Anatomy, diagnosis and management of ankle syndesmosis injuries: Part Two

Part One, looked at the anatomy of the syndesmosis and in detail at the biomechanics of the joint involving the distal tibia and fibula. This article will look at how we might diagnose a syndesmotic injury based on the subjective assessment. As always these are my own ideas and are far from a definitive list of subjective questions. In addition, every injury needs to be managed and indeed assessed differently depending upon the severity and their present clinical condition at that time.

Subjective assessment

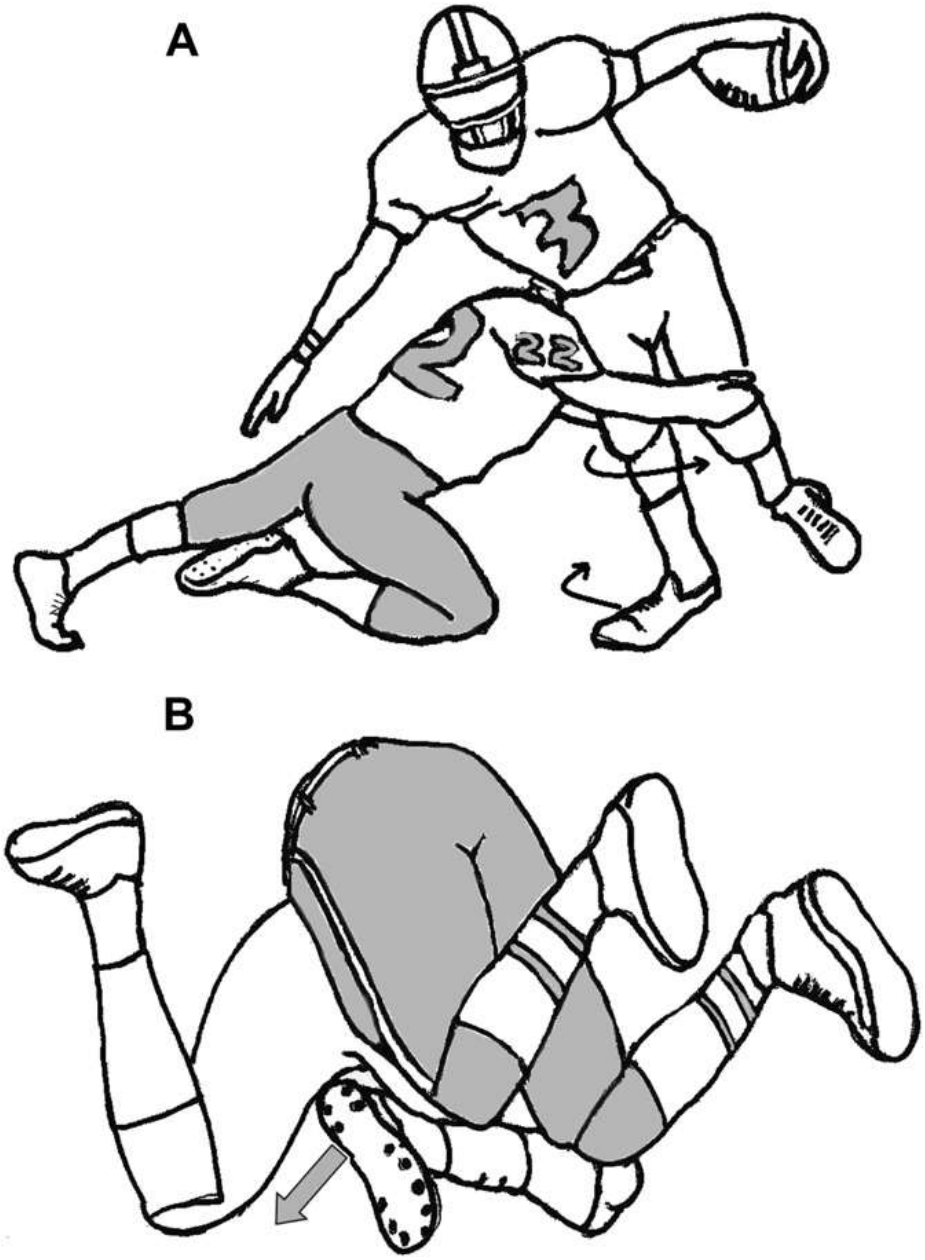
As with any subjective assessment you are trying to help inform your objective testing and by the end of a good subjective you should have a good idea of what structures you think might be damaged.

