Clinical Practice Guideline: **Treatment of Open Foot (Calcaneal, Tarsal, Talus, Metatarsal and Phalangeal) Fractures**

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GUIDELINES

American Specialty Health – Specialty (ASH) considers services consisting of CPT Code 28415, 28445, 28465, 28485, 28505, 28525, or 28585 to be medically necessary for the treatment of calcaneal, tarsal, talus, metatarsal, and/or phalangeal fracture(s) or tarsal/talotarsal joint dislocation when **one (1) or more** of the following criteria have been met:

- Closed reduction is not feasible or cannot be maintained
- Intra-articular fracture
- Significant displacement
- Procedure is part of multistep repair of an open fracture
- Malunion, nonunion, or deformity

ICD-10 Codes That Support Medical Necessity

ICD-10 Code	ICD-10 Code Description
S92.001(B)(G)(K)(P)(S) - S92.066(B)(G)(K)(P)(S)	Open fracture of calcaneus (including malunion and nonunion)
S92.101(B)(G) (K)(P)(S) - S92.199(B)(G)(K)(P)(S)	Open fracture of talus (including malunion and nonunion)
S92.201(B)(G) (K)(P)(S) - S92.256(B)(G)(K)(P)(S)	Open fracture of tarsal (including malunion and nonunion)
S92.301(B)(G)(K)(P)(S) - S92.356(B)(G)(K)(P)(S)	Open fracture of metatarsal (including malunion and nonunion)
S92.401(B)(G)(K)(P)(S) - S92.499(B)(G)(K)(P)(S)	Open fracture of great toe (including malunion and nonunion)
S92.501(B)(G)(K)(P)(S) - S92.599(B)(G)(K)(P)(S)	Open fracture of lesser toes (including malunion and nonunion)

TREATMENT ADJUNCTS FOR FRACTURE MANAGEMENT (as applicable)

Electrical Stimulation

Non-invasive electrical stimulation of bone to promote healing (CPT Code 20974) is considered medically necessary as an alternative to open treatment for malunion or nonunion fractures of long bones (metatarsals and phalanges) only when serial radiographs have confirmed that fracture healing has ceased for 3 or more months prior to starting treatment with the electrical osteogenic stimulator (serial radiographs must include a minimum of 2 sets of radiographs, each including multiple views of the fracture site, separated by a minimum of 90 days).

Fixation

Basic indications for the use of external fixators (CPT Codes 20690 and 20692) include:

1. Fractures and dislocations accompanying soft-tissue damage
2. Penetrating injuries to joints, including injuries resulting from gunshot wounds
3. The rapid stabilization of fractures in hemodynamically unstable patients, including those with multiple fractures or injuries
4. Fractures with extensive damage, including comminution and periosteal stripping
5. Situations in which the use of internal fixation is contraindicated, including the presence of acute or chronic focal infection
6. Infected malunions, nonunion, traumatic deformities, and soft-tissue or bony defects

Fracture reduction with immobilization technique (CPT Code 20650) is considered medically necessary for relatively stable fractures and dislocations that cannot be treated by casting. Do not report CPT code 20650 (Insertion of wire or pin with application of skeletal traction, including removal [separate procedure]) when skeletal traction is not used. This code should not be reported with a fracture treatment or other repair code for the same anatomic region.

Report CPT Code 20694 for removal, under anesthesia, of the external fixation system.

CPT Codes and Descriptions

CPT Code	CPT Code Description
20650	Insertion of wire or pin with application of skeletal traction, including removal (separate procedure)
20690	Application of a uniplane (pins or wires in 1 plane), unilateral, external fixation system
20692	Application of a multiplane (pins or wires in more than 1 plane), unilateral, external fixation system (e.g., Ilizarov, Monticelli type)

