Interventional MSK US: Ankle and Foot

Kenneth S. Lee, MD
Associate Professor of Radiology
University of Wisconsin School of Medicine
Division of Musculoskeletal Radiology
Disclosures

- Grants: RSNA, NIH
- Research: SSI, Arthrex
- Speaker: MTMI
- Advisor: Echometrix
Objectives

- Show that ultrasound is well-suited to evaluate the ankle and foot

- Highlight ultrasound-guided interventions involving the ankle and foot
  - Achilles
  - Medial and Lateral Ankle
  - Foot
Ankle US Evaluation

1. Answers a specific question

2. Superficial Structures
   - Achilles Tendon/others
   - Ligaments
   - Plantar Fascia
   - Lumps/bumps

3. Cyst versus Solid

4. Dynamic
Achilles
Achilles Tendon
Achilles Tendon
Achilles Tendinopathy

Long Axis

Short Axis
US-Guided Therapy:
PRP for Achilles Tendinopathy

T2w-f.s.

Long axis

Short axis
Retro-Calcaneal Bursitis

Long Axis

Sag T2

Sag T1 Gad
Retrocalcaneal Bursitis Injection
Medial Ankle

Tendons of the Medial Ankle

Medial view
Medial Tendons - PTT

- PT
- navicular tuberosity
Medial Ankle Tendons - Cine

FDL to FHL
PTT Tenosynovitis

Long Axis

Short Axis
Tenogram
US-Guided Tenogram
Lateral Ankle

Tendons of the Lateral Ankle

Lateral view

- Common sheath of peroneus longus and brevis tendons
- Superior and inferior peroneal retinaculum
- Lateral malleolus
- Tendons of Extensor digitorum longus
- Peroneus tertius tendon
- Peroneus brevis tendon
Lateral Tendons – PL and PB
Lateral Tendons – Short Axis
US-Guided PRP
Dorsal Ganglion Cyst
Plantar Fasciopathy

Long Axis

Short Axis

calcaneus

Netter
US-Guided Steroid Injection

calcaneus
Injection Protocol:

- Sterile preparation
- Tibial Nerve block
- Skin numbing at heel pad
- Dry needling in 3 locations
- Inject 3 ml of PRP

PRP for Plantar Fasciopathy
US-Guided Injection
Tibial Nerve Block
The Tarsal Tunnel

- Fibro-osseous canal
- Roof: flexor retinaculum (thin fascia)
- Floor: medial aspect of talus
  - sustentaculum tali
  - medial wall of calcaneus
- Content: posterior tibial nerve
  - and its branch
  - posterior tibial artery & vein
  - three tendon (TP, FDL, FHL)
Ganglion in Tarsal Tunnel

Sag T2

Long Axis
Ankle Joint Injection

Tibia

Talus
Neuroma: Compression test

Distal

Dorsal
US Mulder’s Sign

Plantar

Medial

Transverse: 3rd interspace

3rd 4th
Needle Placement – Plantar Approach

Distal

Dorsal
US-Guided Injection

Distal

Dorsal
Summary

- US is well-suited for evaluating the soft tissue structures of the ankle
- US is useful for guiding injections and aspirations involving the ankle
References

1. Grant et al. *JBJS Am* 2005;87:1788
10. Nazarian LN. *AJR* 2008;190:1621
Thank You