AMSER Case of the Month
April 2025

74-year-old female presents with chronic left hip pain that radiates to the left thigh.

Benjamin Benita, MS4, University of Arizona COM - Tucson
Spencer Holmes, MS3, University of Arizona COM - Tucson
Tyson Chadaz, MD, UACOM-T, Banner UMC – Tucson
Luke R. Scalcione, MD, Encore Imaging - Florida

THE UNIVERSITY OF ARIZONA

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Patient Presentation

- HPI: 74-year-old female presents with chronic left hip pain that radiates to the left thigh.
- Differential diagnosis: lumbosacral radiculopathy, entrapment of the sciatic nerve, posterior hip joint arthropathy, ischiofemoral ligamentous injury, hip labral tear, femoral acetabular impingement syndrome, osteoarthritis

Pertinent Labs

- No pertinent labs

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1: **Chronic hip pain. Initial Imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
Radiography pelvis	Usually Appropriate	☢☢
Radiography hip	Usually Appropriate	☢☢☢
US hip	Usually Not Appropriate	O
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	Usually Not Appropriate	Varies
MR arthrography hip	Usually Not Appropriate	O
MRI hip without and with IV contrast	Usually Not Appropriate	O
MRI hip without IV contrast	Usually Not Appropriate	O
Bone scan hip	Usually Not Appropriate	☢☢☢
CT arthrography hip	Usually Not Appropriate	☢☢☢
CT hip with IV contrast	Usually Not Appropriate	☢☢☢
CT hip without and with IV contrast	Usually Not Appropriate	☢☢☢
CT hip without IV contrast	Usually Not Appropriate	☢☢☢
Fluoride PET/CT skull base to mid-thigh	Usually Not Appropriate	☢☢☢

This imaging modality was ordered by the physician

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Findings (unlabeled)

- AP and frog-lateral view hip radiographs

Findings (labeled)

- AP and frog-lateral view hip radiographs
- No acute radiographic findings to explain the patient's pain

What Imaging Should We Order next?

Select the applicable ACR Appropriateness Criteria

Variant 3: **Chronic hip pain. Suspect impingement or dysplasia. Radiographs negative or nondiagnostic. Next imaging study.**

Procedure	Appropriateness Category	Relative Radiation Level
MR arthrography hip	Usually Appropriate	O
MRI hip without IV contrast	Usually Appropriate	O
Radiography hip additional views	May Be Appropriate	
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	May Be Appropriate	Varies
CT arthrography hip	May Be Appropriate	☢☢☢
CT hip without IV contrast	May Be Appropriate	☢☢☢
US hip	Usually Not Appropriate	O
MRI hip without and with IV contrast	Usually Not Appropriate	O
Bone scan hip	Usually Not Appropriate	☢☢☢
CT hip with IV contrast	Usually Not Appropriate	☢☢☢
CT hip without and with IV contrast	Usually Not Appropriate	☢☢☢
Fluoride PET/CT skull base to mid-thigh	Usually Not Appropriate	☢☢☢

