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Hip Injuries: Red Flags

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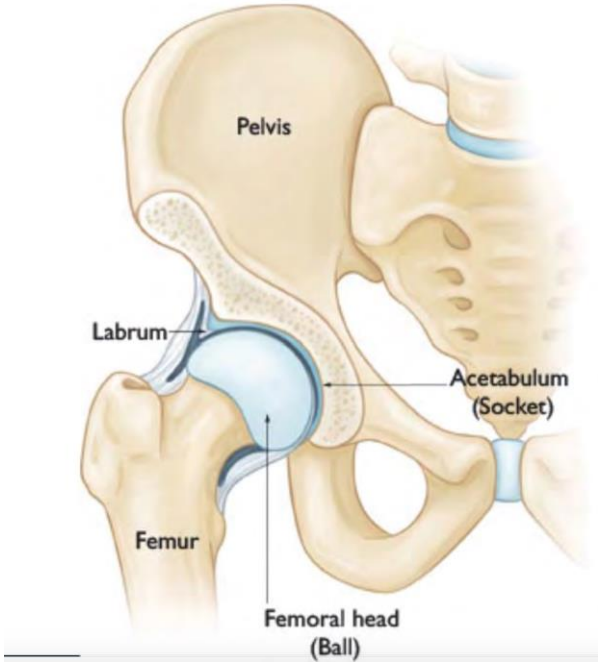
Disclosures

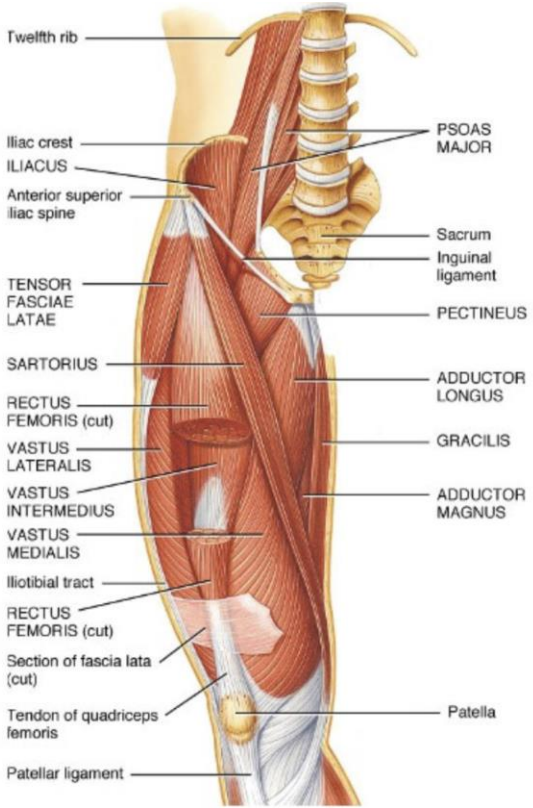
- I have no disclosures.

Objectives

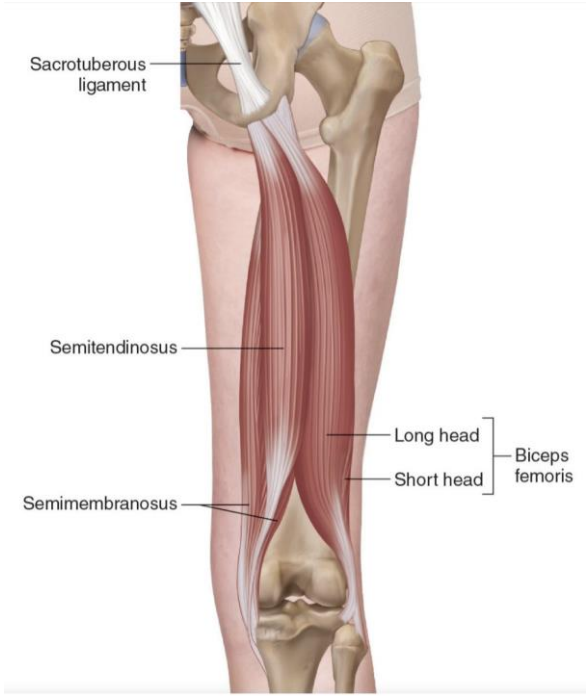
- Recognize red flags in hip injuries
- Identify indications for diagnostic imaging and referrals
- Review non-surgical and surgical management of these conditions

Hip Anatomy





(a) Anterior superficial view



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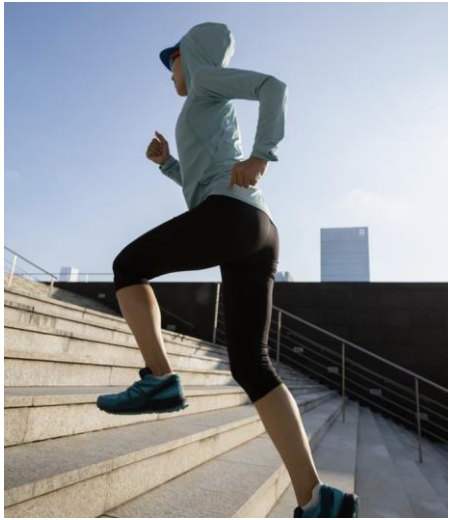
Case

*Audience Poll Question

45 F who presents with hip pain for 3 months. No specific injury. She is normally very active and enjoys running, gym exercising, pilates. She eats “clean” and wants to get back to activity as soon as possible.

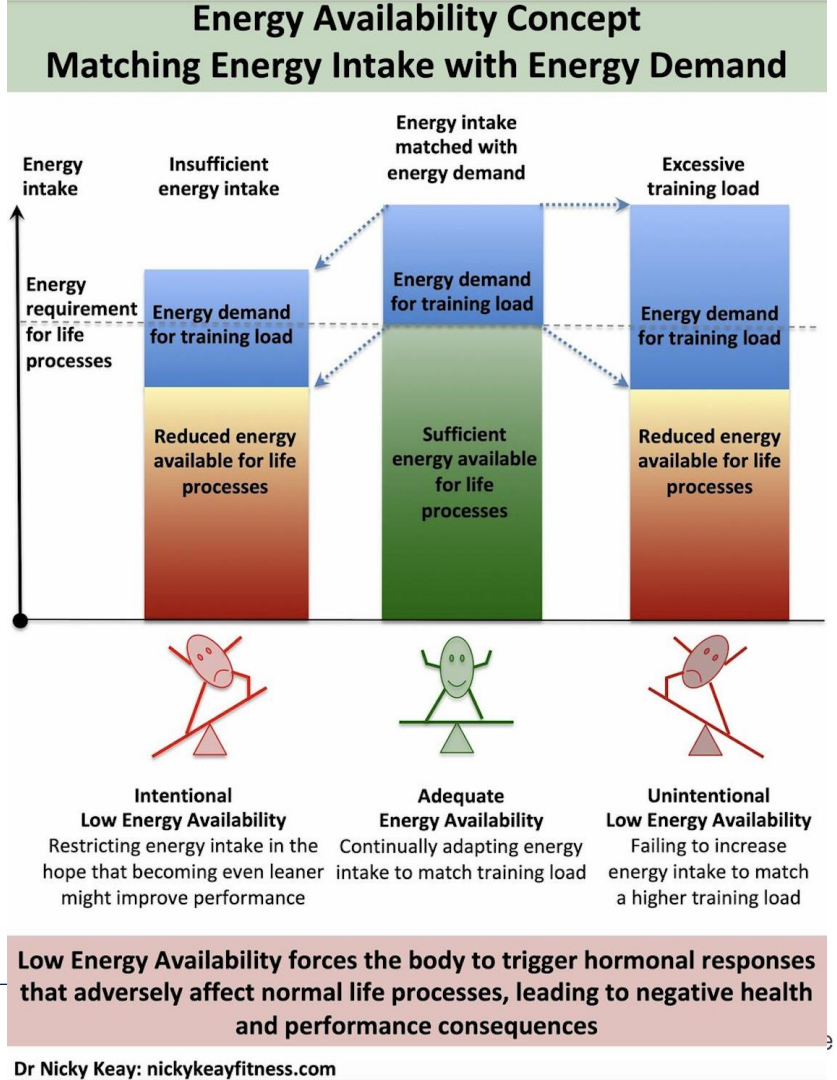
What is the most likely diagnosis?

