Pes Cavus in Talar Neck Fractures:

An anatomic predisposition?

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Michael P. Clare, M.D.
Conflict to Disclose

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My disclosure is in the Final AOFAS Mobile App.
I have a potential conflict with this presentation due to:

Michael P. Clare – Bespa, Inc., Consultant
Purpose

- Do patients with talar neck fractures exhibit different morphologic characteristics relative to the normal population?

- Could these differences represent an anatomical predisposition to fractures of the talar neck in the event of a high energy injury?
Materials

• IRB Approved at 2 Academic Level I Trauma Centers

• Retrospective review

• 33/64 pts included
  – WB Lat Xrays of uninjured side

• 3 Parameters observed
  – Talometatarsal angle
  – Talocalcaneal angle
  – Calcaneal pitch
Prevalence of Foot Morphologies

N = 1047

## Results

<table>
<thead>
<tr>
<th>Angle</th>
<th>Mean (deg)</th>
<th>Range (deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talometatarsal angle</td>
<td>5.1 ± 6.0</td>
<td>(0 – 26)</td>
</tr>
<tr>
<td>Talocalcaneal angle</td>
<td>31.6 ± 5.3</td>
<td>(20-44)</td>
</tr>
<tr>
<td>Calcaneal Pitch</td>
<td>23.0 ± 3.9</td>
<td>(16-30)</td>
</tr>
</tbody>
</table>
# Results

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Prevalence</th>
<th>Standard*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>14</td>
<td>42.4%</td>
<td>57%</td>
</tr>
<tr>
<td>Cavus</td>
<td>19</td>
<td>57.6%</td>
<td>24%</td>
</tr>
<tr>
<td>Planus</td>
<td>0</td>
<td>0%</td>
<td>19%</td>
</tr>
</tbody>
</table>


Z = 4.43
p < 0.0001
Hindfoot alignment influences hindfoot motion

• 3-D reconstructions of weightbearing CT scans

Proposed Mechanism

- Varus hindfoot blocks transverse tarsal motion and locks the midfoot.
- In a high energy axial load, there is concentration of force at the talar neck.
- Predisposition to fracture in the event of high energy / axial load injury?
Further Inference

- Could a “varus malunion” not actually be a malunion (if the patient had pre-existing cavus)?
Conclusion

• Prevalence of pes cavus is greater in talar neck fractures

• Obtain contralateral views to confirm normal anatomy for comparison
References