

Three-Dimensional Geometric Morphometry of Facial Soft Tissue Changes After Bilateral Sagittal Split Ramus Osteotomy

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Bilateral Sagittal Split Ramus Osteotomy

(両側下顎枝矢状分割術後の顔面軟組織変化の3次元形状変化計測)

区 分 : 甲

論文内容の要旨

This study aimed to evaluate the performance of geometric morphometry (GM) to assess the changes in facial soft tissue after orthognathic surgery. Subjects were 27 patients (Skeletal Class III) who underwent bilateral sagittal split ramus osteotomy and 27 volunteers as a control group. Computed tomography (CT) images of each patient were obtained before surgery (T0) and six months after surgery (T1). CT images of 27 volunteers (Skeletal Class I) were also obtained as a control group. Using a three-dimensional (3D) modeling software, 3D models were created and exported to a 3D surface analyzing software for GM and principal component analysis. Significant differences in facial soft tissue were found in the first and second of 15 principal components (PC). The first PC represented variation in the lower facial height, and the second PC represented variation in the anterior-posterior position of the chin. Comparing the pre-and post-operative images, they illustrated that lower facial height was decreased, and the chin and lower lip moved posteriorly. GM showed to be a successful tool to isolate surgery-related changes from inter-individual morphological variations.