



## EM CASES SUMMARY

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### Episode 58 – Commonly Missed Uncommon Orthopedic Injuries, Part 2

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#### Syndesmosis Injuries

Syndesmosis injuries typically occur in impact sports. They are missed in about 20% of cases, as x-rays findings are often subtle or absent.

#### Q: What is the mechanism of a syndesmosis injury?

Syndesmosis injuries, or 'high ankle sprains' typically result from a rotational force, whereby *external* rotation of the ankle +/- hyperdorsiflexion overstretch the syndesmosis that lies between the distal tibia and fibula. This mechanism of injury is far less common than the classic ankle sprain as a result of an *inversion* mechanism.

#### Q: What are the common physical exam findings of a syndesmosis injury?

1. **Toe walking** (see Fig 1): Inspect the patient's gait: patients may not weight bear appropriately, and may walk on their toes to prevent painful dorsiflexion.



Figure 1: Toe walking after syndesmosis injury

Patients may have anterior ankle swelling and pain with palpation at the syndesmosis.

In a syndesmosis injury, ensure there is no concomitant deltoid ligament injury, which would result in an unstable ankle injury. Therefore, examine the medial aspect of the ankle for pain and stability.

2. Perform the *Squeeze/Hopkin's Test* (see Fig 2): the tibia and fibula are squeezed together at the mid-calf level. This will result in pain at the syndesmosis, which is at the base of the tibia/fibular junction, near the talus.



Fig 2: Squeeze Test

3. Try to reproduce the injury with an *External Rotation Test* (see Fig 3): the patient's leg should be stabilized with the hip and knee flexed to 90 degrees. Holding the patient's foot and externally rotating it with a small amount of dorsiflexion, will illicit pain at the syndesmosis.



Fig 3: External Rotation Test

**Q: What are x-ray findings of a syndesmosis injury?**

There are three common x-ray findings:

- 1) Decreased tibio-fibular overlap:
  - normally > 6mm of overlap on the AP view and > 1mm on mortise view



Fig 4: Normal Tibio-fibular Overlap

- 2) Increased medial clear space  
- normally  $\leq 4$  mm



Fig 5: Increased Medial Clear Space

- 3) Increased tibiofibular (syndesmosis) clear space  
- normally  $< 5$  mm on AP and mortise views

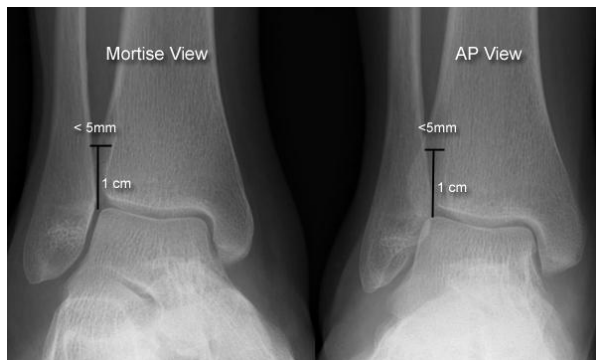


Fig 6: Normal Tibio-fibular Clear Space

**Q: What is the appropriate ED management for a patient with a suspected syndesmosis injury who has *normal* x-rays?**

Patients should be non-weight bearing in a walking boot or back slab. These patients should be followed up by orthopedics.

However, if you suspect widening of the syndesmosis, the joint may be subluxed, and the patient may need screw fixation. An orthopedic consultation would be prudent.

**Q: While syndesmosis injuries may occur in isolation, they are often associated with other injuries. What other injuries are commonly associated with syndesmosis injuries?**

Ankle fractures (Weber B and C), base of 5<sup>th</sup> metatarsal fracture, proximal fibula fracture.