The Role of MRI in the Assessment of Chronic Lateral Ankle Instability: Are Reports Underestimating Peroneal Tendon Pathology?

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Disclosures

• None
Background

- Chronic lateral ankle instability is a common problem in foot and ankle surgery
- Peroneal tendinopathy is a commonly associated condition with reported incidence as high as 77%.
- Not all surgical approaches allow for assessment of the peroneal tendons intraoperatively, and so physical exam and imaging, by either ultrasound or MRI, often plays an important role in pre-operative planning

DiGiovanni et al. Foot ankle Int. 2000
Schuberth et al. J Foot Ankle Surg. 2009
Burrrus et al. Foot ankle Int. 2015
Study Purpose

• Identify any clinical differences in lateral ankle instability patients with peroneal pathology
• Quantify the most commonly missed lesions, as well as the sensitivity of an MRI at detecting any peroneal pathology.
• Analyze the clinical characteristics between patients whose peroneal lesions were “detected” and those whose were “undetected” by MRI.
Methods

• Retrospective chart review of all patients who had undergone surgery for lateral ankle instability at our institution in the past 7 years
• Intraoperative peroneal pathology was the gold standard for diagnosis
• Peroneal pathology was defined as peroneal brevis/longus rupture, split lesion, tenosynovitis, or tendinopathy not otherwise specified
• Cases with peroneal pathology were compared to those without peroneal pathology with regards to clinical factors (duration of symptoms, duration of conservative therapy, presence of traumatic inciting event etc…)}
Methods

• MRI reports were reviewed and correlated the intraoperative findings to assess for their accuracy in assessing for peroneal pathology overall and for specific lesions

• Clinical findings (gender, BMI, age, VAS pain score, inciting traumatic injury, sports participation, duration of symptoms, chronic symptoms, preoperative conservative treatment, preoperative physical therapy, and anterior drawer or talar tilt test) were compared between undetected and detected peroneal lesions
Results

- 238 patients met our inclusion criteria
- 130 (54.6%) had an operative report confirming peroneal pathology, and 108 (45.4%) had no evidence
- Patients with peroneal pathology, had an average of 5.28 months conservative treatment preoperatively compared to an average of 2.32 months in patients without peroneal pathology (p=0.0009)
- Patients who had undergone some form of conservative treatment preoperatively were more likely to have peroneal pathology (RR=1.962, 95% CI: 1.478, 2.604, p<0.0001)
- Patients who had undergone some form of physical therapy (RR=1.661, 95% CI: 1.312, 2.089, p<0.0001)
- Additionally, patients with a history of an inciting traumatic event were less likely to have peroneal pathology (RR=0.736, 95% CI: 0.581, 0.932, p= 0.0109)
Results

- Of the 72 cases of intraoperative peroneal pathology, 44 had some peroneal pathology noted on the preoperative MRI report (sensitivity: 61.11%, false negative rate: 38.89%)
- 28 cases of peroneal pathology went entirely undetected, the most common lesions were:
  - 92.86% (26/28) had peroneus brevis tenosynovitis/tendinopathy not otherwise specified
  - 32.14% (9/28) had peroneal split lesion/interstitial tear (7 of the peroneus brevis and 2 of the peroneus longus)
- Between the “undetected” and “detected” cases of peroneal pathology, no clinical factors were significantly different

<table>
<thead>
<tr>
<th>Specific Pathologies</th>
<th>Detected</th>
<th>Present</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB Tenosynovitis/ Tendinopathy NOS</td>
<td>24</td>
<td>57</td>
<td>42.11%</td>
</tr>
<tr>
<td>PL Tenosynovitis/ Tendinopathy NOS</td>
<td>18</td>
<td>50</td>
<td>36.00%</td>
</tr>
<tr>
<td>PB Split/Interstitial Tear</td>
<td>16</td>
<td>29</td>
<td>55.17%</td>
</tr>
<tr>
<td>PL Split/Interstitial Tear</td>
<td>1</td>
<td>5</td>
<td>20.00%</td>
</tr>
<tr>
<td>PB Rupture</td>
<td>4</td>
<td>5</td>
<td>80.00%</td>
</tr>
<tr>
<td>Peroneal Subluxation</td>
<td>2</td>
<td>2</td>
<td>100.00%</td>
</tr>
<tr>
<td>LIPBMB</td>
<td>0</td>
<td>41</td>
<td>0.00%</td>
</tr>
<tr>
<td>Any Peroneal Pathology</td>
<td>44</td>
<td>72</td>
<td>61.11%</td>
</tr>
</tbody>
</table>
Conclusions

• Over 50% of lateral ankle instability patients have peroneal pathology
• There are differences in preoperative clinical characteristics between lateral ankle instability patients with contaminant peroneal pathology and those without
• Presence and longer duration of conservative treatment, presence of physical therapy, and absence of traumatic inciting events were more common in peroneal pathology patients
Conclusions

• Though MRI carries a false negative rate of nearly 40% when assessing for peroneal pathology in these patients, there are no reliable preoperative clinical findings correlated with “undetected” peroneal lesions on MRI

• We recommend surgeons exercise extreme caution when ruling out peroneal pathology in chronic lateral ankle instability patients based on preoperative MRI

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References

- DiGiovanni et al. Foot ankle Int. 2000
- Schuberth et al. J Foot Ankle Surg. 2009
- Burrus et al. Foot ankle Int. 2015