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Assessment of Condylar Morphology in Different Facial Patterns: A CBCT Study

By

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ABSTRACT

BACKGROUND AND OBJECTIVES: The mandibular condyle is a part of TMJ structure, and its shape and volume have been considered to play an important role in the long-term stability of treatment outcomes in orthodontic, and orthognathic patients. Different loading patterns would result in different morphology of the TMJ. Therefore, dental practitioners need to consider the morphology and position of the condyle throughout the whole treatment process.

Knowledge of the difference in the shape and size of the condyle and its remodelling pattern is still not clear, but its relationship with various facial types and development patterns is still not clear. No published research has defined the morphology of the mandibular condyle, and correlations in the North Karnataka population.

METHODOLOGY: A cross-sectional study was conducted in which 90 patients undergoing orthodontic treatment were selected and allocated into 3 groups of 30 each namely Hypodivergent, Normodivergent and Hyperdivergent based on the Frankfort horizontal plane angle. After meeting the inclusion and exclusion criteria, the patients were subjected to the lateral cephalogram and CBCT of the condyle under standard resolution and FOV of 8X8 with the teeth in maximum intercuspation. The DICOM format of the images was taken and ten anatomical landmarks were marked and analysed using the Carestream imaging software. The results were then statistically analysed using ANOVA.

RESULTS: The mean values of the condylar width, height and condylar axis angulation in hypodivergent group and the mean value of the superior joint space showed statistically significant values in hyperdivergent group.

CONCLUSION: Hypodivergent individuals have condyles which are larger in size and larger condylar axis angles. Whereas, hyperdivergent individuals have more superiorly positioned condyles. During orthodontic treatment, this relationship should be considered when predicting and treating Temporomandibular Joint Disorders.

KEYWORDS: CBCT; Condylar height; Width; Axis angulation; Joint spaces.