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The Unresolved Ankle Sprain

By: Stephen L. Tocci, M.D.

Ankle sprains are the most common injury encountered in both organized sports and casual athletes. They occur in 850,000 people in the U.S. every year. Ankle sprains are especially common in soccer, dance, and basketball, but may also occur with common daily activities such as a misstep off a curb.

The *anterior talofibular ligament* (ATFL) is generally injured first in a common lateral inversion injury by landing on a plantarflexed and inverted foot. The AMA system is most commonly used in classifying and guiding treatment:

- › Grade 1: ligament stretch
- › Grade 2: partial ligament tear
- › Grade 3: complete ligament rupture

Acute Injuries

Acute ankle sprains generally heal well without surgery. Direct acute repair does not offer significant advantages. Functional treatment yields better results than prolonged immobilization.

- › More severe sprains with *instability* often benefit from cast or boot immobilization for 1-2 weeks until stability begins to return. The torn ATFL is reapproximated with the ankle in neutral dorsiflexion, allowing the ligament to heal with better tension.
- › Weight bearing is encouraged with the support of a cast, a walking boot or an ankle brace depending on the degree of instability and pain. A home program or formal therapy is started as the pain decreases.
- › On average, loss of activity is:
 - » Grade 1: 1 to 2 weeks
 - » Grade 2: 2 to 6 weeks
 - » Grade 3: 4 to 12 weeks

The open growth plates in a child's ankle are weaker than the ligaments, and therefore more prone to injury. A child is more likely to sustain a growth plate fracture than a sprain.

Chronic Ankle Pain after Sprain

Some patients continue to have pain or instability after an appropriate period of functional recovery. **Approximately 10-30% of ankle sprains have chronic symptoms due to:**

- › Incomplete rehabilitation, usually due to peroneal weakness
- › Improper healing and tension of the lateral ligaments (chronic lateral ankle instability)
- › Syndesmotic instability
- › Osteochondral lesion often called osteochondral defect or osteochondritis dissecans (OCD)
- › Occult fracture
- › Peroneal tendon tear or subluxation
- › Posterior tibial tendon injury
- › Subtalar impingement lesion (sinus tarsi syndrome)
- › Persistent neuritis

Particularly common are impingement symptoms in which scar tissue, synovitis, chondral fragments or ligamentous structures get intermittently pinched between the bones of the ankle or subtalar joint.

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AP x-ray showing an OCD of the lateral talar dome.

Evaluation

- › Patients with ongoing or recurrent symptoms benefit from orthopedic consultation. These patients usually have a history of prior sprain or functional instability.
- › Symptoms may include pain, swelling, giving way, recurrent sprains or difficulty with uneven terrain.
- › The anterior drawer test assesses the ATFL by measuring anterior subluxation of the talus underneath the tibia.
- › MRI may show signs of impingement, OCD or tendon injury.

Conservative Treatment

Conservative treatment includes NSAIDS, bracing and physical therapy to increase stabilization and decrease pain. Patients are often incompletely rehabilitated following injury, so a formal physical therapy program may be beneficial. Local injection of corticosteroid may improve impingement symptoms by decreasing joint inflammation.

Surgical Treatment

- › Surgical reconstruction of incompetent ligaments can significantly improve function in patients with persistent instability despite conservative management.
- › Impingement and OCD can be addressed with arthroscopic surgery. Although they are often small defects, they can be persistently painful. Osteochondral lesions do not tend to heal on their own, especially in adults.
- › Peroneal tears are addressed with direct repair of the tendon. If the tears are so severe that the tendon is non-functional, a tendon transfer can be performed.

Conclusion

Ankle injuries are the most common musculoskeletal injuries seen in active adults and children. The treatment of uncomplicated ankle sprains should focus on early protected motion and then more aggressive rehabilitation. To reduce morbidity and lost time from activity, it is essential to understand other injuries that can mimic or present with ankle sprains. Intraarticular injury, ligament laxity, or tendon tears cause pain and prevent patients from a full return to activity. Ankle arthroscopy, tendon or ligament reconstruction can significantly improve activity and allow patients to return to a pain-free lifestyle

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Dr. Tocci is an orthopedic surgeon born and raised in Mission Viejo. He attended UC San Diego as an undergraduate and then the University of Pittsburgh for medical school. He completed his orthopedic residency and a fellowship in trauma at Brown University. He then went on to pursue a foot and ankle fellowship at Baylor University Medical Center in Dallas, Texas. Dr. Tocci now practices at Community Orthopedic Medical Group in Mission Viejo and primarily focuses on foot and ankle issues. He is a member of the American Academy of Orthopedic Surgeons and the American Orthopedic Foot and Ankle Society. He continues to be involved in research and publication, with a particular interest in product development to improve patient care.

Dr. Tocci enjoys surfing, mountain biking, and time with his wife, Jennifer, and their three children.

For feedback or questions related to the content of this article, contact Susan Fox, Mission Hospital's Physician Relations Specialist, at (949) 364-4269 or susan.fox@stjoe.org.

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