

MSK US Hip:

Procedures – Iliopsoas,
Hamstring, IFI



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Disclosures

- Grants: NBA/GE and Mitek
- Research: SuperSonic Imagine
- Royalties: Elsevier

Objectives

- To demonstrate that ultrasound is well-suited for evaluating the hip
- To discuss the various ultrasound-guided procedures involving the hip
 - Iliopsoas bursa
 - Greater trochanteric bursa
 - Hamstring
 - Ischiofemoral Impingement

When to evaluate with ultrasound?

- Shoulder
- Elbow
- Hand/Wrist
- Hip
- Knee
- Ankle/Foot
- Nerves

MSK US of the Hip: INDICATIONS

- Diagnostic evaluation
 - Hip joint effusion
 - Bursitis
 - Tendon snapping
 - Tendon tears
 - Tendinopathy

MSK US of the Hip: INDICATIONS

- Therapeutic
 - Steroid injections
 - Nerve injections
 - Platelet-rich plasma (PRP)

Basic Hip Anatomy

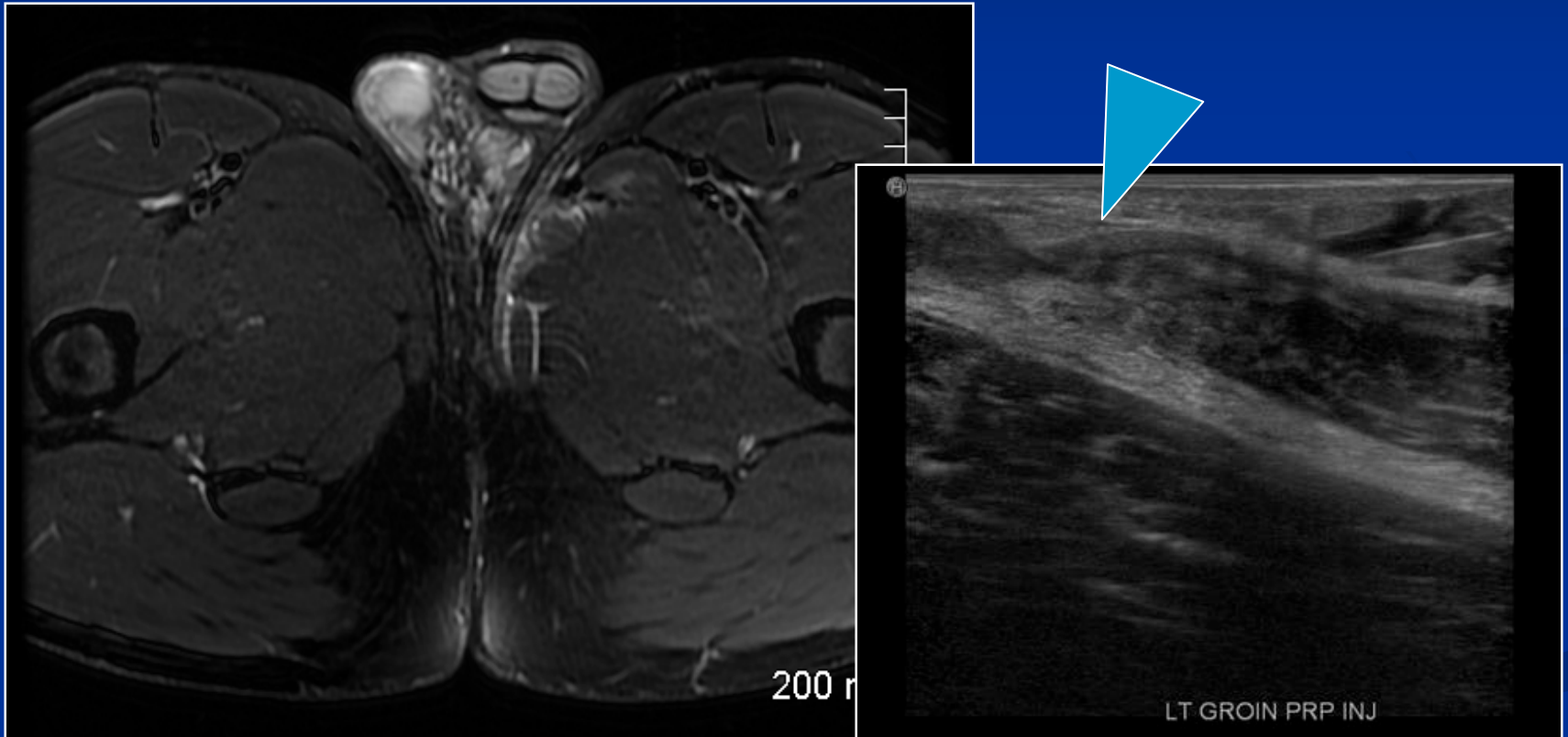
- Anterior Posterior Pelvis

US of Adductor Longus

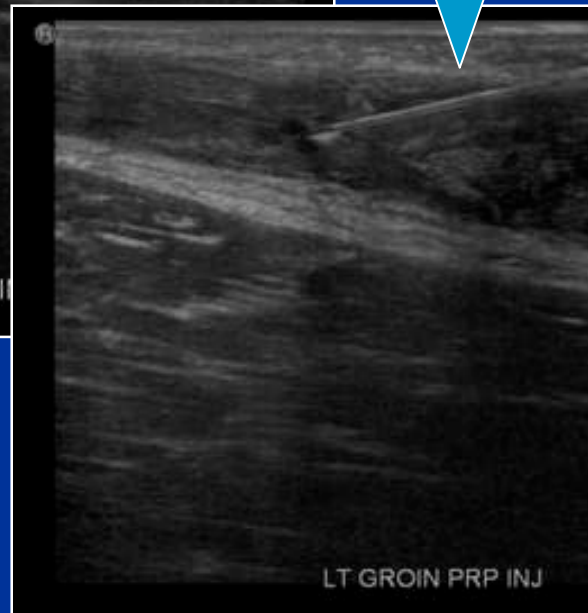
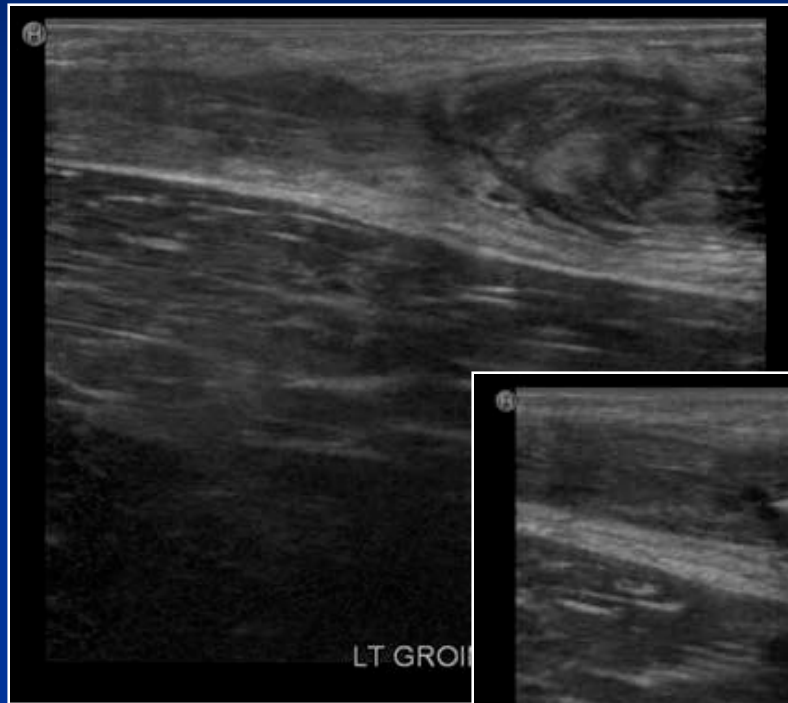