- A: Femoroacetabular impingement
- B: Stress fracture
- C: Inguinal hernia
- D: Hip flexor strain



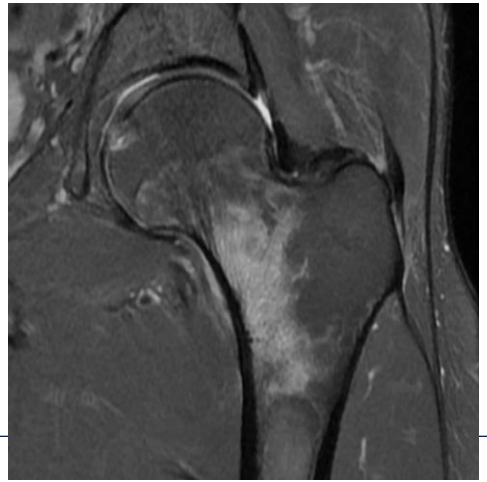
Stress Fracture

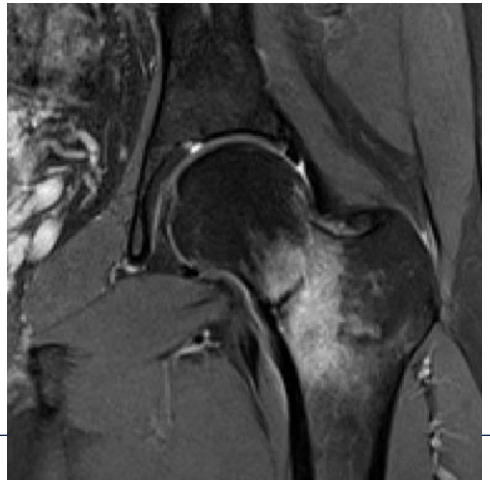
- Can occur in femoral neck, sacrum, pelvis
- Pain localized to that part of hip/pelvis
  - Hip joint → groin
- Check for: increased loading, disordered eating/insufficient fueling, h/o stress fracture

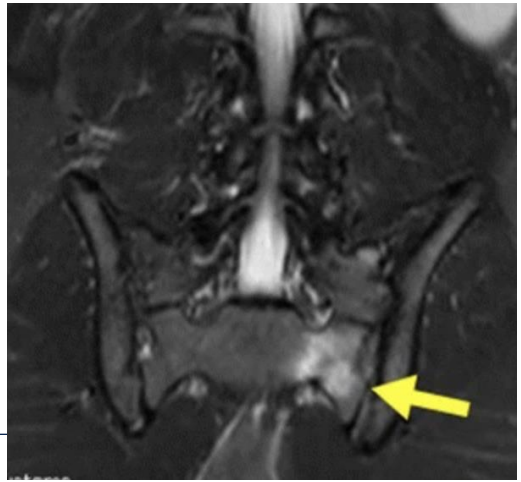


Stress Fracture

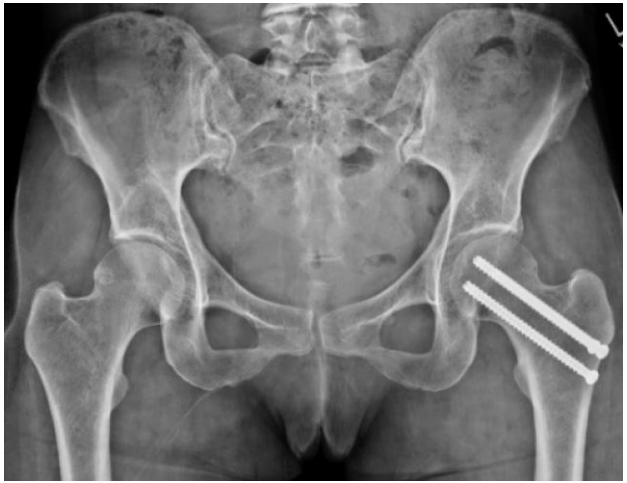
- Exam: Antalgic gait, pain with activities/single leg hop
- XR: often normal
- MR: low threshold to obtain advanced imaging, hold out from impact activities







Stress Fracture



- Treatment
  - Offloading with crutches – flat foot WB
  - Rest x 4-6 weeks
  - If continues to have pain:
    - Check compliance
    - Continue offloading x 2-3 more weeks
    - Screw fixation for femoral neck
  - DEXA, nutritional/loading assessment

*Audience Poll Question

Case

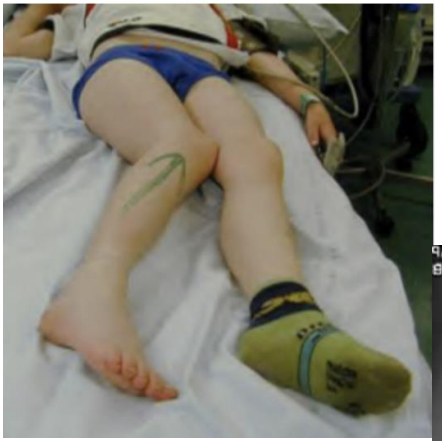
You're covering a high school football game on Friday night. One of the offensive lineman is tackled and does not get up. He complains of hip pain and you notice that leg is rotated inwards. What is his diagnosis?

- A: He is cramping because he did not eat lunch
- B: ACL rupture
- C: Hip dislocation
- D: Avulsion fracture of pelvis

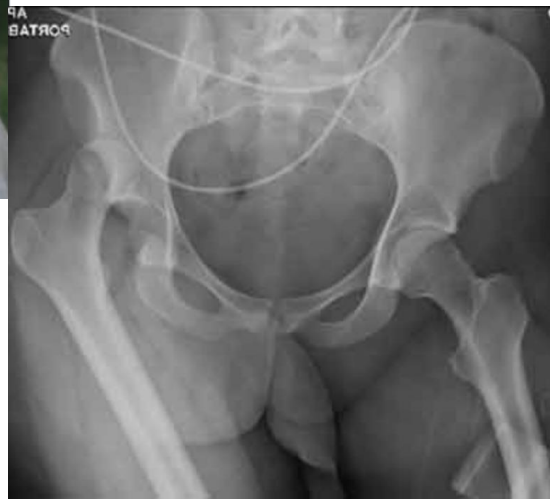
Traumatic Hip Dislocation

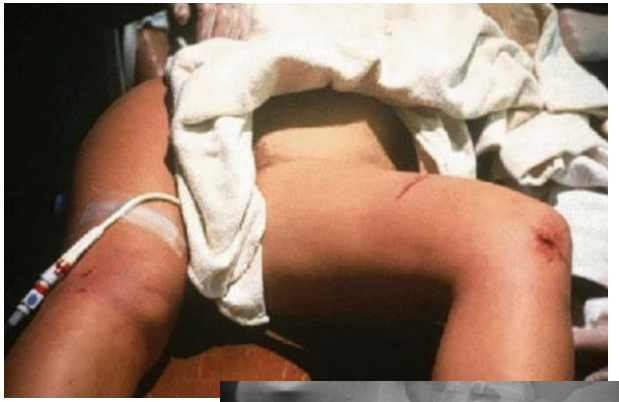
- Occurs from high energy injury
  - Fall, MVC, other sporting injury
- Direction
  - 90% are posterior (“dashboard” injury)
  - Anterior dislocation from abduction, ER position, also iatrogenic s/p hip scope
- Complications can be severe: fracture of femoral head or acetabular wall, sciatic nerve palsy, AVN, ipsilateral knee injury, loose body in joint

