Foot & Ankle Injuries

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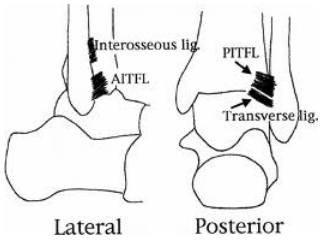
'High Ankle Sprain' – The Syndesmosis Injury

Injury to the distal tibiofibular syndesmosis may be a more common injury than previously described. However it is a poorly recognized injury and often missed. There are three main ligaments that make up this complex: - the anterior inferior tibiofibular ligament (AITFL), the interosseous ligament and the posterior inferior tibiofibular ligament (PITFL). Support is also provided by the interosseous membrane.



An injury to this joint occurs with movements that cause separation (diastasis) of the distal tibia and fibula. Because large forces are required, there will often be associated injuries. Commonly, there will be tearing of the deltoid ligament complex. And frequently there will be an associated fracture of distal fibula and / or medial malleolus. Sometimes there will be a Maisonneuve fracture – a spiral fracture at the upper shaft of the fibula. If there is diastasis on XRay, the whole fibula should be X-rayed.

The injury can occur in conjunction with a severe lateral ankle sprain. Generally however the mechanism of injury is different, with the leg twisting on a fixed foot rather than the foot rolling under the leg. This is common in contact sports, particularly rugby league, union, and American football. In these sports, tackles by one or multiple players put very large forces through the ankle, and players twist as they are wrestled to the ground. The mechanism is usually external rotation of the ankle relative to the leg, particularly in dorsiflexion. A straight dorsiflexion injury is also implicated in injury to this joint, and is likely to result in injury to the PITFL before the other ligaments.

Syndesmosis injuries are often misdiagnosed as lateral ankle ligament sprains. There is speculation that up to 10% of general ankle injuries involve this joint, and up to 35% in the rugby codes and AFL.

Examination

The patient will often have anterior and medial ankle pain after a moderate to severe ankle injury. There will often be medial swelling & bruising associated with the deltoid ligament injury.

The most widely used tests are:

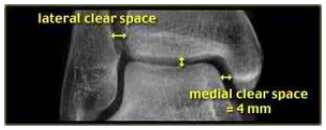
1. Palpation. There will be tenderness superior to the ankle joint over the syndesmosis, and possibly over the interroseous membrane. There will be less localized swelling over the lateral ankle ligaments than is seen with a lateral ligament injury.
2. External rotation test. With the patient sitting and the leg hanging, the ankle is held plantargrade

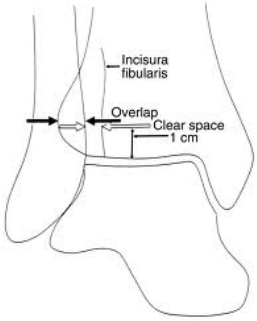
and is externally rotated on a fixed lower leg. This test has reasonably good reliability.

3. Dorsiflexion compression test. With the patient weight-bearing & in full dorsiflexion, there will be widening of the joint and usually an increase of symptoms. A positive test is when manual compression of the joint eases the symptoms. This test has only fair reliability.
4. Squeeze test. Squeezing the proximal shin may cause separation of the syndesmosis, and increase symptoms. In reality, this test will only be positive with a severe diastasis.

Imaging:

Plain X-rays should include AP, lateral and mortise views. There may be widening of the syndesmosis – the *tibiofibular clear space*, and an increased space between the talus and medial malleolus – the *medial clear space*. The incidence of bony avulsion is variously reported as being between10% to 50%.





The tibiofibular clear space is measured 1cm above the joint line. The distance is from the medial border of the fibula to the vertical sclerotic line representing the base of the fibular notch of the tibia. This is normally less than 5-6mm on AP & mortise views.

The medial clear space is normally less than 5.5mm.

As mentioned, with any significant injury, the whole fibula should be X-rayed.

If there is still suspicion after X-ray, comparison can be made with the other side, or stress view included. These can be done in two ways:

(a) With forced abduction & external rotation of the foot. However these are difficult to perform and interpret.
(b) Weightbearing with ankle dorsiflexion.

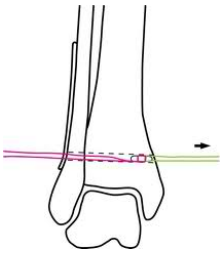
MRI will often be ordered for more specific diagnosis. This will give an accurate indication of the degree of ligament damage.

Treatment

If the injury is minor, the treatment will be rest and graduated rehabilitation, similar to the treatment for a standard ankle sprain. However these injuries tend to heal significantly more slowly than lateral ankle ligament injuries.

Surgery

When there is widening of the joint and particularly if there is associated fracture, surgery will be required. If left untreated, chronic instability is likely, and there may be rapid onset OA. During surgery the ligaments will be repaired, associated fractures plated, and the joint stabilized with a screw or 'tightrope' wire. There is evidence that wiring results in a greatly improved recovery time compared to screw fixation. After healing, there may be a prolonged recovery time, as stiffness and recurrent swelling tend to settle slowly. The wire is removed at between 3 and 6 months.



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Concord Sport & Spine Physiotherapy
202 Concord Road
Concord West, NSW 2138
Sydney, Australia.
Ph (02) 97361092