

US guided procedures

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Ultrasound

➤ Advantages

- No ionizing radiation (x-ray)
- Painless, readily available, and relatively inexpensive
- Excellent soft tissue characterization
- Doppler imaging
- Ideal for MRI incompatible patients, children and pregnant women
- Guidance for percutaneous procedures

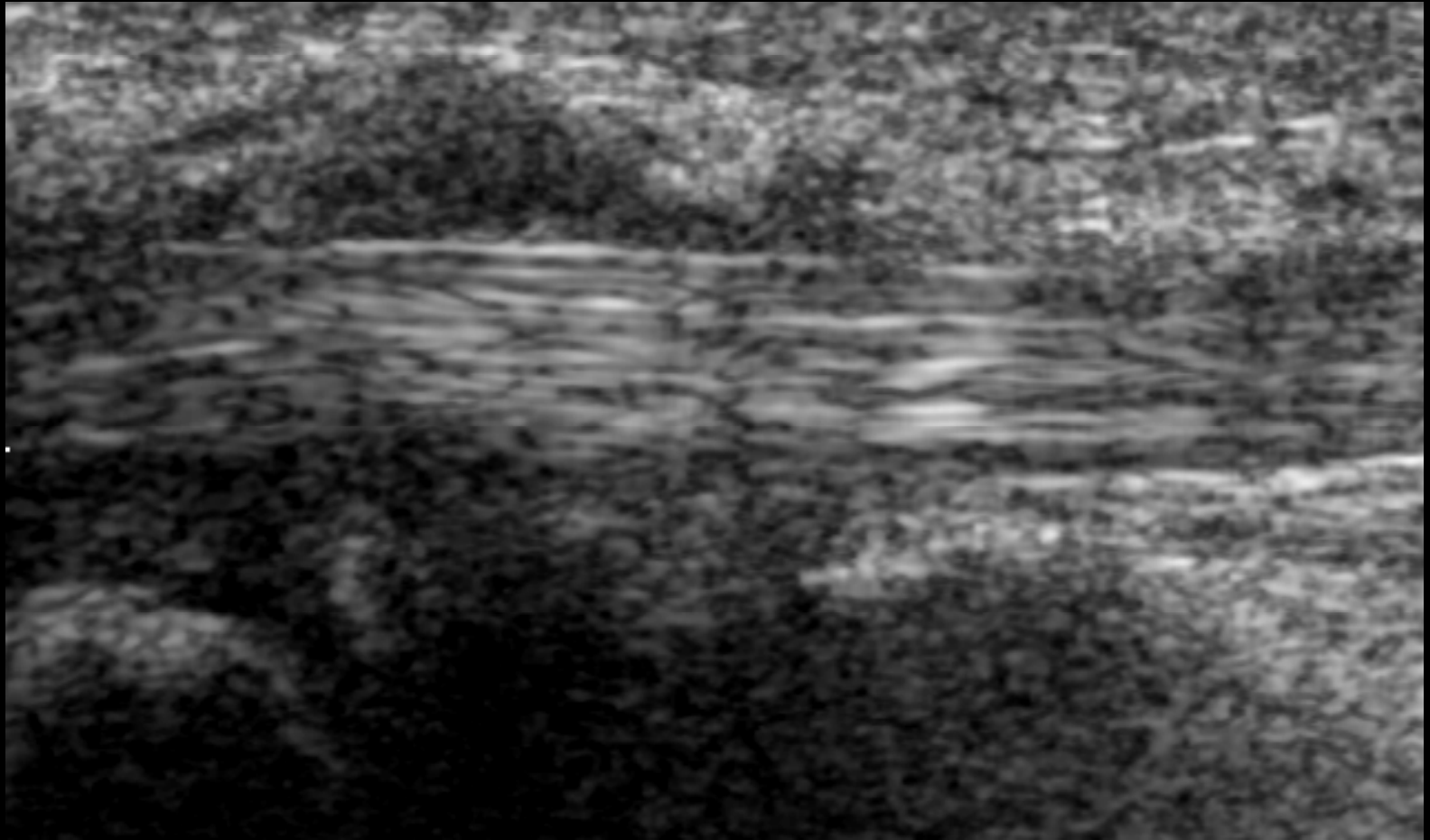
➤ Disadvantages

- Operator dependent
- Relatively small field of view
- Limited by depth, air / gas and bone
- Referring clinicians unfamiliar / uncomfortable with ultrasound procedures

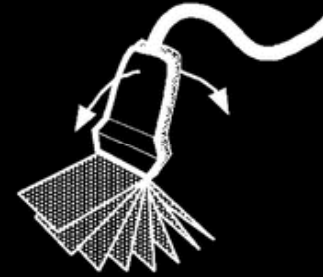
Tendons

- Ideal for US imaging
- Superficial and predictable anatomy
- Tightly bundled collagen fibrils
- Echogenic parallel lines
- Anisotropic
- Pathology
 - Tendinosis
 - Tenosynovitis
 - Tear

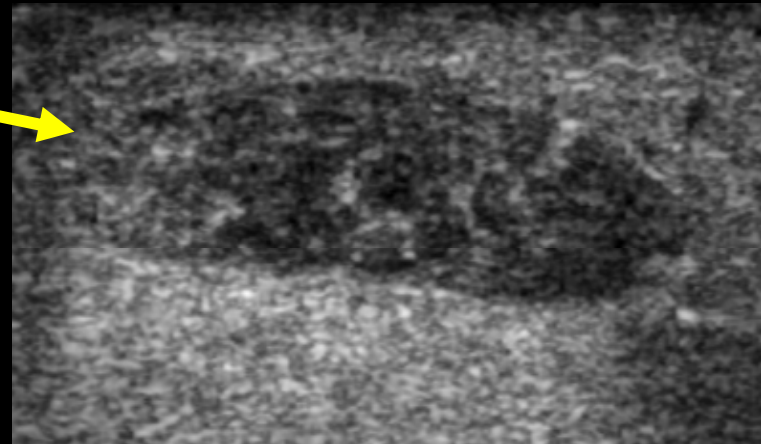
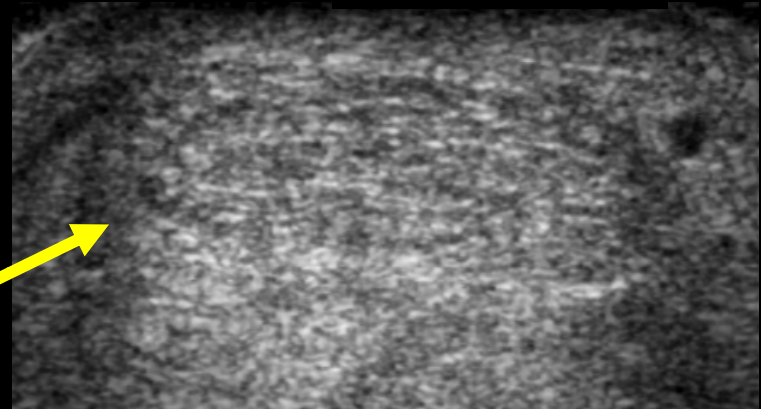
Tendons