Traumatic Hip Dislocation

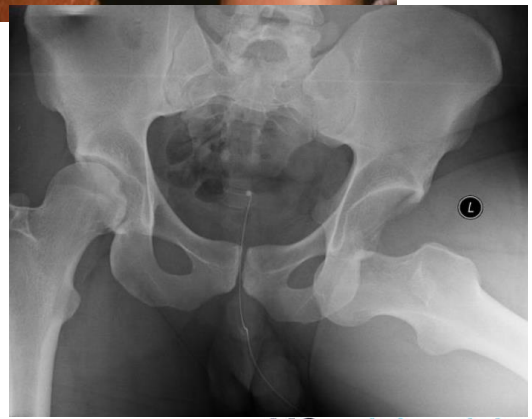


Posterior



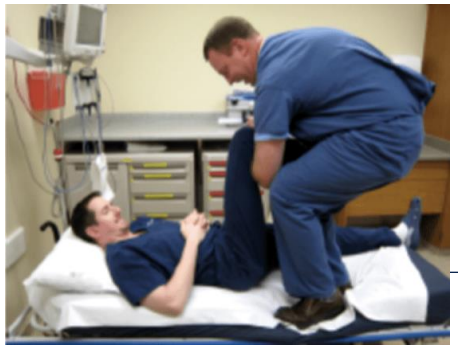
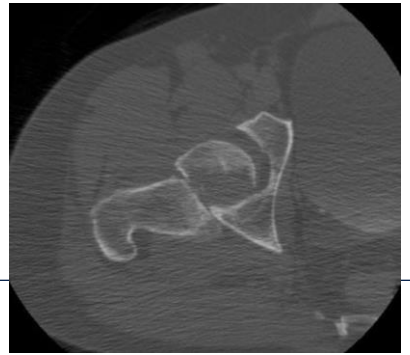
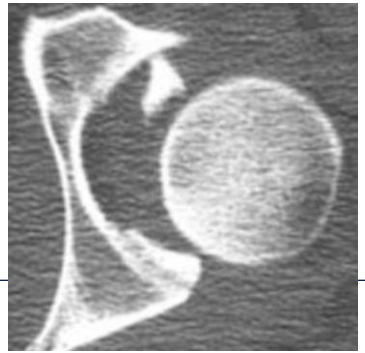
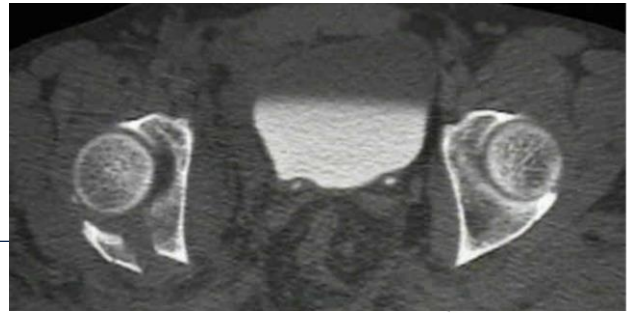


Anterior



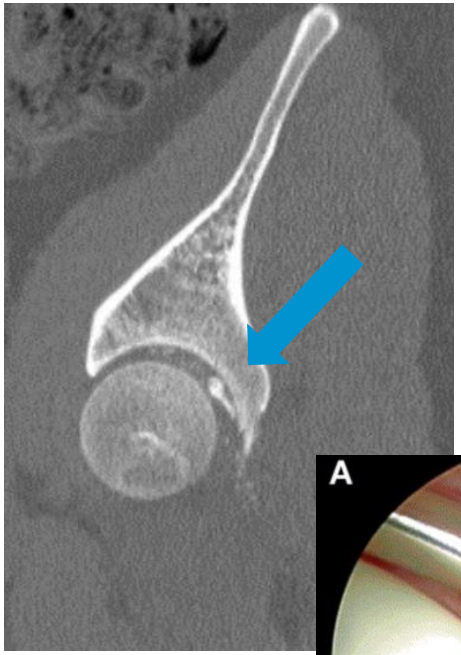
Traumatic Hip Dislocation - Treatment

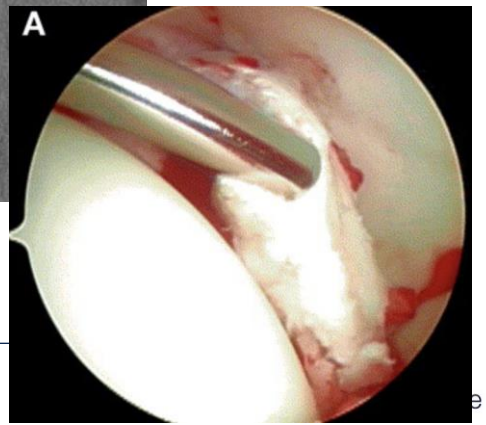
- Transfer to ED / Urgent reduction under sedation
  - Can consider reduction on the field with assistance, but caution fracture-dislocation, physeal injury
  - Posterior: hip/knee flexion, axial traction, gentle rotation
  - Anterior: axial traction, adduction, rotation
- Post reduction CT scan to ensure no loose body or fracture

Traumatic Hip Dislocation - Treatment

- If no loose body or fracture, can treat non operatively
  - Crutches, protected WB x 4-6 weeks
  - Avoidance of position of dislocation
  - PT
- Surgery indicated for displaced fracture for ORIF or for loose body removal





Case

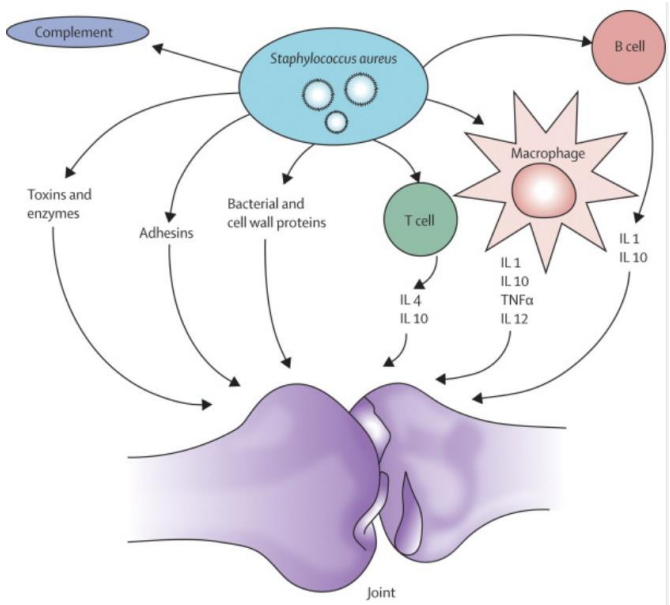
*Audience Poll Question

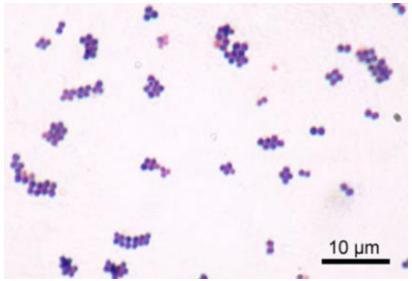
20F who woke up with left groin pain. She does not recall an injury. She is on crutches. She feels more tired than usual. She has type 1 diabetes. X-rays are normal. What condition are you most concerned about?

