

# Standing the Sprain: Chronic Ankle Pain



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Ankle sprains are very common and account for 20% to 40% of all sports-related injuries.<sup>1</sup> A careful history and physical examination with a good understanding of the anatomy must be performed. Mechanism of injury can provide insight into the structures possibly injured. While simple anterior talofibular and calcaneofibular ligament sprains and strains are most common, there are many structures that are in very close proximity to the ankle ligaments and, immediately after the injury, each one seems to be symptomatic.

## *Examining a sprained ankle*

A sprained ankle may often be better examined once the initial edema and pain subsides. Often, a short period of immobilization with



Figure 1. Inversion stress view demonstrating lateral instability.

## Lisa's case

Lisa, 37, presents with left ankle pain of 3 years duration. Her past medical history is unremarkable. She recalls a mild ankle sprain with residual arch pain at onset, but was able to continue weight-bearing and normal activities. The pain escalated and became a limiting factor in her work and daily activities. She is being treated for posterior tibial tendonitis with orthotics and NSAIDs without relief. She presents with unremarkable foot and ankle x-rays.

### Examination and diagnostic testing

Lisa appears to have:

- Pain inferior to the sustentaculum tali
- Pain with plantar flexion of the hallux against resistance

She fails a single toe raise test and complains of medial ankle pain. Her flexor hallucis longus tendon sheath is injected with local anesthetic. Lisa has complete relief and can perform full activity for 8 hours.

### Diagnosis

Lisa has a flexor hallucis tendon injury. The decision to await a pending MRI prior to surgical repair is made. Her MRI shows an area of unreported slight thinning of the tendon. A second local injection with reproducible results is performed prior to surgical exploration. Severe stenosis and a tear of the flexor hallucis longus tendon sheath is identified and repaired.

Two years postoperatively, Lisa is at her pre-injury levels of activity without pain or limitation.



Figure 2. Calcaneonavicular coalition discovered after chronic pain and recurrent lateral "sprains."

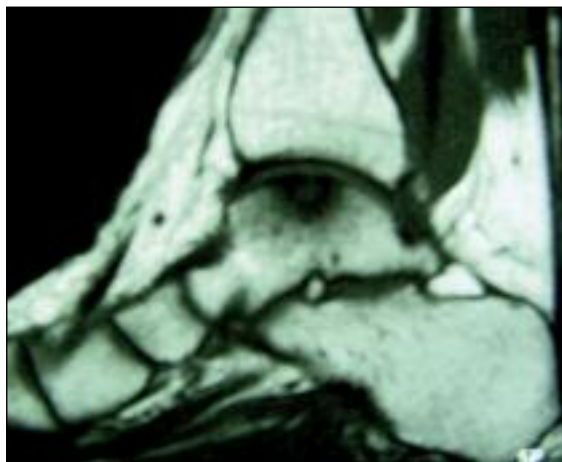


Figure 3. MRI showing talar dome fracture.

PRICE (Protection, Rest, Ice, Compression and Elevation) therapy immediately after a sprain is useful prior to exam.

After a severe (Grade III) sprain, symptoms generally subside in three-to-four months with standard therapies. However, residual symptoms after an ankle sprain have been reported in 40% to 76% of cases.<sup>2,3</sup> Instability of the ankle joint may be responsible for the symptoms and may or may not be associated with pain.

Mechanical and functional instability should be ruled out with mechanical testing and/or stress views of the ankle joint (Figure 1).<sup>4</sup>

Proprioceptive training should be a significant component of any ankle rehabilitation and will often benefit a functional instability. A mechanical instability will generally not respond sufficiently to re-training and bracing or ligament reconstruction can provide significant relief.

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### *Onset of chronic ankle pain*

When the pain becomes chronic and instability is not present, an occult injury or other condition must be suspected. There are many such injuries, which may occur concurrently with a ligament tear or as a result of it (Table 1).

While diagnostic tools, such as the Ottawa Ankle Rules,<sup>5</sup> are valuable there is a misconception that "it cannot be a fracture if the patient can walk." An occult bone injury should be ruled out if ankle pain persists. Many foot and ankle fractures have been identified in fully ambulatory patients after an ankle sprain. Repeat x-rays may prove beneficial as injuries, such as an osteochondral fracture, may become more evident with time. Personally review radiographic studies. Several "normal" studies have revealed coalitions (Figure 2), anterior calcaneal fractures and loose bodies to be the

cause of the chronic pain. The ability to correlate a physical exam and x-rays is invaluable.

A technetium bone scan may help to rule out a fracture, but is unspecific in a soft tissue injury. A CT scan will allow better evaluation of bone injuries not perceived on plain films but indicated on bone scan.

### *Diagnosing chronic ankle pain*

If an osseous injury is ruled out, a MRI scan can be used for the evaluation of soft tissue and joint structures and often provides the diagnosis for the chronic pain.<sup>6</sup> Intra-articular or tendon sheath injection of local anesthetic performed under sterile technique can be used to isolate injured structures when imaging studies are equivocal. By “turning off the pain switch” to a suspect joint or tendon, a differential diagnosis may be firmed up.

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### *Treating chronic ankle pain*

A period of immobilization and restricted weight bearing is often able to resolve stubborn ankle pain, whether osseous or soft tissue in nature. Bracing can be effective in cases of instability and reducing strain on a tendon if injured.

Surgery should be considered when conservative treatment and rehabilitation fail and pain or recurrent instability persists. A fracture may

Table 1

#### Differential diagnosis of chronic ankle pain

- Osteochondral fracture of the talus
- Posterior or lateral talar process fracture (Figure 3)
- Peroneal retinaculum/tendon tear
- Anterior calcaneal process fracture
- Coalition
- Syndesmosis injury/high ankle sprain
- Posterior tibial tendon tear
- Avulsion or occult ankle fractures
- Ankle capsule adhesions or “meniscoid lesions”
- Joint mouse/loose body
- Subtalar joint/ligament injury
- Nerve injury
- Chronic joint degeneration
- Synovitis

need open reduction and internal fixation. In other cases, a malunion may require repair. Arthroscopic ankle debridement, removal of loose bodies, or talar dome lesion debridement/drilling can be performed with minimal invasiveness. Repair of lateral ligaments can reinstate stability and return full, even competitive, activity. Repair of tendon tears is also highly successful (Figure 4). In some cases, arthroplasty or fusion, as a last resort, may be indicated. In most cases, a return to full activity will occur approximately three months post-operatively.



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Figure 4. Intra-operative view of a peroneal tendon tear.

### Final thoughts

In summary, the diagnosis of recurrent symptoms after an ankle sprain can be accomplished with a careful history and a physical, along with the adjunctive use of imaging modalities. Treatment can then be focused appropriately. Referral to an orthopedic or podiatric surgeon specializing in foot and ankle disorders is recommended in persistent cases. **Dx**

#### References

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