South County

Orthopedics Specialist

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Ankle Fracture

A broken ankle is also known as an ankle "fracture." This means that one or more of the bones that make up the ankle joint are broken.

A fractured ankle can range from a simple break in one bone, which may not stop you from walking, to several fractures, which forces your ankle out of place and may require that you not put weight on it for a few months. In a typical ankle injury, the forces that cause the break in the bones rotationally circumscribe the ankle starting from the lateral side of the ankle, circling to the posterior (back), medial (inside), and then to the anterior (front)front of the ankle. From there it can go up into the syndesmotic space which is between the tibia and fibula.

In other patterns the energy of injury starts on the medial side of the ankle.

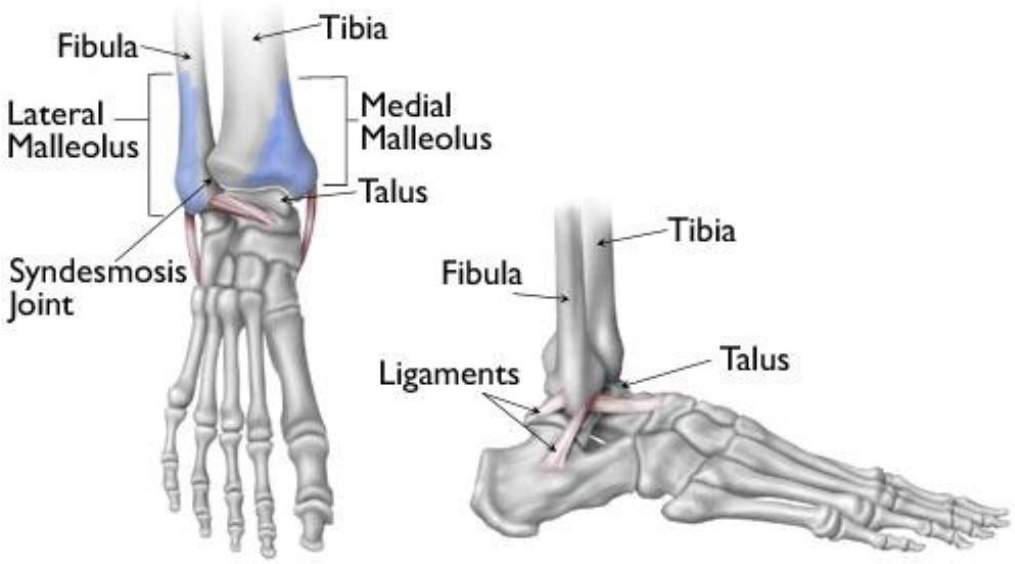
The ligaments that are located on both the medial (inside) of the ankle, lateral (outside) of the ankle, and between the tibia and fibula, syndesmosis, may also be affected during the fracture.

Three bones make up the ankle joint:

- Tibia - shinbone
- Fibula - smaller bone of the lower leg
- Talus - a small bone that sits between the heel bone (calcaneus) and the tibia and fibula

The tibia and fibula have specific parts that make up the ankle:

- Medial malleolus - inside part of the tibia
- Posterior malleolus - back part of the tibia
- Lateral malleolus - end of the fibula



