
Calcaneal Fracture and Rehabilitation

Preoperative Rehabilitation:

- Immediate elevation of involved extremity to decrease swelling
- Compression including: foot pump, intermittent compression devices, or compression wraps
- Ice
- Instruction in use of wheelchair, bedside transfers, or crutches to maintain strict nonweight bearing status
- Instruction in appropriate nonoperative or postoperative rehabilitation plan

NONOPERATIVE AND POSTOPERATIVE REHABILITATION

Note: Both the progression of nonoperative and postoperative management of calcaneal fractures include traditional immobilization and early motion rehabilitation protocols. In fact, the traditional immobilization protocols of nonoperative and postoperative management are similar, and are thereby combined in the progression below. Phases II and III of traditional and early motion rehabilitation protocols after nonoperative or postoperative care are comparable as well and are described together below. Much debate remains on the preferable management of calcaneal fractures after operative management. Bohler, Burdeaux, Palmer, and Parmer recommend traditional immobilization after surgical repair, while Buckley, Essex-Lopresti, Lance, Paley, and Wei advocate early mobilization beginning within 24-72 hours of surgical repair. Debate also exists on the preferable management of calcaneal fractures with nonoperative management. Barnard proposes the use of traditional immobilization in the form of a short leg cast, while Lance, Paley, and Parmer recommend early mobilization with nonoperative management.

Phase I for Traditional Immobilization and Rehabilitation following Nonoperative and Postoperative Management: Weeks 1-4

Goals: Control edema and pain

Prevent extension of fracture or loss of surgical stabilization

Minimize loss of function and cardiovascular endurance

Intervention:

- Cast with ankle in neutral and sometimes slight eversion,
- Elevation
- Ice
- After 2-4 days, instruct in non-weight bearing ambulation utilizing crutches or walker
- Instruct in wheelchair use with appropriate sitting schedule to limit time involved extremity spends in dependent-gravity position
- Instruct in comprehensive exercise and cardiovascular program utilizing upper

extremities and uninvolved lower extremity

Phase I for Early Motion and Rehabilitation following Nonoperative and Postoperative

Management: Weeks 1-4

Goals: Control edema and pain

Prevent extension of fracture and loss of surgical stabilization

Prevent contracture and loss of motion at ankle/foot joints

Minimize loss of function and cardiovascular endurance

Intervention:

- Elevation of involved extremity with ankle maintained at 90-degree angle in relation to the lower leg (or tibia)
- Ice combined with compression wrap
- After 24-72 hours, active range-of-motion exercises in small amounts of movement begin at all joints of the foot and ankle, including: tibiotalar, subtalar, midtarsal, and toe joints, and are completed every hour
- After 2-4 days, instruct in non-weight bearing ambulation utilizing crutches or walker
- After 14 days, instruct in proper fitting and usage of prescribed surgical shoe or orthosis to prevent contracture
- Instruct in wheelchair use with appropriate sitting schedule to limit time involved extremity spends in dependent-gravity position
- Instruct in comprehensive exercise and cardiovascular program utilizing upper extremities and uninvolved lower extremity

Phase II for Traditional Immobilization/Early Mobilization and Rehabilitation following

Nonoperative and Postoperative Management:

Weeks 5-8

Goals: Control remaining or residual edema and pain

Prevent re-injury or complication of fracture by progressing weight-bearing safely

Prevent contracture and regain motion at ankle/foot joints

Minimize loss of function and cardiovascular endurance

Intervention:

- Continued elevation, icing, and compression as needed for involved lower extremity
- After 6-8 weeks, instruct in partial-weight bearing ambulation utilizing crutches or walker
- Initiate vigorous exercise and range of motion to regain and maintain motion at all joints: tibiotalar, subtalar, midtarsal, and toe joints, including active range of motion in large amounts of movement and progressive isometric or resisted exercises

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- Progress and monitor comprehensive upper extremity and cardiovascular program

Phase III for Traditional Immobilization/Early Mobilization and Rehabilitation following
Nonoperative and Postoperative Management: Weeks 9-12

Goals: Progress weight-bearing status

Normal gait on all surfaces

Restore full range of motion

Restore full strength

Allow return to previous work status

Intervention:

- After 9-12 weeks, instruct in normal full-weight bearing ambulation with appropriate assistive device as needed
- Progress and monitor the subtalar joint's ability to adapt for ambulation on all surfaces, including graded and uneven surfaces
- Joint mobilization to all hypomobile joints including: tibiotalar, subtalar, midtarsal, and to toe joints
- Soft tissue mobilization to hypomobile tissues of the gastrocnemius complex, plantar fascia, or other appropriate tissues
- Progressive resisted strengthening of gastrocnemius complex through use of pulleys, weighted exercise, toe-walking ambulation, ascending/descending stairs, skipping or other plyometric exercise, pool exercises, and other climbing activities
- Work hardening program or activities to allow return to work between 13- 52 weeks