Anisotropy



- Tendon appears different with different angles of insonation
- Perpendicular to tendon fibrils
- Any angle other than 90 degrees



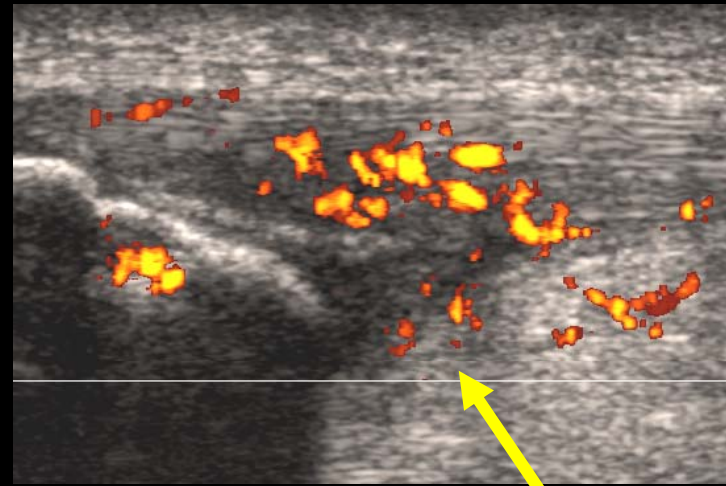
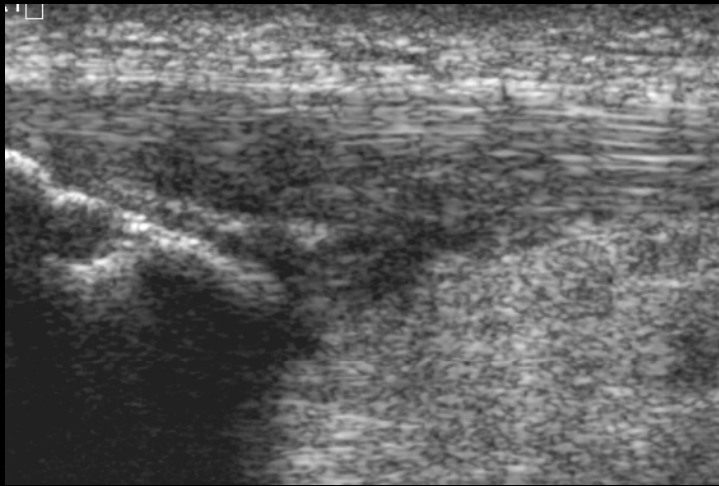
Tendinosis

- Hypoechoic or heterogeneous
- Enlarged
- Indistinct margins
- Intrasubstance tears / degeneration
- Dystrophic calcification
- Possible increased vascularity

Normal Achilles Tendon

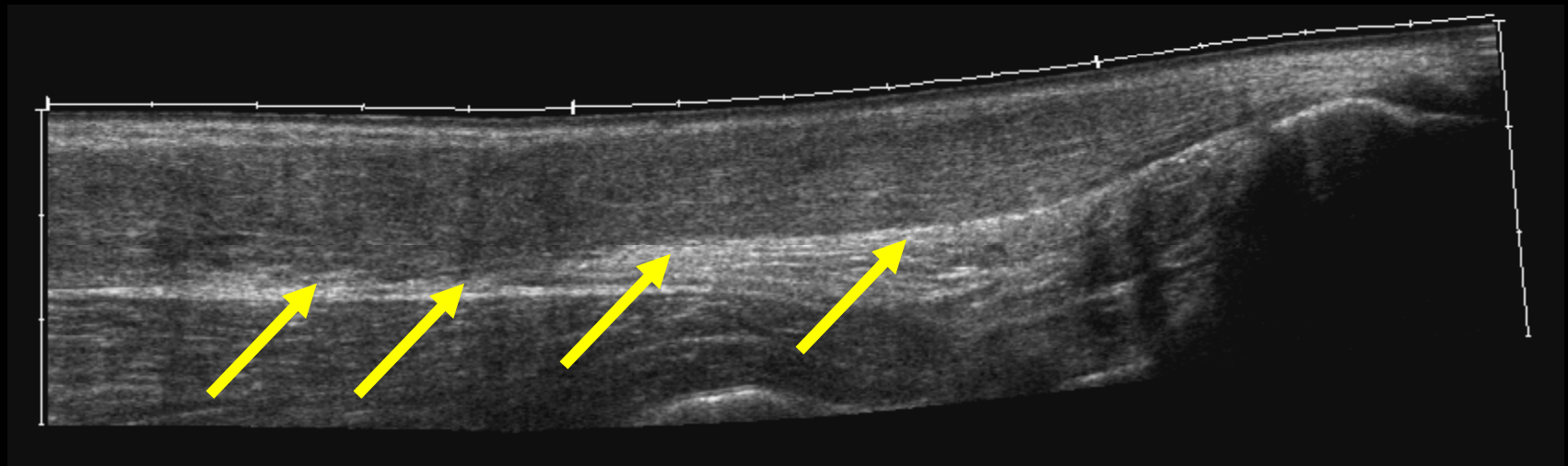
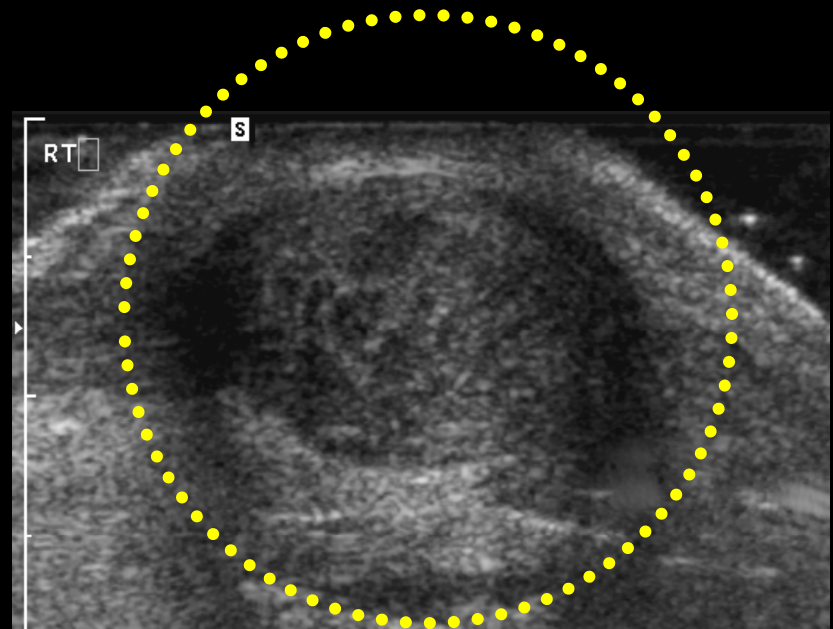


