It’s all in the Hips: An Educational, but Hip Presentation

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Disclosures

I have no relevant relationships with ineligible companies to disclose within the past 24 months.

Learning Objectives:

1. Describe hip anatomy and identify key differences between intra-articular and extra-articular hip pain
2. Differentiate between Instability versus impingement pathologies of the Hip joint
3. Evaluate pelvic x-rays and advanced imaging to diagnose common hip pathologies
4. Diagnose common concomitant and secondary extra-articular manifestations of hip pathology
5. Identify the difference between hip preservation and hip arthroplasty surgical candidates

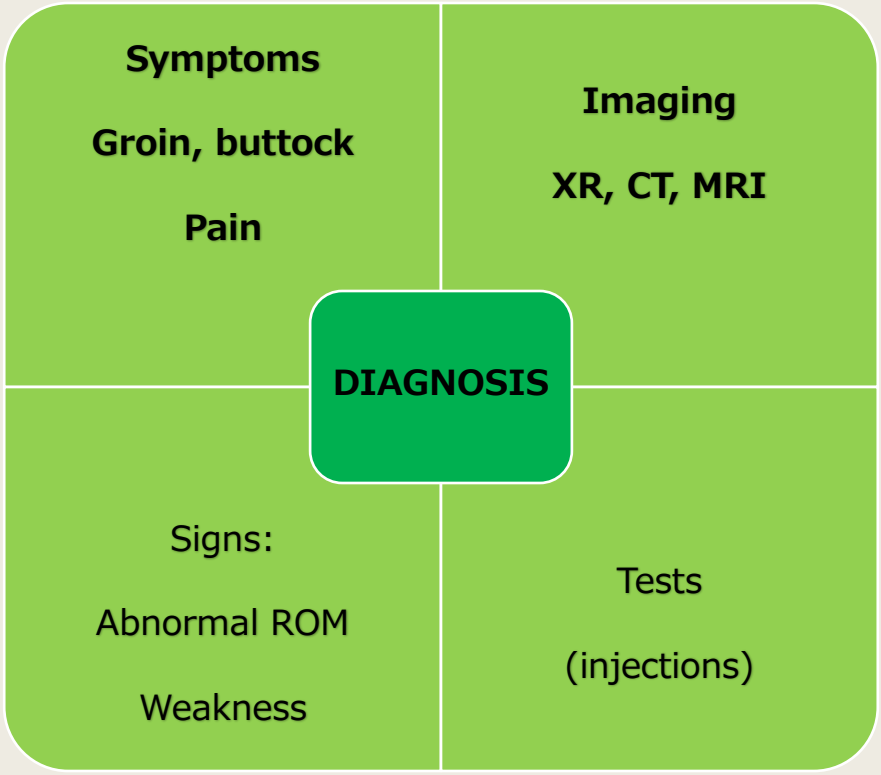
Intra-Articular vs Extra-Articular

In order to treat hip pain, you need to know what it is.

Check Function

Look for reproduceable pain

Verify that the pain that brings the patient in to your office is being reproduced.



Differential

- Intra-Articular
  - Acetabular labral tears
  - Osteonecrosis of the femoral head
  - Chondrolysis
  - Femoroacetabular impingement
  - Femoral neck stress fracture
  - Instability
    1. DYSPLASIA
    2. FEMORAL ANTETORSION
    3. HYPERLAXITY
  - Oncologic processes
  - Osteoarthritis
  - Osteochondritis dissecans
  - Synovitis

- Extra-Articular
  - Facet joint abnormalities
  - Pelvic Floor Dysfunction
  - Iliofemoral ligament sprain
  - Lumbar radiculopathy
  - stress fracture
  - Muscle strain: adductors/sartorius, rectus
  - femoris, iliopsoas, or rectus abdominis
  - Nerve entrapment: genitofemoral, iliohypogastric, ilioinguinal, lateral femoral cutaneous (meralgia paresthetica, ventral rami [L2–L4]), obturator, or pudendal
  - Osteitis pubis
  - Sacroiliac joint disorders
  - Snapping hip syndrome (external, internal)
  - Sports hernia/pubalgia (eg, hockey player syndrome)
  - Gluteus Medius pathology and Greater Trochanteric Bursitis

What's in a Hip?

Intra-Articular (Inside the hip joint and capsule)

