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Development of ankle arthrodesis based on 2D tomography with 3D reconstruction

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ABSTRACT

Objective: To implement a method for analyzing the contour and alignment of the ankle bones in a normal population for a more accurate assessment of tibiotalar arthrodesis.

Methods: Tomographic scans of 20 ankles were subjected to 3D reconstruction. During the examinations, 7 anatomical points of interest for the 3-screw fixation technique were identified and marked with 3D position indicators. The mean locations of each point were calculated. The combination of these means made it possible to reconstruct a standard ankle for that population. In these standard ankles, the lengths and angles for the passage of the screws were studied.

Results: Two ankles, one right and one left, were reconstructed. The best entry point in relation to the malleolus, the best entry points of the lateral, medial and posterior screws and the best entry angles in relation to the tibial axis were determined.

Conclusion: This is the first study to present an accurate guide for performing ankle arthrodesis based on a population study.

Keywords: Orthopedics; Ankle joint; Tomography.

