OP03 A CONE BEAM COMPUTED TOMOGRAPHIC EVALUATION OF ALVEOLAR HOUSING IN NORMAL, HYPO- AND HYPER-DIVERGENT SUBJECTS

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AIM: The buccal bone plate thickness, interradicular distance (IRD) and alveolar height will assist the orthodontist with insertion of miniscrews and to decide if expansion or extraction should be performed. The aim of this study was to evaluate the quantity of available alveolar bone in subjects with different vertical facial growth patterns.

MATERIALS AND METHOD: Sixty cone beam computed tomographic (CBCT) scans of subjects aged between 17 and 46 years were retrospectively selected. Lateral cephalograms were synthesized from the CBCT and, based on gonial and FMA angles, divided into three groups: normal, hypo- and hyper-divergent. In both jaws, between the teeth posterior to the canines, the thickness of the buccal plates and IRD were measured 1, 3 and 5 mm from the crest of the alveolar bone together with the height of the alveolar bone. The obtained data were analyzed.

RESULTS: The mean values of IRD were 5.00 ± 0.95 mm, 4.99 ± 1.70 mm and 5.03 ± 1.02 mm in the normal, hypo- and hyper-divergent groups, respectively. Considering alveolar thickness, there was a significant difference between the three groups ($P < 0.001$). The mean values for the thickness of alveolar cortical plates were 1.19 ± 0.41 mm, 1.40 ± 0.5 mm and 0.97 ± 0.37 mm in the normal, hypo- and hyper-divergent groups, respectively. For alveolar bone height in both jaws only that of the hyperdivergent was more than in the hypodivergent subjects ($P < 0.041$). All IRD measured either at 1, 3, or 5 mm apical to the crest were significantly greater than the minimum space of 2.5 mm required for insertion of a miniscrew ($P < 0.001$). When the measurements were performed at points more apically distant from the crest, both the variables, cortical thickness and IRD, increased.

CONCLUSIONS: Facial growth pattern might influence cortical bone thickness and bone height, but not IRD. Compared to the maxilla, the IRD, cortical widths, and jaw heights were greater in the mandible. Older subjects would have thicker cortices. Under similar conditions in borderline cases with a hyperdivergent growth pattern, extraction is preferred to expansion.