Plantar Fascia Release Through a Single Lateral Incision: A Cadaveric Analysis of a Novel Surgical Technique

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Disclosures
No Conflict to Disclose

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Our disclosures are in the Final AOFAS mobile app. We have no potential conflicts with this presentation.
Introduction

- Plantar fascia release (PFR) and calcaneal slide osteotomy (CSO) are often components of the operative management of cavus deformities of the foot.
- PFR has traditionally been performed through an incision over the medial calcaneal tuberosity.
- CSO is performed through a lateral incision.
Purpose

- To use a cadaver model to confirm whether a full PFR was achievable through a lateral incision.
- To examine the proximity of the medial neurovascular structures to both the PFR and the lateralizing CSO.
Materials and Methods

- Six cadaver feet were dissected for this analysis.
- A medial sided dissection was performed to fully expose the tibial, medial and lateral plantar, and calcaneal nerves, as well as the origin of the plantar fascia.

Hollow Arrow- Medial Plantar Nerve; Solid Arrow- Lateral Plantar Nerve; Star- Calcaneal branches of Tibial Nerve; (*)- Plantar Fascia
Materials and Methods

- An incision was made on the lateral aspect of the ankle inferior and parallel to the peroneus longus tendon and was carried to bone.
- A curved osteotome was used to sweep the plantar fascia off of the calcaneus just distal to its proximal insertion.
- A #15 scalpel was inserted into the space created, parallel to the plantar fascia, and was directed toward the plantar fascia insertion.
- The scalpel was turned ninety degrees so that the blade was perpendicular to the plantar fascia and the ankle was dorsiflexed until a full release was achieved.
- An oscillating saw was used to make an osteotomy perpendicular to the axis of the calcaneus, in the posterior one-third of the calcaneus, and was completed with an osteotome.

Image shows: location of the calcaneal osteotomy (solid black arrow); site where plantar fascia is released (white arrow).
Results

- In all six cadavers, the plantar fascia was fully released from its origin at the medial calcaneal tuberosity through the lateral incision.
- There was no obvious damage to the medial neurovascular structures in any specimen.
Results

- The CSO made through the lateral incision reliably crossed the calcaneal branch of the tibial nerve in all specimens.
- The osteotomy was posterior to the lateral and medial branches of the tibial nerve.

The oscillating saw blade (solid white arrow) crossing the calcaneal branch of the tibial nerve.
Conclusions

- PFR through a lateral incision can be considered in operative management of cavus deformities of the foot.
- A full PFR can be achieved through this lateral based incision.
- Calcaneal slide osteotomies performed through a lateral based incision reliably cross the calcaneal branch of the tibial nerve.
Future Directions

• An in vivo cohort will need to be followed to see how patients fare clinically with respect to short and mid-term outcomes following a lateral based PFR.
References