- Conjoined Tendon
 - Rectus Abdominis
 - Adductor Longus

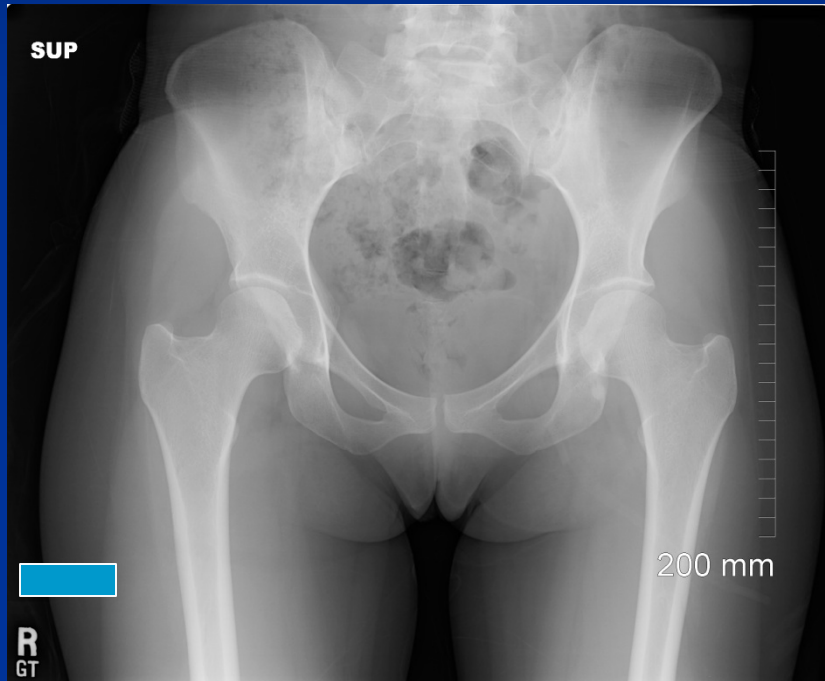
US of Adductor Longus



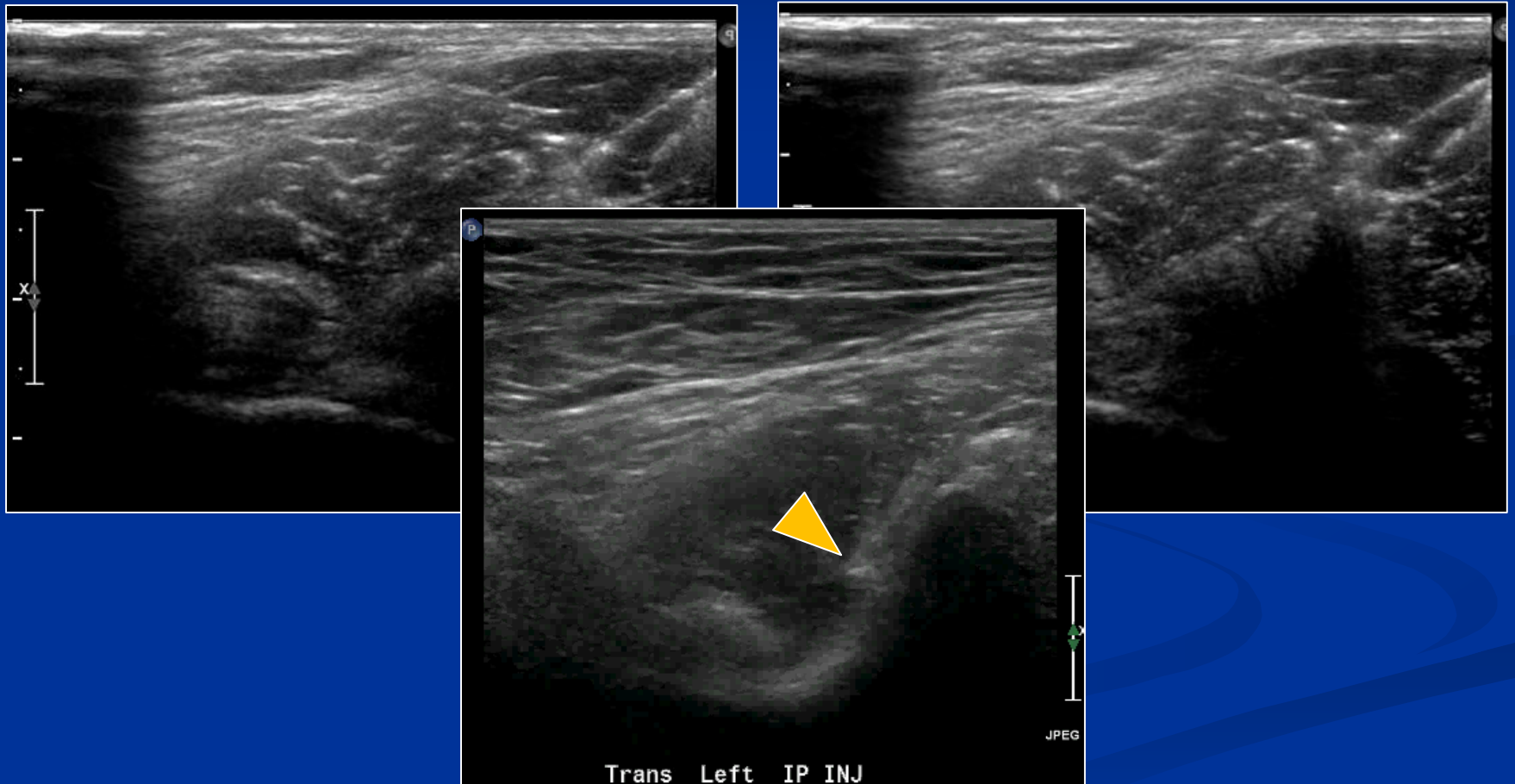
US of Adductor Longus



MSK US Intervention: Iliopsoas Tendon Snapping

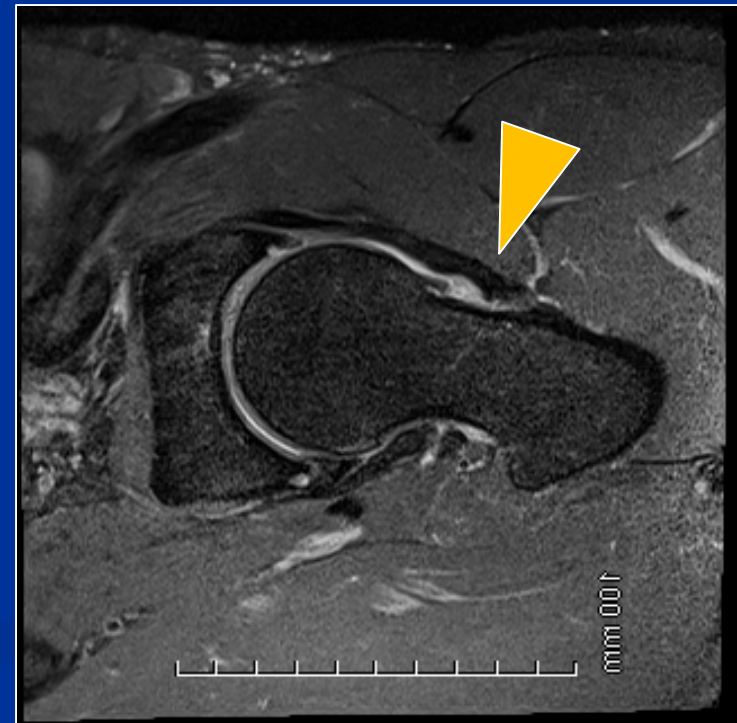
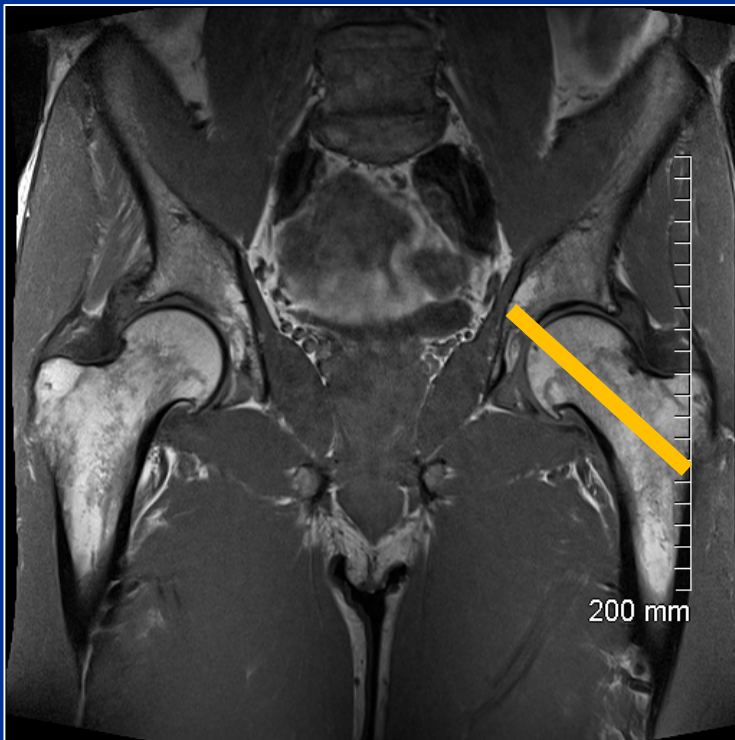


MSK US Intervention: Iliopsoas Bursa Injection

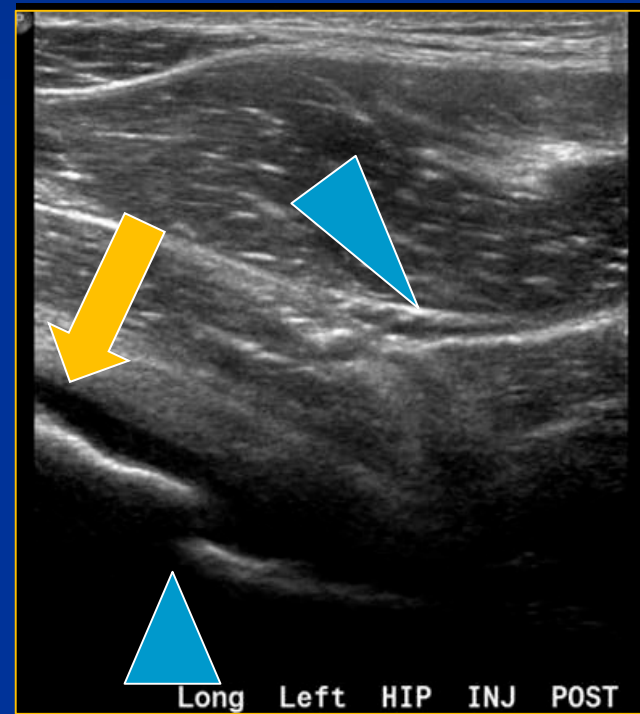
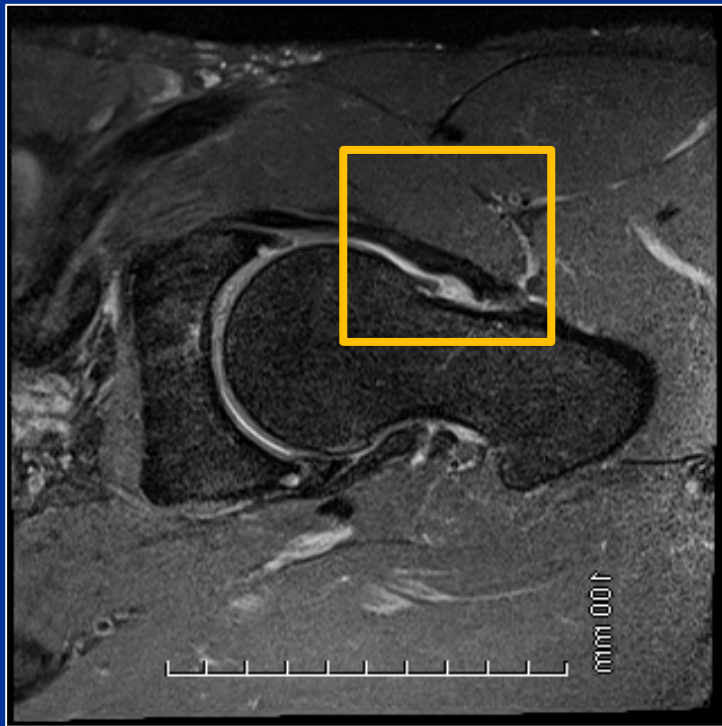


MSK US Intervention: Intra-articular Hip Injection

- Steroid
- Synvisc



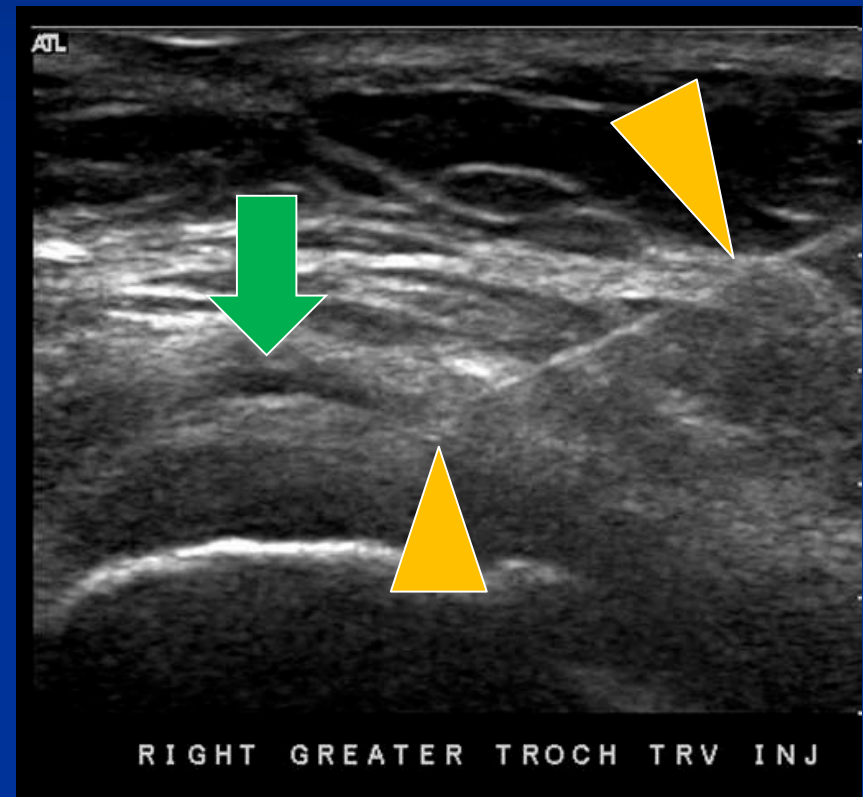
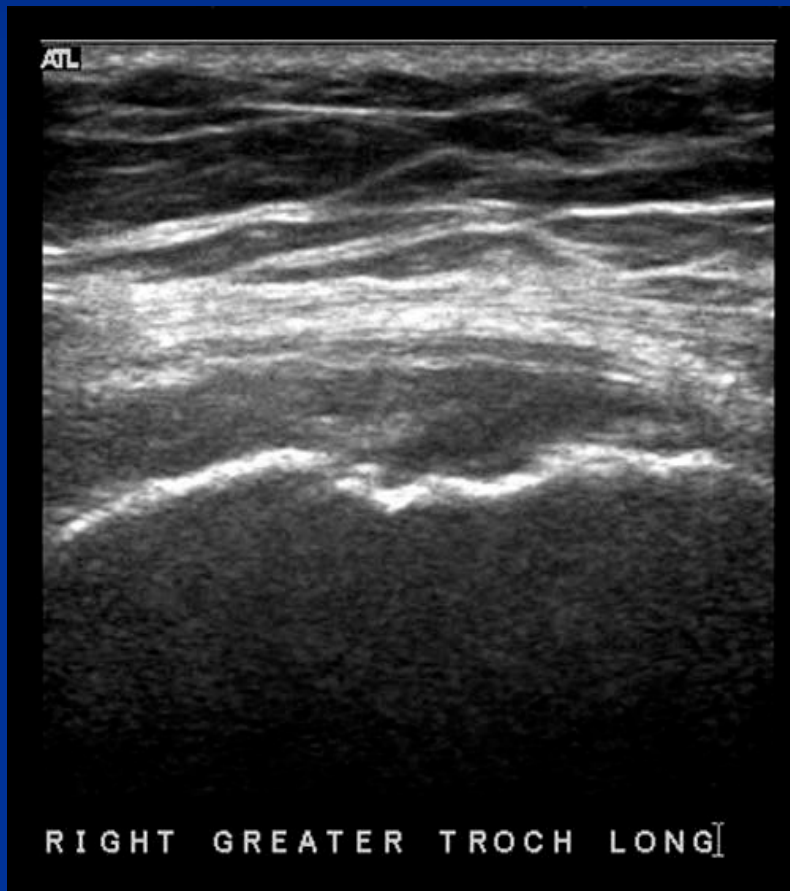
MSK US Intervention: Intra-articular Hip Injection