Achilles tendinosis

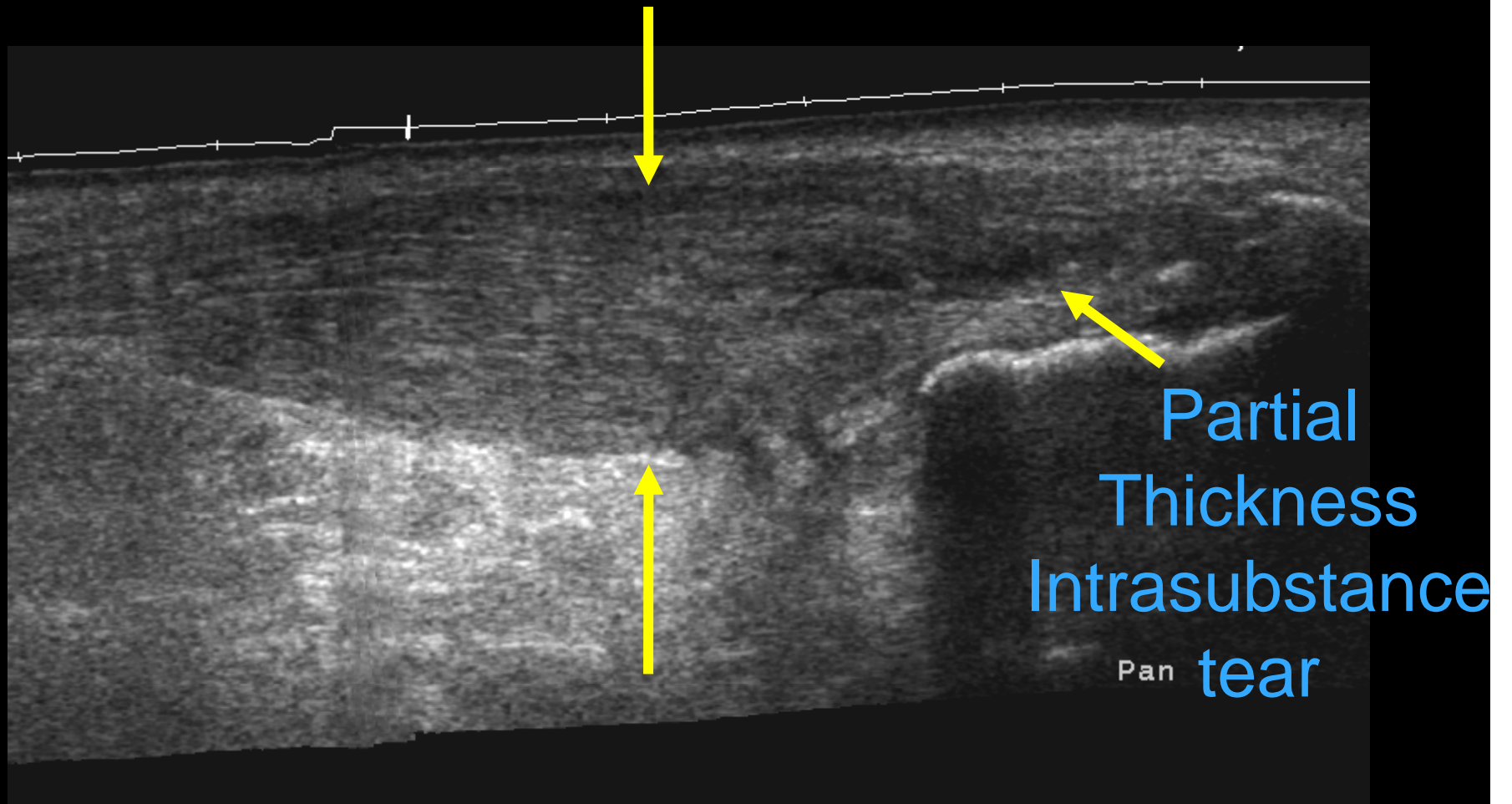


Angiofibroblastic
response

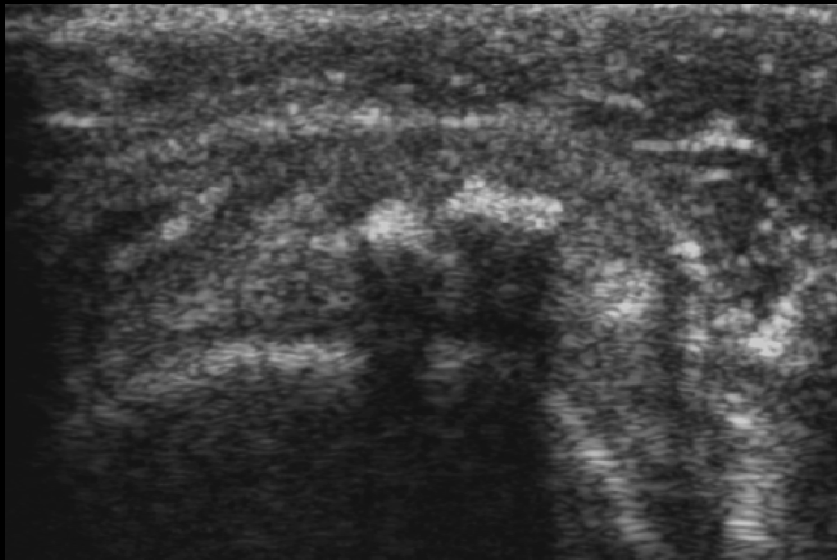
Diffuse Achilles tendinosis



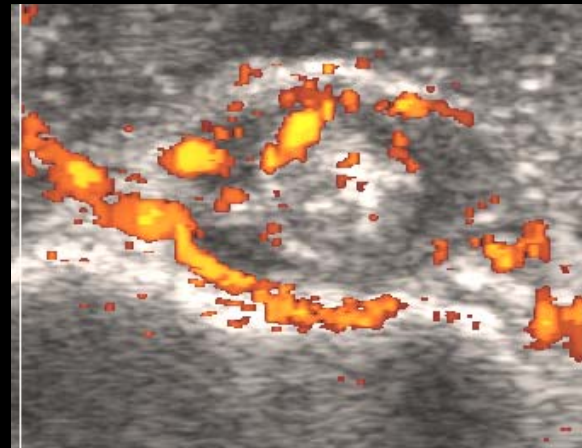
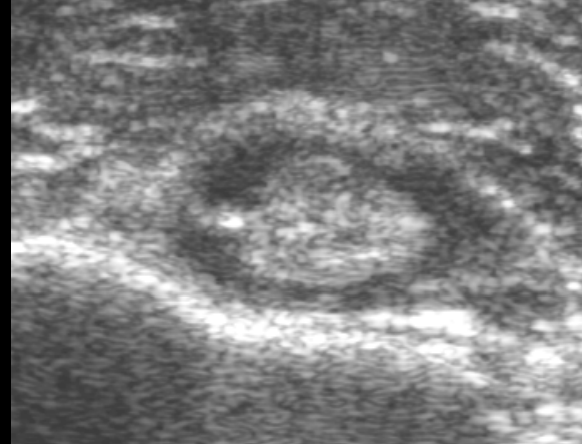