CPT Code	CPT Code Description
20694	Removal, under anesthesia, of external fixation system
20974	Electrical stimulation to aid bone healing; noninvasive (nonoperative)
28415	Open treatment of calcaneal fracture, includes internal fixation, when performed
28445	Open treatment of talus fracture, includes internal fixation, when performed
28465	Open treatment of tarsal bone fracture (except talus and calcaneus), includes internal fixation, when performed, each
28485	Open treatment of metatarsal fracture, includes internal fixation, when performed, each
28505	Open treatment of fracture, great toe, phalanx or phalanges, includes internal fixation, when performed
28525	Open treatment of fracture, phalanx or phalanges, other than great toe, includes internal fixation, when performed, each
28585	Open treatment of talotarsal joint dislocation, includes internal fixation, when performed

GENERAL

Fractures

About 10 percent of all fractures involve one or more of the 26 bones in each foot. The mechanism of injury is frequently an indicator of the involved bone(s). For example, fractures of the calcaneus usually occur when a person jumps or falls from a height, landing directly on their feet. Injuries to the midfoot (navicular, cuboid and three cuneiform bones), the forefoot (metatarsals), and toes (phalanges) often are caused by a direct blow (e.g., a misdirected kick) or from a crushing injury such as a heavy object dropped on the foot. Stress fractures are more commonly observed in the lower extremities and can be thought of as tiny cracks in the bone surface. Most other types of fractures fully traverse the bone. These can be stable (no shift in bone alignment) or displaced (fractured bones are not aligned) (AAOS, 2021).

The open fracture should be assessed as a matter of urgency following presentation, with antibiotic treatment and debridement. Mechanical stabilization may be initially achieved with external fixation if definitive management with an intramedullary nail cannot be

achieved at the time of debridement. The fixation device of choice is dependent on the severity of the injury. Appropriate vascular and surgical involvement should be sought early as indicated by injury severity. Adequate soft tissue cover and vascularity to the injury site are important to limit complications and promote bone healing (Elniel et al., 2018).

Fixation Procedures for Fracture

Alternative approaches such as percutaneous or external fixation may be appropriate for patients with open wounds, significant edema, or poor skin condition(s) predisposing these patients to tissue/wound breakdown. Surgical fixation of ankle and foot trauma can present challenges. Percutaneous fixation may be appropriate for fractures with extensive damage to the soft tissue envelope. Percutaneous fixation can benefit both soft tissue and osseous healing when used correctly (e.g., preserving blood supply, minimizing soft tissue loss, and restoring limb function) (McMillen et al., 2011).

Ramelt et al. (2010) assessed percutaneous arthroscopically assisted reduction and screw fixation of selected, less severe fractures. Their evaluations included the complications, clinical hindfoot alignment, motion, functional outcome scores, and x-rays. They performed percutaneous reduction and screw fixation in 61 patients with Type II (Sanders) calcaneal fractures. In 33 (54%) of these patients with displaced intra-articular fractures (types IIA and IIB), anatomic reduction of the subtalar joint was confirmed arthroscopically. Among these patients, no wound complications or infections were observed. Further, only three patients required minor additional treatment. Twenty-four of 33 patients (73%) were followed a minimum of two years. The average AOFAS ankle-hindfoot score at last follow-up was 92.1 (range, 80-100). Further, Böhler's angle and calcaneal width were reduced comparable to the values of the uninjured limb. Ramelt et al. (2010) concluded percutaneous fixation is a reasonable alternative for moderately displaced Type II fractures provided there was adequate control over anatomic joint reduction using either arthroscopy or high-resolution (3-D) fluoroscopy.

Atesok et al. (2011) performed a systematic analysis of published studies which evaluated the feasibility, efficiency, and outcomes of arthroscopy-assisted intra-articular fracture fixation. The authors found that arthroscopy-assisted techniques have been used successfully to treat fractures in many regions of the body, including the calcaneus. Compared to open surgical treatment, they found arthroscopic fracture fixation to be less invasive and allow direct visualization of the intra-articular space. However, such arthroscopic methods take time to learn and to perform effectively. Atesok et al. (2011) concluded randomized controlled trials are necessary to validate broader use of arthroscopy-assisted techniques in the management of intra-articular fractures.