MSK US Intervention: Intra-articular Hip Injection



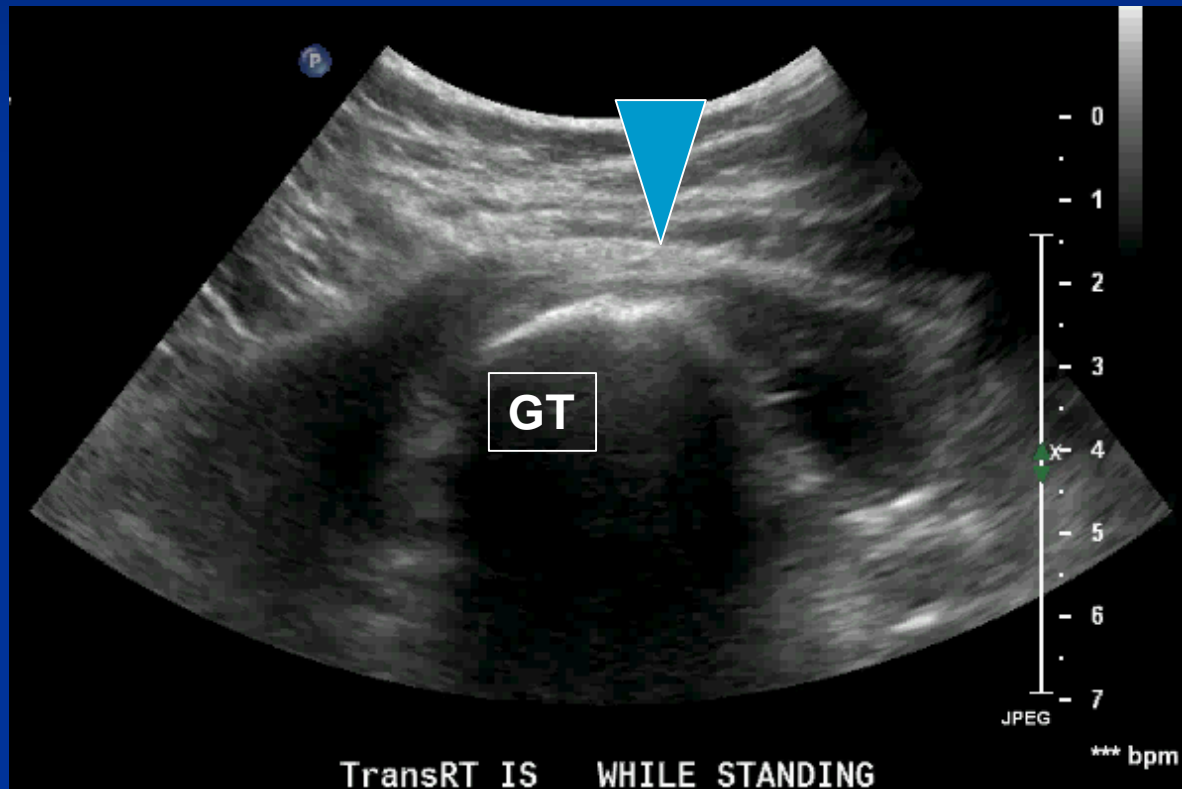
MSK US Intervention: Greater Trochanteric Bursa Inj



MSK US Intervention: Greater Trochanteric Bursa Inj



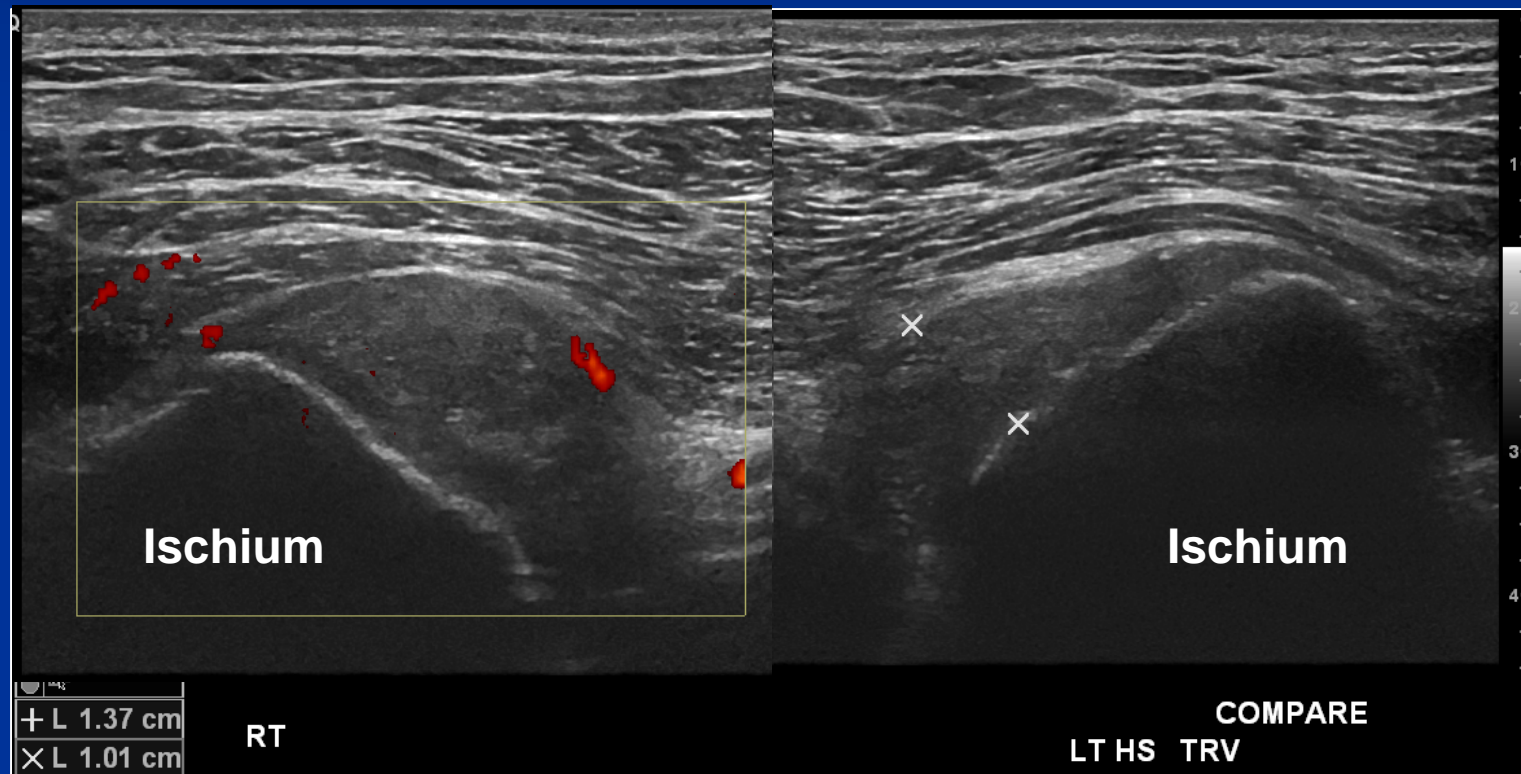
US of Snapping IT Band



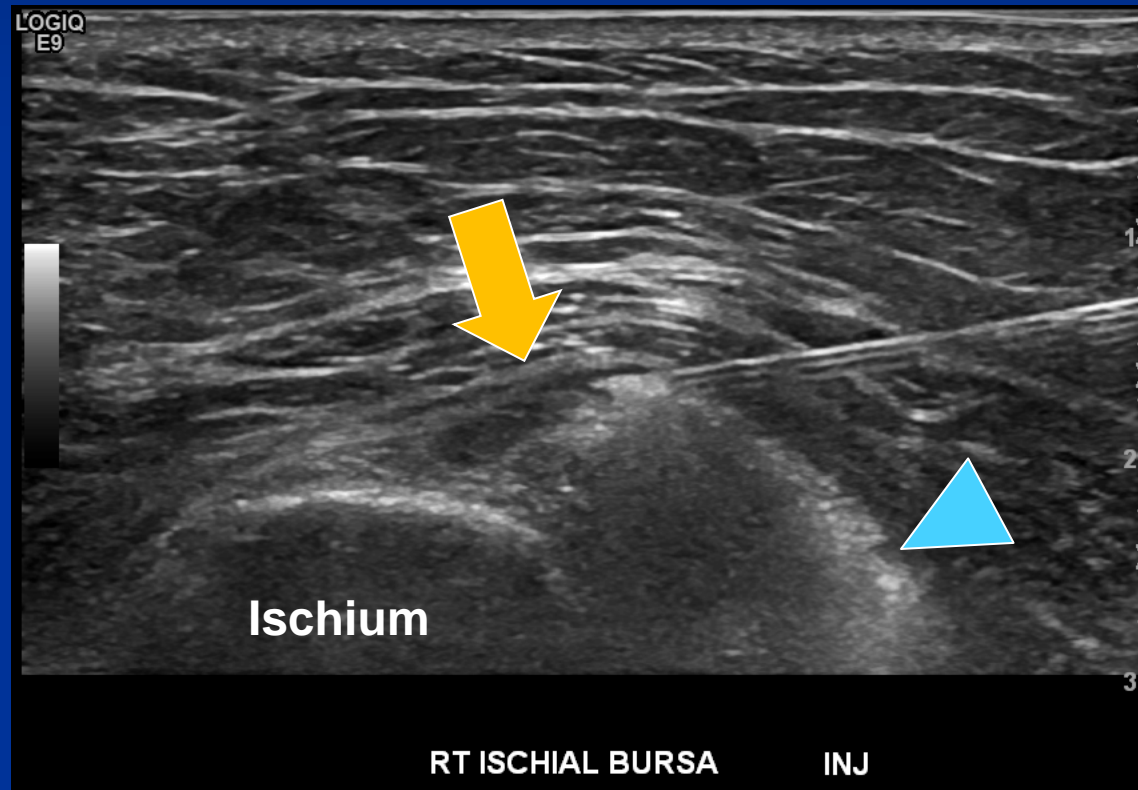
MSK US Intervention: **Hamstring Origin Injection**

