FLEX-THREAD®

Surgical Case Study
Ankle Fracture

Contributed by

Joshua Wolfe, DPM, MHA

Fellowship-Trained Foot and Ankle Surgeon
Past Fellow, The Center for Orthopedic Research and Education (The CORE Institute), Phoenix, AZ
Consulting Surgeon, New Mexico State University Athletics

Introduction to Surgical Case Study

An 83-year-old male presented for a right ankle injury after sustaining a ground level fall in his driveway while getting out of his vehicle. He was initially seen in a local ER and underwent attempted closed reduction, and was splinted and discharged for outpatient follow-up. He presented to my office the following day with malreduced trimalleolar ankle fracture (**Figure 1**). He was unable to tolerate closed reduction in the office and was brought to the operating room for closed reduction (**Figure 2**). He was unable to undergo ORIF at that time secondary to soft tissue swelling. He returned to the operating room once his soft tissues were amenable to ORIF.

Preoperative Considerations

Figure 1 demonstrates a trimalleolar ankle fracture of the right ankle. There was noted to be significant valgus displacement of his ankle fracture consistent with global instability of the patient's trimalleolar ankle fracture.

Figure 2 demonstrates a closed reduction of trimalleolar ankle fracture in good alignment.

Surgical Technique

The patient was brought to the operating room in standard fashion and was placed under general anesthesia. The lower extremity splint was removed, and soft tissues were wrinkle-positive and amenable to ORIF. Landmarks were identified for fracture and distal malleolus (**Figure 3**). Mini-open technique was performed to allow for adequate mobilization of lateral malleolar fracture and direct anatomic reduction (**Figure 4**). Cross-malleolar clamping may be used for laterally translated malleolus that does not anatomically reduce with direct clamping alone, as seen in **Figure 5**. Entry wire was then placed in a retrograde fashion from the tip of the fibula (**Figure 6**). Positioning was confirmed on AP and lateral radiographs to ensure appropriate placement.

Opening reamer was used distally with sequential reaming of the fibular canal to determine the appropriate size of the fibular nail. We then placed the Flex-Thread 4.5 x 130mm fibular nail (**Figure 7**). Rotation was then set with syndesmotic wire through the jig to prevent malrotation of the nail during distal screw insertion (**Figure 8**). Distal screws were then drilled


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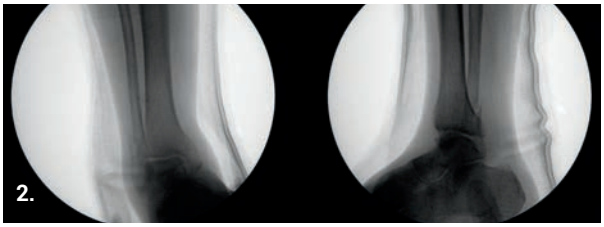
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Surgical Technique *continued*

through the jig in standard fashion while maintaining direct reduction of the fracture site (**Figure 9**). The fibula was noted to be in good alignment. Medial malleolus was then reduced and fixated in standard fashion before placing syndesmotic hardware. In elderly patients, we find that syndesmotic fixation does provide significantly improved stability to allow for early weight bearing. In this case, two 3.5mm cortical screws were placed across the syndesmosis. Care was taken to ensure maximum dorsiflexion of the ankle to prevent syndesmotic malreduction and ankle impingement.

Postoperative Planning, Protocol, and Outcome

Postoperative radiographs (**Figure 10**) demonstrated a well-healed trimalleolar ankle fracture. The hardware was intact without failure. The anatomic alignment of the patient's fracture sites was noted without displacement.

We typically allow patients to be weight-bearing as tolerated in a tall CAM boot immediately after surgery on two conditions: 1) There is no significant comminution of the fracture site; and 2) In the elderly, syndesmotic fixation should be screws rather than flexible fixation to provide additional stability in the less robust bone. Patients are started in physical therapy at four weeks post-op for strengthening and range of motion. Patients are then transitioned out of their boot to an ASO ankle brace at six weeks post-op. Patients typically return to normal shoes without ASO at ten weeks post-op.

As demonstrated in **Figure 10**, the patient has attained appropriate healing with a maintained reduction of his fracture sites. The patient was able to tolerate early weight bearing and range of motion of his ankle fracture. Early mobilization is essential for geriatric ankle fractures to prevent decompensation of the patient's overall health status and maintain mobility and independence while minimizing post-operative complications associated with wound healing in the elderly. The patient has returned to full activity without limitation. He has followed up 12 months postoperatively with good results.


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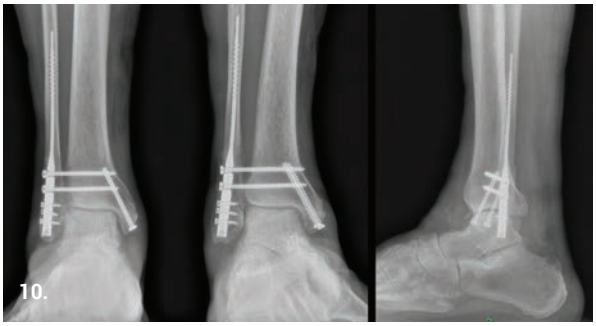
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Conventus Flower Orthopedics
100 Witmer Road, Suite 280
Horsham, PA 19044
877.778.8587 | ConventusFlower.com

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