Achilles tendinosis



Calcific tendonitis



Tenosynovitis



Tendon Tears

➤ Partial

➤ Intrasubstance

- longitudinal split
- mucoid degeneration

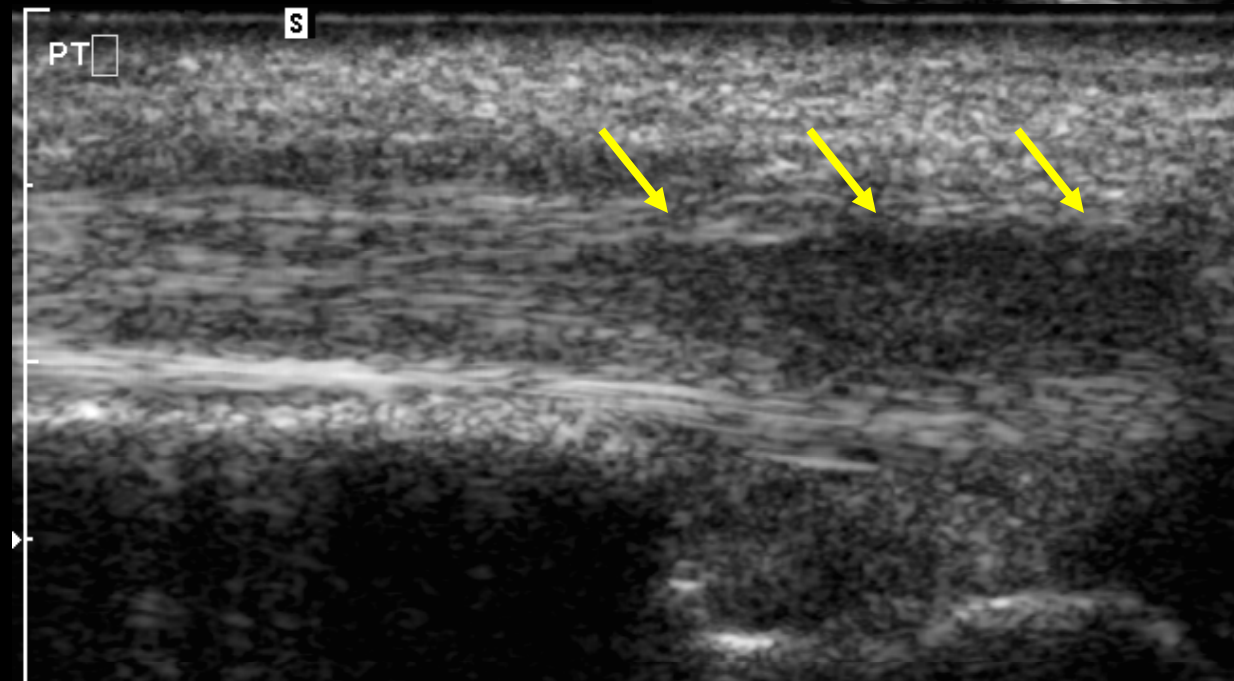
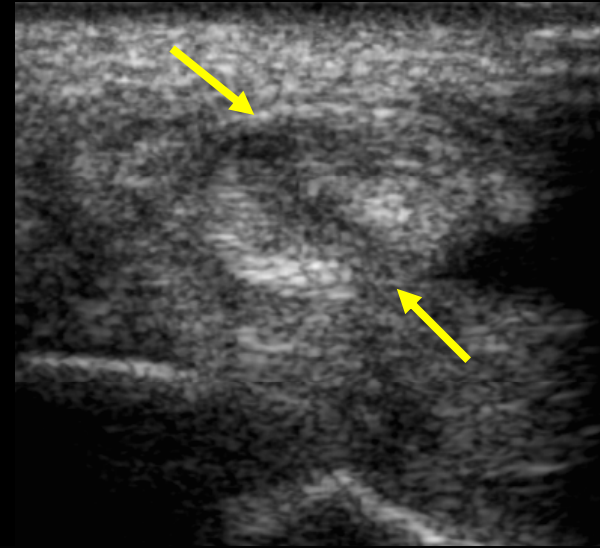
➤ Deep or superficial surface