- Steroid
- PRP

Hamstring Tendinosis

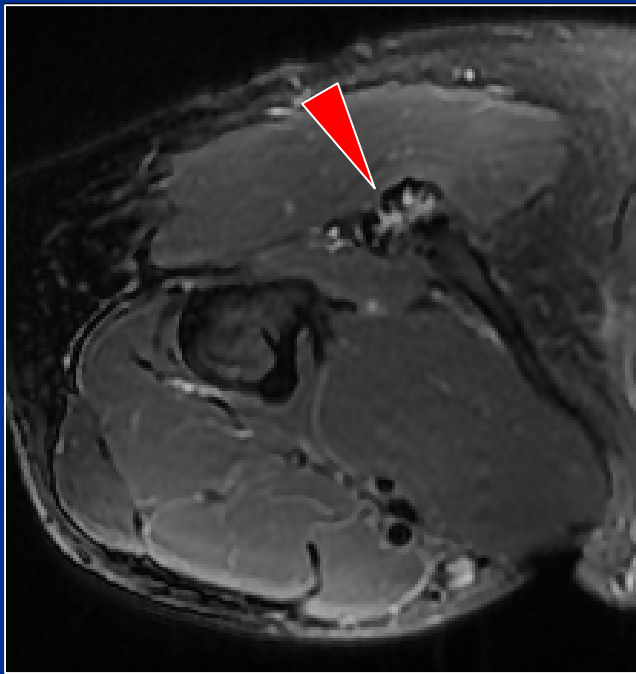


USG Ischial Bursa Injection

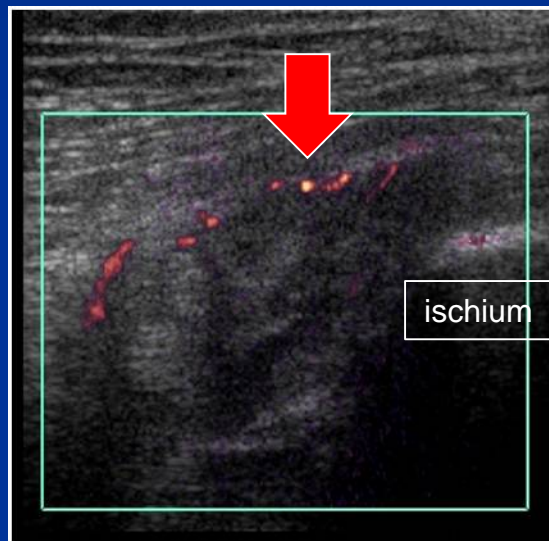


PRP for High Hamstring Tendinopathy

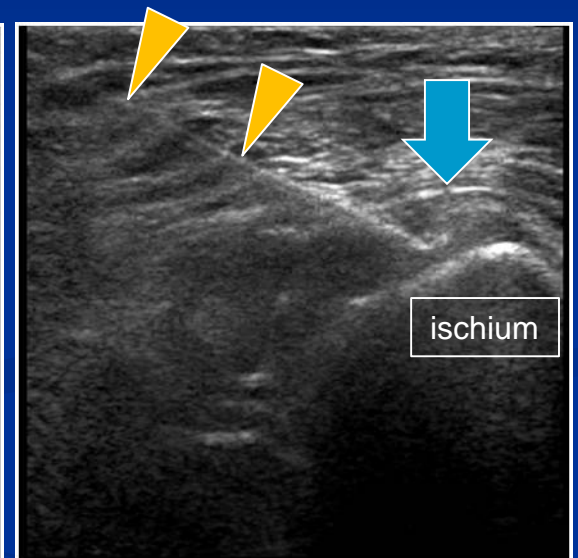
US-Guided Injection



Prone T2w-fat sat



With Power Doppler



Transverse

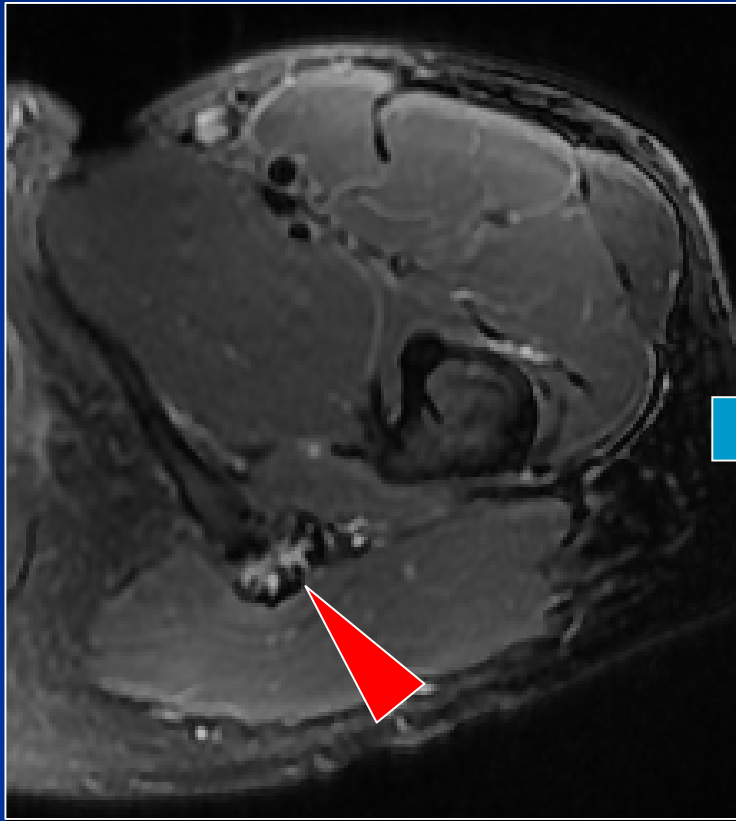
Hamstring PRP injection



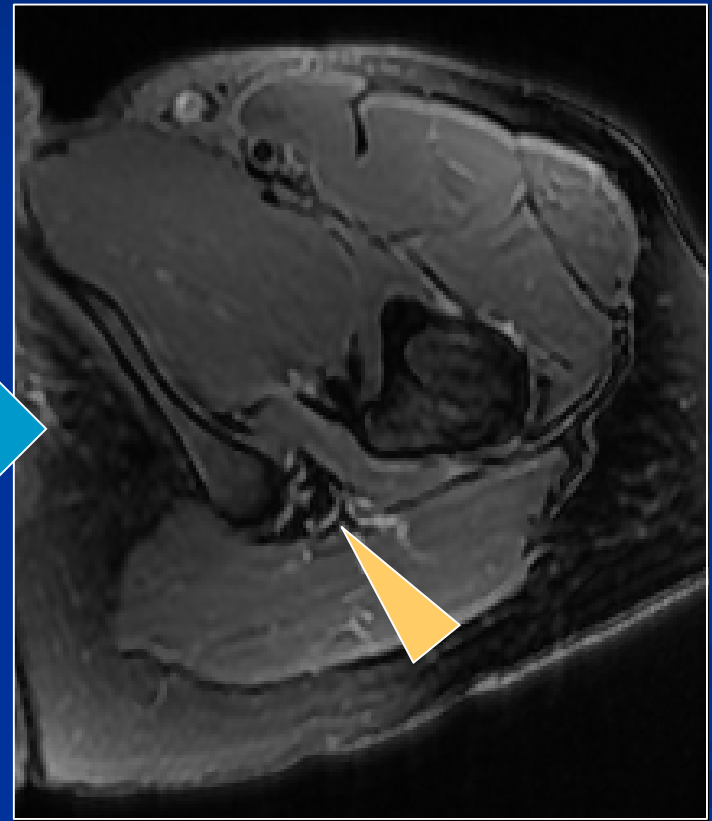
- PRP Protocol:
 - Patient checks in one hour before US appt
 - Nursing/draws blood
 - Centrifuge 15 min.
 - Inject 3 - 4 ml at 5x []

PRP for High Hamstring Tendinopathy

MRI Evidence of Healing

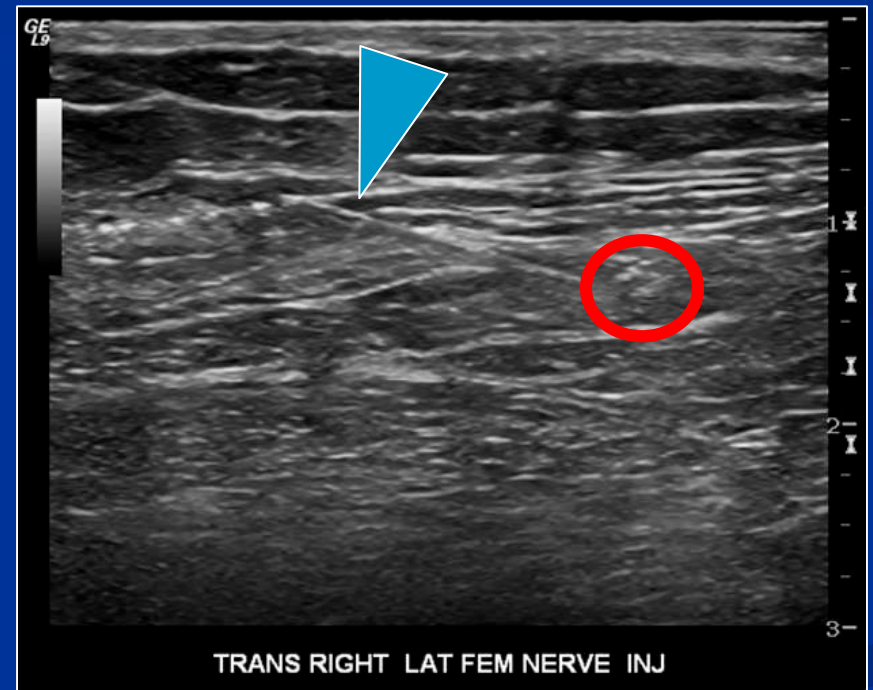
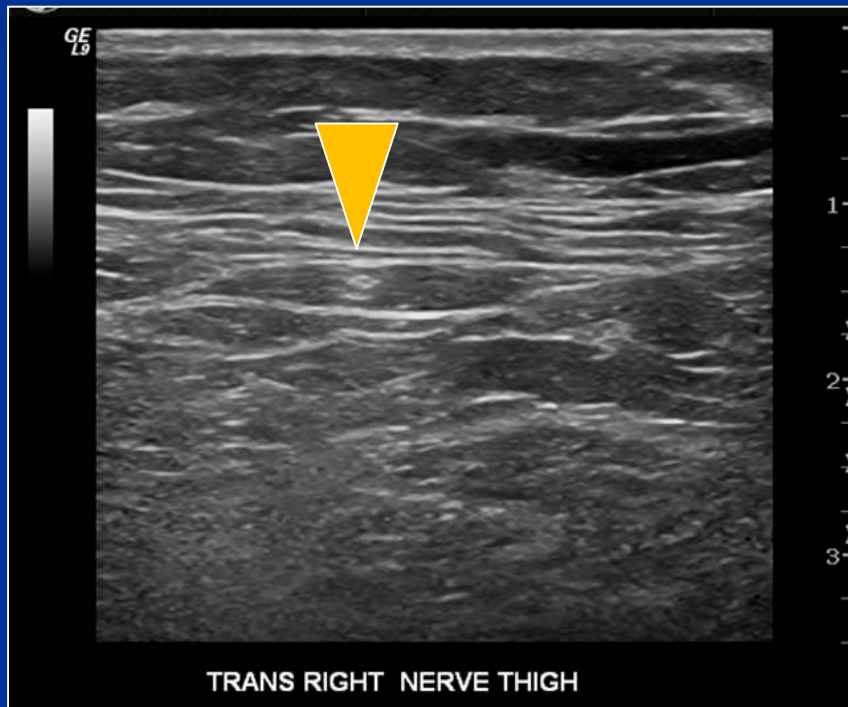