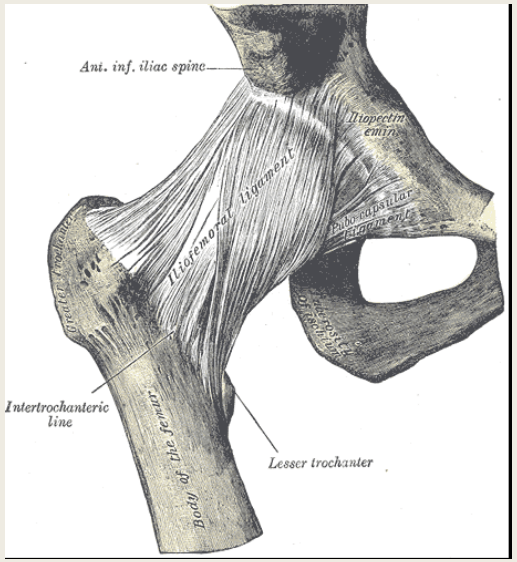
-Femoral head

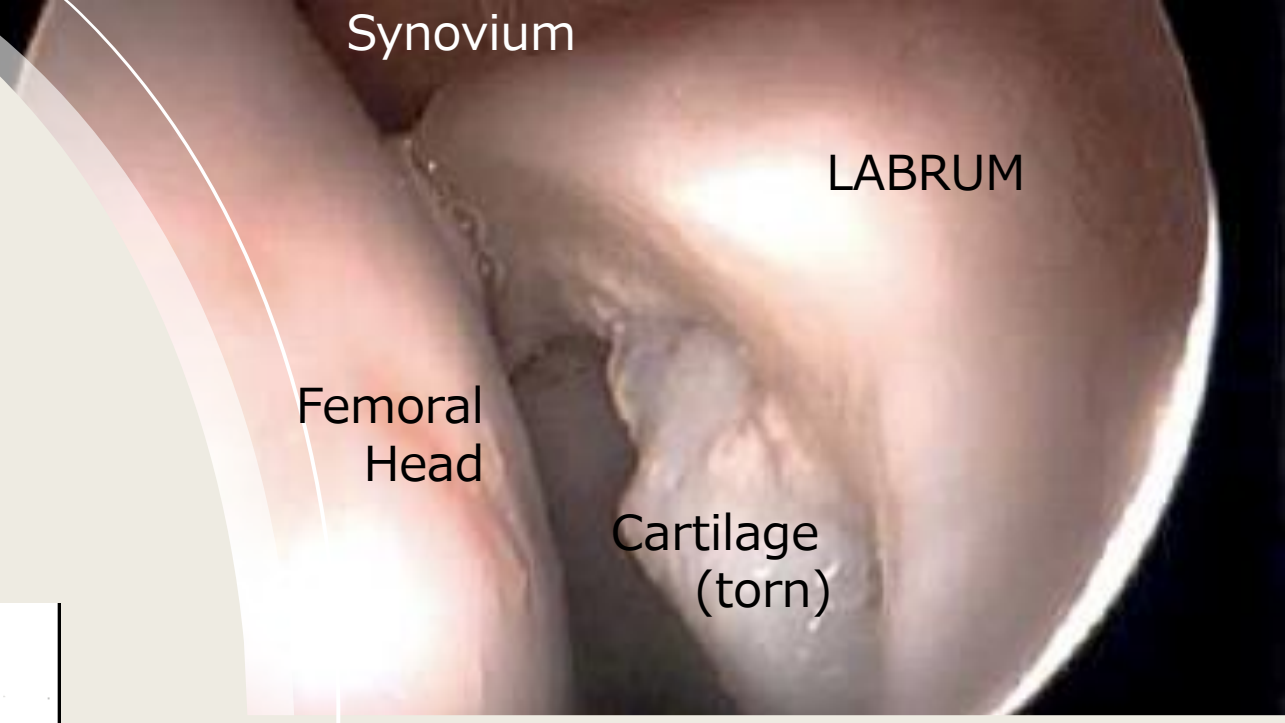
-Acetabulum

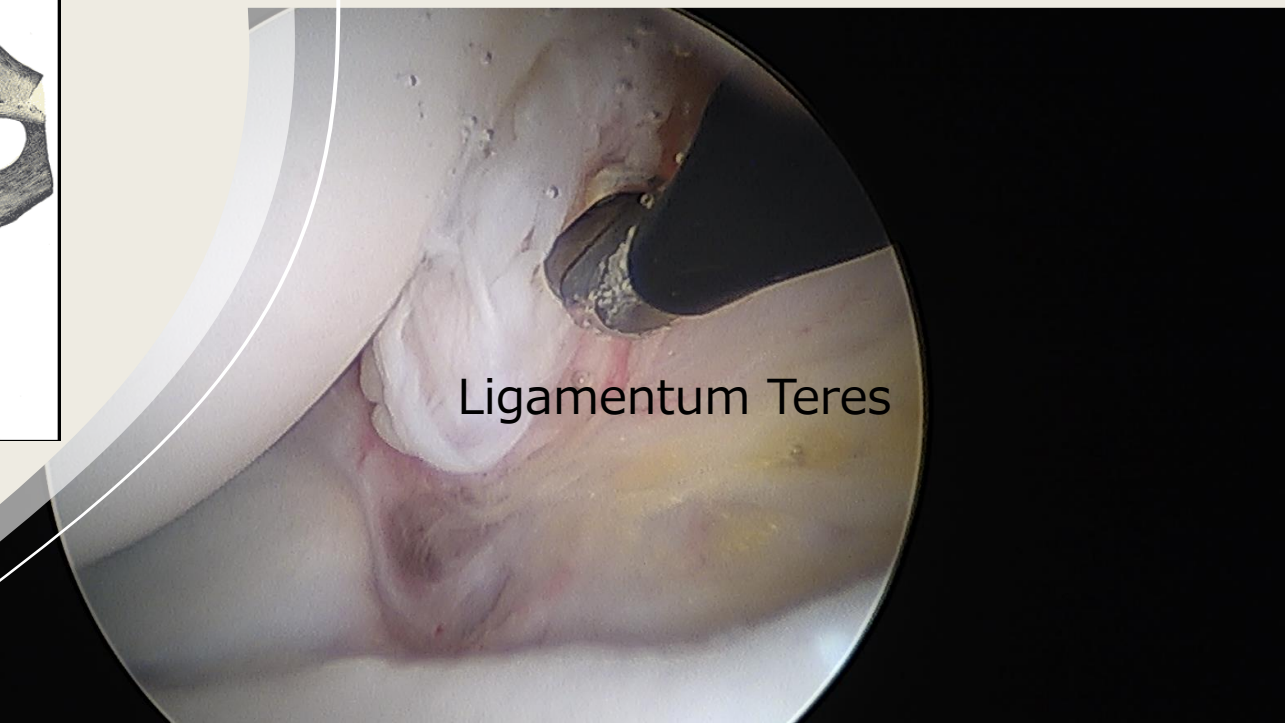
-Labrum

-Ligamentum Teres

-synovium

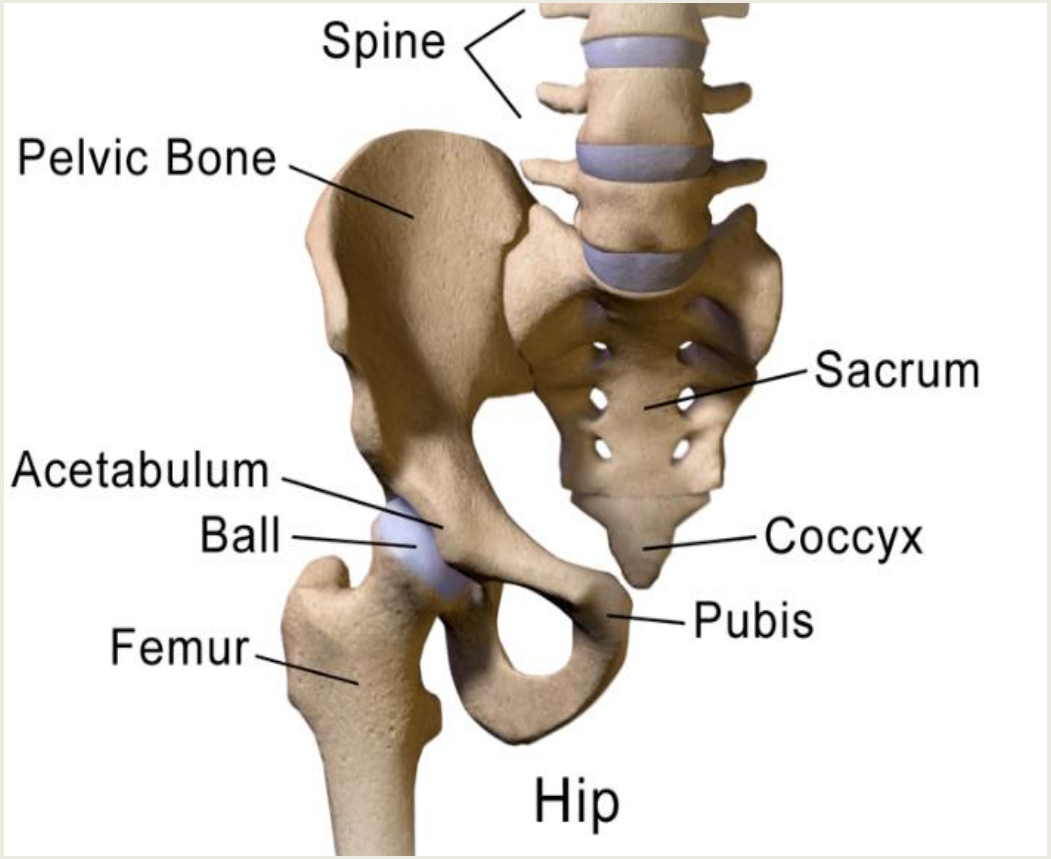






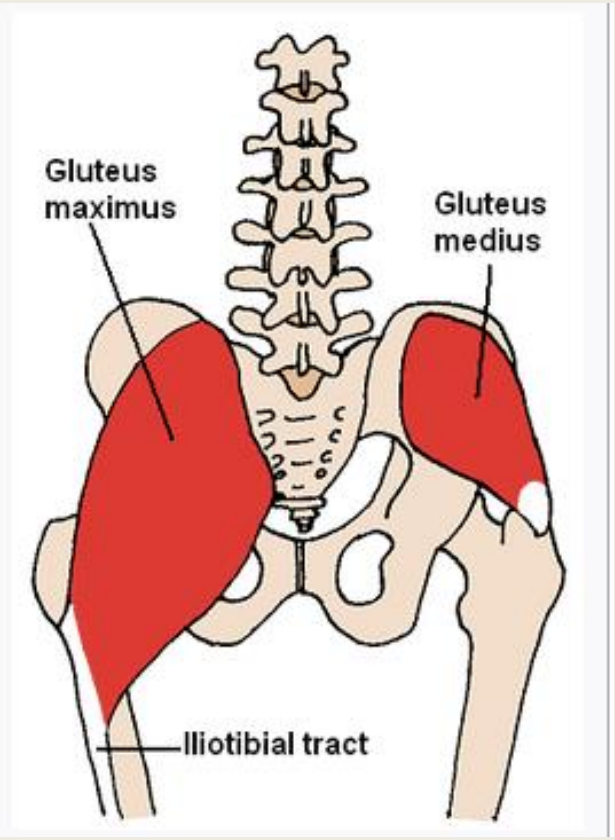
What’s Outside of a Hip?

- ABDUCTORS: Gluteus Medius, Minimus, Maximus, Tensor Fascia lata
- Hamstring
- Piriformis
- Adductors
- Spine
- Pelvic Floor
- SI Joint



Gluteus Medius Pathology
Greater Trochanteric Bursitis Pain Syndrome

- -Normal XR findings
- -lateral sided hip pain
- -MRI is almost ALWAYS abnormal (Gluteus medius partial tear or evidence of GT bursa signal)
- -93% female: Avg age 53