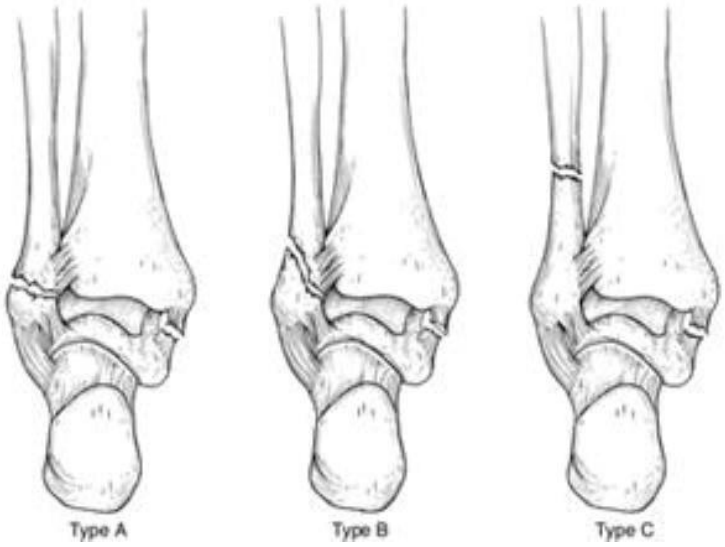
There are
various methods to classify ankle fractures. The Lauge-Hansen classification system uses the mechanism of injury to determine the extent of injury to the ankle joint. By knowing the mechanism of injury or the deforming force, your physician can establish a sequence of injuries of the likely structures injured. Assessing the mechanism of injury can be valuable in deciding the appropriate treatment. The most common ankle injury is supination with external rotation, comprising 60% of all ankle fractures. The injury sequence of this mechanism of injury is as follows:

1. Anterior inferior tibiofibular ligament injury
2. Spiral (or oblique) fracture of the distal fibula
3. Posterior inferior tibiofibular ligament injury OR posterior malleolus avulsion
4. Fracture of medial malleolus OR deltoid ligament injury

Lateral Malleolus fracture

A lateral malleolus fracture is a fracture of the fibula. There are different levels at which the fibula can be fractured. According to The Danis-Weber classification system categorizes ankle fractures by assessing the location of the distal fibula fracture in its relation to the syndesmosis. Weber A is below the syndesmosis, Weber B the fracture is at the syndesmosis level, and Weber C the fracture is above the syndesmosis.

The level of the fracture will direct the treatment which can range from a CAM boot or simple ankle brace requiring no surgery to a surgical intervention.



Treatment

Non-surgical treatment

You may not require surgery if your ankle is stable, meaning the broken bone is not out of place or just barely out of place. A stress x-ray may be done in the office at the initial appointment to see if your ankle is stable enough without the use of surgical intervention. Several different methods are used for protecting the fracture while it heals. Ranging from a high-top tennis shoe, ankle brace, walking boot, or a short leg cast. You will be seen in the office for follow up and to repeat your ankle x-rays to make sure the fragments of your fracture have not moved out of place during the healing process. **Total healing time for the bones to heal is 6-8 weeks.**

Surgical treatment

If the fracture is out of place or your ankle is unstable, your fracture may be treated with surgery. The surgical intervention is called open reduction internal fixation, where the ankle will be opened up in order to realign the two bone fragments. During this type of procedure, the bone fragments are first repositioned (reduced) into their normal alignment. They are held together with special screws and metal plates attached to the outer surface of the bone. The screws and plates stabilize the bones internally so that they can heal.

Post-operative care

0-2 weeks post-op: non weightbearing in a posterior mold splint

2-6 weeks post-op: sutures will be removed at 2-3 weeks depending on swelling. Short leg cast will be applied and patients may progress weightbearing as tolerated. In certain cases, due to instability or neuropathy, weightbearing status will be modified.

6 weeks: transition into shoes, some may use ankle brace vs. walking boot for comfort. A home exercise program will be initiated for calf stretching, strengthening, and edema control.

6-10 weeks post-op: formal physical therapy will be initiated to continue strengthening ankle, increasing ROM, and increase proprioception.

10-12 weeks: can begin light aerobic and impact activities

3-6 months post-op: full recovery

Medial Malleolus fracture

A medial malleolus fracture is a break in the tibia, at the inside of the lower leg. As described above, the forces that go through the ankle from an injury usually are circumferential thus, if there is a medial malleolar fracture there is a high likelihood

addition fractures are ie: fibula (lateral malleolus), back of the tibia (posterior malleolus), or an injury to the ankle ligaments of both the lateral, medial and syndesmosis.

Treatment

Non-surgical treatment

Depending on the location and displacement of the fracture surgery may not be indicated. A stress x-ray may be done in the office at the initial appointment to see if your ankle is stable along with full length tibia and fibula x-rays. Several different methods are used for protecting the fracture while it heals ranging from a high-top tennis shoe, ankle brace, walking boot, or a short leg cast. You will be seen in the office for follow up and to repeat your ankle x-rays to make sure the fragments of your fracture have not moved out of place during the healing process.

