Hindfoot Endoscopy for Treatment of Posterior-Medial Calcific Tendinosis and Posterior Impingement

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Purpose

Hindfoot endoscopy has been described for rearfoot joint debridement and arthrodesis, but little is documented for its place in tendon remodeling. This case study presents a unique case of tendon and ankle joint calcification involving multiple posterior-medial tendons. Our surgical approach exemplifies the versatility and utility of hindfoot endoscopy in managing rearfoot structural limitations while offering direct anatomic visualization and minimal soft tissue violation.

Literature Review

Pathologic deposition of calcium hydroxyapatite within and surrounding tendons is common, with the majority of cases involving the hip and shoulder¹. The process is less often described in the foot and ankle with pedal involvement accounting for less than 1% of total cases^{2,3}. Complete understanding of the pathogenesis has yet to be elicited, although Uhthoff and loehr have defined four distinct phases of development^{4,5}. These phases describe the histopathologic lifecycle of the condition, but have little bearing on prognosis or treatment.

The mainstay of treatment for calcific tendinosis is conservative with immobilization and nonsteroidal anti-inflammatory medications¹. If symptoms are recalcitrant to conservative cares, surgical intervention may be indicated. Historically, calcific tendinosis has been approached with extensile curvilinear incisions which require long recovery time and can be comorbid. To our knowledge, there are no cases reported in the literature of hindfoot endoscopy for the management of calcified flexor hallucis longus (FHL) and tibialis posterior (PT) tendons with concomitant posterior tibiotalar osseous impingement.





Figure 4. Intra-operative endoscopic images. Visualization of posterior osseous protuberance with ankle and subtalar joint via lateral portal (A). Anatomic contour of posterior tibia and talus post-debridement with ankle joint, subtalar joint, and FHL tendon visible. View from the lateral portal (B). Visualization of kirschner wire retraction from lateral portal (C). Osseous debridement of posterior medial ankle with acromionizer visualized from the lateral portal (D). Visualization of debrided FHL tendon and posterior medial ankle from the lateral portal (E).

A case is presented of a 73-year-old male with chronic posterior-medial left ankle pain that was referred to our clinic for second opinion after failing steroid injection and ankle brace stabilization. Clinically, symptoms were present with dorsiflexion and weight bearing activity. CT revealed posterior osseous tibiotalar impingement with multiple deep flexor tendons encased in calcification. The patient subsequently underwent tendon and osseous debridement via hindfoot endoscopy.

The rearfoot was approached from a prone position with a two-portal technique as described by van Dijk and colleagues⁶. Upon visualization, the FHL tendon was noted to be within a ring of calcific tissue with thickened and scared sheath. The prominent posterior surface of the tibia and talus was resected to normal anatomic contour and the FHL tendon sheath was incised allowing un-tethered movement. Visualized surfaces of the FHL were debrided of fibrotic and calcific tissues. The peroneal and FHL muscles were retracted lateral and medial respectively with Kirschner wires. Tendons

Figure 2 Pre-operative operative



Case Study

of flexor digitorum longus and PT were then identified adjacent to the posterior-medial tibia. A calcific ring was noted to encompass the tendons, which was resected along with fibrotic scar tissues. Portals were closed in a layered fashion and a well padded modified Sir Robert Jones dressing was applied from toes to knee. The patient remained non-weight bearing with surgical dressings until portals were healed and then transitioned to normal shoe gear.



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Figure 3. Post-operative radiographs of operative extremity.

MEDICAL

FOUNDATION

Analysis & Discussion

Calcification was removed via direct visualization allowing patient to promptly to activity. return Post-operatively, mild loss of great toe flexion strength was noted, which has not been problematic for the patient. At 13 months the patient is without pain or activity limitation.

We present our approach to this unique pathology. Via hindfoot endoscopy we were able to restore function with minimal soft tissue violation. The approach provides decreased risk of wounding and expedited recovery. This case study affirms the versatility and utility hindfoot endoscopy.

References

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