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

Date of Implementation: August 20, 2015

Product: Specialty

GUIDELINE

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:

<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>S92.001(B)(G)(K)(P)(S) - S92.066(B)(K)(P)(S)</td>
<td>Open fracture of calcaneus (including malunion and nonunion)</td>
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<tr>
<td>S92.201(B)(G)(K)(P)(S) - S92.256(B)(K)(P)(S)</td>
<td>Open fracture of tarsal (including malunion and nonunion)</td>
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<tr>
<td>S92.301(B)(G)(K)(P)(S) - S92.356(B)(K)(P)(S)</td>
<td>Open fracture of metatarsal (including malunion and nonunion)</td>
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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

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>20650</td>
<td>Insertion of wire or pin with application of skeletal traction, including removal (separate procedure)</td>
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<tr>
<td>20690</td>
<td>Application of a uniplane (pins or wires in 1 plane), unilateral, external fixation system</td>
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<tr>
<td>20692</td>
<td>Application of a multiplane (pins or wires in more than 1 plane), unilateral, external fixation system (e.g., Ilizarov, Monticelli type)</td>
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<td>20694</td>
<td>Removal, under anesthesia, of external fixation system</td>
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<tr>
<td>20974</td>
<td>Electrical stimulation to aid bone healing; noninvasive (nonoperative)</td>
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<tr>
<td>CPT Code</td>
<td>Description</td>
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<tr>
<td>28415</td>
<td>Open treatment of calcaneal fracture, includes internal fixation, when performed</td>
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<tr>
<td>28445</td>
<td>Open treatment of talus fracture, includes internal fixation, when performed</td>
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<tr>
<td>28465</td>
<td>Open treatment of tarsal bone fracture (except talus and calcaneus), includes internal fixation, when performed, each</td>
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<tr>
<td>28485</td>
<td>Open treatment of metatarsal fracture each, includes internal fixation, when performed, each</td>
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<tr>
<td>28505</td>
<td>Open treatment of fracture, great toe, phalanx or phalanges, includes internal fixation, when performed</td>
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<tr>
<td>28525</td>
<td>Open treatment of fracture, phalanx or phalanges, other than great toe, includes internal fixation, when performed, each</td>
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**GENERAL**

**Fractures**

About 10% 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 (AOFAS, 2015). 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, 2012).

If surgical management of a foot fracture is necessary, the goals are to stabilize and restore the fractured bone in its appropriate position, facilitate healing, restore function and reduce the risk of subsequent complications (e.g., persistent pain, loss of motion and/or arthritis) (AOFAS, 2015).

The literature suggests that a conservative (non-surgical) approach can be used to treat most nondisplaced or extra-articular fractures. For example, metatarsal fractures often heal with conservative care. The foot is wrapped to reduce swelling and placed in an orthopedic post-op or Reese shoe. Additionally, cast boots may be appropriate (Wedro, 2013). However, displaced fractures may benefit from surgical intervention (AOFAS, 2015). Most phalangeal fractures can also be treated non-surgically. However displaced fractures that lead to toe deformation may benefit from surgical management (AOFAS, 2015).
A systematic review of randomized controlled trials (RCTs) found insufficient evidence to conclude operative treatment is superior to nonoperative treatment of some intra-articular calcaneal fractures. The optimal management of calcaneal fractures is controversial, as the correlation between outcome and anatomical restoration has yet to be proven (Gougoulias et al., 2009). Additionally, post-surgical complications are common. A search of established databases (e.g., MEDLINE, Google scholar, the Cochrane Controlled Trials Register) for calcaneal fractures included randomized and quasi-randomized trials. Two separate comparisons were performed in the trials: operative versus non-operative management (five studies), and impulse compression versus no impulse compression (one study). While the existing trials are of relatively poor quality, results showed no difference in residual pain, but favored surgical management for decreasing the likelihood of requiring subtalar fusion, as well as, the ability to return to work. The reviewers concluded it is unclear whether general health outcome measures, injury specific scores and radiographic measures improve following surgical intervention, and whether the benefits of surgery outweigh the risks (Gougoulias et al., 2009).

According to Gurkan et al. (2011) a high complication rate has been associated with open reduction and internal fixation of calcaneal fractures (Sanders type IV). They assessed the long-term outcome of 83 comminuted intra-articular type IV calcaneal fractures in 64 patients over a seven year period who were treated non-surgically (closed reduction and immobilization in a long leg cast). Patients were assessed quarterly in the first year, and semi-annually thereafter. At each visit, the involved ankles were evaluated via the American Orthopaedic Foot and Ankle Society (AOFAS) criteria. Both the presence of osteoarthritis and degree of fracture healing were assessed. At a mean follow-up of 51 months the mean AOFAS score was 72. Osteoarthritis was scored radiologically and identified in the subtalar joints of 75 ankles (90%) on x-ray and in all ankles via CT scans, of which 20 were grade 0 - 1, 39 grade 2, and 24 grade 3. A non-operative approach to treating these types of fractures may be simpler with fewer complications and better tolerated than surgery.

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. 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 hindfoot, 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**

There are circumstances which may require surgical management in the treatment of tarsal, metatarsal, and/or phalangeal fracture(s) or talotarsal joint dislocation. For example, nonoperative management of displaced intra-articular fractures of the calcaneus can lead to malunion, which affects ankle and subtalar joint function. While some calcaneal
fractures can be managed conservatively, most require surgical intervention (Stapleton et al., 2009).

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 (AOFAS, 2015).

**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, 2017).

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 in a Health Care Facility (CPG 159 – S) policy for information.

References


