
CALCANEUS FRACTURE NONOPERATIVE PROTOCOL

Fractures of the calcaneus are a complex group of injuries with highly variable outcomes. They most commonly occur as a result of axial loading. A single twisting injury may cause a non-displaced fracture. The vast majority usually occurs as a result of a fall or motor vehicle accident. Approximately 75% of these injuries involve displacement of the subtalar joint. Associated injuries: 10% spine, 25% other extremity, 10% bilateral, <5% open.

Type I fractures are non-displaced, type II are displaced 2-part fractures, type III are displaced 3-part fractures and type IV are displaced, comminuted 4-part fractures. Types II and III calcaneal fractures are usually treated with ORIF to create anatomic reduction and restore the overall shape and height of the calcaneus, as well as restoring congruency to the posterior articular facet.

There are a number of reasons calcaneus fractures are treated non-operatively. Type I (non-displaced) and some type II fractures up to 2 mm of displacement have good outcomes with non-operative treatment. Six weeks of splinting, elevation NWB or TTWB and early motion yield results good. Also, poor soft tissue (swelling/fracture blisters/ecchymosis/open injury), age, activity level, social history (tobacco) and the patient health must be considered and may preclude operative treatment.

Complications are relatively common with calcaneus fractures and may include post-traumatic arthritis, peroneal impingement (10-20%) subtalar stiffness, FHL scarring, widening of heel, decreased dorsiflexion, weak plantar flexion, leg length discrepancy, wound dehiscence, infection and sural nerve injury.

Calcaneus fractures may result in long-term mild pain and discomfort. From longterm studies, evidence demonstrates that 65% of patients may be limited in vigorous or sports activities, only 50% are able to ambulate over any surface, and 40% are unable to return to previous employment. With excellent care from our physical therapy and orthopaedic team, our goal is to maximize your ability to return to your daily activities and work.

Rehabilitation Guidelines

GOALS:

- Immobilize (splint, boot, or cast) for 6 weeks
- Elevation, ice, and medication to control pain and swelling
- Nonweight bearing (NWB) x 6 weeks
- Hip and knee AROM, hip strengthening
- Core and upper extremity strengthening

Phase I- Protection (Weeks 0 to 6)

WEEKS 0-2: Nonweightbearing in splint or boot

- elevate the leg above the heart to minimize swelling 23 hours/day
- ice behind the knee 30 min on/30 min off (Vascutherm or ice bag)
- minimize activity and focus on rest
- Acetaminophen (e.g. Tylenol) 500mg every 6 hours alternating with ibuprofen 600mg every 6 hours or meloxicam 15mg once daily. Narcotic pain medication (hydrocodone or oxycodone) should be reserved for breakthrough pain as second line medication. Do not take over 4,000mg of acetaminophen per day.

WEEKS 3-4:

- AROM/AAROM, circumduction (alphabets)
- Soft tissue mobilization to peroneal tendons and FHL
- Edema Control

WEEKS 4-6:

- PROM/AROM
- Joint mobilization to ST joint/ posterior ankle mobs
- Heel cord stretching
- Soft tissue mobilization to peroneals and FHL
- Gait Training
- Open chain strengthening-theraband, ankle machine

Phase II- Weightbearing and Early strengthening (Weeks 6 to 12)

WEEK 6-10: Orthotics

Developed in conjunction with the physicians at South Bend Orthopaedics

- Closed chain strengthening: weight machine, weight shifts, seated BAPS, Sportscord, lunges, heel raises.
- Proprioception- SLS balance static/dynamic, mini-tramp, rocker board, balance pad, dynadisc.

PHYSICAL THERAPY: start between 4-6 weeks post injury, focus on motion and swelling at first, then gait training and strengthening

- focus on hip/knee/core for first 6-10 weeks
- patient specific desires on gait training with/without therapist
- DO NOT attempt to gain motion in the subtalar joint; focus only on dorsiflexion/plantarflexion (DO NOT ATTEMPT side to side motion until 6-8 weeks and fracture healed per MD)

DRIVING: Prior to driving, you must be able weightbear on your right foot without crutches. In addition, you may begin driving at 9 weeks if surgery on right ankle; if left ankle, may drive automatic transmission car when off narcotic pain medication

FULL ACTIVITY: This may take 6 to 18 months. There is no guarantee on outcome. All conservative management options have risk of worsening pain, progressive irreversible deformity, and failing to provide substantial pain relief. All surgical management options have risk of infection, skin or bone healing issues, and/or worsening pain. Our promise is that we will not stop working with you until we maximize your return to function, gainful work, and minimize pain. Nonoperative calcaneus fractures do have high risk for longterm stiffness and pain that may require subtalar fusion in the future.

SHOWERING: You may shower with soap and water 1 day after surgery. Avoid lotions, creams, or antibiotic ointments on surgical site until directed by your orthopaedic surgeon. No baths or submerging operative site under water until incision has completely healed.

SKIN CARE: Steristrips are typically placed on your incision at your follow up appointment. Steristrips will typically fall off on their own. Remove steristrips in shower after 3 weeks if they remain on incision. Incisions may become sensitive. Some surgical incisions based on their location and patient factors are more likely to require postoperative scar desensitization with physical therapy. You may use Mederma or other skin protectant lotion once incisions have completely healed and approved by your orthopaedic surgeon. Do not place cortisone or other steroid on your incision unless directed by your orthopaedic surgeon. Incisions and surgical site scars are more prone to burn by ultraviolet radiation when out in the sun. Always apply sun screen onto the healed incision once fully healed.

STOOL SOFTENERS: While on narcotic pain medication (e.g. Norco/hydrocodone or Percocet/oxycodone) especially within first 72 hours of surgery, you should take stool softener (e.g. Miralax, docusate, senna). Discontinue if you develop loose stool or diarrhea.

REFERENCES:

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