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Orthodontic treatment of openbite and deepbite high-angle malocclusions

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ABSTRACT

The aim of the investigation was to assess the effect of orthodontic treatment on dentoskeletal morphology in children with openbite and deepbite high-angle malocclusion. Subjects (n=54) in the mixed dentition with a hyperdivergent mandibular plane angle (high-angle, NSL/ML $\geq 40^\circ$) were surveyed. Pre- and posttreatment lateral roentgenographic cephalograms were analyzed. Subjects were divided into three subgroups according to the amount of pretreatment overbite: < 0 mm = insufficient /no compensation (openbite); 0 – 4 mm = acceptable compensation (normal overbite); > 4 mm = overcompensation (deepbite). Pretreatment, 20% of the high-angle cases exhibited insufficient dentoskeletal compensation (overbite < 0 mm), and 35% displayed overcompensation (overbite > 4 mm). Influences of habits such as lip sucking and tongue-thrust swallowing were more common in the openbite group. No major difference in treatment approach could be found between subgroups. In 82% of the openbite group and 90% of the deepbite group, overbite was corrected by orthodontic treatment. The mandibular plane angle was unaffected in both groups. The mechanisms of overbite correction differed between groups. The openbite group exhibited a significant decrease in interjaw-base angle. Increases in anterior and posterior dentoalveolar heights were comparable. The deepbite group showed no significant changes in skeletal morphology. The increase in dentoalveolar height was approximately twice as large posteriorly as anteriorly. The majority of children (80%) with high-angle morphology had a positive pretreatment overbite, thus exhibiting compensation of jaw-base hyperdivergency. Orthodontic treatment of high-angle malocclusions did not influence the mandibular plane angle in openbite or deepbite cases. Overbite correction was accomplished by tipping the maxilla downward anteriorly in openbite subjects, and by controlling incisor eruption in deepbite subjects.

KEY WORDS: Orthodontic treatment, Compensation, High angle, Skeletal, Dentoalveolar, Mixed dentition.

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