Ligament Balancing During TAR in Varus Deformity by Open Wedge Osteotomy of the Medial Malleolus: Results in 50 Ankles
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Introduction/Purpose: After reducing the tilted talus during total ankle replacement (TAR) in severe varus deformities, the surgeon is faced to a contract medial joint and an abducted medial malleolus leaving a wide gutter. A sliding osteotomy will release the deltoid ligament but the “horizontal” position of the medial malleolus remains and bony containment of the ankle joint is not restored. We propose an open wedge osteotomy, which will both lengthen and adduct the medial malleolus and restore ligament balancing. Fixation is done by either screw or plate fixation. We present our primary results with this new technique.

Methods: From 2008-2015 Total Ankle Replacement combined with open wedge medial malleolar osteotomy was done in 50 ankles (48 patients). Inclusion criteria: Takakura stages 3 and 4 ankle arthritis. Minimum follow-up was defined as one year.

Results: Neutral alignment was achieved in all ankles at last follow-up. AOFAS score increased from 36 preoperative to 82 at last follow-up. In 15 Ankles an additional bony procedure was done during the TAR surgery (Calcaneus Osteotomy: 5, Dorsiflexion Osteotomy of first ray: 6, Fibula Osteotomy: 4, peritalar fusion: 4). Complications included one non-union of the medial malleolus, which resolved after revision. One deep infection that was treated in a staged procedure with reimplantation of a TAR and no recurrence of infection. Two luxations of the polyethylene due to insufficient lateral ligaments and syndesmotic dehiscence, both were stable at final follow-up after revision (ligament reconstruction and tight-rope Fixation).

Conclusion: Open wedge osteotomy of the medial malleolus restores the bony containment of the ankle joint and decreases the tension of the deltoid ligament. It is a valuable tool for ligament balancing during TAR.

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