Evaluation of skeletal and dental asymmetries in Angle Class II subdivision malocclusions with cone-beam computed tomography

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Abstract

Introduction
The purpose of this study was to determine whether Angle Class II subdivision malocclusions have skeletal or dental asymmetries between the Class II and Class I sides.

Methods
A sample of 54 untreated Angle Class II subdivision patients with pretreatment photos and cone-beam computed tomography (CBCT) scans was used. The photos were used to identify the Class II subdivision malocclusion and to record the amount of crowding per quadrant. Landmarks were plotted on each CBCT volume so that direct 3-dimensional measurements could be made to compare the positions and dimensions of the skeletal and dental structures on the Class II side vs the Class I side.

Results
Significant differences were found for 2 skeletal measurements: the position of the maxilla relative to the cranial base, and the mandibular dimension from the mandibular foramen to the mental foramen. Statistically significant dental differences were found for the position of the mandibular first molars and canines in relation to the maxilla and the mandible. Statistically significant differences were found for the maxillary first molars and canines in relation to the mandible.

Conclusions
There were significant skeletal and dental differences between the Class I and Class II sides. The dental asymmetries accounted for about two thirds of the total asymmetry.

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