Objectives

• Understand the syndesmosis anatomy and function
• Classify syndesmosis injuries
• Describe treatment options for syndesmosis injuries

Syndesmosis Ligaments

Disclosures

• No relevant disclosures
Syndesmosis Ligaments
- AITFL (2)
- PITFL (1)
- IOL

Syndesmosis Injury
- The syndesmosis
  - Stabilizes distal tibia and fibula
  - Keeps talus under the tibia
- The tibio-talar surface
  - Must be perfectly matched
  - 1 mm lateral shift increases joint surface pressure by 42%

Syndesmosis Injury
- A failed syndesmosis
  - Leads to lateral translation
  - Tibio-talar pressure
  - Promotes ankle arthritis
  - Results in a loss of function

<table>
<thead>
<tr>
<th>Subclassification</th>
<th>Anatomic Injury</th>
<th>Historical Findings</th>
<th>Exam Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syndesmosis Injury</td>
<td>AITFL, PITFL, and IOL injury</td>
<td>External rotation mechanism, pain over ankle syndesmosis</td>
<td>Swelling and tenderness over syndesmosis, pain at syndesmosis with squeeze test or forced external rotation</td>
</tr>
<tr>
<td>Subtalar Injury</td>
<td>CFL, interosseous talocalcaneal ligament, cervical ligament</td>
<td>Frequent “ankle sprains,” sinus tarsi pain, difficulty on uneven ground</td>
<td>Increased subtalar ROM, sinus tarsi tenderness</td>
</tr>
</tbody>
</table>

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Differential Diagnosis

- ATFL sprain
- CFL sprain
- Syndesmosis sprain
- Deltoid sprain
- Peroneal instability
- Peroneal tendon tear
- Lateral malleolus fracture
- Talar dome fracture

Peroneal Instability

Peroneal Tendon Tear

Lateral Malleolus Fracture

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Talar Dome Fracture

History

- Previous injury
- Mechanism
  - External rotation through the ankle
- Ability to continue play
- Current complaints

Physical Examination

- Systematic approach
- Inspection
- Palpation
- Provocative maneuvers

Provocative Maneuvers

- Squeeze test
- Stress tests
  - varus
  - valgus
  - external rotation

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Squeeze Test

- Syndesmosis injury
- Compress mid-leg
- Pain at syndesmosis
- Must first rule-out
  - fracture
  - contusion
  - compartment syndrome

Stress Tests

- Clinical and radiographic tool
- Grading ankle sprains
- Inadequate for reproducible diagnosis of lateral ankle ligament injuries

Anterior Drawer

- ATFL disruption
  - Contralateral comparison
  - Normal translation
  - False negative results
  - Local anesthesia
Anterior Drawer

Talar Tilt

- ATFL/CFL disruption
  - Neutral and plantarflexion test
  - Contralateral comparison
  - Normal tilt
  - False negative results
  - Local anesthesia

Talar Tilt

External Rotation Stress Test

- Syndesmosis injury
- Knee forward facing
- Examiner applies ER
- Pain at syndesmosis

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External Rotation

Radiographs

- Leg AP and lateral
- Ankle AP, mortise, lateral
  - malleolar fx
  - physeal fx
  - osteochondral fx
  - avulsion fx
  - alignment
  - translation

Syndesmosis Imaging

Imaging

- X-ray
  - Standing
  - ER stress test
  - Comparison view
  - Alignment
  - Associated injuries
Syndesmosis Imaging

- CT
  - Axial
  - Comparison
  - Alignment
  - Associated injuries

- MR
  - AITFL injury
  - Alignment
  - Associated injuries

Syndesmosis Treatment

- Grade I and II
- Grade III
- Chronic Instability

Grade I and Grade II Sprains Acute Phase

- Rest
- PT
- Cast boot
- Non-weight bearing as needed
Return to Sport Phase

- Protective taping to resist ER
- Bracing
- Range of motion
- Strength activities
- Progressive activity
- Avoid re-injury

Grade III Injury

- Closed Reduction
- Direct Repair
- Internal Fixation

Closed Reduction

Direct Repair
Surgical Stabilization

Stabilization with Fracture

Screw Removal

• WB after screw removal
• WB with screw
  – Physiologic motion
  – Osteolysis
  – Screw failure
  – Pain
  – Prominent hardware

Complications

• Instability
• Persistent pain
• Ossification

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Failed Fixation/Instability