This imaging modality was ordered by the physician

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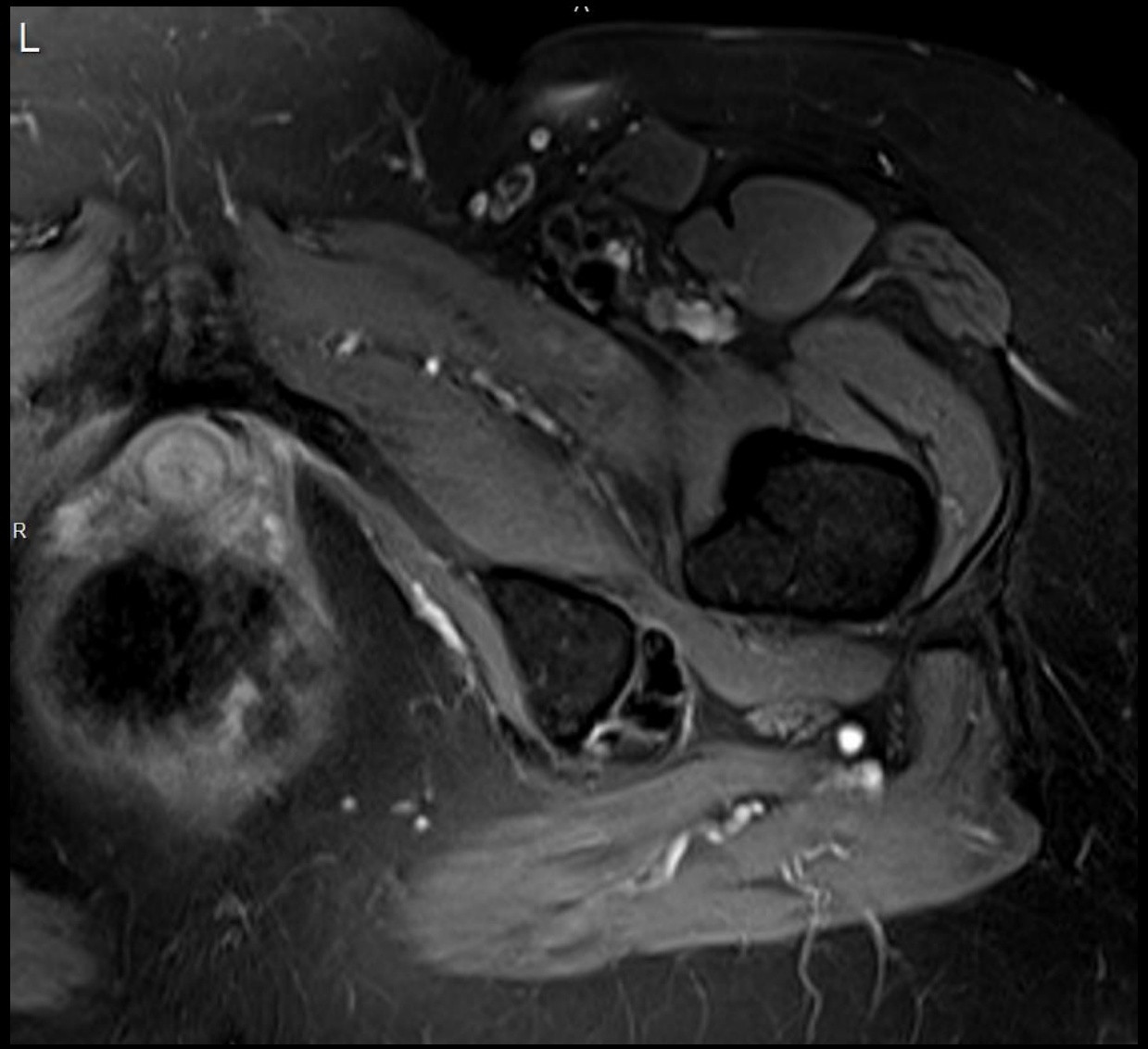
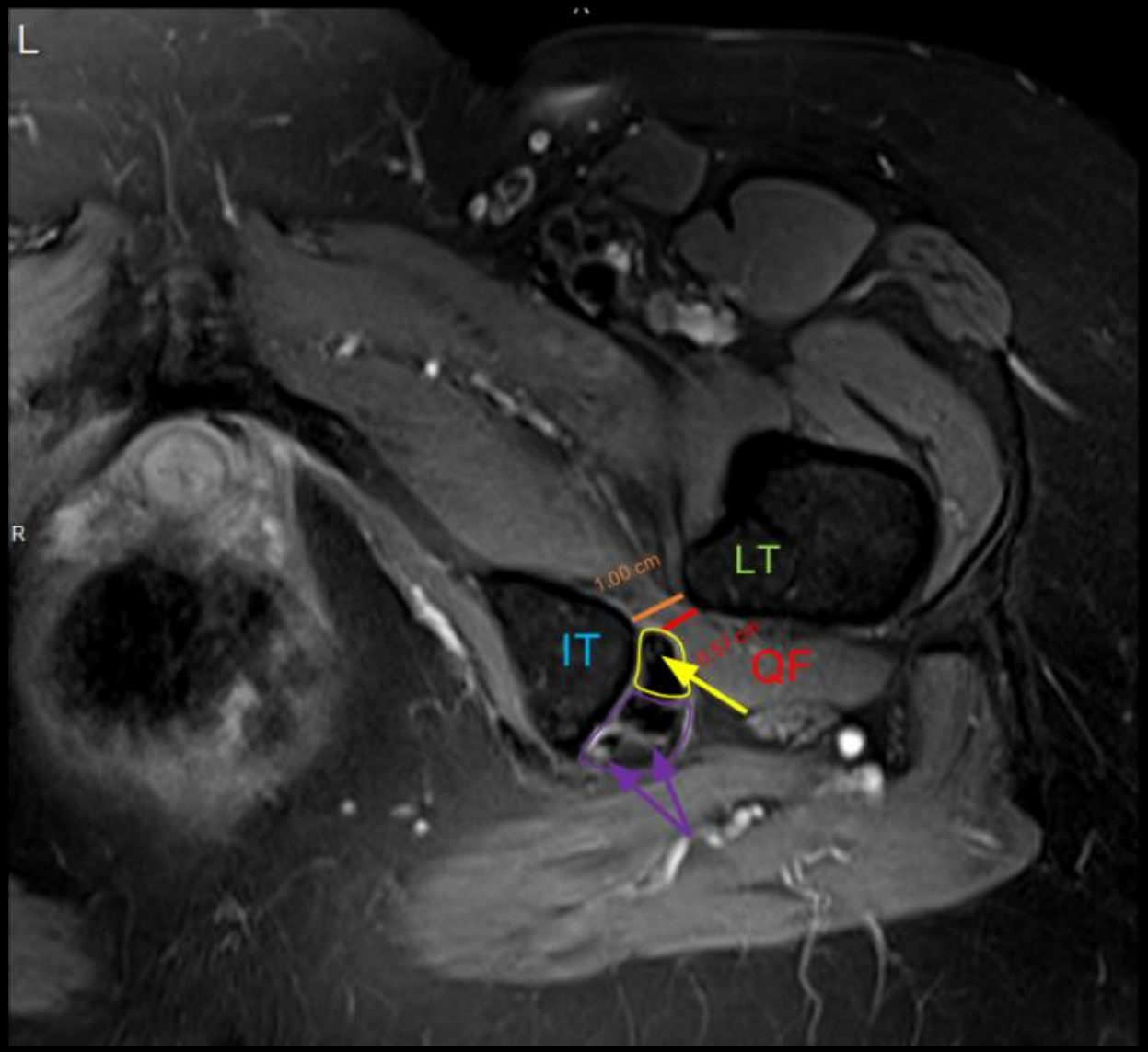
Findings (unlabeled)