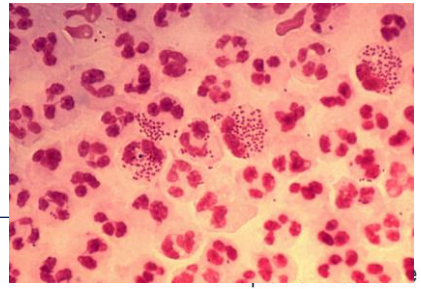
- A: Septic arthritis of the hip
- B: Femoroacetabular impingement
- C: Hip flexor strain
- D: Trochanteric bursitis

Septic Hip

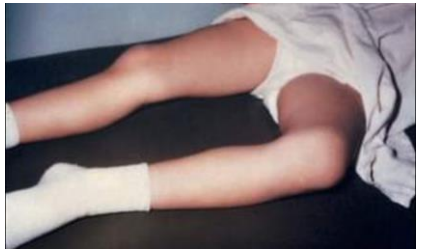
- Inflammation of the joint due to bacteria
  - Knee > hip > shoulder
- Etiologies: bacteremia, direct inoculation, contiguous spread
- Causes irreversible cartilage damage
- Most common pathogen: Staphylococcus aureus
  - Neisseria gonorrhea in young adults

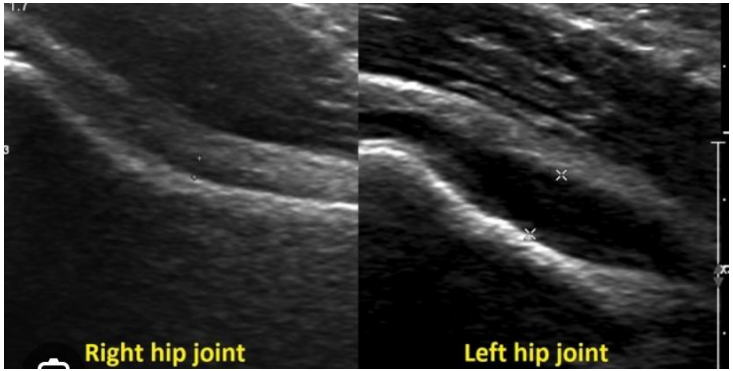


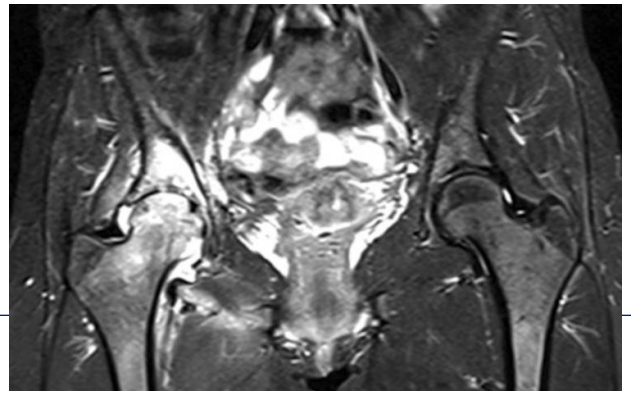




Septic Hip







- Risk factors: young child, recent surgery, bacteremia, immunocompromised, IV drug user
- History: severe pain, +/- fever
- Exam: Hip held in FABER position, inability to bear weight, inability to tolerate PROM > erythema/effusion
- Imaging:
  - XR normal
  - US shows effusion
  - MRI can show osteomyelitis

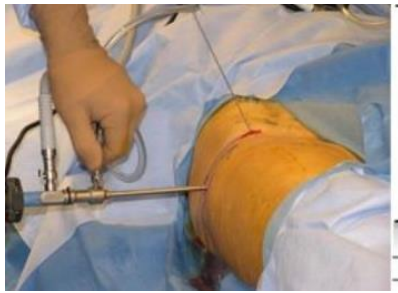
Septic Hip - Diagnosis

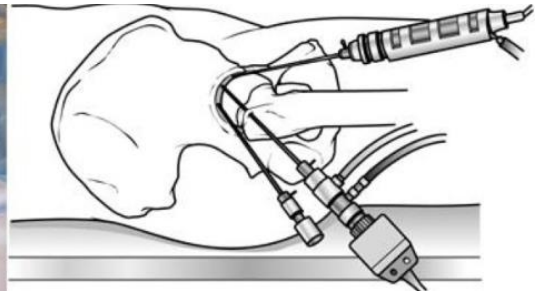
- Immediate evaluation in ER
- Elevated serum WBC, ESR, CRP
- Aspiration and synovial cell count for diagnosis (WBC > 50k)
  - Gram stain: + only 1/3 of time

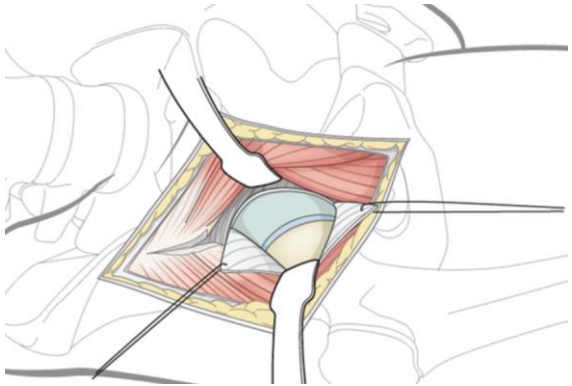
Kocher Criteria to Determine Risk for Pediatric Septic Joint	
Non-weight bearing on affected side	*Probability of Septic Arthritis* • 4/4 = 99% • 3/4 = 93% • 2/4 = 40% • 1/4 = 3%
ESR > 40 mm/hr	
Fever	
WBC > 12,000	

Septic Hip - Treatment

- Surgical emergency!
- Hip irrigation and debridement (arthroscopic vs open)
- IV antibiotics
- Complication: osteomyelitis, stiffness, arthritis

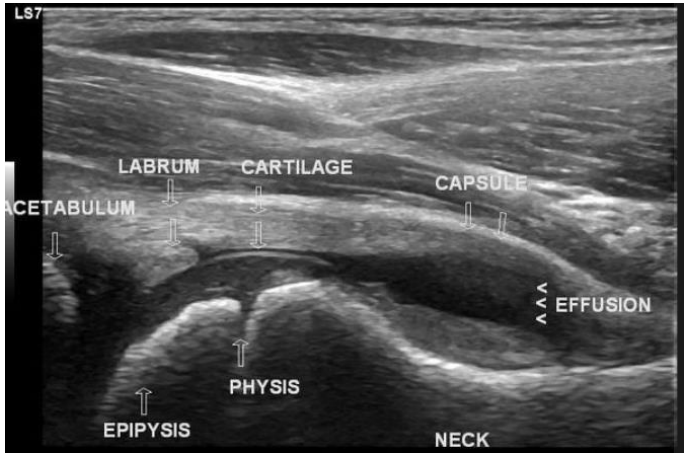






Transient Synovitis

- Inflammation of the synovium without infectious organism
- Common cause of hip pain in children 4-8
- May be related to recent illness, trauma
- Presents like septic hip
  - Diagnosis of exclusion
- Serum labs may be slightly elevated
- +/- aspiration depending on clinical concern
- Treatment: NSAIDs → if better, then is transient synovitis