With this type of injury the most important is trying to find out how the injury occurred. Determining the position the ankle was in during injury will often give you a good indication as to whether the injury might involve the syndesmosis.

Lateral ankle injuries are very common in athletic populations and usually involve the movement of inversion with or without plantarflexion. The features of this type of injury and a syndesmosis injury are vastly different.

A syndesmosis injury is distinctively different as it usually involves either excessive dorsiflexion with or without lateral rotation. The two pictures below show two common mechanisms for syndesmosis injury.

Common mechanisms for syndesmosis injury



A) Foot is fixed in a position of external rotation with the ankle dorsiflexed while a lateral force at the trunk or hip causes an internal rotation of the lower limb

B) The athlete is in a prone position and receives a direct blow to the lateral leg forcing the dorsiflexed ankle into excessive external rotation (Mulligan 2011).

In diagram A, the foot is fixed in external rotation (toe-out position) during and there is a direct blow to the lateral aspect of the knee while the body is turning away from the foot. In B, the player is prone on the ground with the foot fixed in an externally rotated position and a force on the knee or heel comes from a posterior and/or lateral direction.

Both mechanisms cause injury, as the joint is in its closed-pack position (maximal dorsiflexion) and is unable to accommodate the transverse plane rotation of the talus within the mortise. As a result the fibula is displaced in a lateral direction.

Additionally, excessive or hyper-dorsiflexion without rotation can also cause syndesmosis injury. This usually occurs in jumping sports where the foot is planted in a position of excessive dorsiflexion upon landing. An example might be a player returning from a jump and their forefoot landing on an opponent's foot driving their ankle into a position of excessive dorsiflexion. In everyday life, a slip up a kerb, where the forefoot is on the kerb and the heel planted may produce the same injury.

Where are patient symptoms?

Where the patient's symptoms are will also often give some information to the structures involved. A lateral ankle injury will generally have tenderness over the ATFL (anterior talo-fibula ligament) and will usually be accompanied by lateral ankle swelling. Swelling is less likely with a syndesmosis injury. This is largely due to the damaged structures being situated outside the joint capsule hence any swelling is easily dispersed. Any palpable tenderness caused by disruption to the ATFL (anterior tibio-fibula ligament) will be higher than the ankle joint itself. The figure below shows the anatomical positions of both the ATFL and the ATFL. Furthermore, with a syndesmosis injury, pain may also be present in the back of the joint, along the path of the PTFL (posterior tibio-fibula ligament).

With more severe injuries some tenderness may be present over the anteromedial portion of the fibula at the insertional point of the interosseous membrane.

An athlete with this injury may walk with a limp following injury and is likely to show a decreased stride length and shortened stance phase to allow less loading into dorsiflexion through the injured joint. Thus, they are likely to walk with more of a flat footed position particularly during the acute phase of injury.

If the athlete is unable to weight bear a few steps after injury and bony tenderness is evident an x-ray would be required to check for a fracture. No ligamentous stress tests should be completed until a fracture has been ruled out.

Conclusion

I hope this has given a few ideas as to the sort of things to look out for in the subjective questioning of a patient with a possible syndesmosis injury. As with any subjective the key is to help this part of the assessment guide the objective assessment. Look out for Part Three coming soon which will look at imaging for syndesmosis injuries and how to objectively diagnose and manage such injuries.

Thanks for reading

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