

Operative Management of AO Type 44 Ankle Fractures: Determinants of Outcome*Jos Velleman; Stefaan Nijs, MD, PhD; Harm Hoekstra, MD, PhD**Catholic University of Leuven, Wichelen, Oost-Vlaanderen, BELGIUM*

Purpose: The consequences of inadequate treatment of ankle fractures can be disastrous. Here we assessed the radiological and functional outcome, the postoperative quality of life, and its determinants of patients operatively treated for AO type 44 ankle fracture. This study faced the lack of evidence concerning the management of posterior malleolus fractures and syndesmotic injuries.

Methods: A retrospective adult cohort study included 432 AO/OTA type 44 ankle fractures (431 patients). Median follow-up was 52 months. Classification was performed by the AO/OTA classification and by combining fibula, medial, and posterior malleolus fractures. Outcome was assessed using the patient files, radiographs, American Orthopaedic Foot & Ankle Society (AOFAS) ankle score (functional outcome), and EQ-5D (quality of life) questionnaires.

Results: The median AOFAS score was 88. 27.9% of the patients reported restricted mobility, 21.1% experienced problems with usual activities, and 40.4% suffered from pain or discomfort. In 8.8%, radiographic failure was observed. The presence of a posterior malleolus fracture was significantly associated with a poor functional outcome, whereby a postoperative step-off correlated with both radiological failure, poor functional outcome, and postoperative quality of life in young and middle-aged patients (≤ 65 years). Additionally, a syndesmotic injury and delayed-staged surgery protocol were associated with radiological failure, which in turn correlated significantly with AOFAS functional outcome scores. A prolonged time to removal of the syndesmotic screw was associated with worse EQ-5D TTO (time tradeoff) quality of life scores.

Conclusion: A substantial number of our operatively treated patients with an AO type 44 ankle fracture suffered from functional impairment, discomfort, and pain. The presence of a ligamentous (syndesmotic) injury was found to be associated with failure of the ankle joint and subsequently poor functional outcome. Our data indicate that all displaced posterior malleolus fracture fragments affecting the posterior articular tibial surface in patients up to 65 years require an anatomical reduction. This can be accomplished best through direct open reduction and internal fixation via a posterolateral or posteromedial approach. A conscientious diagnostic workup of AO type 44 ankle fractures, the assessment of associated ligamentous injury, and careful treatment are essential for a good outcome.