Calcaneocuboid Instability: Frequently Overlooked Cause of Lateral Foot Pain

Presented by J. Melvin Deese, M.D.
Medical Director of Research
Southeast Georgia Health System
September 2014
Calcaneocuboid Instability: Frequently Overlooked Cause of Lateral Foot Pain

J. Melvin Deese, M.D.

My disclosure is in the Final AOFAS Mobile App.

I have no potential conflicts with this presentation.
Calcaneocuboid Instability

• **First described by Zwipp and Kretteck 1986**
  – Three cases isolated calcaneocuboid instability
  – Introduced stress x-rays
  – Arthrodesis

• **Incidence**
  – United States two million ankle sprains per year (Waterman, 2012)
  – Jennings (2005) reported 6.7 percent of patients presenting with plantar flexion and inversion injury of the ankle also had calcaneocuboid injury
  – 1/3 of calcaneocuboid injuries will become chronically unstable (Dorne-Lang, 2008)
Diagnosis

• **Missed or Delayed Diagnosis**
  – Leads to chronic instability and pain
  – Repetitive injuries
  – Inability to play sports
  – Disability

• **Differential Diagnosis of Lateral Foot Pain**
  – Lateral ligament injury
  – Peroneal tendon disruption
  – Sural nerve entrapment/injury
  – Fracture 5th metatarsal
  – Tarsal coalition
  – Anterior calcaneal process fracture
  – Cuboid fracture
  – Os peroneum
Diagnosis

- History of plantar flexion inversion injury
- Pain on palpation of CC joint
- Occasional swelling
- Ecchymosis
- Weakness secondary to pain at toe-off
- Comparative bilateral stress radiographs +/- helpful
- Calcaneocuboid joint lidocaine injection – most reliable
- MRI and standard x-rays not consistently reliable
Calcaneocuboid Ligaments (Patil, 2008)

- **Most important in calcaneocuboid injury**
  - Dorsal calcaneocuboid
  - Ligamentum bifurcatum

- **Other ligaments**
  - Short plantar calcaneocuboid
  - Long plantar calcaneocuboid

Photo Source: Public domain version of Grey’s Anatomy labeled for use with modification
Hx of plantar flexion inversion injury

Persistent tenderness over calcaneocuboid joint
Bilateral stress x-rays
Local injection

6 weeks NWB SLC

No pain – WBAT

Persistent pain 3 months to 20 yrs.

Allograft or autograft reconstruction

NWB SLC x 4 weeks

WBAT in high boot x 4 weeks

Wean out of boot, use on uneven ground x 8 weeks

16 weeks. No restrictions, increase activity as tolerated
# Surgical Techniques

<table>
<thead>
<tr>
<th>Surgeon</th>
<th>Number of Patients</th>
<th>Technique</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deese</td>
<td>13</td>
<td>Allograft</td>
<td>2013</td>
</tr>
<tr>
<td>Zwipp</td>
<td>3</td>
<td>Arthrodesis</td>
<td>1986</td>
</tr>
<tr>
<td>Andermahr</td>
<td>1</td>
<td>Peroneus Brevis</td>
<td>2000</td>
</tr>
<tr>
<td>Lohrer</td>
<td>1</td>
<td>Periosteum</td>
<td>2004</td>
</tr>
<tr>
<td>Lohrer</td>
<td>5</td>
<td>Periosteum</td>
<td>2006</td>
</tr>
<tr>
<td>Punwar</td>
<td>1</td>
<td>Gracilis</td>
<td>2007</td>
</tr>
<tr>
<td>Hirschmann</td>
<td>1</td>
<td>EDB</td>
<td>2008</td>
</tr>
</tbody>
</table>
Retrospective review
January 2009 to May 2013

• 1302 ankle sprains (ICD 9 845.00, 845.02.)
  – 1249 treated conservatively
  – 55 required surgical intervention (CPT 27695, 27696, 27698)

• 42 diagnosed with calcaneocuboid sprain and or instability (845.10, 726.79)
  – 29 successful conservative treatment
  – 13 surgical reconstruction (27698)
    • 9 chronic
    • 4 acute injury
Clinical Experience 13 Reconstructions
Symptoms from 3 months to 20 years mean 5.5 yrs
Allograft reconstruction

No or minimal pain after 8 weeks
Full function = 2-10 months
Summary

- Calcaneocuboid sprain is more common than we think
- 1/3 become chronically unstable and painful
- Usually reports as “ankle sprain that will not heal”
- Diagnostic signs are local calcaneocuboid tenderness and pain relief with local calcaneocuboid joint injection
- Rely on high suspicion and H&P
- Allograft reconstruction is a valid solution
- Reconstruction yields high success rate
References


7. Andermahr J, Helling HJ, Maintz D, Monig S. The injury of the calcaneocuboid ligaments. Foot Ankle Int. 2000; 21; (5)


11. Hirshmann MT, Friederich NF, Muller C. Anatomic reconstruction of a chronically unstable calcaneocuboid joint with augmented extensor digitorum brevis muscle flap: A New method. Foot Ankle Int; 2008: 29 (12) 1258-1261