

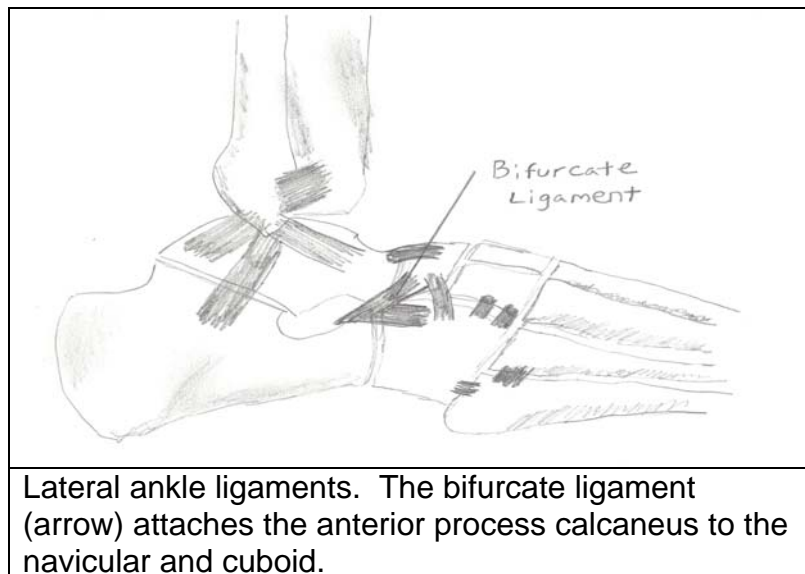


QUESTION | A RECENT PATIENT OF MINE HAD SPRAINED THEIR ANKLE. INITIAL X RAYS DID NOT SHOW ANY FRACTURES, THEN A CT SCAN REVEALED AN ANTERIOR PROCESS CALCANEUS FRACTURE. DOES THIS INJURY NEED SURGERY?

ANSWER | The anterior process of the calcaneus usually fractures due to an avulsion or traction injury. Typically the injury is caused by excessive inversion of the ankle and subtalar joints, placing a traction force on the lateral ligaments. The bifurcate ligament attaches the anterior process of the calcaneus to the navicular and cuboid bones. Excessive traction to this ligament can result in a fracture of the anterior process of the calcaneus.

The fractured anterior process usually represents a small intra-articular fragment, and is usually non displaced. However, the extent of fracture can vary, and sometimes can result in comminution or can involve a significant portion of the calcaneo-cuboid joint.

Patients with fractures of the anterior process of calcaneus often will present as an ankle sprain, with pain and swelling over the anterolateral aspect of the hindfoot. Different from the common ankle sprain, pain is slightly more distal, over the bifurcate ligament. Inversion stress of the subtalar joint can reproduce pain, however, this test will elicit pain in the common ankle sprain as well.



Standard ankle radiographs are usually obtained with an ankle sprain to rule out fractures. The anterior process of the calcaneus fracture can usually best be seen on the lateral view. Foot x-rays, rather than ankle xrays, including an AP and oblique can further demonstrate this fracture. Xrays should suffice if the fracture is clearly seen, but if there is any questions as to the extent a CT scan should be performed. MRI is a thorough test for an ankle sprain to look for fractures and osteochondral lesions of the talus, but detail of a comminuted fracture is more clear in a CT scan.



A large anterior process calcaneus fracture, involving 50% of the joint. This required surgical fixation with a screw to secure the fragment.

Treatment should be based on the size of the fragment and extent of injury to the calcaneocuboid joint. A small, non-displaced fracture is best treated non-operatively. I place them in an immobilising boot and will allow weight bearing when comfortable. The boot is worn for four to six weeks. The patient can then begin walking without the boot, using an ankle brace as needed for support. Physio can commence to begin range of motion and strengthening exercises.

Patients with a large displaced fragment or comminution of a significant portion of the calcaneocuboid joint may require surgical fixation. Fixation of the fragment is necessary to restore alignment of the articular surface to restore anatomy and minimize the risk of arthritis.

Nonunions of the anterior process can occur, with a persistent fragment seen on follow-up xrays. If the patient has no symptoms, then they should be allowed to return to activities as tolerated. Those patients with persistent symptoms are considered for excision of the fragment and repair of the bifurcate ligament. I will usually allow 9-12 months prior to considering this surgery, as most symptoms usually resolve with physiotherapy and cortisone injections.

In Summary:

- Anterior Process Calcaneus fractures occur from an inversion injury to the ankle, and its diagnosis should be considered when seeing a patient with an ankle sprain.
- If one is suspicious for this injury, a CT scan or MRI will demonstrate injury to the anterior process or bifurcate ligament.
- Treatment is usually non-operative, with protective weight bearing in a boot, as commonly the fracture is small and non-displaced. Large fractures or comminuted fractures involve the articular surface of the calcaneocuboid joint, and if left displaced can lead to arthritis. These fractures should be surgically fixed to restore the anatomy and minimise the chance of arthritis.

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