FDL Tenodesis Vs Tunnelization in PTTD

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- Posterior Tibial Tendon (PTT)
  - Is the strongest plantar flexor and foot inverter
  - Stabilizes midfoot and rearfoot

SURGICAL RECONSTRUCTION CONSENSUS IN STAGE II PTTD IS:

- Tendon transfer: Flexor Digitorum Longus (FDL)
- Bone reconstruction
- Achilles tendon lengthening?

- FDL transfer can be done:
  - thru a Navicular bone tunnel
  - PTT Navicular insertion tenodesis

- FDL transfer thru a Navicular bone tunnel
  - Most popular technique between foot and ankle surgeons
  - Strong fixation (to itself, interference screw, bone anchor, etc)
  - Inserts different to PTT in Navicular: new tendon biomechanics??
  - Lose PTT distal insertions?? (3 cuneiforms, Cuboid, 3 middle metatarsals)

- FDL tenodesis to PTT Navicular insertion with a side-to-side tenorrhaphy (rest of PTT is removed)
  - Preserves PTT biomechanics and distal insertions
  - Strong fixation? (#)
• PTT distal 2 cms is healthy tendon (K Johnson, Clin Orthop. 1989)
• Smaller incision and less FDL tendon needed

(#) Biomechanical Evaluation of Various Suture Configurations in Side-to-Side Tenorrhaphy. 
E Wagner and cols, JBJS Am, 2014

• Tested by cyclic loading four suture techniques:
  running locked, simple eight, vertical mattress, and pulley suture

• All sustained loads well above the physiologic loads expected to occur in tendons in the foot

• The vertical mattress suture configuration appeared to be weaker than the other configurations

❖ FDL Tenodesis vs tunnelisation in PTTD
G Khazen, H Ruiz, F Rondón.
Presented at Sociedad Venezolana de Traumatología y Ortopedia (SVCOT) National Congress, Valencia, Venezuela, 2014

• Retrospective and comparative study performed between July 2005 and February 2013 at Hospital de Clínicas Caracas Foot and Ankle Unit

• Goniometric measurement of midfoot inversion and plantar flexion against the contralateral foot at 12 months postop

• 19 of 27 patients with FDL Navicular tunnelisation could be followed at 12 months postop

• 36 of 49 patients with FDL tenodesis to TTP insertion could be followed at 12 months postop

• 6 patients excluded because of bilateral PTTD
Other procedures:

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
</tr>
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<tbody>
<tr>
<td>Medializing Calcaneal osteotomy</td>
<td>46</td>
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<tr>
<td>Evans osteotomy</td>
<td>9</td>
</tr>
<tr>
<td>Spring ligament reconstruction</td>
<td>22</td>
</tr>
<tr>
<td>Cotton osteotomy</td>
<td>43</td>
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<td>Lapidus</td>
<td>12</td>
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<tr>
<td>Arthrosis</td>
<td>3</td>
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Results

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Midfoot inversión</th>
<th>Plantarflexión</th>
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<tbody>
<tr>
<td>Navicular tunnel</td>
<td>62%</td>
<td>86%</td>
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<tr>
<td>PTT Tenodesis</td>
<td>86%</td>
<td>89%</td>
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</table>

Significance 0.013

- 1 of 19 patients with Navicular tunnelisation and 2 of 36 patients with FDL tenodesis to TTP insertion lost tendon function

CONCLUSION

- FDL tenodesis to PTT Navicular insertion with a side-to-side tenorrhaphy
  - Excellent procedure
  - Easy to reproduce
  - Better midfoot inversion than FDL tunnelisation