➤ Full thickness

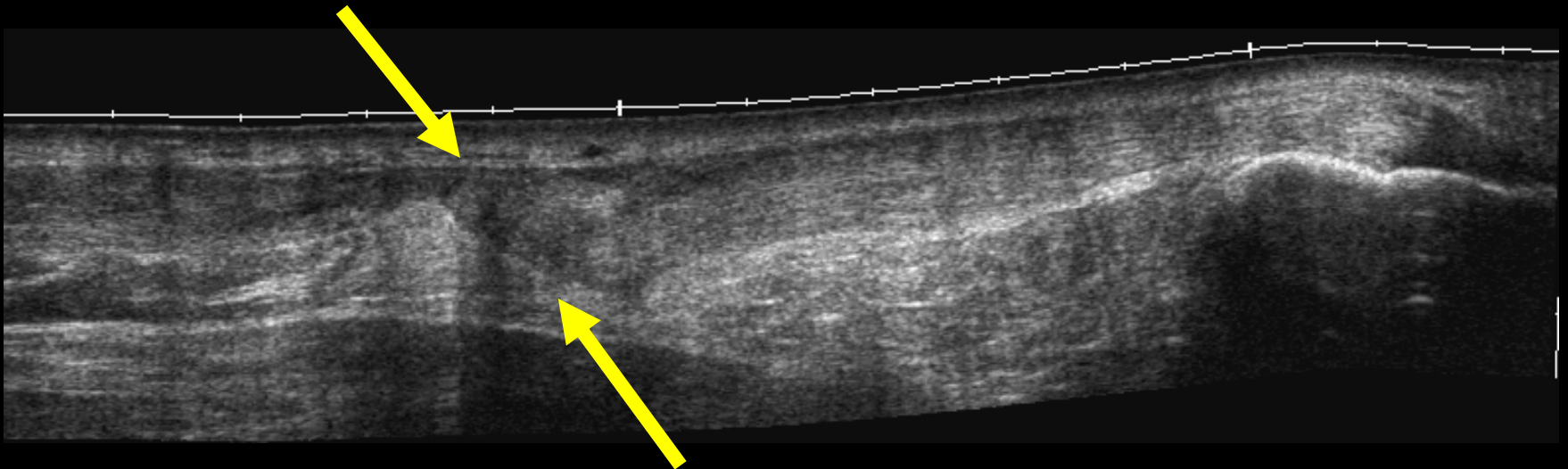
➤ Tendon retraction

➤ Space filled with angiofibroblastic response

Posterior tibial tendinosis with intrasubstance longitudinal split



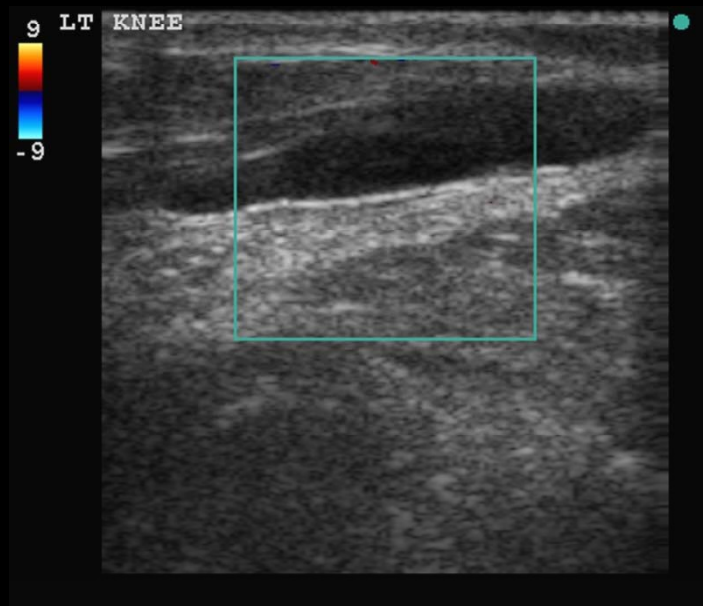
Full thickness tear of the Achilles tendon



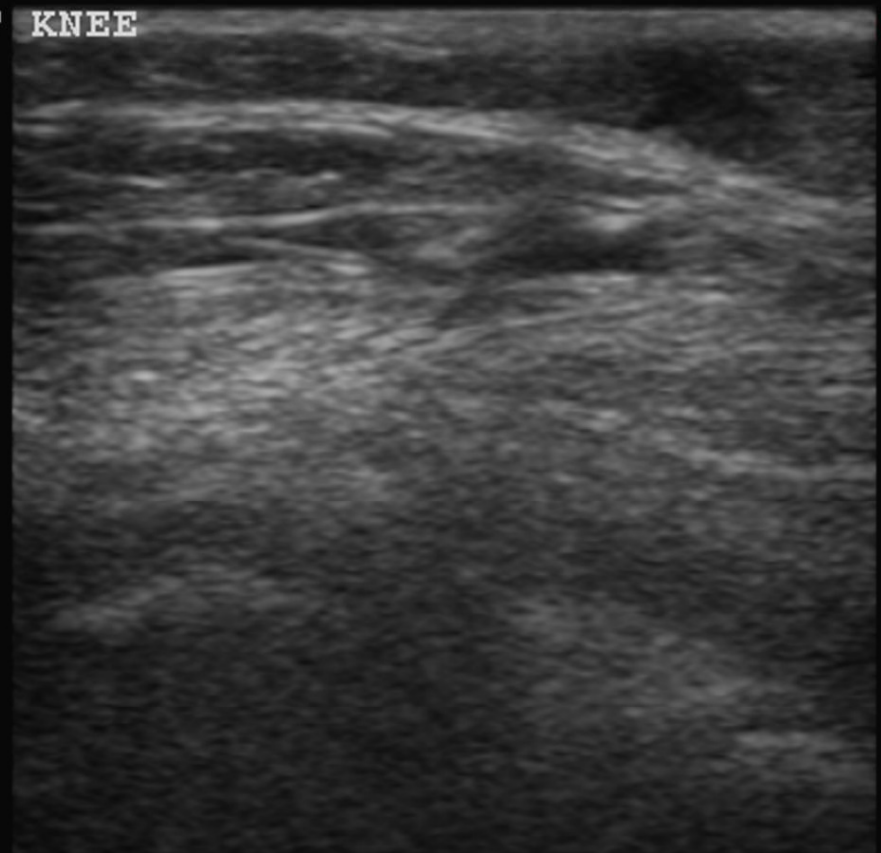
Guidance for percutaneous procedures

- Hematoma / seroma / cyst aspiration
- Ganglion / joint aspiration
- Steroid / anesthetic injection
- PRP injection

