arch width changes in the maxillary dentition following non-extraction treatment with orthodontic mini-implant (OMI) anchorage in Class II division 1 malocclusions.

**SUBJECTS AND METHOD:** Seventeen Korean adults with a Class II division 1 malocclusion. OMI were inserted at the buccal attached gingiva between the maxillary second premolar and first molar on both sides. Distalizing forces of approximately 200 g were applied from the OMIs to the posted hooks between the maxillary canines and lateral incisors. Three-dimensional (3D) virtual maxillary models were acquired pre- (T0) and post- (T1) treatment. The T0 and T1 3D virtual models were superimposed using the palatal rugae and the midline raphe as reference. Linear variables (anteroposterior and vertical displacement of maxillary dentition), angular variables (rotation of maxillary molars), and arch width variables were measured. Means and standard deviations were calculated, and variables of T0 and T1 were compared by *t*-test.

**RESULTS:** All maxillary teeth moved posteriorly; anterior teeth, U1, U2, and U3, were distalized (1.78, 0.98 and 1.39 mm, respectively;  $P < 0.01$ ) and the posterior teeth, U4, U5, U6, and U7, were moved backwards (1.15, 1.40, 2.04 and 2.44 mm, respectively;  $P < 0.001$ ). Comparing T0 and T1, there were no statistically significant differences in the vertical changes of the maxillary teeth except that the maxillary second molars (U7) were extruded ( $-0.86$  mm,  $P < 0.01$ ). The maxillary first molar (U6) and maxillary second molar (U7) were rotated distal-in ( $-4.59^\circ$ ,  $P < 0.01$  and  $-3.08^\circ$ ,  $P < 0.05$ , respectively).

**CONCLUSIONS:** Using OMI anchorage for treatment of Class II division 1 malocclusions without extractions, the whole maxillary dentition could be retracted to achieve a Class I canine and molar relationship without a significant change in the vertical position of the teeth, but the second molars were significantly extruded. Simultaneously, in the occlusal view, the maxillary arch was shown to be expanded with distal-in rotation of the molars.