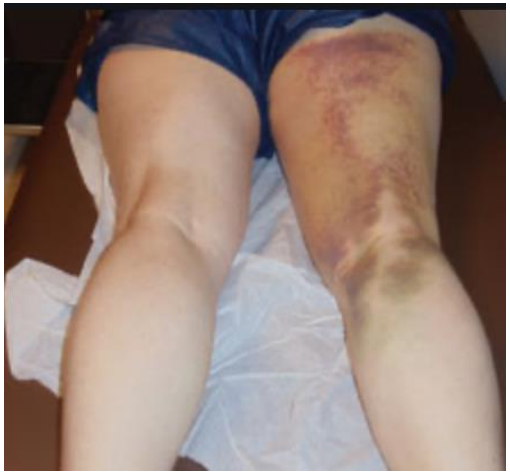
Case

*Audience Poll Question

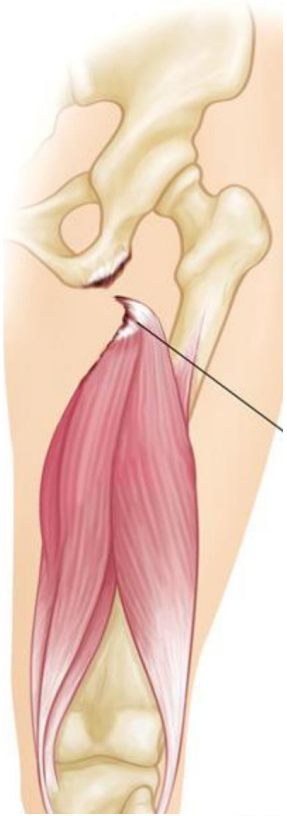
Your 51M uncle was water skiing at a local lake this past weekend and fell, with immediate hip pain. He cannot walk and notices a lot of bruising. He calls you to ask what you think might be going on. You tell him that he has:

- A: Hip osteoarthritis
- B: Avulsion fracture of hip
- C: Proximal hamstring rupture
- D: He is too old to be water skiing

Proximal Hamstring Rupture

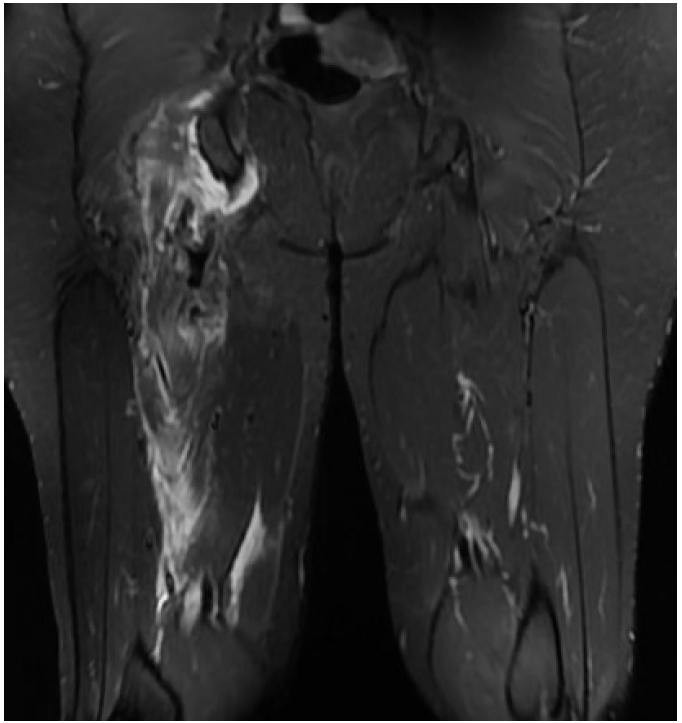


- Often acute, can be chronic overload (runners)
- Awkward fall/splits, +posterior thigh bruising
- Buttock/ischial pain, pain with sitting
- +TTP ischium, weakness with knee flexion & hip extension
- ** Differentiate from hamstring muscle strain by location
  - Strain with pain in muscle belly

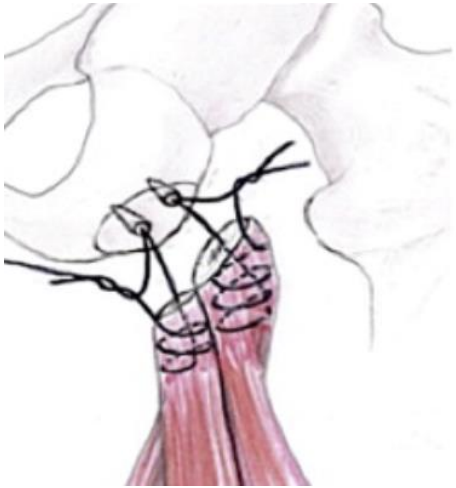


Proximal Hamstring Rupture

- XR r/o avulsion fracture, MRI hamstring or thigh
- Nonoperative
  - NSAIDs, PT, gradual return to activity
- Operative: acute proximal hamstring repair in young, active patients
  - 3 tendon complete ruptures
  - 2 tendon ruptures > 2cm retracted
- Sitting pain either way



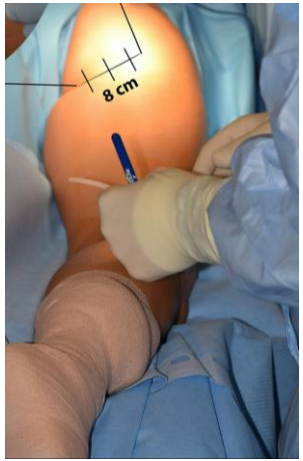
Outcomes after Proximal Hamstring Repair

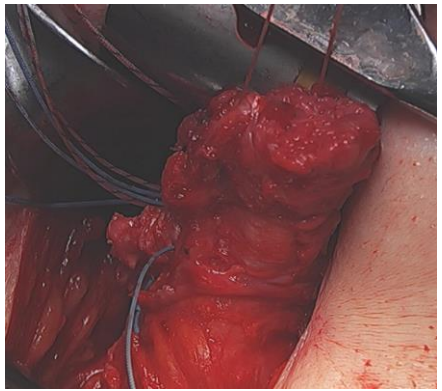


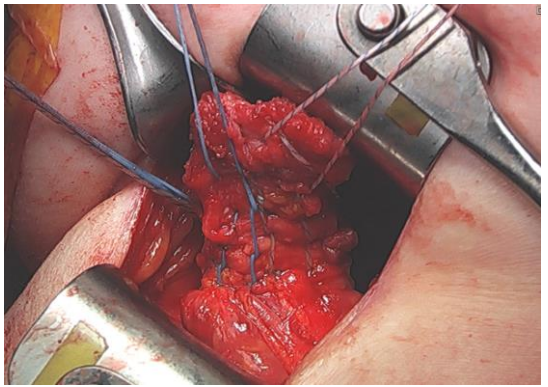
- Meta-analysis of 24 studies (795 repairs) showed acute repairs with high patient satisfaction, strength, Lower Extremity Functional Scale score (Bodendorfer et al, AJSM 2018)
  - But difficult to compare to non op (low n)
  - Complication rate **23%**
- Acute repairs seem to do better than chronic (Cohen et al, AJSM 2012, Bodendorfer et al, AJSM 2018)
- Quality of studies overall low

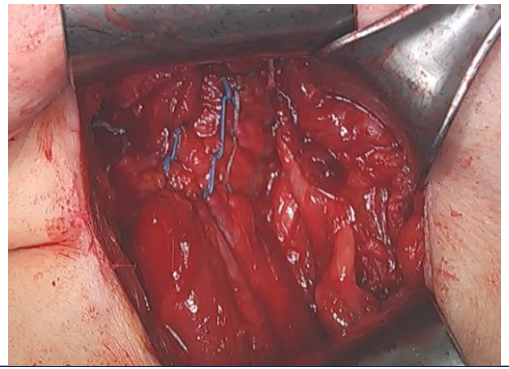
Proximal Hamstring Repair

Posterior









- Rehab is intensive!
- 6 weeks foot flat WB with brace, crutches/walker
- PT for 6+ months
- Full sports 6-9 months

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Case

*Audience Poll Question

67F who you have been treating for over 6 months with lateral right hip pain. She limps and does not seem to be improving. She is compliant with HEP. She has had several corticosteroid injections to her trochanteric bursa which help temporarily. What do you recommend?

