

## **Open Reduction and Internal Fixation of Three Displaced Malleoli**

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### ABSTRACT

**CASE HISTORY:** A 20-year-old, white/Hispanic, female visited Emergency Room with severe inflammation, lateral ecchymosis, tenderness, and displacement of the left ankle due to a fall. Patient was unable to move foot, remained non-weight bearing, and had 10/10 pain levels with palpation to ankle and foot. **PHYSICAL EXAM:** Upon orthopedics' physical examination, pain on palpation was noted on the left hallux. Her pedal pulses were readily palpable. There was moderate nonpitting edema to the left lower extremity. **DIFFERENTIAL DIAGNOSES:** Grade 3 lateral ankle sprain. **TESTS & RESULTS:** General radiology (GR) on ankle, tibia, fibula, and a computerized tomography (CT) on left ankle were ordered. GR found acute displaced angulated trimalleolar fracture with soft tissue swelling and ankle joint malalignment. CT indicated displacement of distal medial malleolar fragment, minimal posterior displacement of both the distal lateral and posterior malleolar fragment. No damage was found to the tendons and ligaments. **FINAL DIAGNOSIS:** Three displaced malleoli. **DISCUSSION:** Open reduction and internal fixation of lateral malleolus with 1/3 tubular internal fixation systems (IFS) plate and six locking and nonlocking screws across the plate. Medial malleolar displacement was reduced with a 1.25 K-wire then internally fixated with one 4.0 partially threaded cancellous IFS screw measuring 45mm in length. Fluoroscopy was used to confirm medial and lateral malleolar alignment and proper screw length. Reduction of the lateral and medial malleoli caused accidental reduction to posterior malleolar displacement and no internal fixation was needed. Patient was placed in a controlled ankle movement (CAM) walker and transferred from operating room to post-anesthesia care unit. Vital signs were stable and neurovascular status was intact in left lower extremity. She was readmitted to the floor for postoperative management and discharged two days postop. Patient was instructed to be strict non-weight bearing to her left lower extremity. She was instructed to keep the CAM walker on with ankle at 90° dorsiflexion and she ambulated with crutches. X-rays were taken during follow up with podiatrist to rule out hallux fracture, in which case there was no fracture. Patient was to be non-weight bearing with left lower extremity elevated for 3 months postop. Physical therapists were asked to evaluate and gait train the patient. **OUTCOME OF THE CASE:** Patient received 1-3 hour physical therapy sessions, tri-weekly, for three months in an outpatient facility. Therapist provided scar massages to remove scar tissue and help gain range of motion (ROM). Patient was weaned into applying full body weight to left lower extremity with CAM walker. Once patient was full weight-bearing she was permitted to cease need for CAM walker. **RETURN TO ACTIVITY AND FURTHER FOLLOW-UP:** Patient's goal was to gain the strength to run and the flexibility to wear heels again. Therapist focused on building muscle, gaining balance and stability, increasing ROM, and decreasing pain. After three months, patient was able to run and wear heels without issues. Patient fully recovered from injury and now lives comfortably with the IFS plate and screws.