T2w-fat sat

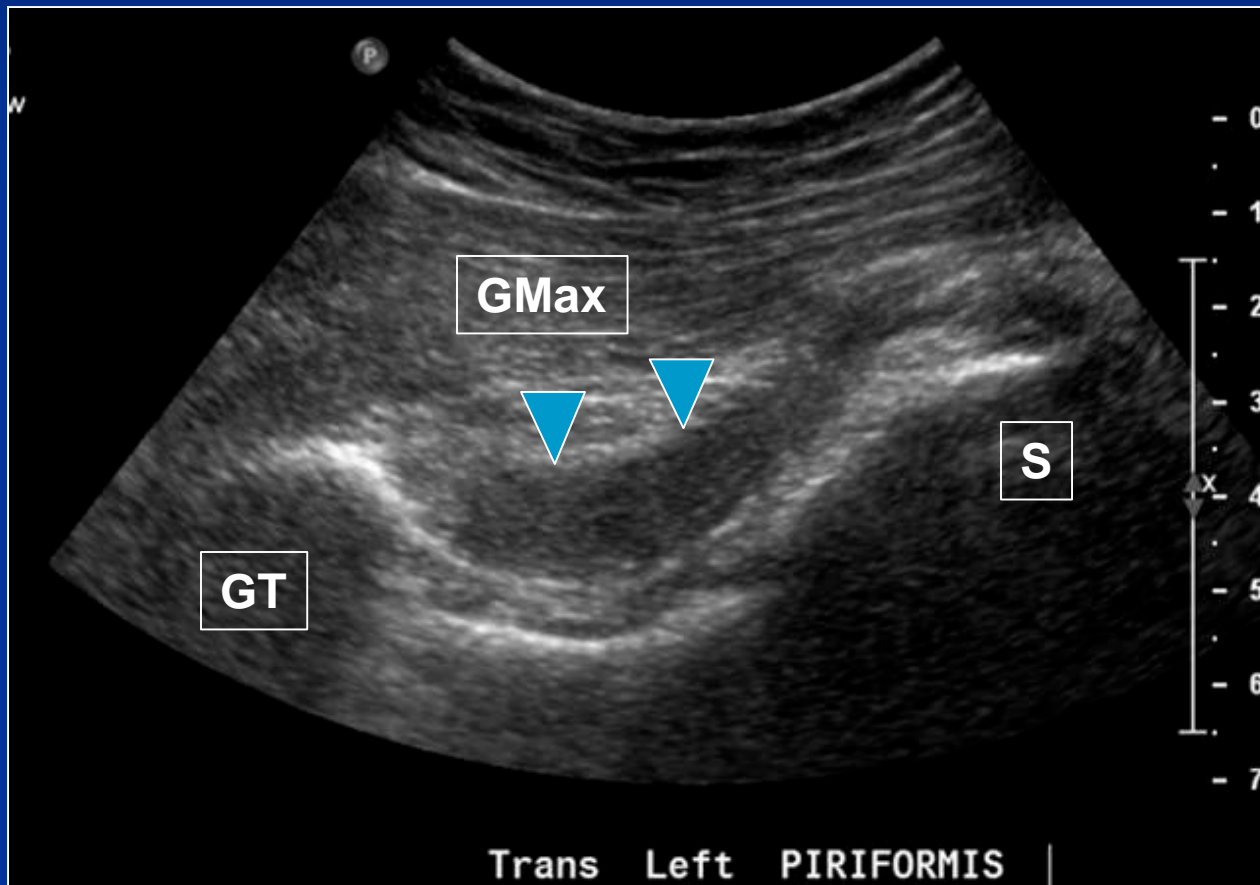


6 months after PRP

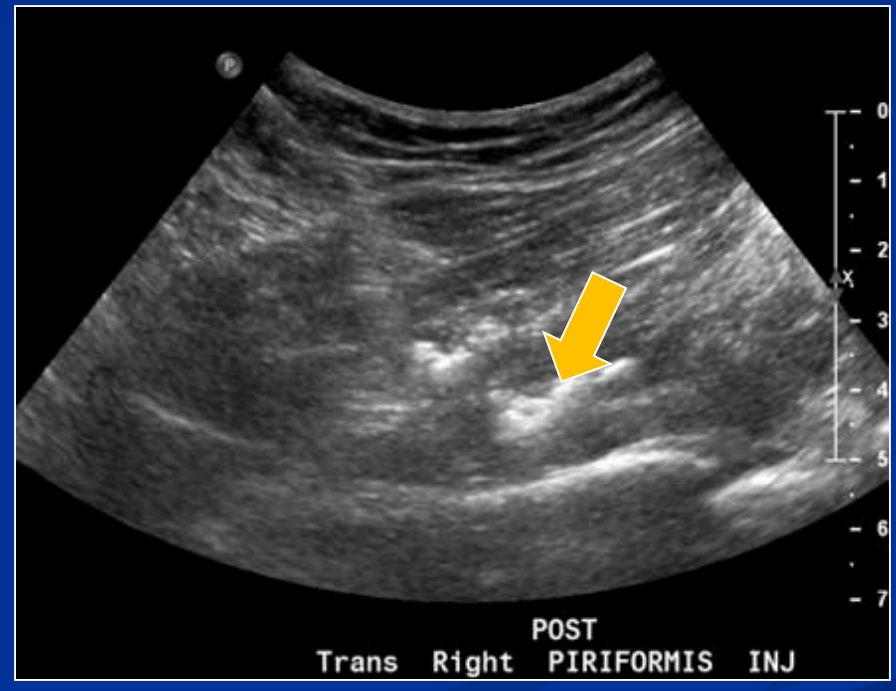
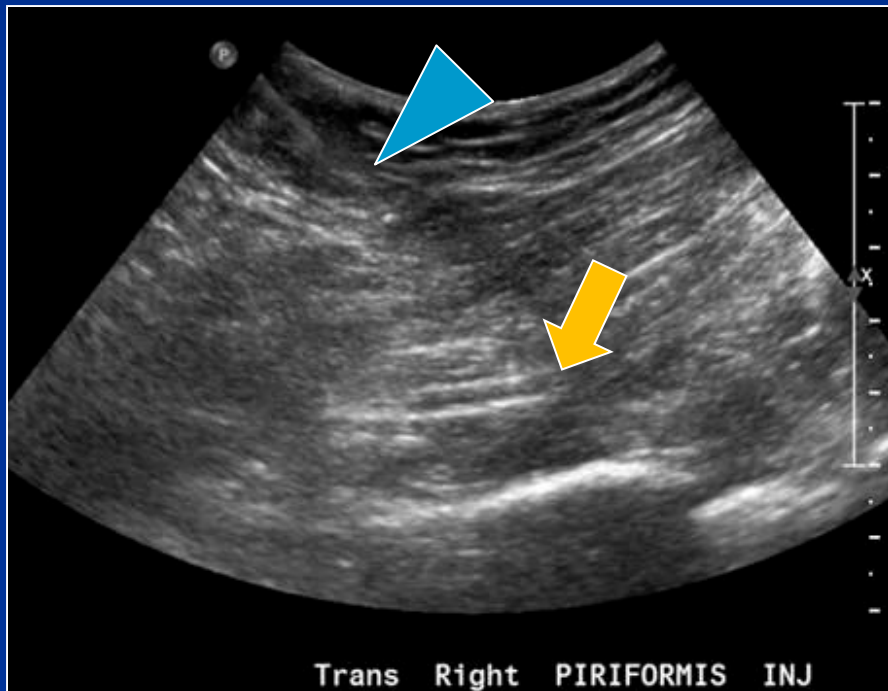
MSK US Intervention: Lateral Femoral Cutaneous Nerve Inj



MSK US Intervention: Piriformis Muscle Injection



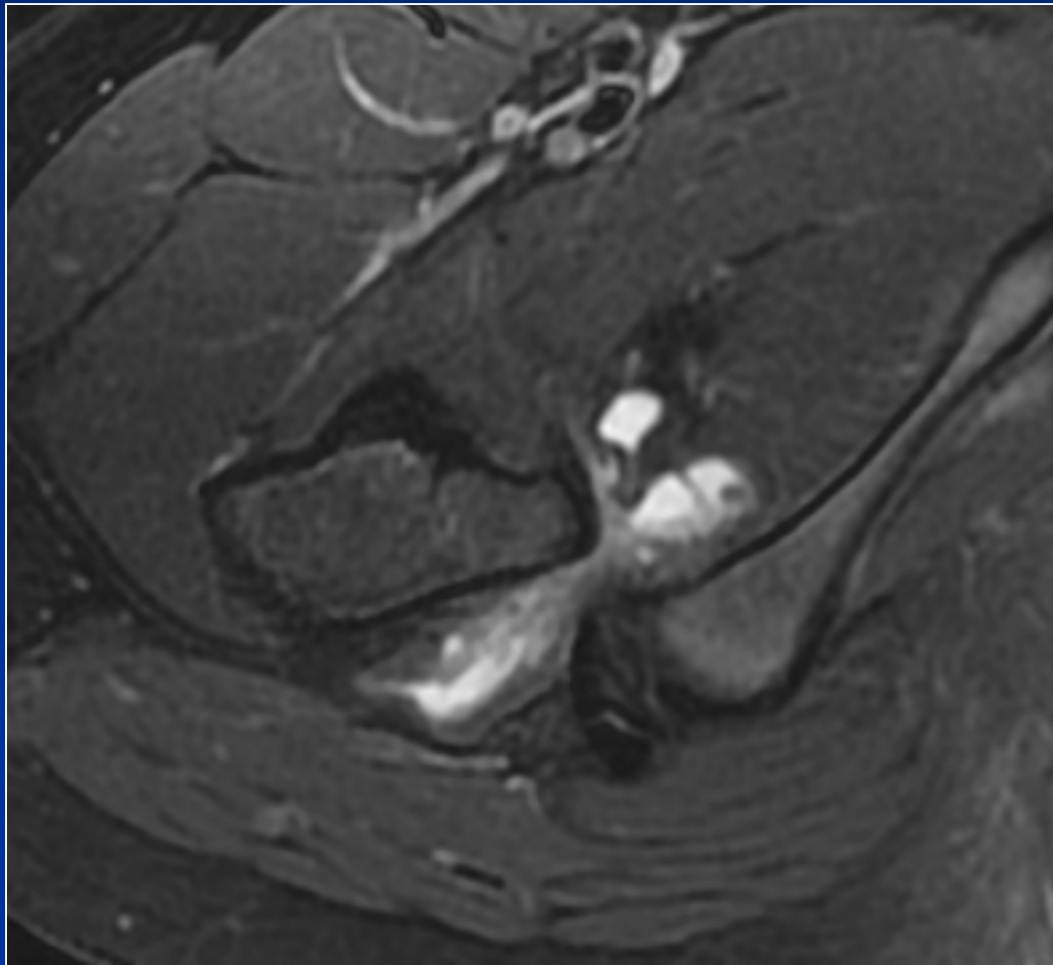
MSK US Intervention: Piriformis Muscle Injection



Hip Case

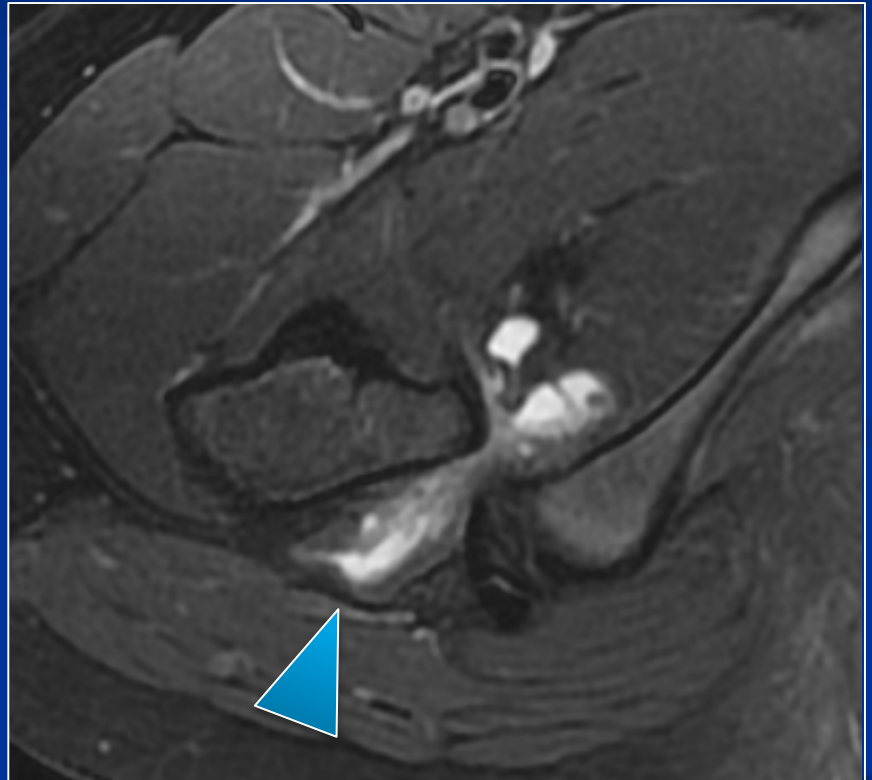
55 yo woman with deep hip
pain

MRI of Right Hip



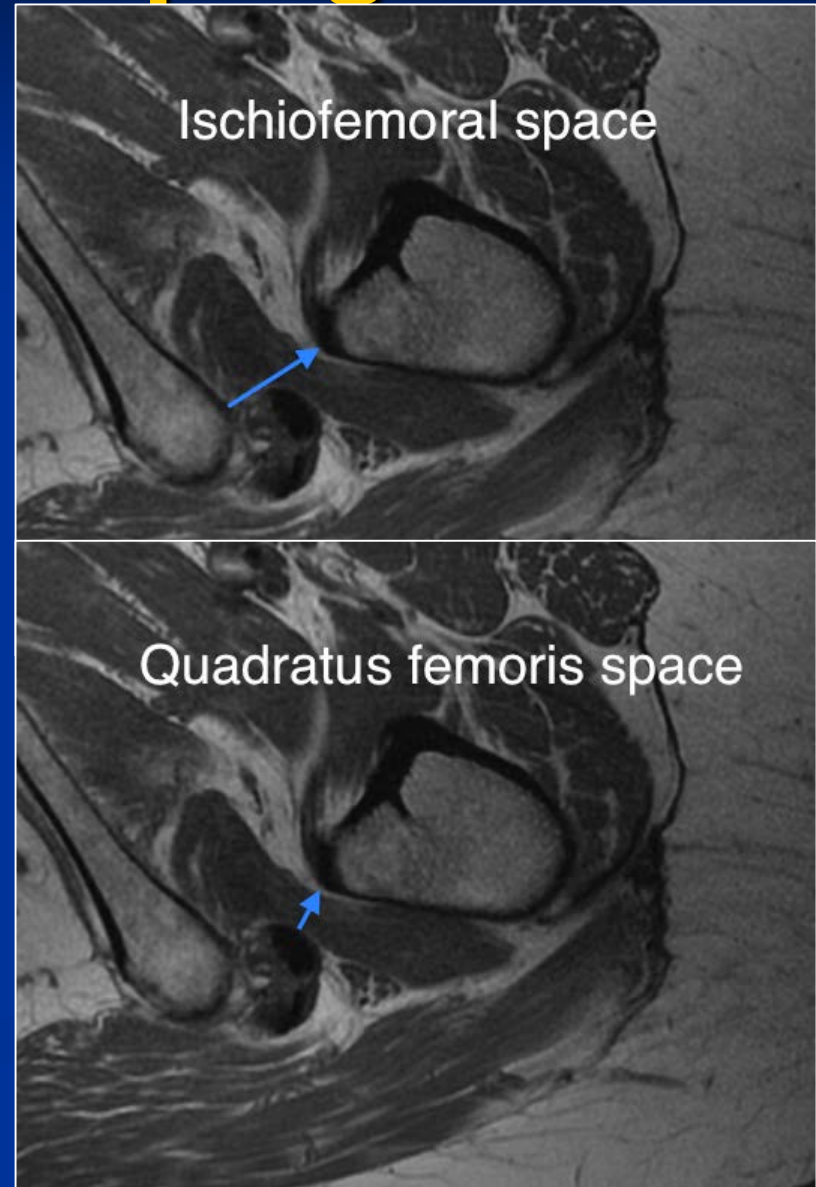
Ischiofemoral Impingement

- Decreased distance between the femoral lesser trochanter and ischial tuberosity
- Compression of the quadratus femoris muscle
- Manifests clinically as hip, gluteal, or atypical groin pain



Ischiofemoral Impingement

- How do we define IFI?
 - Edema and/or atrophy in the quadratus femoris
 - Ischiofemoral space (IFS) narrowing
 - Quadratus femoris space (QFS) narrowing
 - $\leq 17\text{mm}$ for IFS
 - $\leq 8\text{mm}$ for QFS