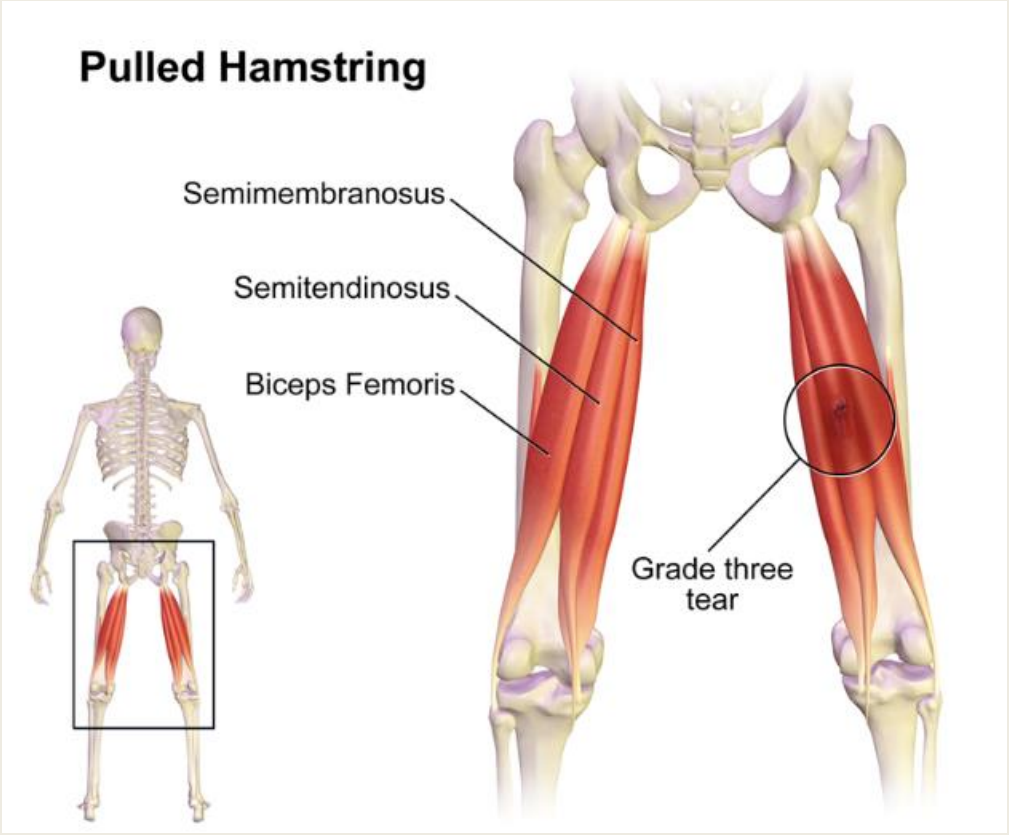
Gluteus Medius Pathology
Greater Trochanteric Bursitis Pain Syndrome

- 1 time steroid injection for GT bursitis may be appropriate
- PRP injections with good success in treatment with PT
- Single injection PRP with improved symptom relief and greater % symptom free interval at 2 years vs cortisone injection for chronic gluteus medius tears
- Surgical Gluteus Medius Repair/augmentation/reconstruction for refractory cases or significant tears.

Hamstring Tendinopathy

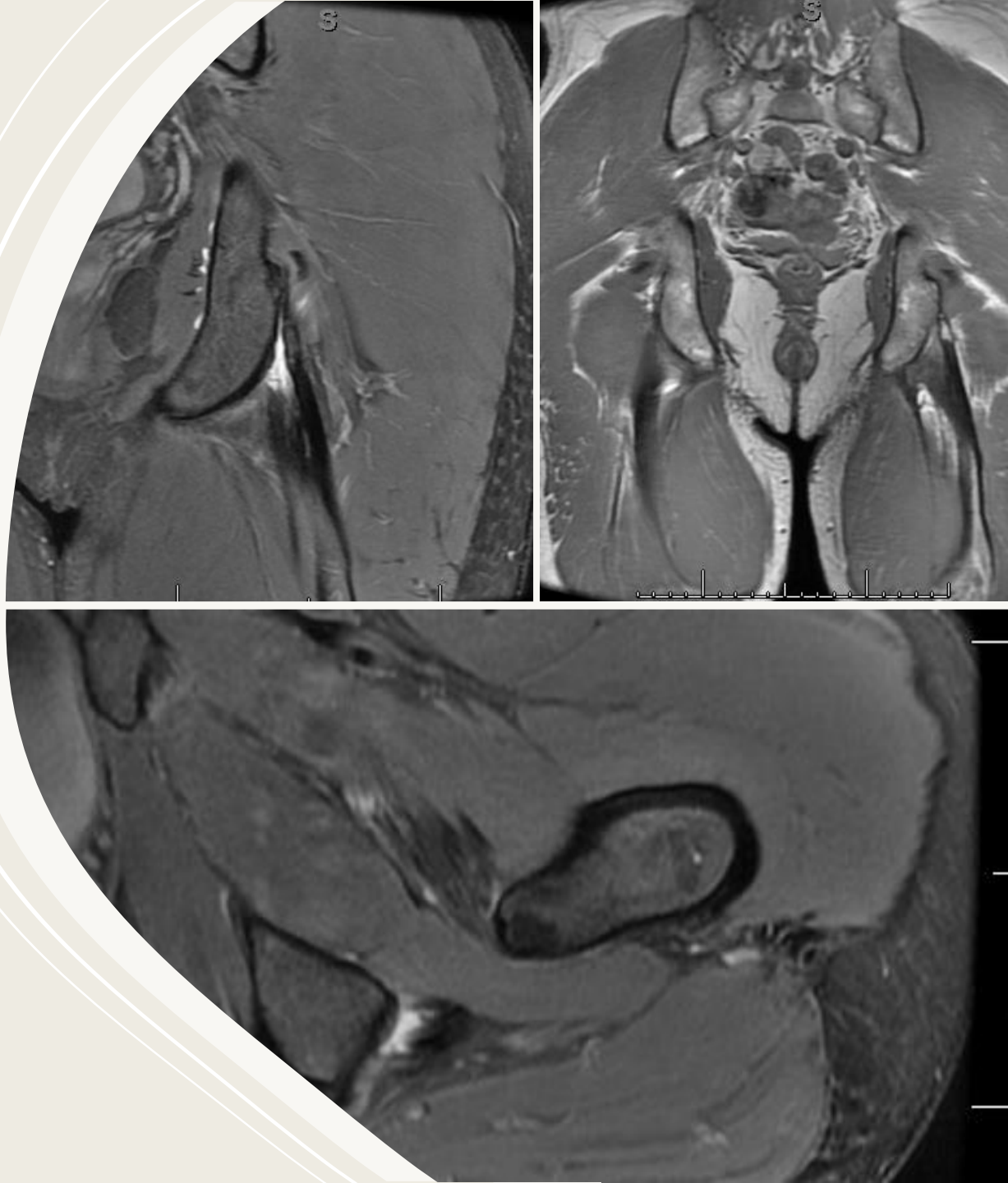
HAMSTRING PATHOLOGY

- Buttock pain worsened with resisted hamstring contraction
- XRs can be normal often
- PRP injections with improved symptoms and decreased recovery time for partial tears (Hamid et al)
- High Concomitant Hip Pathology
- Up to 75% FAI diagnosis
- 40% conservatively managed tears go on to have surgical repair.



