Normal Sonographic Parameters of Posterior Tibial, Peroneal, and Achilles Tendons

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Disclosures

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Background

Tendinopathy in the foot and ankle is common
Ultrasound of soft tissues allows for quick evaluation
Baseline measurements of every ankle tendon not established

Tendons of interest:
  ◦ Posterior tibial tendon (PTT)
  ◦ Peroneus brevis tendon
  ◦ Peroneus longus tendon
  ◦ Achilles tendon
Purpose and Goals

Use ultrasound to characterize ankle tendons
Provide normal sonographic parameters of scanned tendons
Methods

One ultrasonographer with a GE Logiq machine and 15L transducer, the “hockey stick,” scanned and measured each tendon.
Methods continued

200 patients with nearly 400 extremities

- included if: patient was 18 years or older and presenting to the foot and ankle clinic

- excluded if: unable to tolerate ultrasound examination or have ulcer/lesion/wound directly over area of examination

Tendons were excluded if clinically diagnosed with tendinopathy

Peroneus brevis, peroneus longus, and PT tendons were scanned above and below the medial malleolus
## Results

<table>
<thead>
<tr>
<th>Observed</th>
<th>Mean (cm)</th>
<th>SD (cm)</th>
<th>Min (cm)</th>
<th>Max (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brevis above</td>
<td>392</td>
<td>0.116</td>
<td>0.055</td>
<td>0.03</td>
</tr>
<tr>
<td>Brevis below</td>
<td>392</td>
<td>0.133</td>
<td>0.061</td>
<td>0.05</td>
</tr>
<tr>
<td>Longus above</td>
<td>392</td>
<td>0.206</td>
<td>0.042</td>
<td>0.07</td>
</tr>
<tr>
<td>Longus below</td>
<td>390</td>
<td>0.287</td>
<td>0.072</td>
<td>0.08</td>
</tr>
<tr>
<td>PTT Above</td>
<td>366</td>
<td>0.374</td>
<td>0.101</td>
<td>0.19</td>
</tr>
<tr>
<td>PTT Below</td>
<td>365</td>
<td>0.459</td>
<td>0.122</td>
<td>0.18</td>
</tr>
<tr>
<td>Achilles</td>
<td>374</td>
<td>0.498</td>
<td>0.098</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Above and below signify measurements above and below the medial malleolus
Peroneal Tendons

Brevis Above

Longus Above

Brevis Below

Longus Below
Posterior Tibial and Achilles Tendons

PTT Above

Achilles

PTT Below
Conclusions

Largest epidemiologic study thus far to provide parameters of tendons in the foot and ankle

Baseline measurements provided for each of the tendons

Measurements may help clinicians better identify and characterize tendons in patients with and without tendinopathy

No classification system exists to help clinicians distinguish between normal vs. pathologic tendons

Ultrasound can become even more valuable for examination purposes when more is known about normal sonographic parameters of tendons
Future Directions

Plan for additional tendon evaluation in the future to establish a classification system for tendinopathy

Will correlate physical exam and comorbidities to sonographic tendon findings
References


