The Prevalence of Immediate Mandibular Lateral Translation and Laterosurtrusion in 165 Patients

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Statement of problem. Most practitioners and dental laboratories use articulators that do not accurately simulate condylar movements.

Purpose of Study. The purpose of this investigation was to determine the prevalence of mandibular lateral translation and laterosurtrusion, report geometric values of the eminentia and condylar complex, and evaluate the proximity of opposing first molars when immediate mandibular translation and anterior guidance are present.

Material and methods. Stuart® gnathological instrumentation was used to create pantographic tracings of 165 patients, providing 330 condylar recordings. Measurements were made of the radii of eminentia curvature, condylar pathway inclination, progressive mandibular translation angle (Bennett angle), intercondylar distance, presence of immediate mandibular translation, horizontal laterotrusive direction and angulation, and vertical laterotrusive direction and angulation. Data was compiled and evaluated. Casts were mounted on the Stuart articulator so photographs could be made of first molar proximity and contact at different angles of vertical laterotrusion.

Results. Immediate mandibular translation was recorded on 76.97% of the tracings. Laterosurtrusion was the most common direction of the lateral movement of the working side condyle, being present in 43.94% of the laterotrusive movements. Straight lateral transtrusion was recorded in 38.79% of the samples. Laterodetrusion was the least common direction of movement, occurring in 17.27% of the samples. Other recorded average values included a 0.68” radius of eminentia curvature, condylar pathway angulation of 34.81°, progressive mandibular translation angle of 20.66°, and intercondylar distance of 57.48 mm from the midline. An average laterotrusive angle of 2.835° was observed in the horizontal plane (lateroprotrusion), and an average laterotrusive angle of 4.09° observed in the vertical plane (laterosurtrusion).

Conclusions. Immediate mandibular translation occurred in nearly 80% of the 330 condylar movement recordings and more than 40% of the translatory movements of the working side condyles were outward and upward movements (laterosurtrusion).

CLINICAL IMPLICATIONS
Practitioners should record mandibular movements and use a fully adjustable articulator or the current semi-adjustable articulators should be modified to permit laterosurtrusion movement.

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