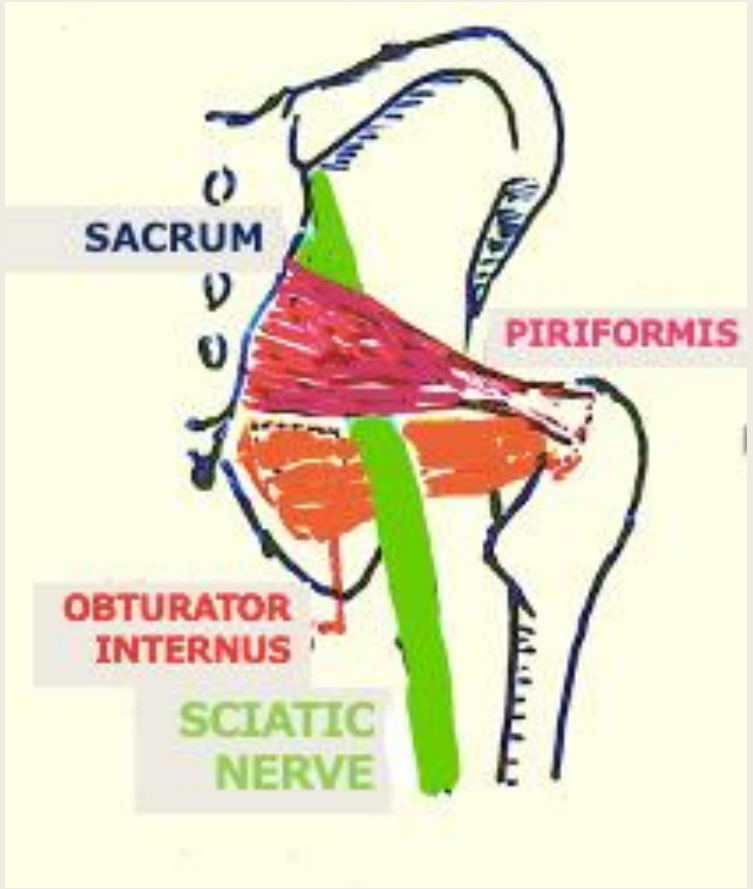
42 year old male runner

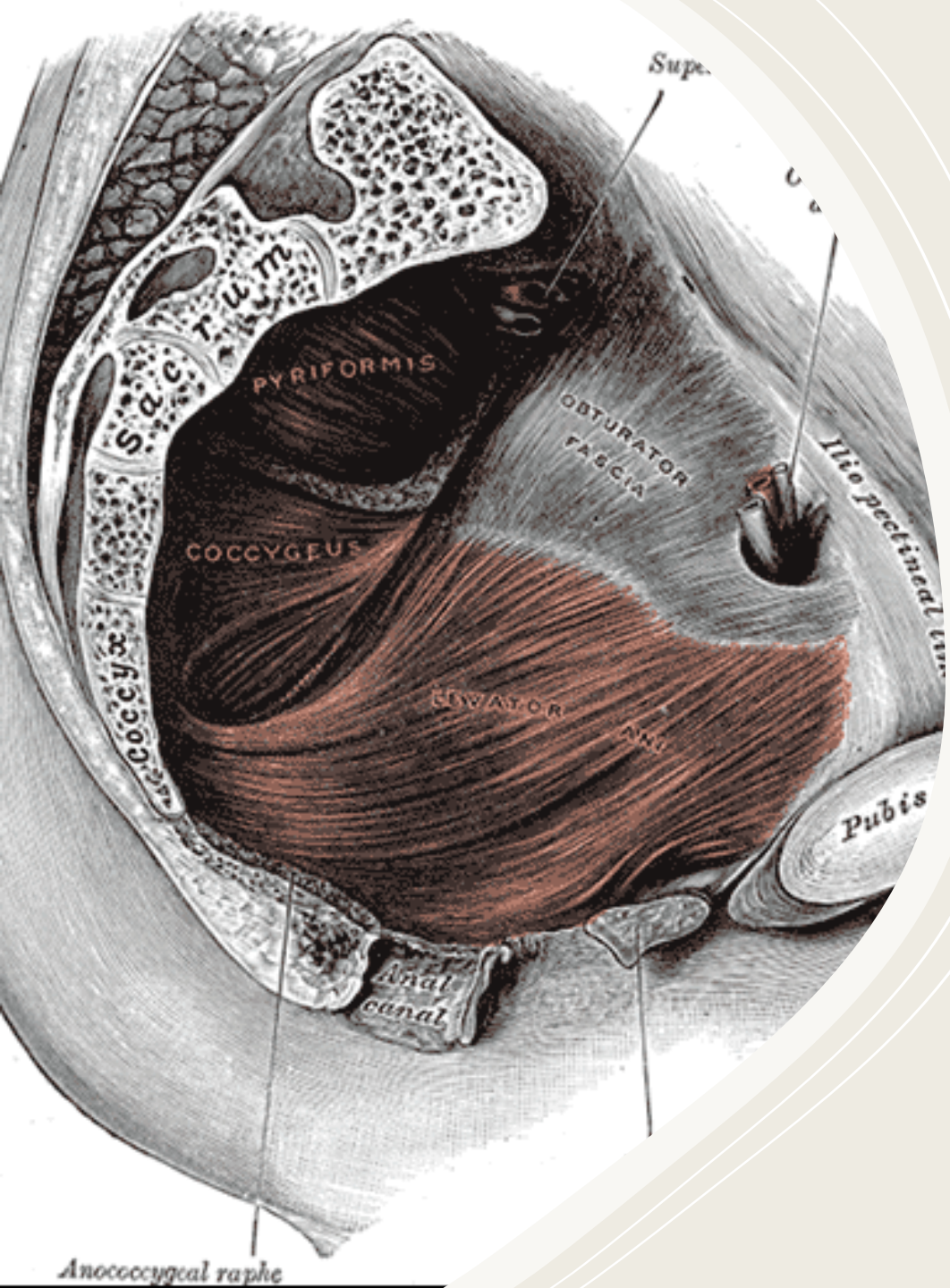
- Surgical repair for chronic complete tear
- High functioning adults/professional athletes can return to sport faster with acute repair
- Partial tears repaired surgically with improved outcomes compared to complete tears



Piriformis Syndrome

- Buttock Pain
- With or Without “Sciatica” Symptoms
- FAIR
- To engage the piriformis, have the patient lie in lateral decubitus, stack ankles and clamshell knees open (Externally rotate)
- Can benefit from focal steroid injections
- Refractory cases: surgical decompression of the sciatic nerve with partial piriformis release





High concomitant incidence of pelvic floor pain/symptoms

Screening tools:
Ask Questions about
-dyspareunia
-dysuria
-pain with defecation
Cozean Pelvic Screening Survey

Intra-Articular HIP Pain

History and Physical:

Groin, side and buttock Pain with impact activities, prolonged sitting, positions of high flexion.

“C” sign

Posterior joint aka Buttock pain (PITA😉)

Feeling of instability

Global **weakness** in hip flexion, abduction, adduction

Pelvic floor dysfunction

Dyspareunia

“I have a torn labrum.”

This can mean a lot of things.

-instability

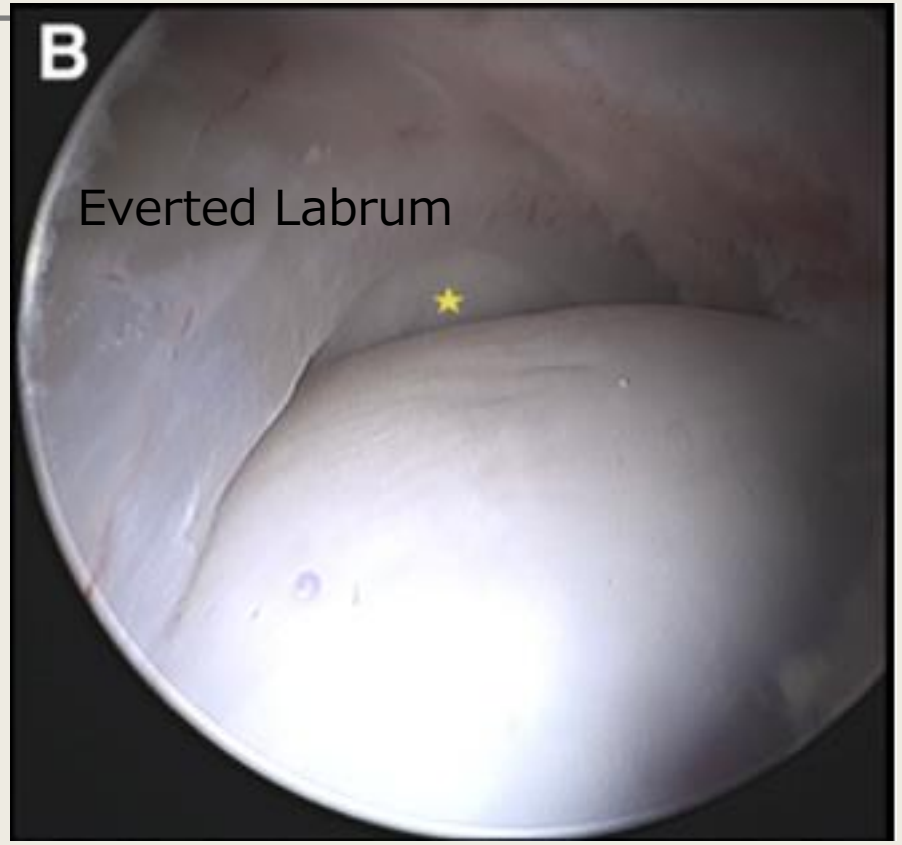
-impingement

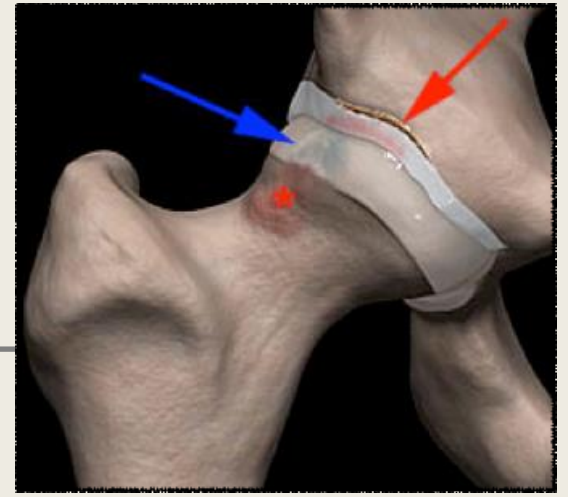
-everted labrum

But Labral tear ≠ Problem (not always)