According to Ali et al. (2009), external fixation may be an appropriate alternative. They reduced 25 intra-articular calcaneal fractures (25 patients) using a minimal incision and

fixed with an Ilizarov external fixator. Patients averaged 38.6 years of age. Applying the Sanders CT classification, 10 (40%) were type II, 9 (36%) type III, and 6 (24%) type IV. Follow-up evaluations averaged 30 months. Using the AOFAS scale for ankle and hind foot, the average score was 68 with 6 (24%) rating excellent, 11 (44%) good, 6 (24%) fair, and 2 (8%) poor results. Radiographic evaluation identified reduction malalignment (< 5 degrees in 22 cases and > 10 degrees in 3 cases). The calcaneal height was restored to 92% of the normal side and the mean (+/- SD) Böhler angle was changed from 11 degrees +/- 9 degrees pre-surgery to 24 degrees +/- 5 degrees post-surgery. Although this study involved a small number of non-randomized cases, it appears to indicate it could be a viable alternative to traditional methods of treating some types of intra-articular calcaneal fractures (Ali et al., 2009).

Dislocation with Fracture

The complication rates of open calcaneal fractures are high and increase with the severity of the wound. They are commonly caused by high energy trauma, such as motor vehicle or motorcycle accidents or a fall from height. Initial treatment includes antibiotic treatment and debridement. The medial wounds are caused by the medial sustentaculum fragment; therefore, a reduction of the fracture is necessary to relieve stress on the medial wounds and to allow tension free closure. The tuber and sustentaculum are well accessible via the medial wound and fixated using 1.6 mm Kirschner wires from tuber into the sustentaculum fragment and if needed into the talus. An additional Essex-Lopresti maneuver might be necessary to reduce a tonguetype calcaneal fracture using a Schanz pin from posterior. This restores height and axial alignment. In case of severe instability (due to additional injuries) an external fixator could be added (Spierings et al., 2019).

According to Nanchahal et al., (2009), managing open talar and calcaneal injuries successfully is a clear challenge, but surgery is essential for wound excision, stabilization and cover. Acute management should include orthopedic and plastic surgeon assessment, debridement and provisional stabilization. With regard to joint dislocations (ankle or subtalar), these are to be reduced at primary surgery (Nanchahal et al., 2009). A combination of internal and external fixation techniques is often necessary in severe foot and ankle deformities secondary to leg length discrepancies (Thakral and Conway, 2011).

Surgery Contraindications

Potential complications of foot fracture surgery include wound breakdown, failure of the fracture to heal (nonunion) or healing in a bad position (malunion), infection, persistent pain, loss of motion and arthritis. Surgical intervention may be contraindicated if there is significant soft tissue swelling, infection, skin or vascular problems (e.g., diabetes), a non-functional extremity from stroke or paralysis, or a medical condition that would increase the risk of anesthetic related complications.

PRACTITIONER SCOPE AND TRAINING

Practitioners should practice only in the areas in which they are competent based on their education, training, and experience. Levels of education, experience, and proficiency may vary among individual practitioners. It is ethically and legally incumbent on a practitioner to determine where they have the knowledge and skills necessary to perform such services and whether the services are within their scope of practice.

It is best practice for the practitioner to appropriately render services to a member only if they are trained, equally skilled, and adequately competent to deliver a service compared to others trained to perform the same procedure. If the service would be most competently delivered by another health care practitioner who has more skill and training, it would be best practice to refer the member to the more expert practitioner.

Best practice can be defined as a clinical, scientific, or professional technique, method, or process that is typically evidence-based and consensus driven and is recognized by a majority of professionals in a particular field as more effective at delivering a particular outcome than any other practice (Joint Commission International Accreditation Standards for Hospitals, 2020).

Depending on the practitioner's scope of practice, training, and experience, a member's condition and/or symptoms during examination or the course of treatment may indicate the need for referral to another practitioner or even emergency care. In such cases it is prudent for the practitioner to refer the member for appropriate co-management (e.g., to their primary care physician) or if immediate emergency care is warranted, to contact 911 as appropriate. See the *Managing Medical Emergencies (CPG 159 – S)* policy for information.

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