

FRACTURE OF THE CALCANEUS, OPEN REDUCTION

Postoperative Recovery Protocol

What is a fracture of the calcaneus?

Fractures of the heel bone or calcaneus can be really debilitating injuries. When the heel bone is injured, it is typically caused by tremendous forces which impact on the foot, for example associated with falls from a height, or in a motor vehicle accident. Imagine standing on an orange, and this is effect what happens to the calcaneus, which essentially gets squashed flat, and then widens. The joint between the calcaneus and the talus is called the subtalar joint. This joint is responsible for the inward and outward movements of the foot, otherwise called inversion and eversion. When the calcaneus is fractured, the movement of inversion and eversion is commonly decreased or lost completely. The upward and downward movement of the ankle (dorsiflexion and plantarflexion) is not usually affected by fractures of the calcaneus. There are numerous problems associated with and caused by fractures of the calcaneus. These include widening and deformity of the bone itself, irregularity of the subtalar joint which leads to arthritis, and injuries to the heel cushion (the heel pad), as well as the nerves and tendons surrounding the heel.

Treatment of the calcaneus fracture

The ideal goal of treatment is to restore the dimensions of the heel as accurately as possible. This is always difficult because of the multiple fragments of bone that are commonly present. It is almost like trying to piece together a jigsaw puzzle. However, surgery can be performed and for the majority of patient's surgery is the correct form of treatment. The goal of surgery is to restore the anatomic dimensions and structure of the heel, and this is performed by what is called an open reduction and internal fixation of the fracture with a plate and screws. This improves the shape of the heel, decreases the likelihood of arthritis developing, and maximizes the potential for inward and outward movement of the foot. There are times however when the bone is so severely smashed and fractured, that although surgery is indicated, in addition to the open reduction and internal fixation, the heel joint (the subtalar joint) is fused. This is performed to decrease the inevitable likelihood painful arthritis developing subsequently. Although the inversion and eversion movement of the foot is lost after a subtalar fusion, there is a more rapid return to activities and functions after this type of surgery.

There is another type of surgery which we perform to fix a calcaneus fracture, which we have developed here at the Institute, and which uses mini punctures or incisions on the foot. Instead of making a very large incision on the heel which has a high complication rate, these punctures are made and screws are inserted into the bone. The reduction of the bone pieces and the fracture is not always as good as when a large incision is made, but the risks of a problem with the healing are a lot less with the mini incision approach.

Surgery: general facts

- Surgery cannot be performed when there is marked swelling in the ankle.
- The ideal time to perform surgery is when there is minimal swelling of the skin, and frequently, surgery will have to be delayed for more than a week in order to perform the surgery more safely.
- Sometimes we are able to perform surgery more quickly if we admit the patient to hospital and apply a pump called an intermittent compression foot pump.



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- We will sometimes also wrap the foot in a special bandage called an Unna boot, and give the patient a fluid pill called a diuretic to decrease swelling.
- Surgery is performed under a general anesthetic, and takes approximately two hours to perform. The surgical procedure is called an open reduction and internal fixation.
- The surgery is performed through an incision on the outside of the heel which exposes the side of the heel and the fracture. At times tiny punctures are made instead of a large incision. The bone is put together and held in place with a metal plate and multiple screws.
- A large bandage is applied to the leg with plaster incorporated into the dressing to prevent movement of the ankle, and decrease pain.
- Postoperative recovery: General factors
- There will be a hard plaster bandage applied to the leg for two weeks after surgery.
- In order to stay off your foot, you will need to use crutches, a walker, a wheelchair or a scooter type device called a roll-about.
- Your first follow up visit will be at approximately 2 weeks to check the incision healing.
- We will remove the stitches once the skin has healed, which is between 2 and 4 weeks.
- We will usually apply a removable boot for you to wear at this time, but occasionally we use a short leg below the knee cast for a short period of time.
- If the surgery is on your left ankle, you should be able to drive an automatic vehicle at two weeks. If the surgery is on the right ankle, you may drive between 3 and 4 weeks.
- Exercises of the foot and ankle are to be encouraged at about 2-3 weeks after surgery.
- You will not be putting weight on the leg for 10-12 weeks, but are allowed to be as mobile as you can, with crutches or a walker device.
- If you have access to a swimming pool, I encourage you to use this as soon as the incisions are completely dry and healed, which will be at about 3 weeks. Swimming will significantly improve your recovery and allow you to begin bearing some weight on the leg in the pool.
- You should remove the boot for twenty minutes three times a day to exercise.
- You may begin to walk without the boot at about 10 weeks
- When walking, this is only in the boot, and never without support. You should plan to use a physical therapist for about 1-2 months.
- Physical therapy is important to regain the strength and movement.
- There will be moderate swelling of the ankle and leg for about 6-9 months.



- Stiffness of the subtalar joint is common after this surgery
- You will continue to improve your strength and movement for about one year.
- You can expect to have some soreness, aching and stiffness for about 6 months.

Exercise, work and activity after your calcaneus fracture

- For many individuals, a return to a very active lifestyle is difficult following this injury.
- For some, this may mean the ability to walk without pain, and for others, a more regular exercise routine as well as working without restrictions may be more important.
- Some individuals are not able to return to a job which requires walking and climbing on uneven surfaces.

The specific Post-Operative Course:

Day 1

- Foot is wrapped in bulky bandage and splint
- Ice, elevate, take pain medication
- Expect numbness in foot 12-24 hours
- Bloody drainage through bandage is expected.
- Do not bear any weight

1 week

- Use crutches, walker, wheelchair or roll-a-bout.
- Do not change dressing/splint
- Do not get the leg wet

2 weeks

- First follow-up in the office
- X-rays taken
- Dressing changed
- Sutures may be removed
- A removable boot is applied
- Start motion out of the boot as instructed
- Can shower, provided the incision is clean and dry
- Cover the incision with antibiotic ointment before showering



- Do not soak the foot until the incision is completely dry
- Can soak in tub when incision completely dry, usually about 3 weeks
- 30 lbs. body weight only is allowed 5 minutes twice a day when washing/bathing

3-weeks

- Start in a swimming pool using a flipper to help movement of the ankle
- You can bear some weight in the pool if there is no discomfort or pain

6 weeks

- Start stationary bike. No resistance
- Start physical therapy

10-12-weeks

- Full weight-bearing without boot
- Continue physical therapy
- XR taken in the office
- Orthotic arch supports are made
- A computer gait analysis is done to measure the foot and make the orthotic support