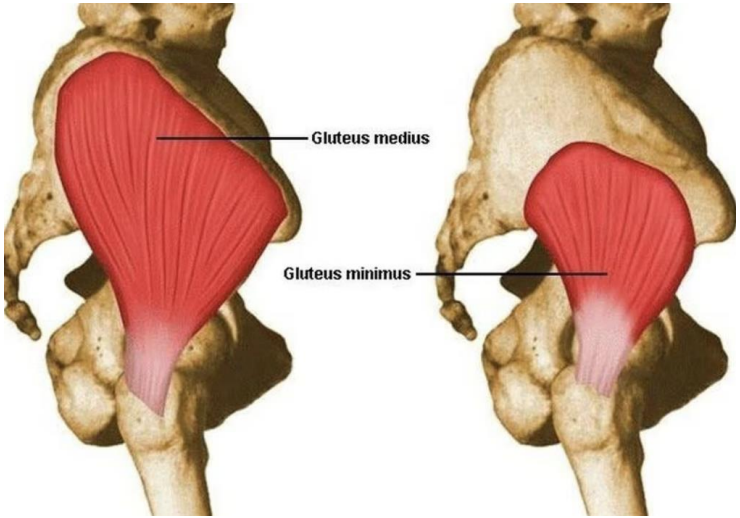
- A: Increase HEP to 2x per day
- B: Repeat steroid injection to bursa
- C: Hip replacement
- D: MRI to assess gluteal tendons

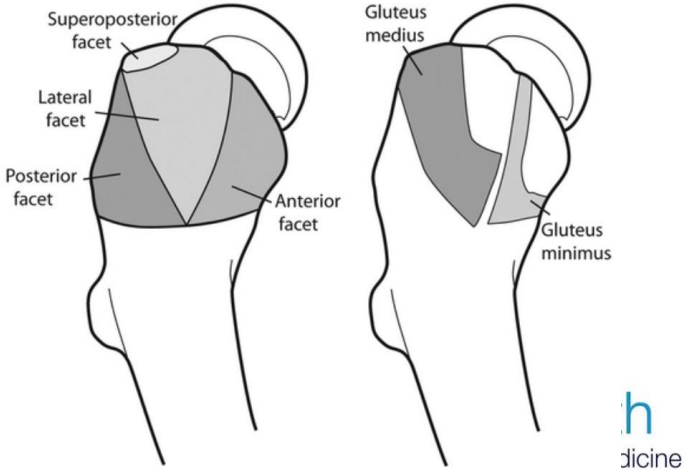
Gluteal tendon tears

- Gluteus medius and minimus
- Action: Strong abductors, stabilizers of hip joint

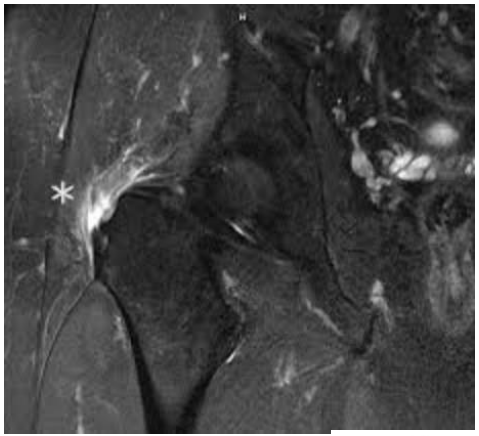
<u>Insertions:</u>

- Superoposterior and lateral facet = **medius**
- Anterior facet = **minimus**
- Posterior facet = nothing

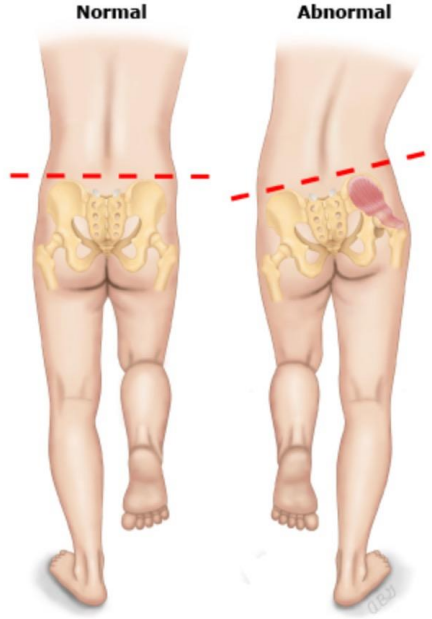




Gluteal tendon tears



- “Rotator cuff of the hip”
- Can be acute or chronic
- Females ages 50-70
- Pain + WEAKNESS with abduction
- Positive Trendelenberg sign
- **Caution! Can co-exist with trochanteric bursitis
- Nonop: PT, corticosteroid injection vs PRP
- Operative: endoscopic vs open repair



Leucocyte-Rich Platelet-Rich Plasma Treatment of Gluteus Medius and Minimus Tendinopathy: A Double-Blind Randomized Controlled Trial With 2-Year Follow-up

The American Journal of Sports Medicine
Volume 47, Issue 5, April 2019, Pages 1130-1137

https://doi-org.ucsf.idm.oclc.org/10.1177/0363546519826969

Jane Fitzpatrick, PhD, MBBS, FACSEP[†,‡,§,*], Max K. Bulsara, PhD[‖], John O'Donnell, FRACS, MBBS[¶], and Ming Hao Zheng, PhD, DM, FRCPath, FRCPA[#,]**

- RCT 80 patients: LR-PRP vs CSI, US guided
- Partial thickness gluteal tendon tears
- Both groups improved
  - PRP group improved more out to 2 years

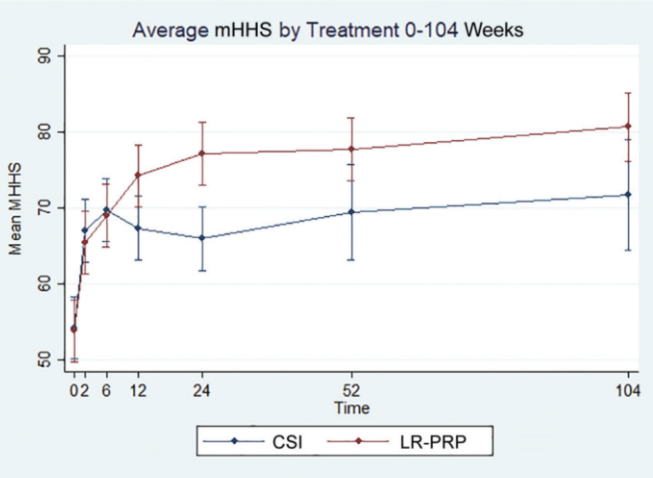


Figure 3. Modified Harris Hip Scores (mHHSs) in the CSI and LR-PRP groups at 0 to 104 weeks. CSI, corticosteroid injection; LR-PRP, leucocyte-rich platelet-rich plasma. Values are presented as mean ± SD.