Demographics

- Prevalence in the population is unknown
- 50/805 (6%) patients had hip pain and quadratus edema (Tosun et al.)
- Tends to affect women, generally middle-age to elderly

Orthopedic Literature

- Difficult to localize pain from IFI
 - Potentially misdiagnosed as snapping IPT
- Standardization of ischiofemoral and quadratus femoris spaces difficult depending on rotational position of extremity
- Symptomatic cases often associated with normal MRI findings
- Abnormality of the quadratus femoris (signal changes) often observed as incidental finding

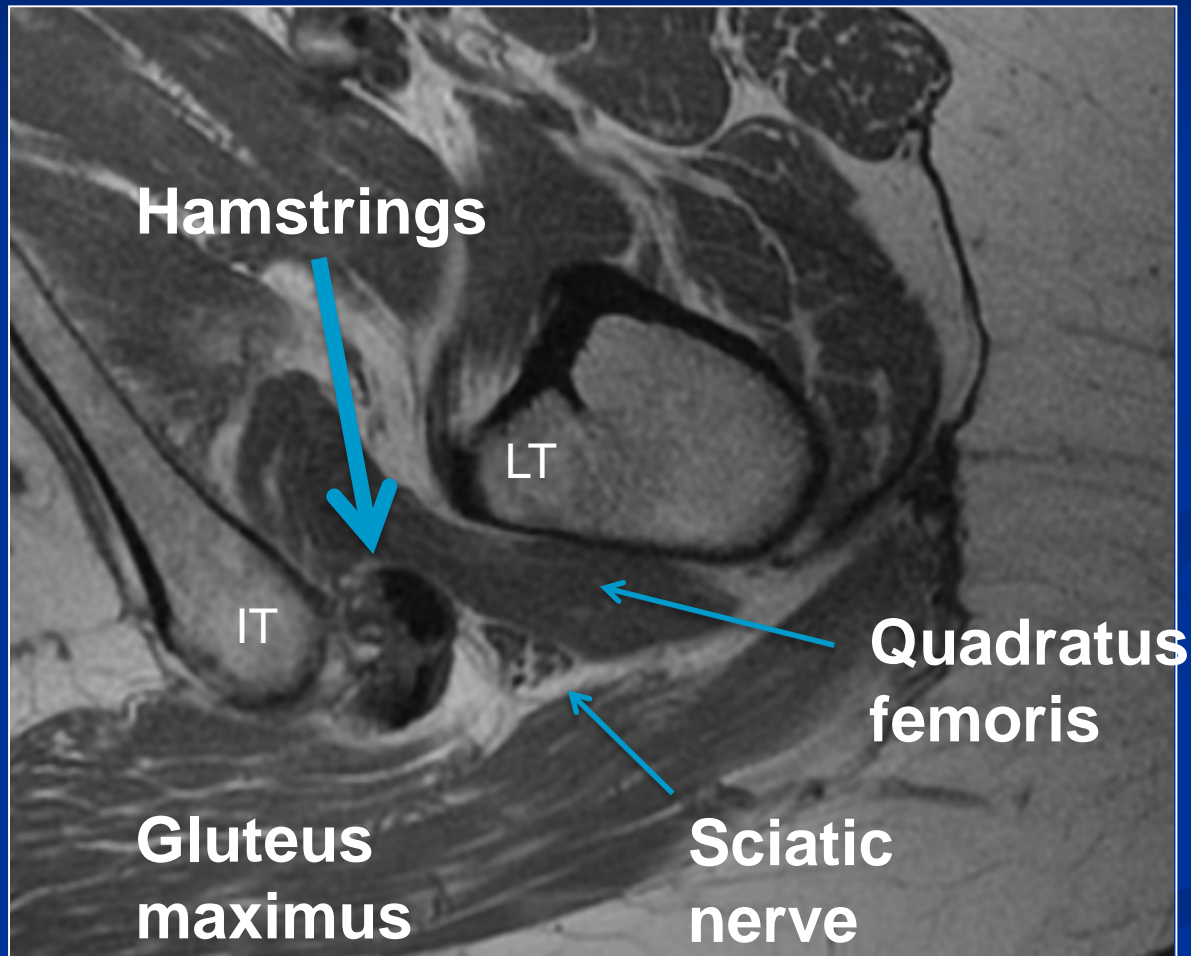
Treatment

- Conservative
 - Oral anti-inflammatory
 - Activity modification
 - Physical therapy

- Surgical decompression
 - Osteotomy of lesser trochanter
 - IP tendon release
 - Quadratus decompression

- Corticosteroid injection
 - Potential Dx and Rx role

Anatomy

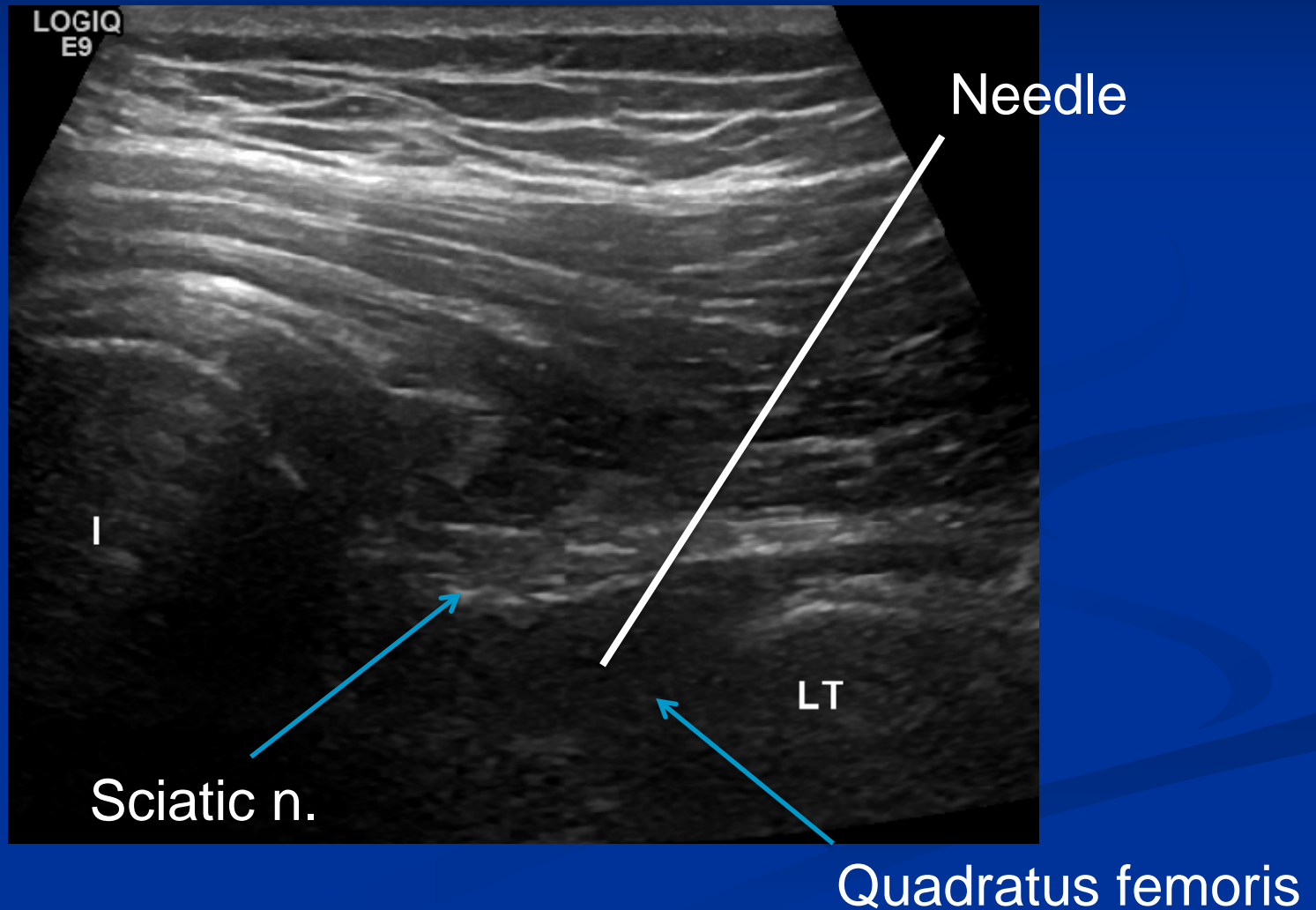


US-Guided Technique

- Advance past the lateral (lesser trochanteric) side of the sciatic nerve into the quadratus femoris muscle
- 3.5 inch, 22-gauge needle
- Inject 3-4 mL total: 1 mL of Kenalog-40 and 3 mL of preservative-free 1% lidocaine



Injection Technique



Results

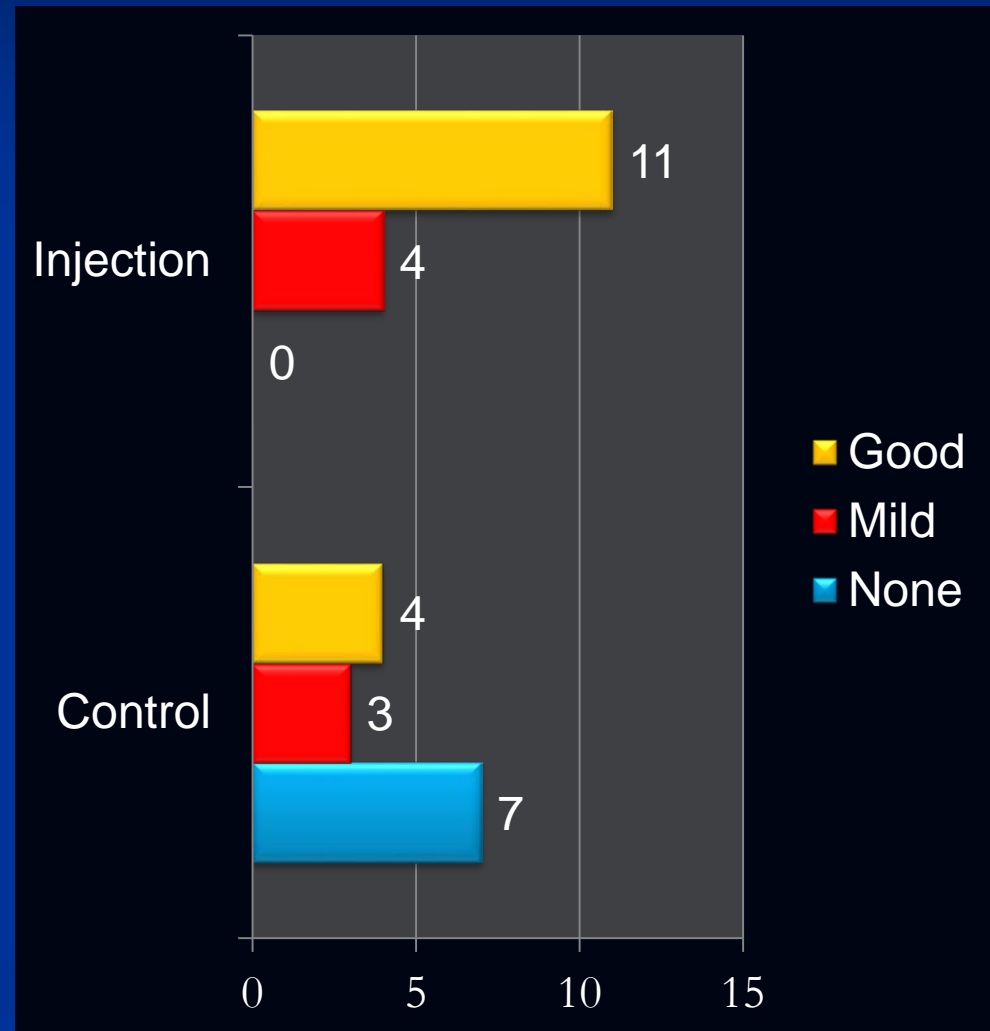
■ Injection group

- 11/15 (73%) provided good relief **** (VAS >2)**
- 4/15 (27%) provided mild relief **** (VAS 1-2)**
- 0/15 (0%) provided no relief