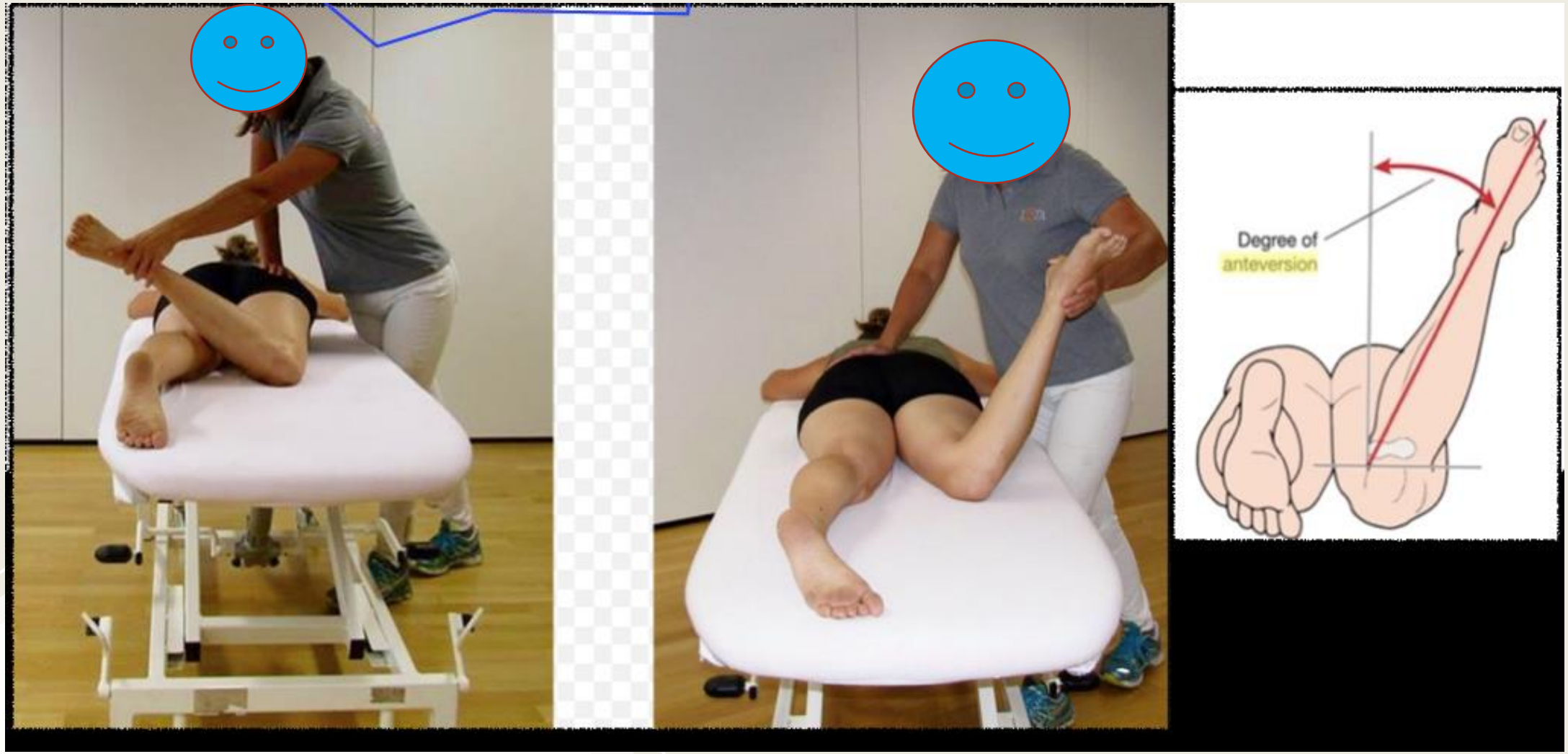
-up to 93% NHL players

-high percentage of **ASYMPTOMATIC** patients with labral tears (up to 69%)





Provocative maneuvers



Passive Range of motion predicts bony anatomy

Chadayammuri, ET AL.

DIAGNOSTIC HIP INJECTIONS: Increasingly required by Insurance for Approval for Surgery

Diagnositic injections should be done with lidocaine ONLY (we inject 7cc of 2% lidocaine without Epi).

When performing injections: Can be done without imaging guidance with a trained expert.

IF NOT: Should be done using ultrasound or fluoroscopy to confirm intra-articular placement of anesthetic

Be judicious when injecting steroids into the hip joint

While the risk of RDHDfollowing a single low-dose (≤40 mg) triamcinolone injection is low, the risk is higher following high-dose (≥80 mg) injection and multiple injections.

5.4% RDHD incidence following single high dose steroid injection

Cases diagnosed on avg 5 months s/p injection.

OK, it’s coming from the HIP JOINT, but why?

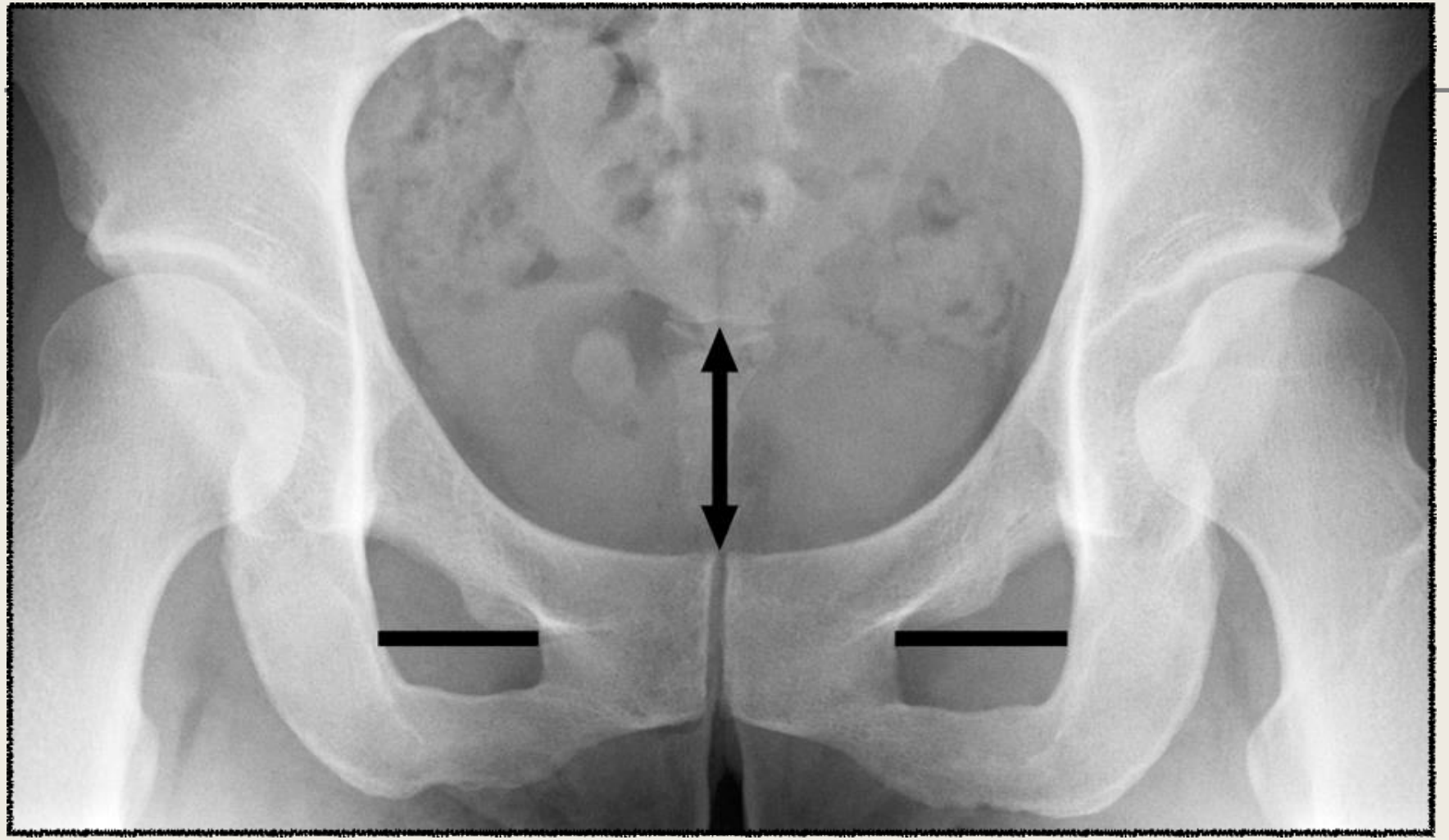
- Need to understand anatomical predisposition for hip joint failure/overload
- Suboptimal Anatomy in the absence of MAJOR Trauma is the most likely cause.
- Is it Impingement, Instability, or BOTH?
- Order Good Quality (centered and aligned), AP, WEIGHT BEARING X-RAYS.
- Order specifics views: (Dunn Lateral, False Profile)
- ADVANCED IMAGING: 3T MRI (does not need an arthrogram)
- ADVANCED IMAGING: CT scan from pelvis to include the entire femur (down to knees)