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Case

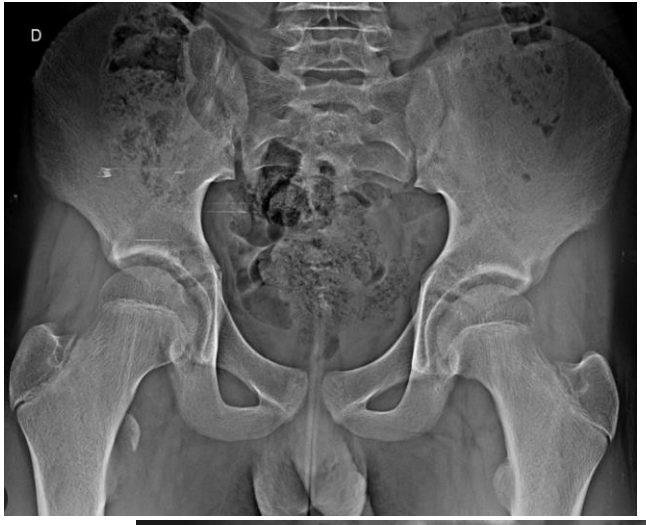
*Audience Poll Question

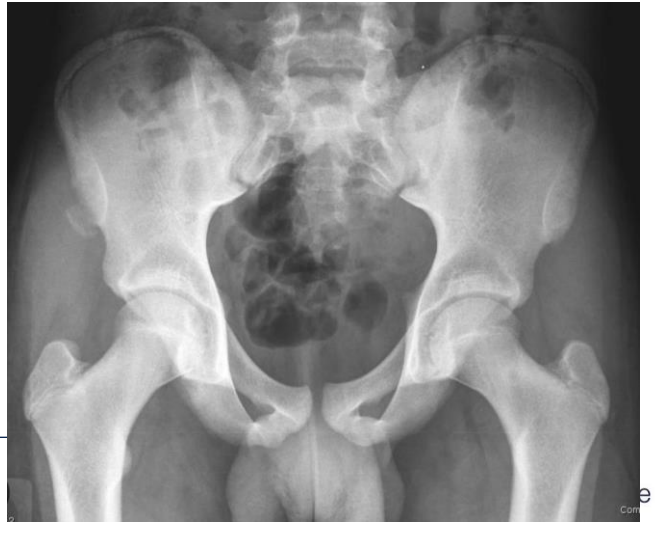
17M was anchoring the 4x100m relay and was rounding the last corner when he felt a sharp pain in his hip which caused him to fall. He was unable to finish the race. He is not able to walk. What is the next best step?

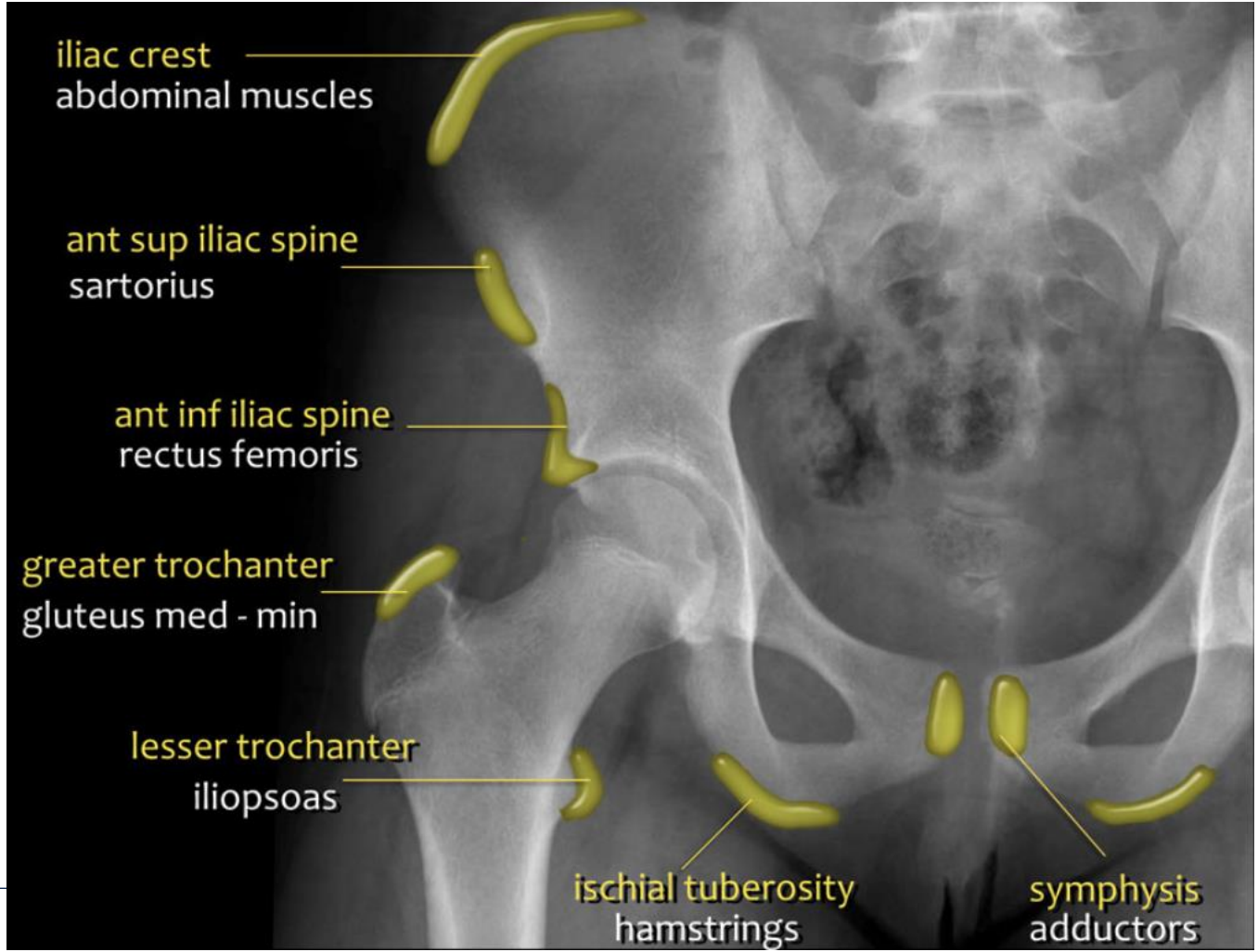
- A: Electrolyte drink for cramping
- B: RICE
- C: NSAIDs
- D: X-rays

Pelvis Avulsion Fractures

- Who?
  - Adolescents
- What?
  - Apophysis
  - In contrast to adults (tendon or musculotendinous junction)
- When/why?
  - Acute injury
  - Explosive concentric contraction







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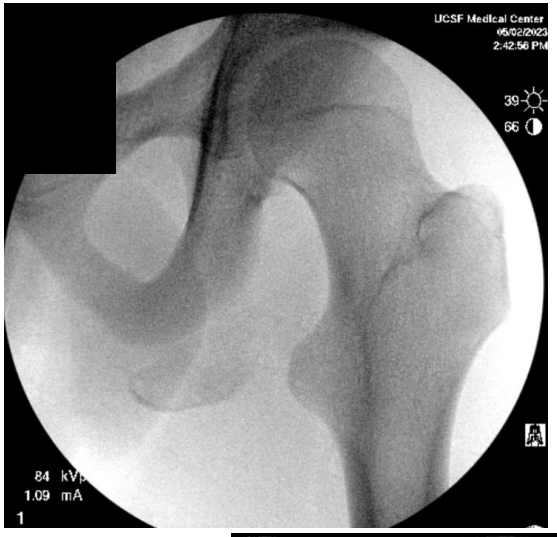
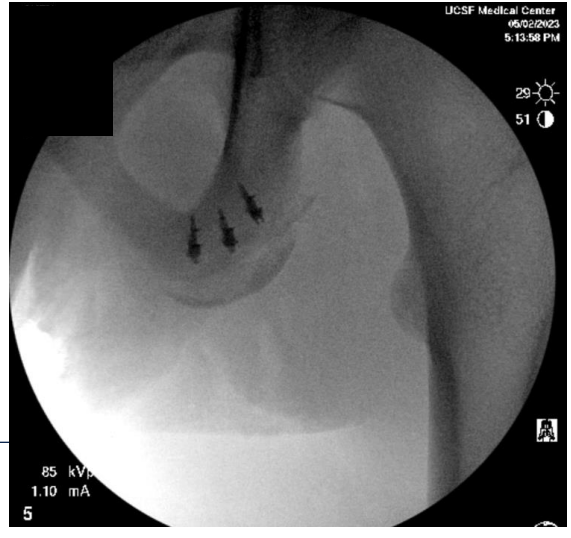
Pelvis Avulsion Fractures