- Axial PD FS MRI image of the ischiofemoral space

Findings (labeled)



- The ischiofemoral space between the medial aspect of the lesser trochanter (LT) of the femur and the lateral aspect of the ischial tuberosity (IT) measures 10 mm
- The quadratus femoris (QF) space, or the smallest distance in which the QF muscle passes between the superolateral aspect of the hamstring tendons and the posteromedial aspect of the ischial tuberosity or iliopsoas tendon measures 5.7 mm
- Tendinopathy of the conjoint tendon of semitendinosus and biceps femoris with acute on chronic intrasubstance tearing
- Chronic low-grade intrasubstance tearing of the semimembranosus tendon

Final Dx:

Ischiofemoral Impingement Syndrome

Secondary Dx:

Tendinopathy of the conjoint tendon of biceps femoris and semitendinosus with acute on chronic intrasubstance tearing, chronic intrasubstance tearing of the semimembranosus tendon

Case Discussion (Pathophysiology)

- Ischiofemoral impingement syndrome is caused by narrowing of the ischiofemoral space that causes soft tissue entrapment, predominantly of the quadratus femoris muscle
- Narrowing of the ischiofemoral space may be congenital or acquired
- Congenital anomalies include developmental hip dysplasia or coxa valga
- Acquired causes include fractures of the proximal femur, osteoarthritis, Perthes disease, hamstring enthesopathy, total hip arthroplasty, or abductor insufficiency
- Lower buttock or groin pain is the main presenting complaint, and it may radiate to the knee or mimic sciatica due to proximity of the sciatic nerve to the quadratus femoris muscle
- Symptoms are typically exacerbated during extension of the affected hip while running or taking large steps

Case Discussion (Imaging)

- MRI is most commonly used for assessing ischiofemoral impingement
  - Abnormal signal intensity of the quadratus femoris musculature suggesting edema or fatty atrophy is the main imaging finding of ischiofemoral impingement syndrome
  - Measurements of the ischiofemoral space and quadratus femoris space on T1W axial imaging may assist in diagnosis, although these can be difficult to standardize due to gender specific and intra-individual anatomical differences, as well as variation in patient positioning
  - The ischiofemoral space cut off is ≤ 15 mm (specificity 81 %, sensitivity 77%)
  - The quadratus femoris space cut off is ≤ 10 mm (specificity 74%, sensitivity 79%)
- Ultrasound may also be used to measure the ischiofemoral and quadratus femoris spaces

Case Discussion (Treatment)

- Symptomatic ischiofemoral impingement syndrome is treated conservatively with rest, analgesia, activity modification and physical therapy
- Addressing secondary causes of impingement is crucial
- CT or US guided corticosteroid injections of quadratus femoris are a therapeutic option if no resolution of symptoms, may repeat in 3-months
- Cases refractory to a regimen of 3-months of conservative management with additional injections may necessitate a surgical intervention, although conservative therapy has a high rate of success
- Surgical interventions include resection of the lesser trochanter or ischioplasty

References:

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Jeyaraman, Madhan et al. “Ischiofemoral impingement syndrome: a case report and review of literature.” *Journal of orthopaedic surgery and research* vol. 17,1 393. 19 Aug. 2022, doi:10.1186/s13018-022-03287-y

Singer, Adam D et al. “Ischiofemoral impingement syndrome: a meta-analysis.” *Skeletal radiology* vol. 44,6 (2015): 831-7. doi:10.1007/s00256-015-2111-y

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