Current Concepts Review

The Anteroposterior Pelvic Radiograph

Acetabular and Femoral Measurements and Relation to Hip Pathologies

K. Linnea Welton, MD, Mary K. Jesse, MD, Matthew J. Kraeutler, MD, Tigran Garabekyan, MD, and Omer Mei-Dan, MD



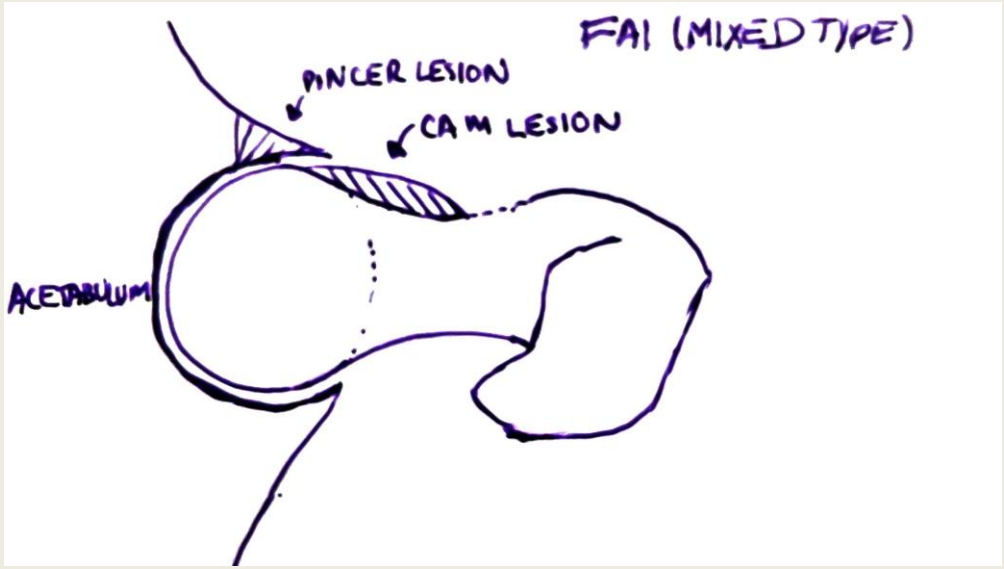
Impingement

ANTERIOR PATHOLOGY

- Femoroacetabular Impingement
  - -Cam
  - -Pincer
  - -Mixed
- Subspine Impingement
- Excessive Femoral Retrotorsion
- Often ”groin pain” with activity

POSTERIOR PATHOLOGY

- Ischiofemoral Impingement



Femoroacetabular Impingement (FAI)

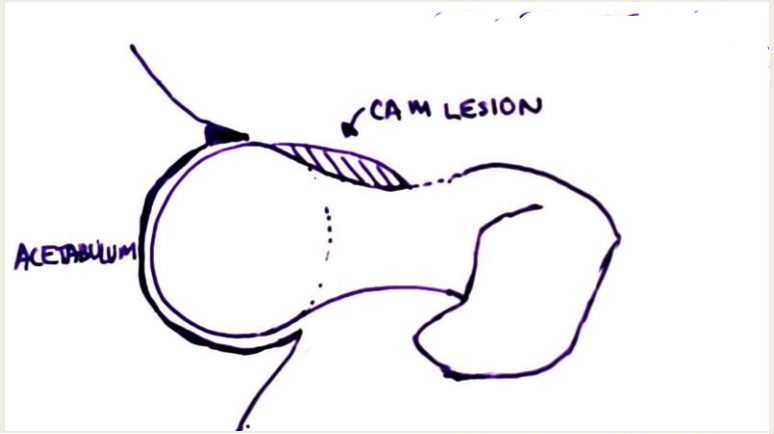
•Motion limiting disorder
•Supraphysiological/repetitive contact between the lateral femoral head/neck junction, anterolateral rim of the acetabulum (arises during adolescence)
•dynamic impingement
•resulting compensatory motion or stress at adjacent joints
•“outside in” damage to the acetabular cartilage.

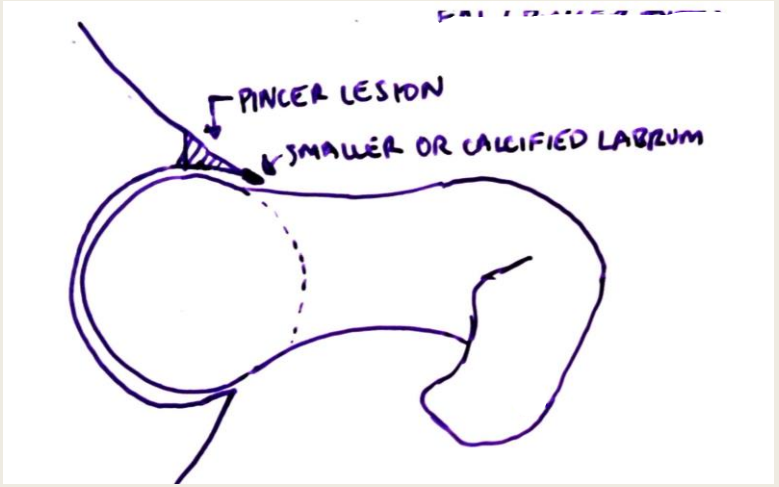
•Types:

1. CAM: osteochondral asphericity leads to a loss of femoral offset

2. Pincer: over-coverage

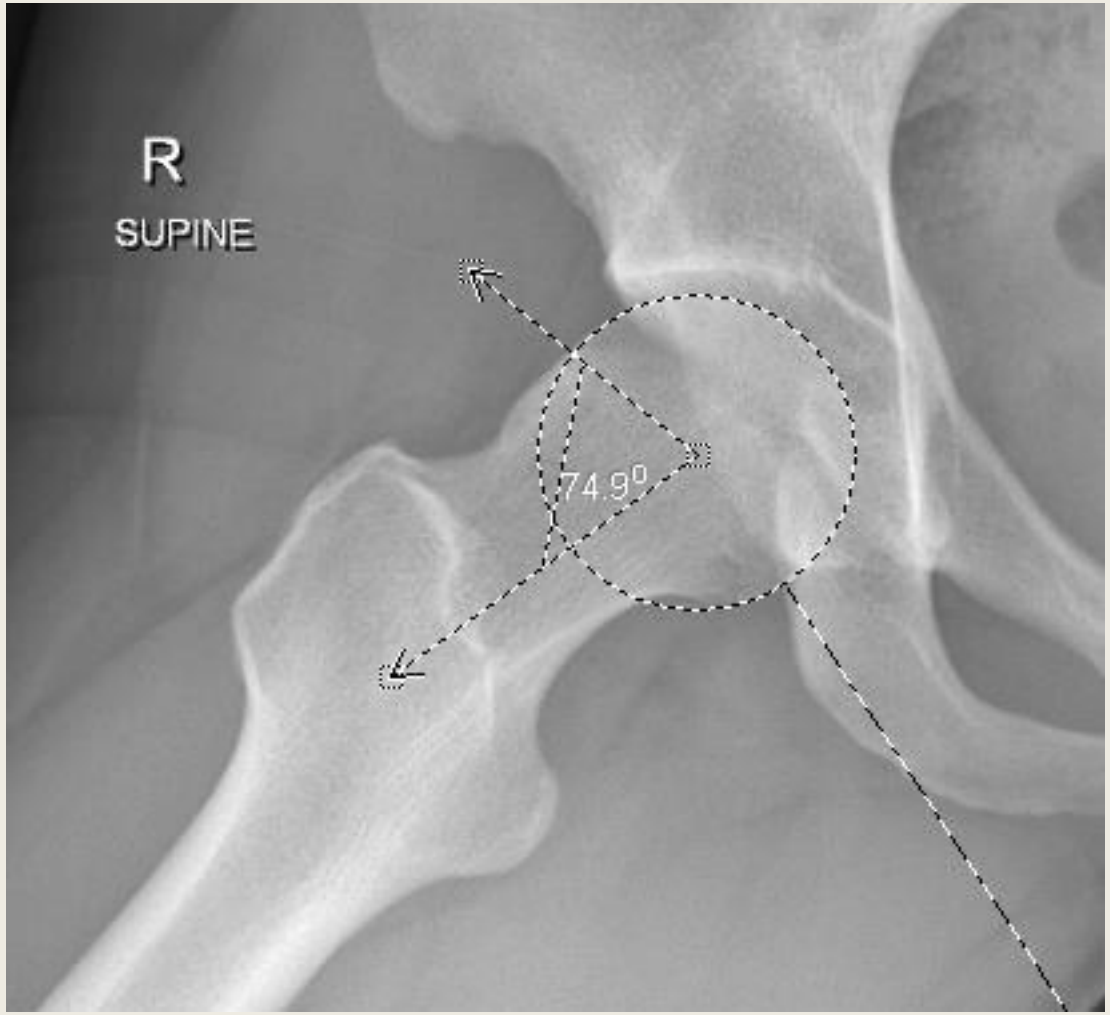
3. Mixed: BOTH cam and pincer pathologies



