Comparison of MRI and Operative Findings in Peroneal Tendon Disorders in an Active Duty Population

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• The author has no conflicts to disclose
Introduction

- Ankle sprains are common injuries especially in the military
- Waterman\textsuperscript{1} found an overall incidence of 58.4 ankle sprains per 1000 person-years at the US Military Academy compared to estimated 5-7 sprains per 1000 person-years in the civilian population
- These injuries can lead to chronic ankle pain and instability
Peroneal tendon disorders are an overlooked cause of lateral ankle pain and a significant amount of patients are misdiagnosed on their initial examination\textsuperscript{2,3,4}

These disorders can be due to trauma, overuse, degeneration and/or chronic inflammation resulting in tendinopathy, tenosynovitis and tears/ruptures.

Anatomic variants such as a low lying peroneus brevis muscle belly or peroneus quartus muscle belly can also be a causative factor\textsuperscript{4,5}
Magnetic resonance imaging (MRI) findings of peroneal tendon pathology include fluid collection around or within the sheath, swelling, splitting of the tendons, interstitial/intrasubstance tears or dislocation.

Previous studies comparing MRI with intraoperative findings have shown mixed results.

Purpose of this study was to compare MRI findings of peroneal tendon pathology to intraoperative findings in a military population.
A retrospective review was performed of patients undergoing peroneal tendon exploration by a fellowship trained foot/ankle surgeon from 2009 to 2014.

Inclusion criteria:
- 1) patients who underwent peroneal tendon exploration
- 2) had a preoperative MRI of the affected ankle in the radiology system
- 3) available operative report for review
- 4) were active duty, reservist or national guard soldiers at time of their surgery
• All MRI studies were retrospectively reviewed by a board certified radiologist blinded to the purpose of the study

• A cohort of patients with ankle MRIs and no known peroneal tendon disorders were used to match 1:1 by age, gender and laterality
  – Purpose was to decrease any potential hindsight bias
• The MRI read was then compared to the intraoperative findings for each patient, specifically looking for:
  – Peroneus longus/brevis tears
  – Peroneus longus/brevis tendinopathy
  – Tenosynovitis
  – Injury to superior peroneal retinaculum

• Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were calculated using Microsoft Excel®
Results

- Thirty two patients were included in the study

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Average age</td>
<td>32 years of age (range 19-55)</td>
</tr>
<tr>
<td>Gender</td>
<td>25 Males (76%)</td>
</tr>
<tr>
<td>Concomitant surgery</td>
<td>20 Modified Brostrum (63%), 4 ankle arthroscopy (12.5%), 1 metatarsal/calcaneal osteotomy (3%)</td>
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<tr>
<td>Low lying peroneus brevis muscle belly</td>
<td>22 patients (69%)</td>
</tr>
<tr>
<td>Peroneus Quartus</td>
<td>7 patients (22%)</td>
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<tr>
<td>Condition</td>
<td>MRI Positive</td>
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<tr>
<td>-----------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Peroneus Brevis tears</td>
<td>14</td>
</tr>
<tr>
<td>Peroneus Longus tears</td>
<td>12</td>
</tr>
<tr>
<td>Tenosynovitis</td>
<td>2</td>
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<tr>
<td>Peroneus Longus tendinopathy</td>
<td>5</td>
</tr>
<tr>
<td>Peroneus Brevis tendinopathy</td>
<td>2</td>
</tr>
<tr>
<td>Superior Peroneal Retinaculum injury/tear</td>
<td>0</td>
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* two patients had tears of both tendons
• 41% of patients with a low lying muscle belly had a concomitant peroneus brevis tear, which is higher than previously reported\textsuperscript{7,8}

• 22% of patients had a peroneus quartus tendon which is similar to findings from other studies\textsuperscript{9}

• Conclusion: Service members with lateral ankle pain and a low lying peroneus brevis or peroneus quartus on preoperative imaging should undergo evaluation for associated peroneus brevis tendon tears.
References


2. DIGiovanni, BF; Fraga, CJ; Cohen, BE; Shereff, MJ: Associated injuries found in chronic lateral ankle instability. Foot Ankle Int. 21:809-815, 2000.