Surgical treatment

If the fracture is out of place or your ankle is unstable, your fracture may be treated with surgery. The surgical intervention is called open reduction internal fixation. Most often the fracture will be held together with screws.

Bimalleolar fracture

"Bi" means two. "Bimalleolar" means that two of the three parts or malleoli of the ankle are broken. In most cases of a bimalleolar fracture, the lateral malleolus and the medial malleolus are broken and the ankle is not stable. A stress test x-ray may be done to see whether the medial and syndesmotic ligaments are injured. These fractures may also be associated with ankle dislocation.

Treatment

Non-surgical treatment

These injuries are considered unstable and surgery is usually recommended. Nonsurgical treatment might be considered if you have significant health problems, where the risk of surgery may be too great, or if you usually do not walk. Immediate treatment typically includes a splint to immobilize the ankle until the swelling goes down. A short leg cast is then applied. Casts may be changed frequently as the swelling subsides in the ankle. You will be seen in the office for follow up and to repeat your ankle x-rays to make sure the fragments of your fracture have not moved out of place during the healing process this will occur at 1-2 weeks intervals.

Surgical treatment

Most often this type of fracture will be treated with surgery. The surgical intervention is called open reduction internal fixation. The screws and plates stabilize the bones internally so that the pieces of the bone can heal.

Rehabilitation

PHASE I (Surgery to 6 weeks after surgery)

Precautions	Therapeutic exercises
• Non weight bearing • Keep the incision/cast dry • Avoid long periods of dependent positioning of the foot during the first week to assist in wound healing	• Elevate to control swelling • Multi-plane hip ROM • quad strengthening • moving toes in cast • bending knee • Core and upper extremity strengthening

PHASE II (6 to 10 weeks after surgery)

REHABILITATION GOALS	THERAPEUTIC EXERCISES
• Normalize gait with weight bearing as tolerated using the boot/ankle brace • ankle range of motion • strengthen ankle muscles and calf muscle	• calf stretching • Edema control/massage/compression socks • light aerobic exercises (walking, stationary bike, aquatic therapy) • normalize gait • scar massage and desensitization • balance double leg/single leg • Full active and passive ROM of ankle in all planes • Proprioception training

PHASE III (usually 10 to 12 weeks after surgery)

REHABILITATION GOALS	THERAPEUTIC EXERCISES
• Return to daily activities without any limitations	• Advance to impact cardiovascular activities • Sport specific drills on field (if doing so prior to injury)

FAQ

How long does it take to heal a fractured ankle?

It takes around 6-12 weeks to recover from a broken ankle. You will need to wear a cast or boot for about 6-weeks. Most people can walk normally again and resume their everyday activities by around three months.

When can I drive?

If you fracture your LEFT ankle you need to be off of the pain medication before returning to driving, usually after the first 2-3 weeks. If you fractured your RIGHT ankle, you will have to refrain from driving until you are out of the cast usually 6-9 weeks. At that time, we will recommend that you slowly progress to full driving capabilities.

Do I keep the hardware inside the ankle after the fracture is healed?

Routinely hardware removal is not recommended. In certain cases, if there is limitation of motion due to a syndesmotic screw or if the plates and or screws irritate the skin or tendons then the hardware can be removed. Post hardware removal patients can weight bear immediately with recovery of 4-6 weeks.

Additional links

https://www.footcaremd.org/conditions-treatments/ankle/broken-ankle

https://www.orthobullets.com/trauma/1047/ankle-fractures

https://orthoinfo.aaos.org/en/diseases--conditions/ankle-fractures-broken-ankle/

https://www.footcaremd.org/conditions-treatments/ankle/ankle-fracture-surgery

https://orthoinfo.aaos.org/globalassets/pdfs/2017-rehab_foot-and-ankle.pdf

https://www.ncbi.nlm.nih.gov/books/NBK542324/