- Treatment generally non-operative for minimal displacement
  - Protected WB x 4-6 weeks
  - PT
  - Full recovery 3-4 months
- Surgery for ORIF if >15-20mm displacement
- Excellent outcomes
- Complications: pseudoarthrosis, surgical group nerve palsy, hardware irritation





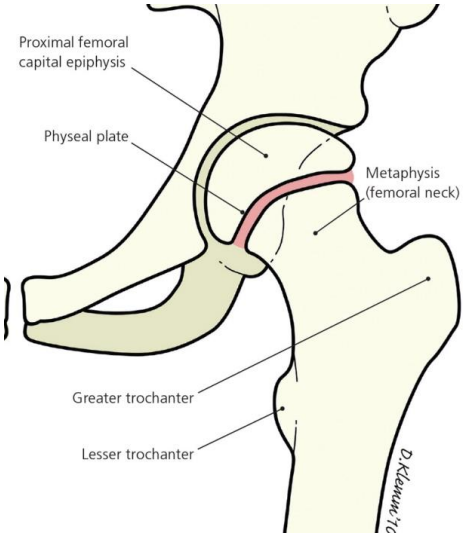
Case

*Audience Poll Question

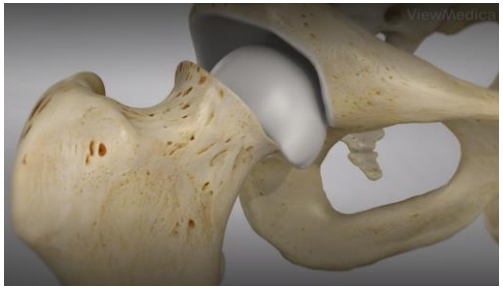
12M who is seeing you with 6 weeks of knee pain and limping. He saw his pediatrician who got knee x-rays which were normal. He was told he has growing pains and PT was recommended. What is another possible cause of his pain?

- A: Lumbar disc herniation
- B: Slipped capital femoral epiphysis
- C: Patellofemoral syndrome
- D: His weight (he is obese)

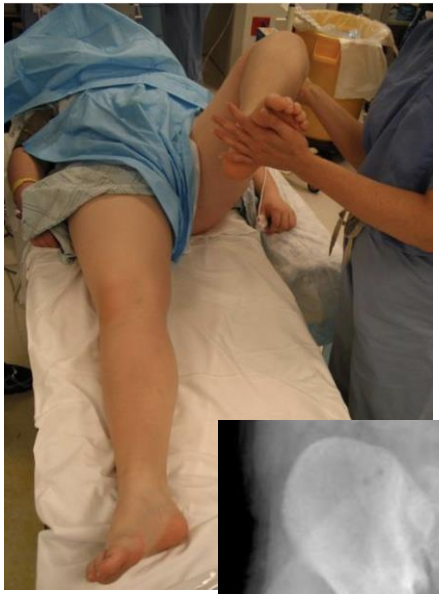
Slipped Capital Femoral Epiphysis (SCFE)

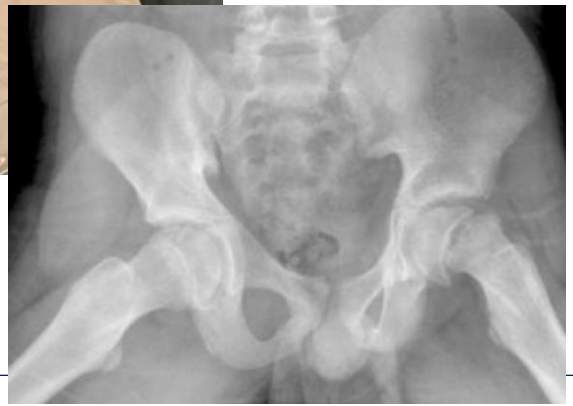


- Slippage of the epiphysis of the proximal femoral physis
- Occurs in adolescents age 10-16 M>F
- <u>Increased risk with obesity</u>
- Associated with endocrine conditions (thinner, younger patients)



Slipped Capital Femoral Epiphysis (SCFE)

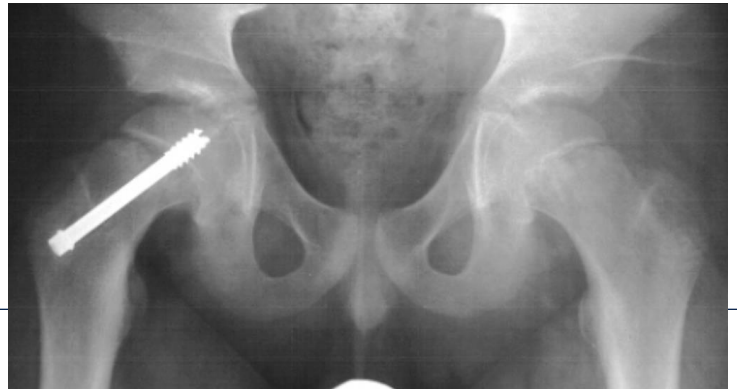


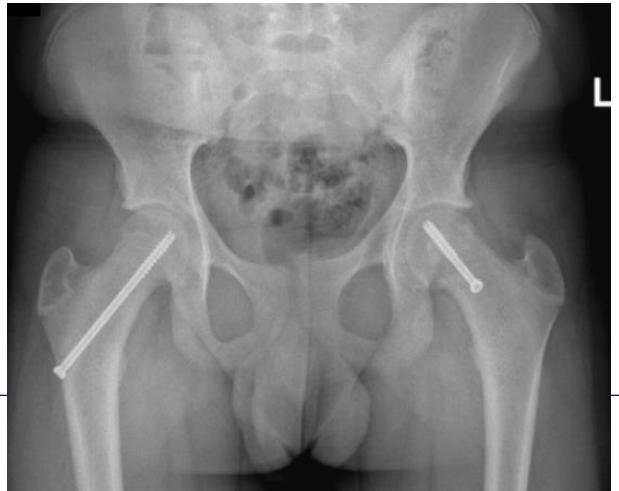


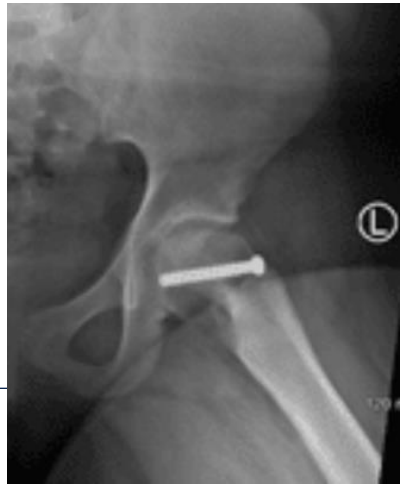
- Presentation often delayed weeks to months
- Hip pain
- 15-50% present with knee pain
- Exam: limp, ER foot progression angle, obligate hip ER with passive flexion
- X-rays essential for diagnosis

Slipped Capital Femoral Epiphysis (SCFE)

- **Treatment**: in situ percutaneous screw fixation
- Consider contralateral prophylactic fixation in high risk
  - Young age, endocrine disorder, contralateral hip pain
- Complications: AVN, LLD, chondrolysis, post SCFE hip impingement







Summary

- Keep a broad differential diagnosis for hip conditions
- Traumatic conditions: hip dislocation, proximal hamstring rupture, pelvis avulsion fracture
- Atraumatic or insidious onset: stress fracture, septic hip, gluteal tendon tear, SCFE
- Always ok to recommend x-ray

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Thank you!

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