

Postoperative Three-dimensional Assessment of CT Image for Osteotomy

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Abstract : The purpose of this study was to evaluate Le Fort I osteotomy, sagittal split ramus osteotomy and rotational acetabular osteotomy using a new technique that superimposes pre- and post-operative three-dimensional CT images (3D-CT images).

The coordinate system and the origins of the x, y, z-axis were respectively set, and pre- and postoperative three-dimensional CT images were superimposed by using a six degrees of freedom search.

The distance of displacement and the amount of the angle of rotation from the origins in maxillary and mandible images were quantified by using the 3D-CT DICOM (Digital Imaging and Communication in Medicine) DATA. The same result was also obtained in the hip joint.

Therefore, this new technique of superimposition is considered to be a practical method for evaluating postsurgical bone fragment displacement and it could potentially be applied regardless of the type of osteotomy.

Key words : Osteotomy, Superimposition, Three-dimensional CT image, Six degrees of freedom search