Indications:

The ankle joint consists of three bones (tibia, fibula, and talus) and two joints (talocrural and tibio-fibular syndesmosis) that create a slot-and-peg joint that is commonly referred to as the “mortise”. The bony components of the tibia and fibula are well seen on x-ray. These include the distal fibula (lateral malleolus), medial malleolus (most medial and distal part of the non-weightbearing segment of the tibia), and the posterior segment of the tibial joint surface (posterior malleolus). A ligament, the deep branch of the deltoid ligament, attaches the medial malleolus to the medial body of the talus and prevents lateral translation of the talus under the weight-bearing surface of the tibia (plafond). Injuries to a single structure are typically stable and will go to union in an acceptable position with minimal orthopedic involvement. Injuries to both the medial and lateral side of the joint are unstable and will tend to displace, even at a relatively late time.

Minimally displaced ankle fractures involving only one side of the joint may be treated with protected weight-bearing in a walking boot orthosis. Isolated fractures of the medial malleolus require confirmation of the absence of a high fibula fracture (Maisonneuve pattern) requiring surgical repair with a tibia-fibula view. Isolated fractures of the lateral malleolus require confirmation of the absence of injury to either the deep deltoid or syndesmotic ligaments with a stressed mortise view of the ankle. This is done in one of two ways. First, the patient may be positioned lying on their injured side with the ankle hanging off the end of the x-ray gantry. A mortise view is obtained in this position, using gravity as the stressing force. A second technique requires the patient to be positioned supine in the usual mortise position. The foot is then gently externally rotated by a trained provider to obtain a stressed view. Medial clear space widening relative to the superior joint space suggests an associated ligamentous injury.

Stable, unimalleolar fractures are treated as follows:

Treatment Protocol

Initial evaluation-- Begin Phase I (fracture healing)

- Bracing: CAM Boot walker to injured extremity to be worn day and night. Patient may weight bear as tolerated in boot.
- Pain assessment. Pain medication as needed.
  - okay for patients who do not abuse tobacco and have 2+ dp pulses to take NSAIDS in addition to narcotics for pain control.
  - People who abuse nicotine (e-cigarettes, cigarettes, and chewing tobacco) should be encouraged to stop and are also restricted from use of NSAIDs.
- Work restrictions:
  - May not drive or operate heavy machinery.
  - Must be allowed 15 minute breaks q 2 hours for leg elevation
Must wear CAM boot at all times.

- Expected Return To Work:
  - Sedentary/ Cognitive: next day
  - Light Manual: 6 weeks
  - Heavy Manual: 8-10 weeks

- Schedule follow-up visit 6 weeks from day of injury.

6 week follow-up visit--

- AP/ Lat/ Mortise view of ankle.
- Assess pain/ persistent tenderness.
  - If fracture site remains tender and/or no bridging callus on 2+ cortices of ankle on XR:
    - continue Phase I restrictions and return to clinic in two weeks.
  - If fracture site nontender and bridging callus is seen on 3+ cortices on XR:
    - Advance activity as below to Phase II (Return to activity)

- Advanced to Phase II → schedule f/u for 3 months from injury
- Work note: May resume driving. No carrying, lifting, pushing, or pulling >20#. Must take 15 minute breaks every 4 hours for leg elevation.
- Therapy prescription.

Therapy (Phase II)

**Physical Therapy 2-3x/ week x 6 weeks**

- Start AROM/ PROM of ankle and hindfoot
- Achilles stretch with 1 cm bump under 1st MTP to lock midfoot and focus stretch on gastrocnemius complex.
- Ankle dorsiflexion, plantarflexion, inversion, eversion strengthening
- Balance and proprioception exercises
- modalities prn
- HEP -- wean to HEP as tolerated.
- Wean to shoes as tolerated.

3 month follow-up: Return to sporting/ heavy activity.

- AP/ Lat/ Mortise view of ankle
- Assess ankle stability.
  - anterior drawer.
  - inversion/ eversion strength

- Therapy: consider sport-specific exercise program for cutting/ pivoting athletes & work-conditioning for patients with particularly strenuous laboring jobs.

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