■ Control group

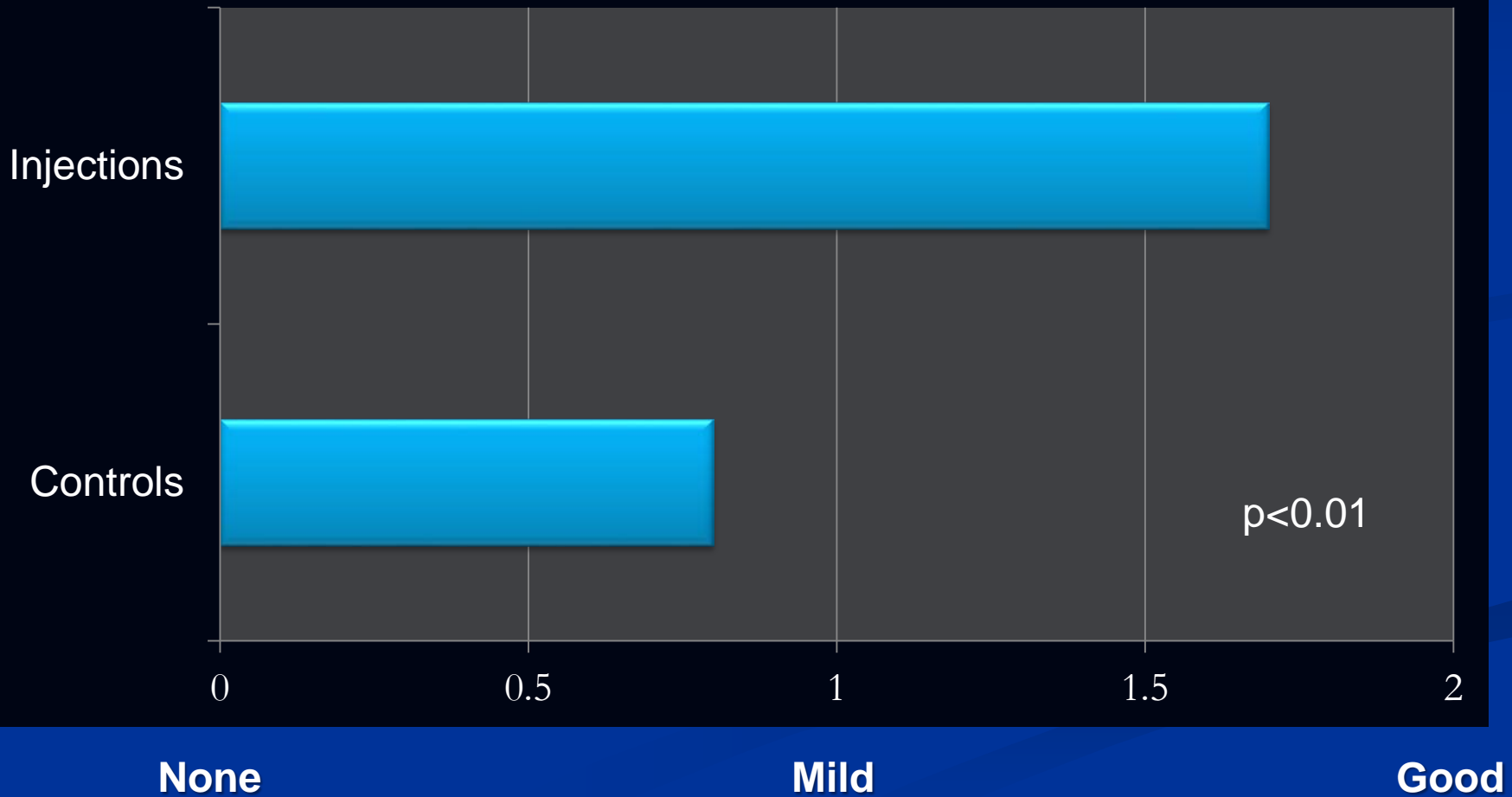
- 4/14 (29%) had good relief
 - 3/14 (21%) had mild relief
 - 7/14 (50%) had no relief
- ** (Clinic note)**

$p < 0.01$



Results

Pain Relief

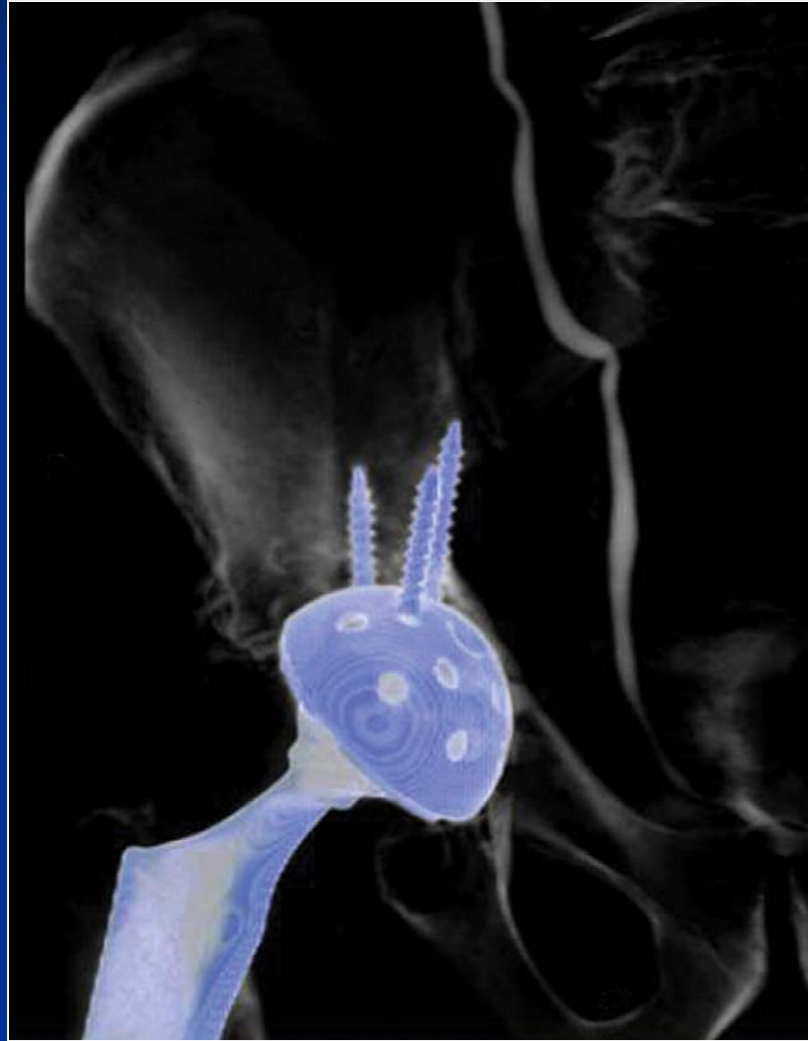


Post-Operative Hip

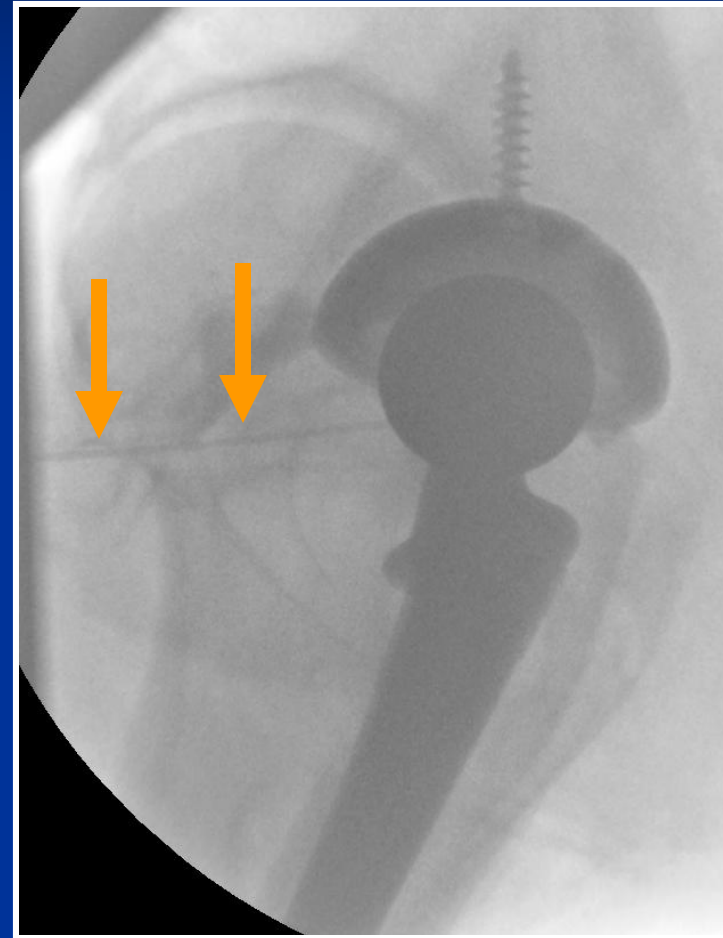
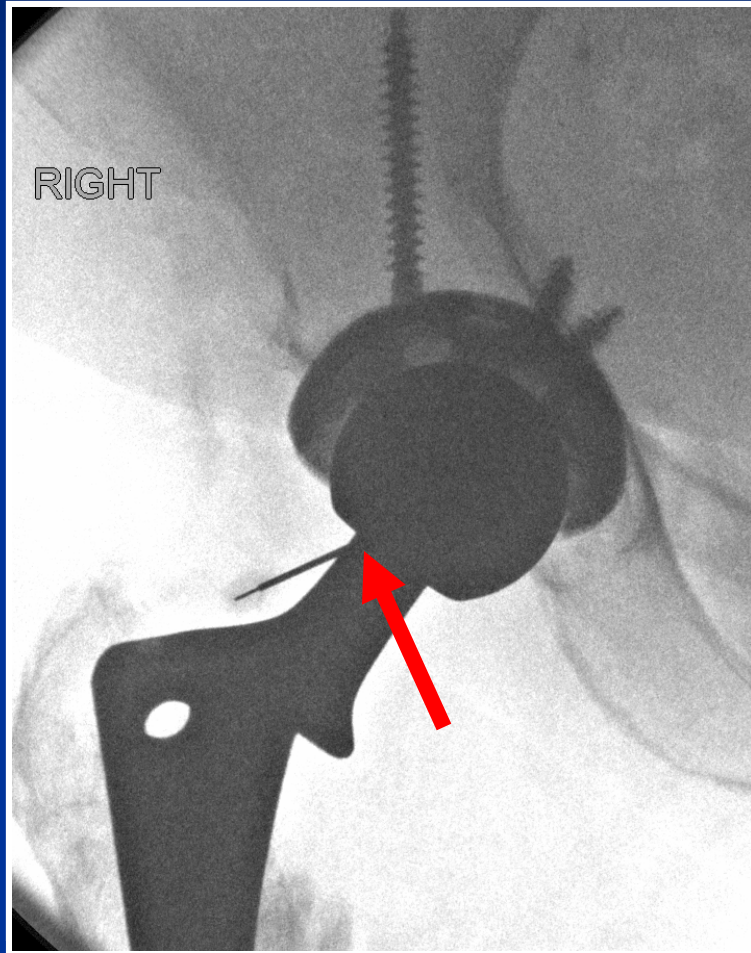
45 yo male with increasing
hip pain.