Popliteal cyst aspiration



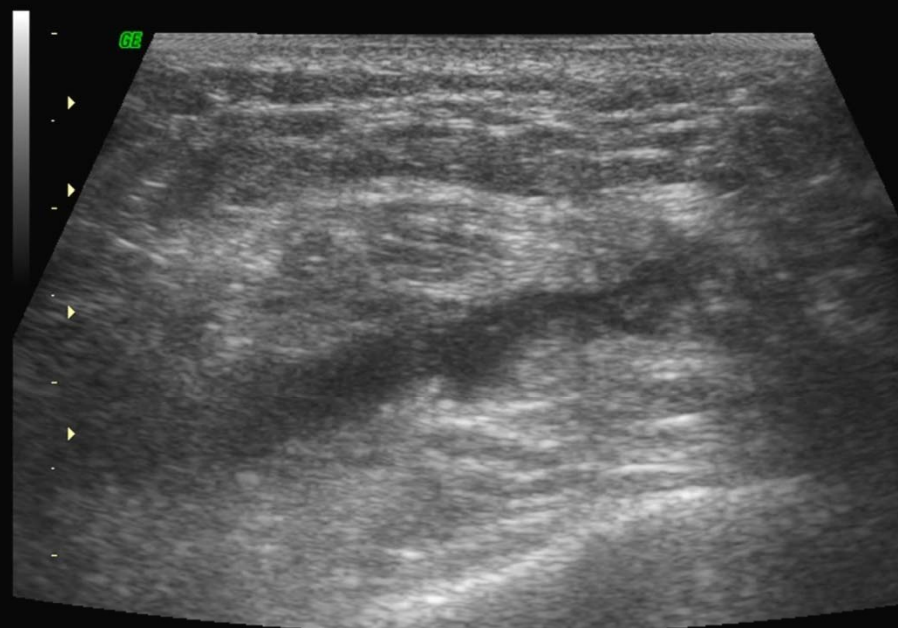
LT KNEE



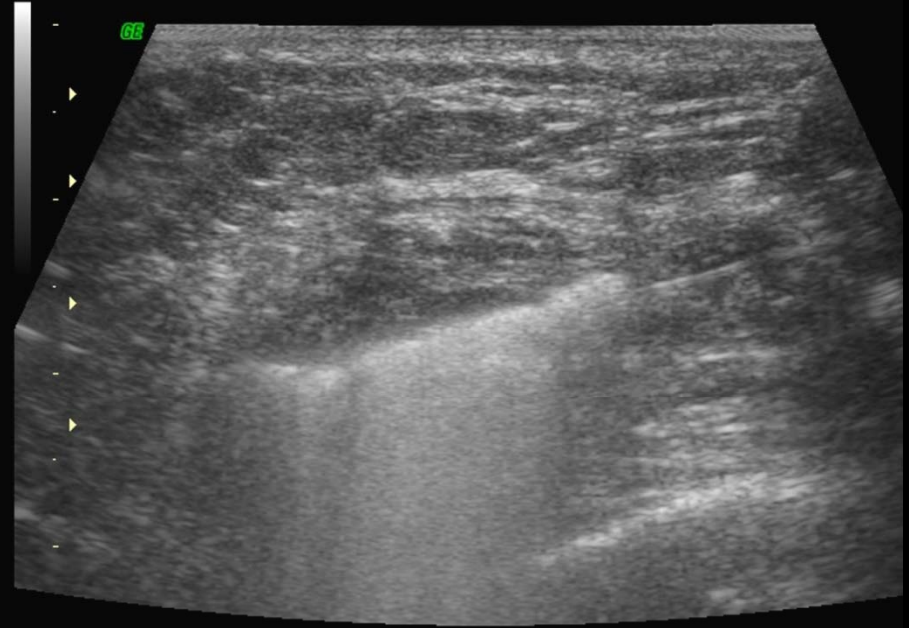
LT KNEE



Popliteal cyst steroid injection



RT KNEE TRV POST



RT KNEE TRV POST

Breast implant seroma aspiration



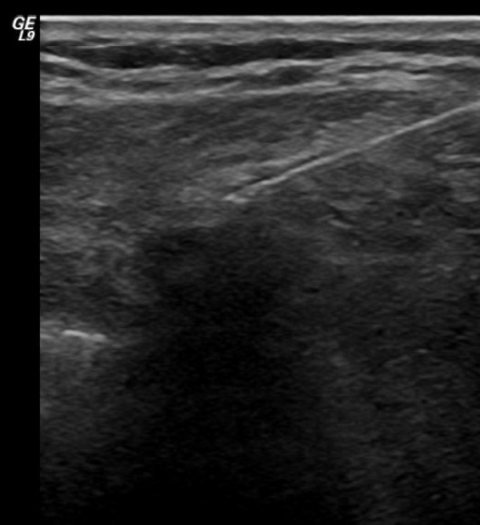
LT BREAST MED



LT BREAST MED

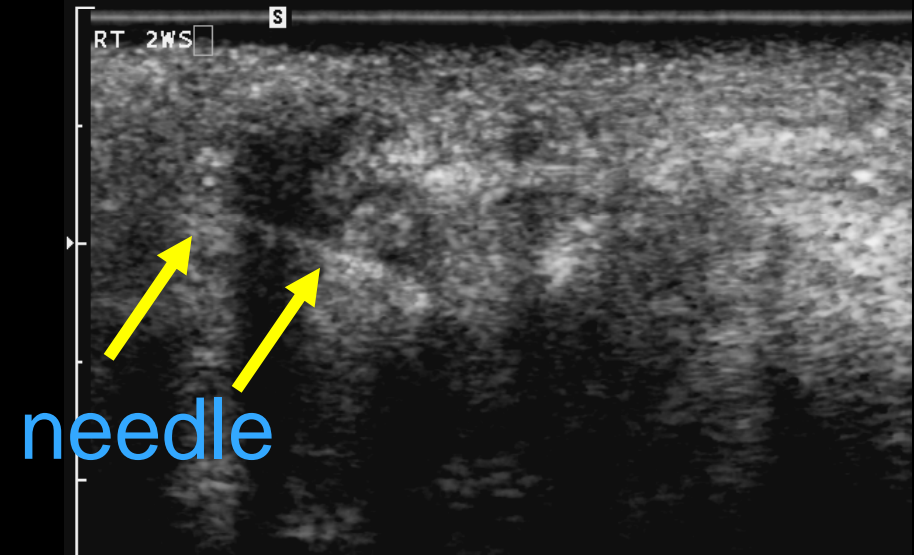
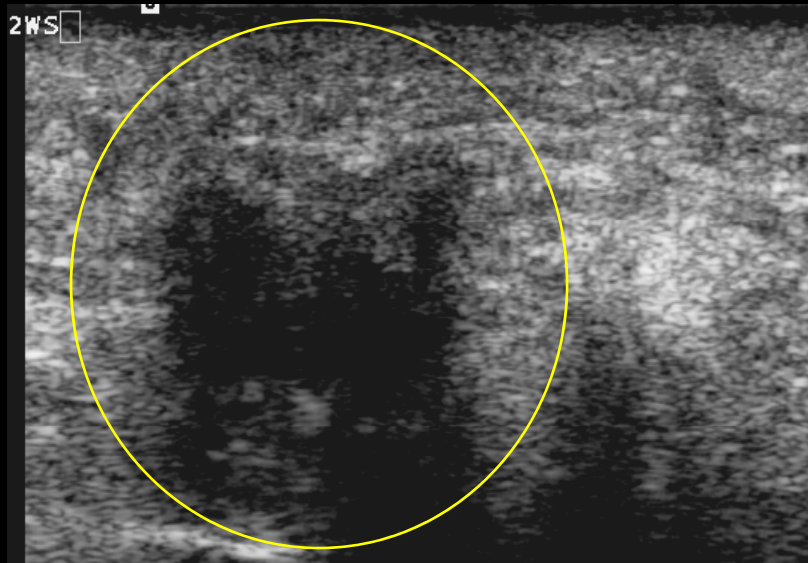