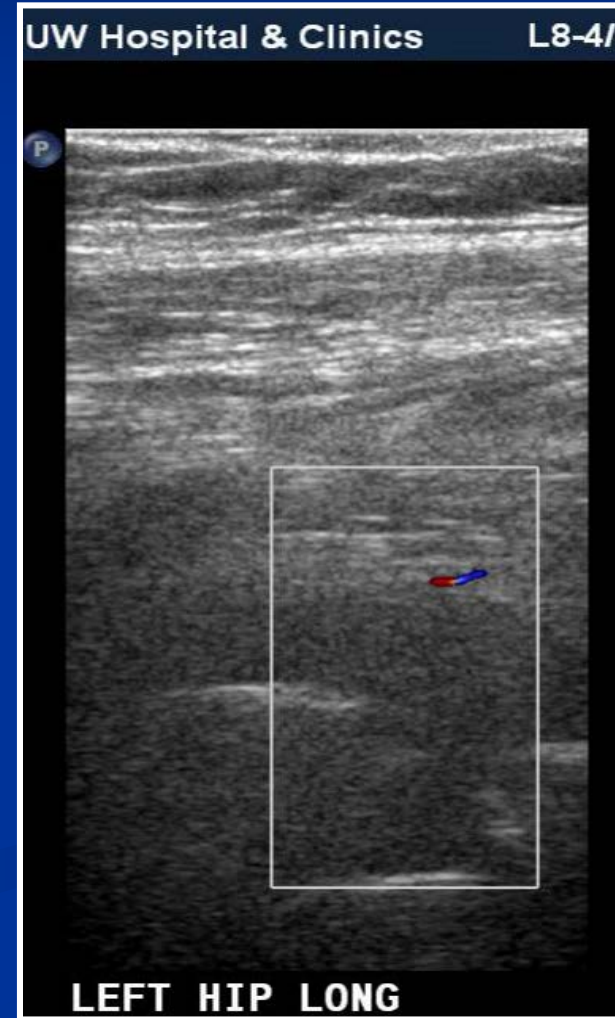
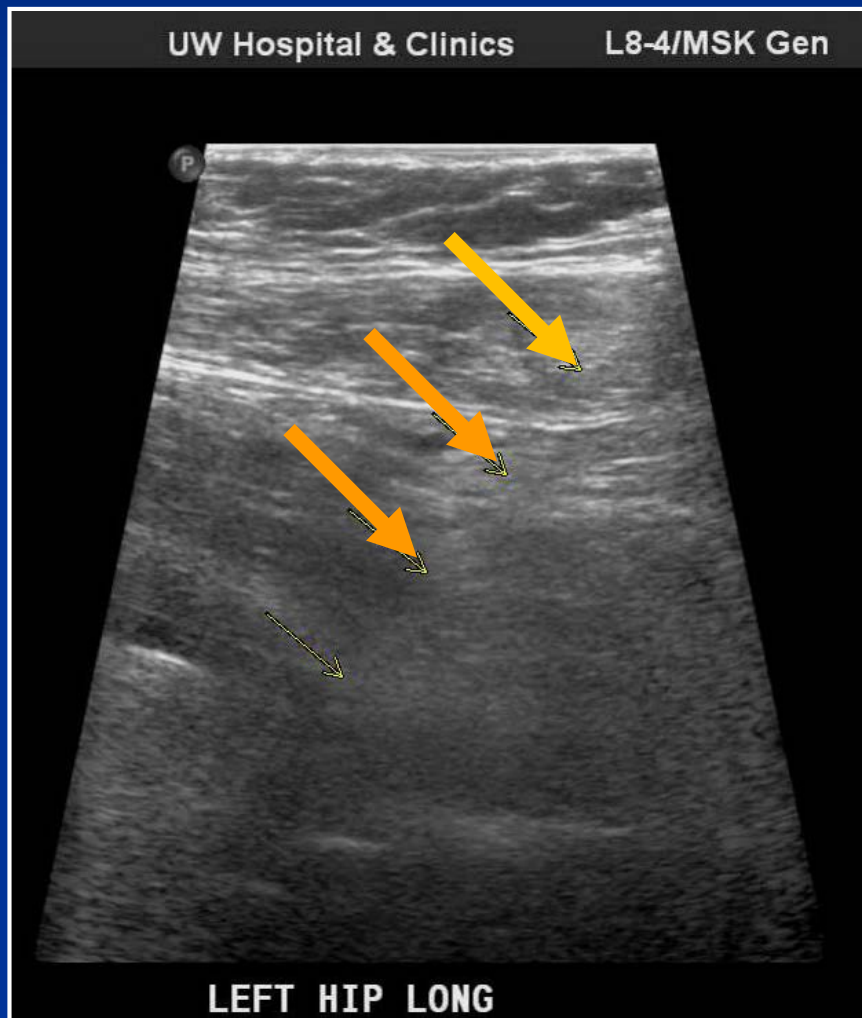
The Post-Operative pt



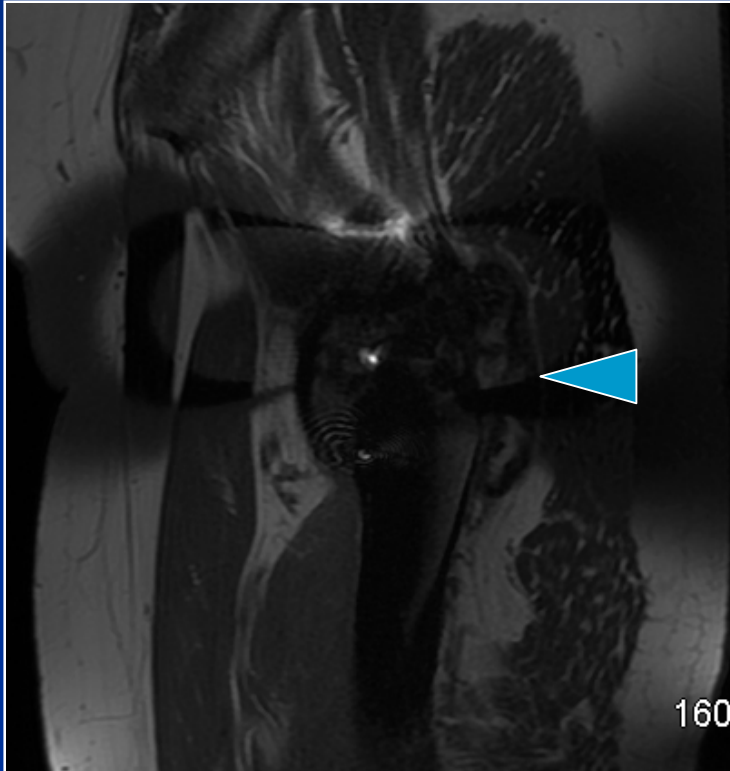
Total Hip Arthroplasty



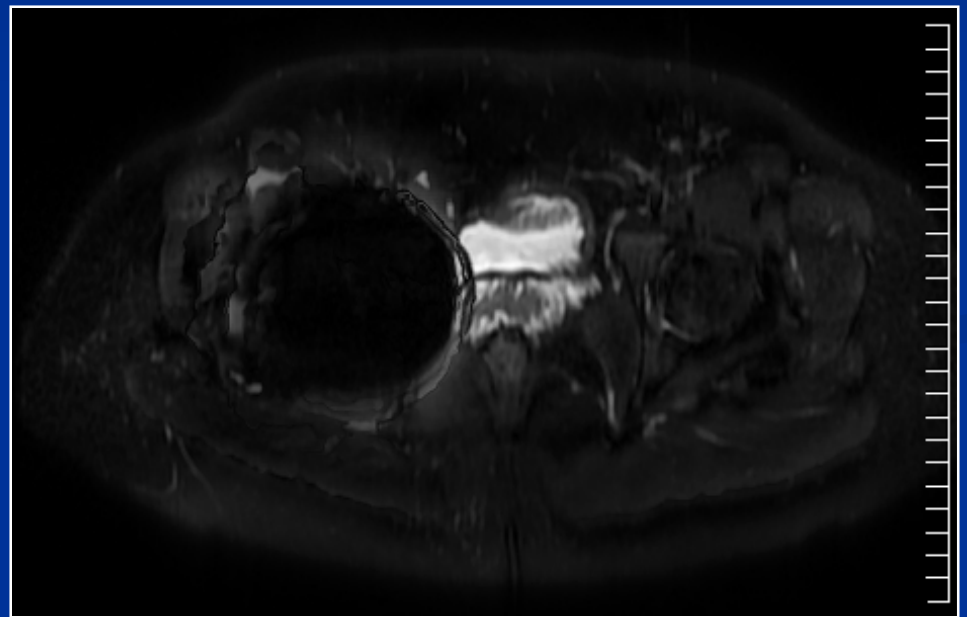
US-Guided Aspiration



US of Pseudotumor

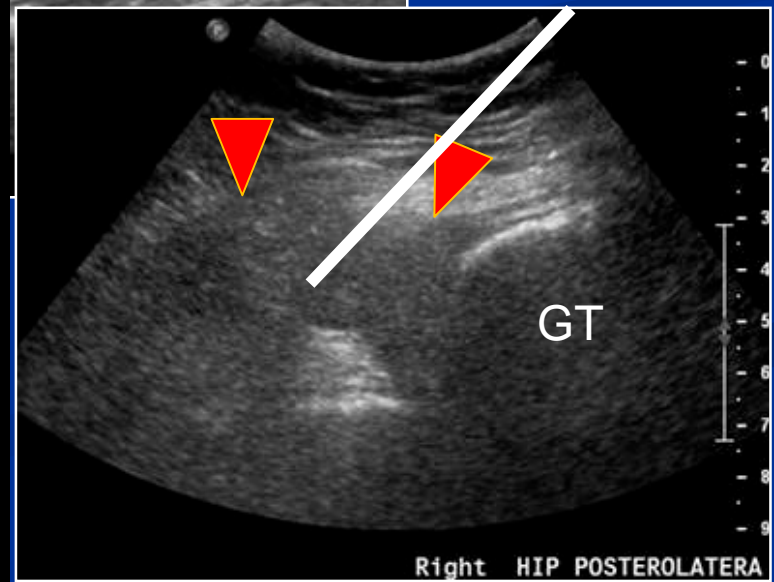
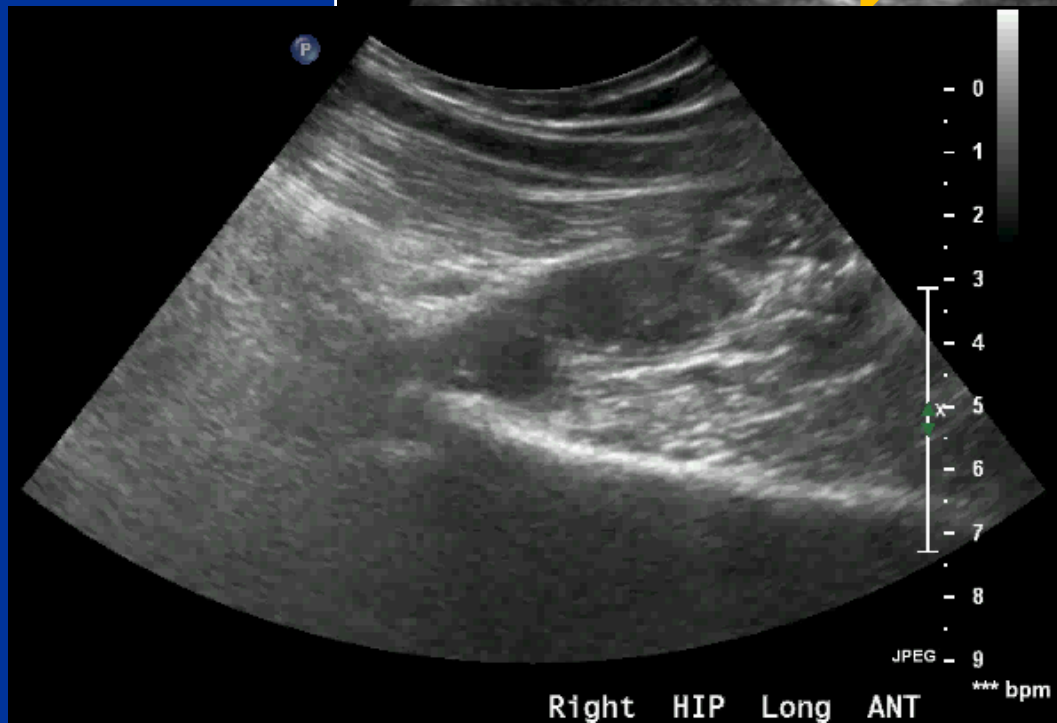
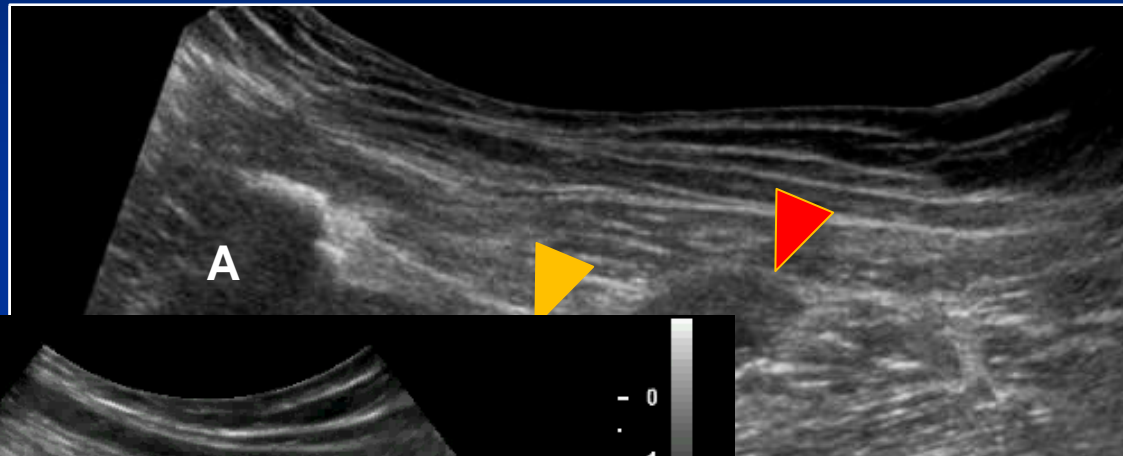


Sagittal T1



Axial T2 fat sat

US of Pseudotumor



Summary

- Ultrasound is well-suited for evaluating soft tissue structures of the hip
- Therapeutic injections is a particular advantage with ultrasound