LT BREAST MED

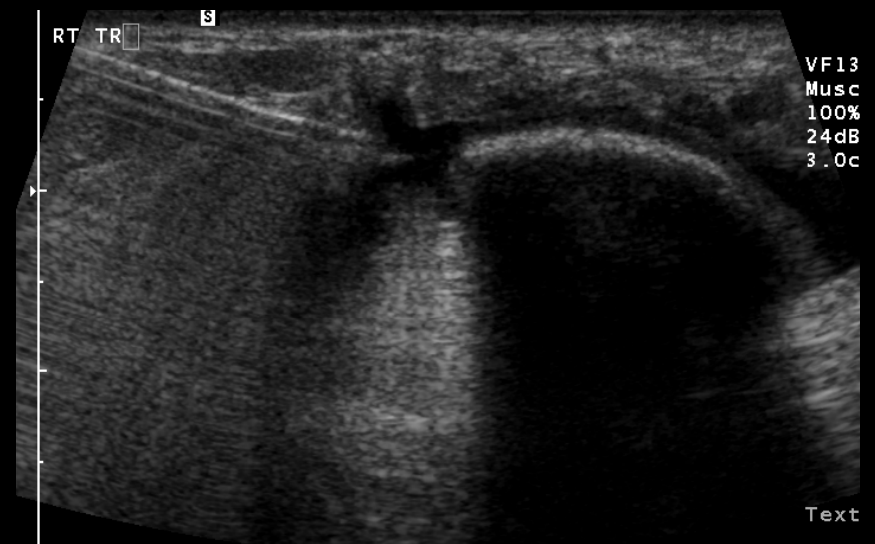
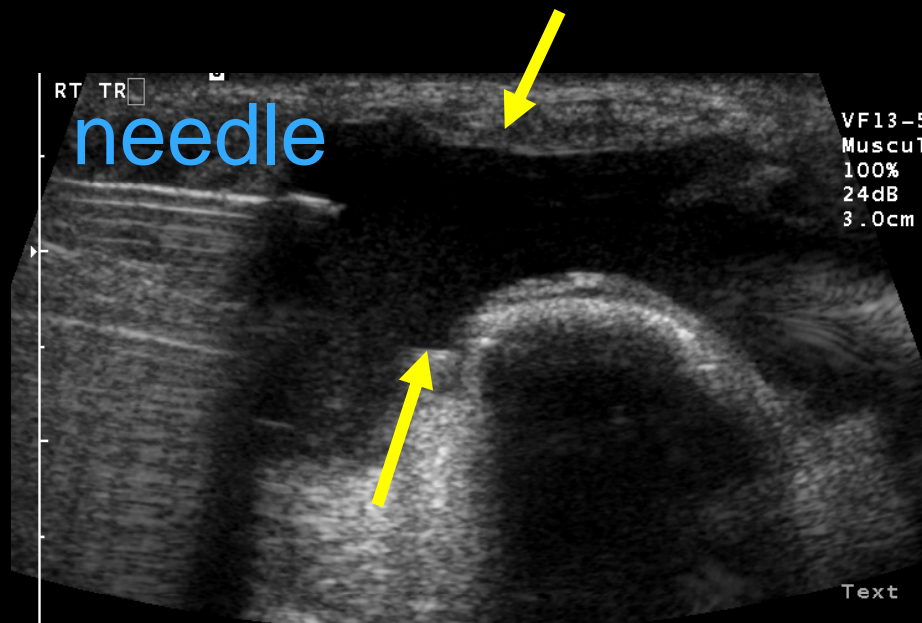


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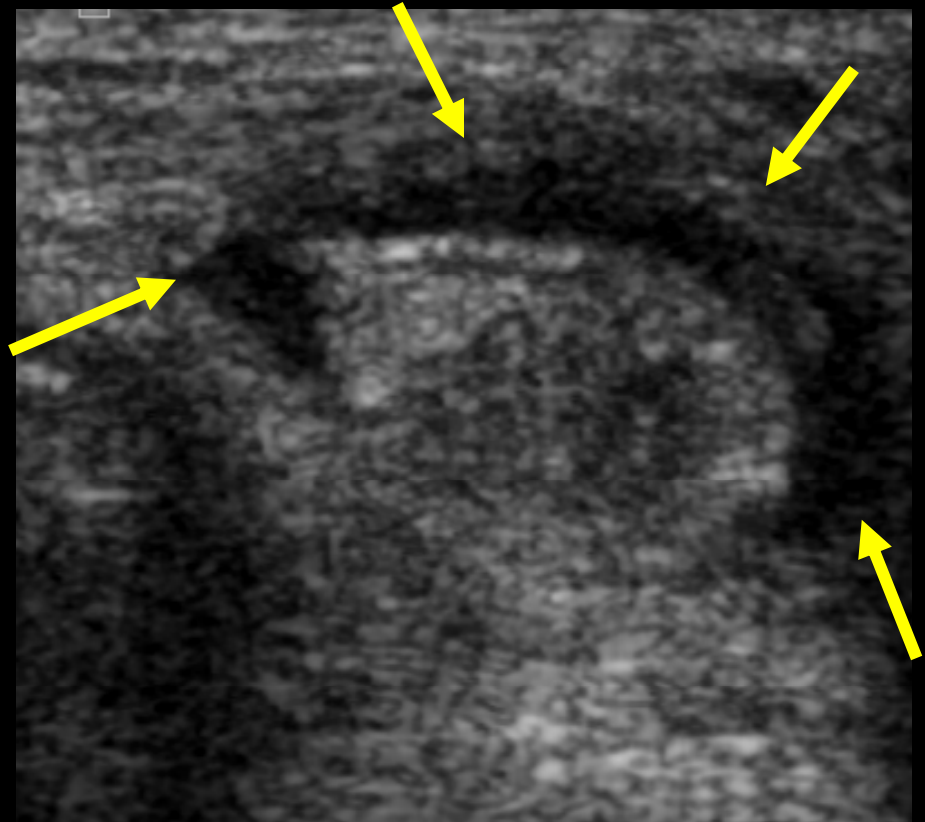
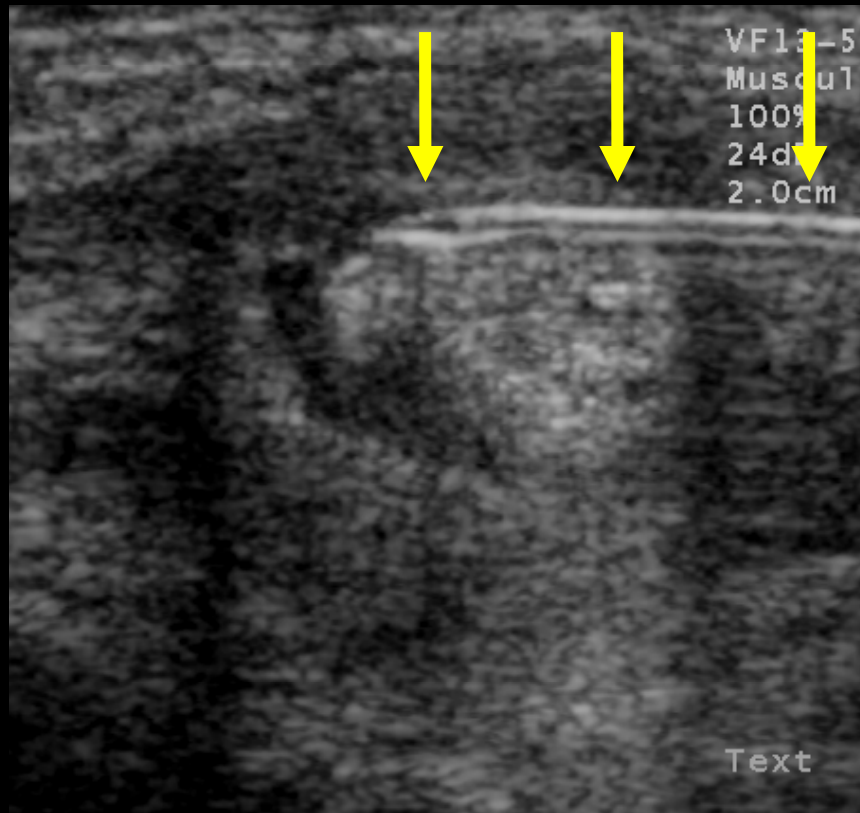
Therapeutic injection of a Morton's neuroma



Aspiration of a dorsal midfoot ganglion

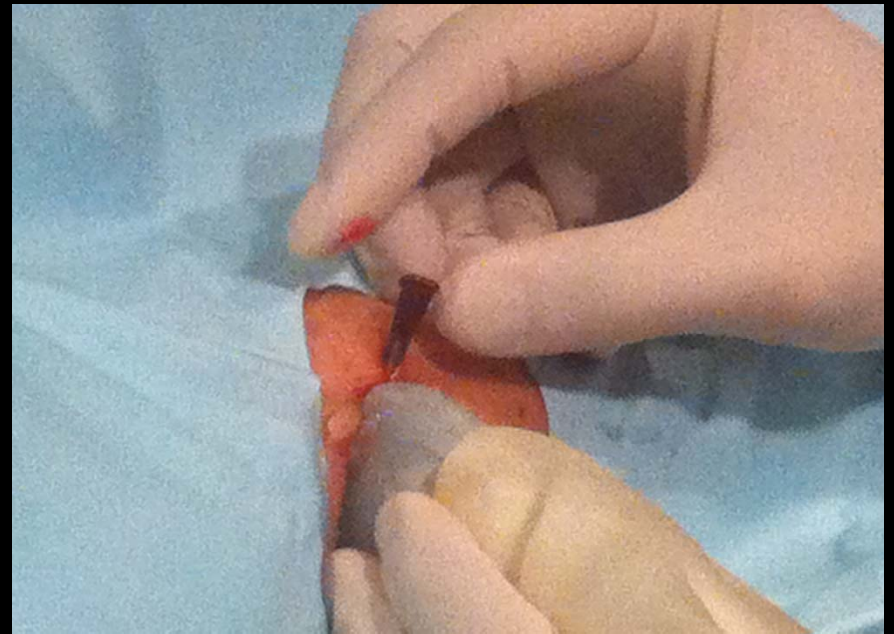
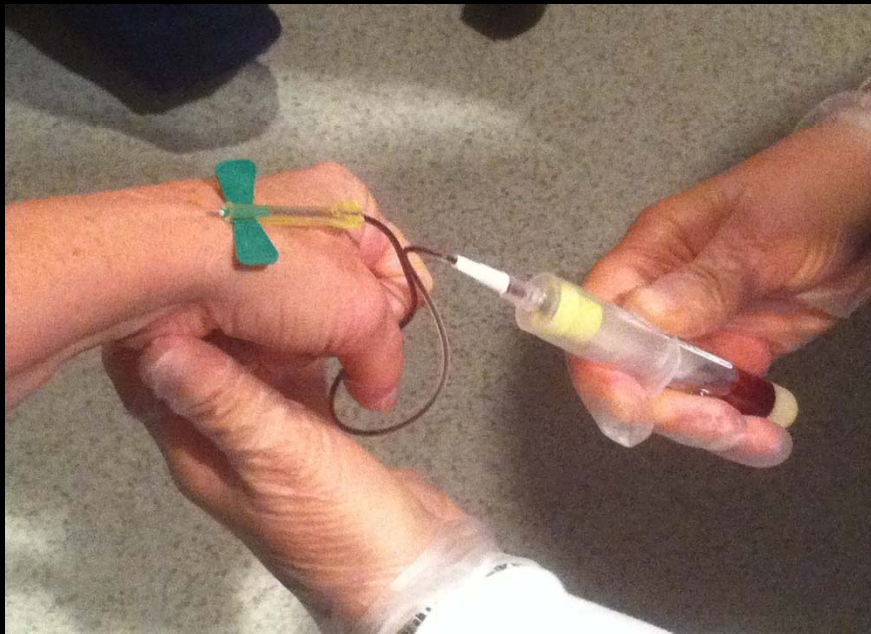


Selective tendon sheath injection posterior tibial tendon



PRP: Platelet Rich Plasma

- Autologous concentrated blood plasma containing several growth factors and cytokines
 - Experimental treatment for tendinitis, osteoarthritis, bone repair, sports injuries
- Direct Ultrasound-guided injection



Conclusion

- Ultrasound is an excellent modality for imaging of specific musculoskeletal indications
- Excellent for guided procedures such as aspiration, steroid injection and PRP

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