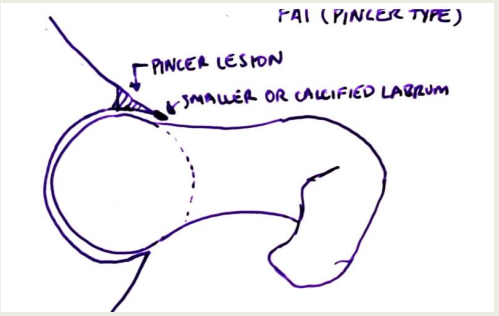


Radiographic Evaluation : CAM LESION –DUNN VIEW

- Views: APP, Cross table lateral, 45 and 90 degree Dunn, false profile
- alpha angle on a frog leg lateral
- >45 degrees suggest a head/neck offset deformity
- In a study evaluating 125 NFL prospects, 90% of the players (BL films) had at least 1 radiographic sign of FAI with increased **alpha angle** being the only predictor of groin pain (Larsen et al)

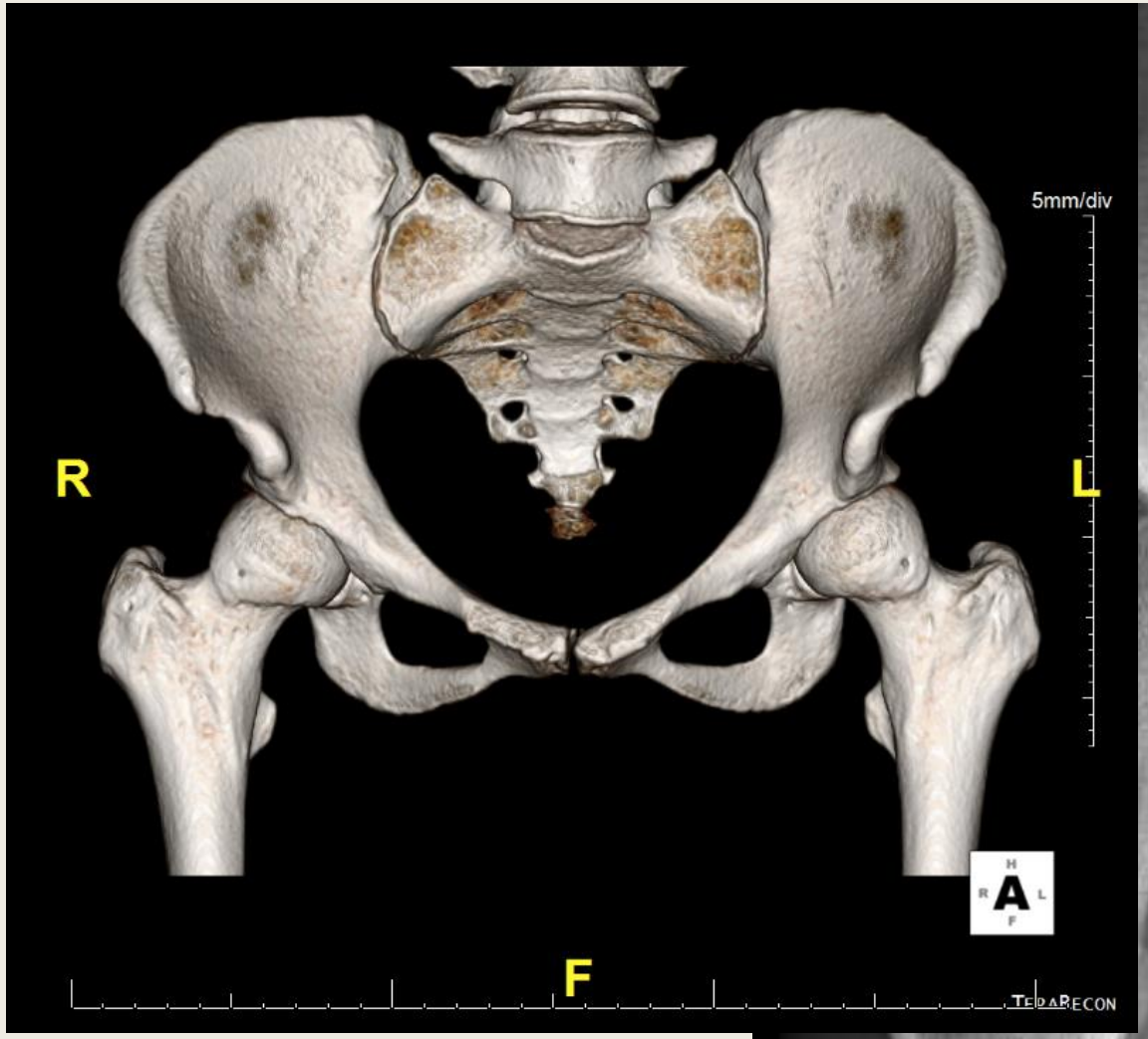


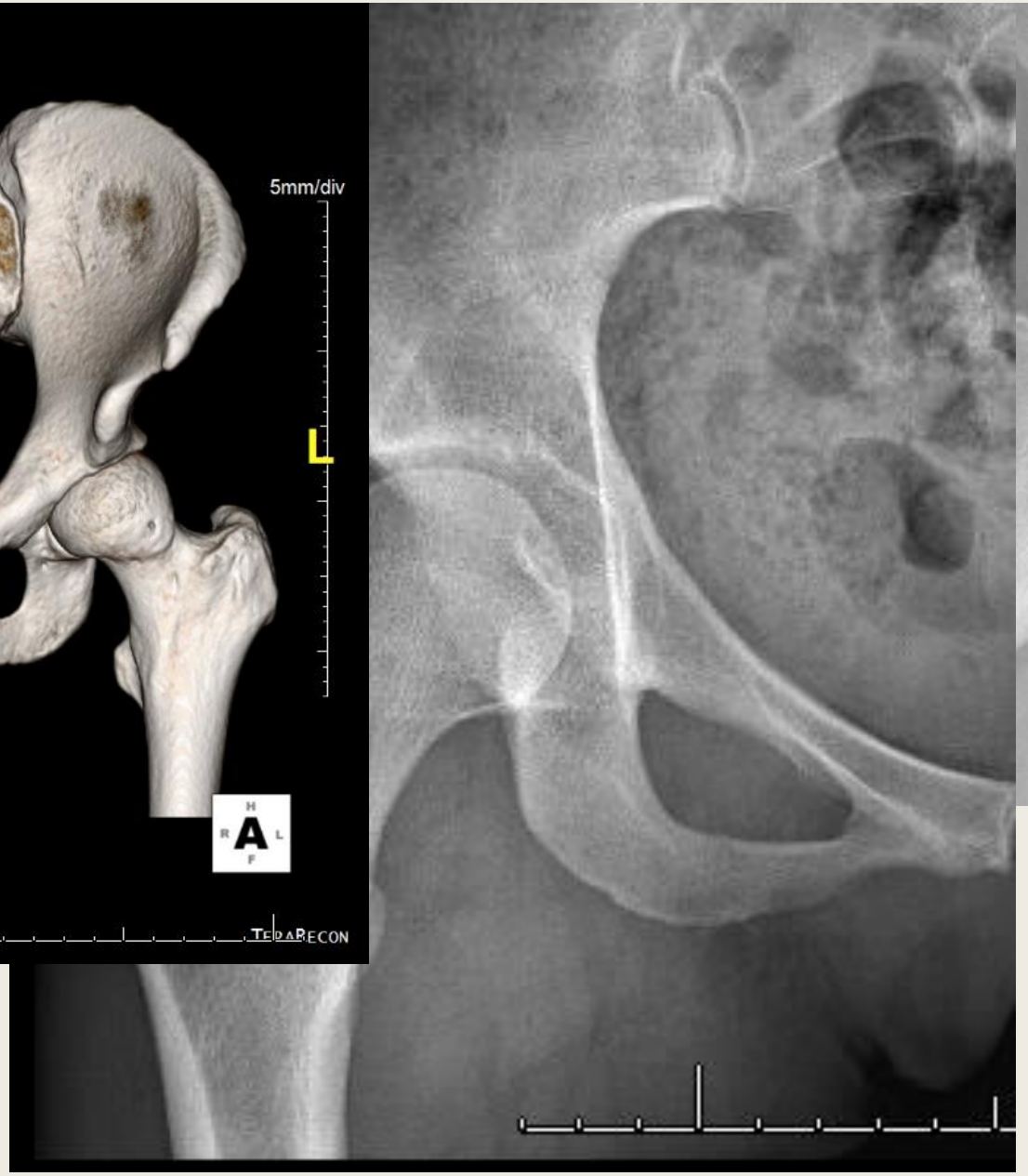
PINCER



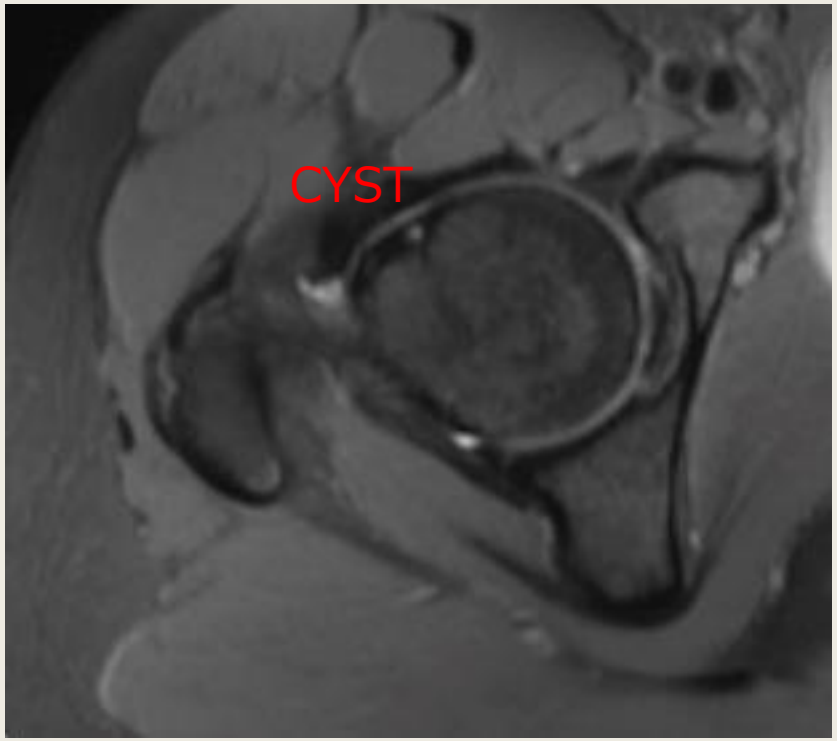
- "TOO MUCH COVERAGE"
- ACETABULAR sided pathology creates dynamic impingement
- "CROSSOVER SIGN"

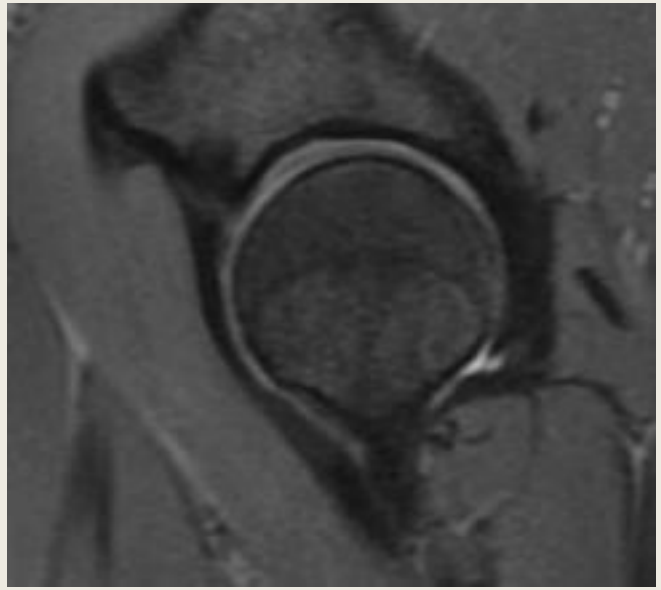
  -overlap of anterior and posterior acetabular wall
- Similar pathologies: calcified labrum
- OS acetabulum

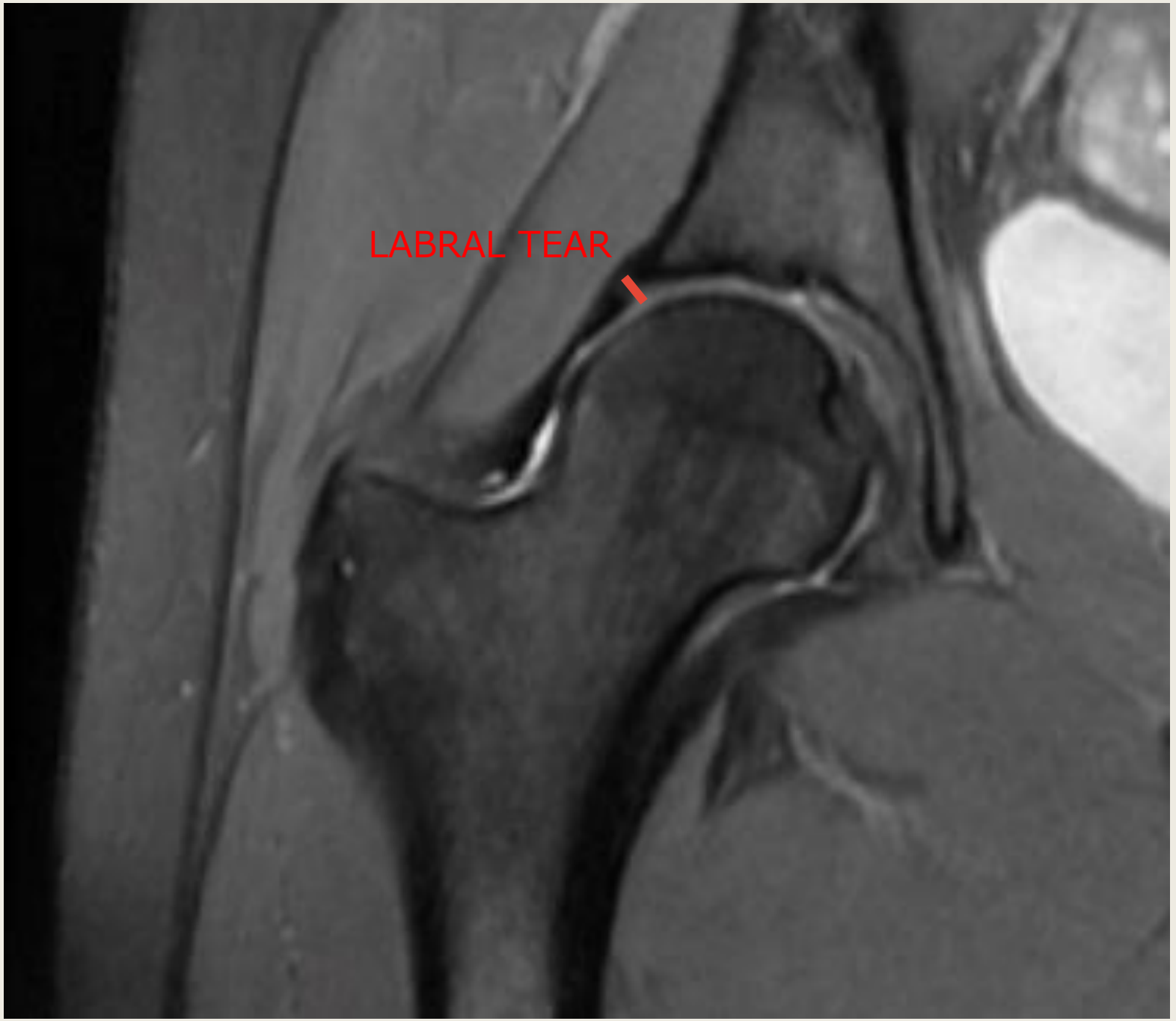




24 yo FEMALE: KICKBOXER

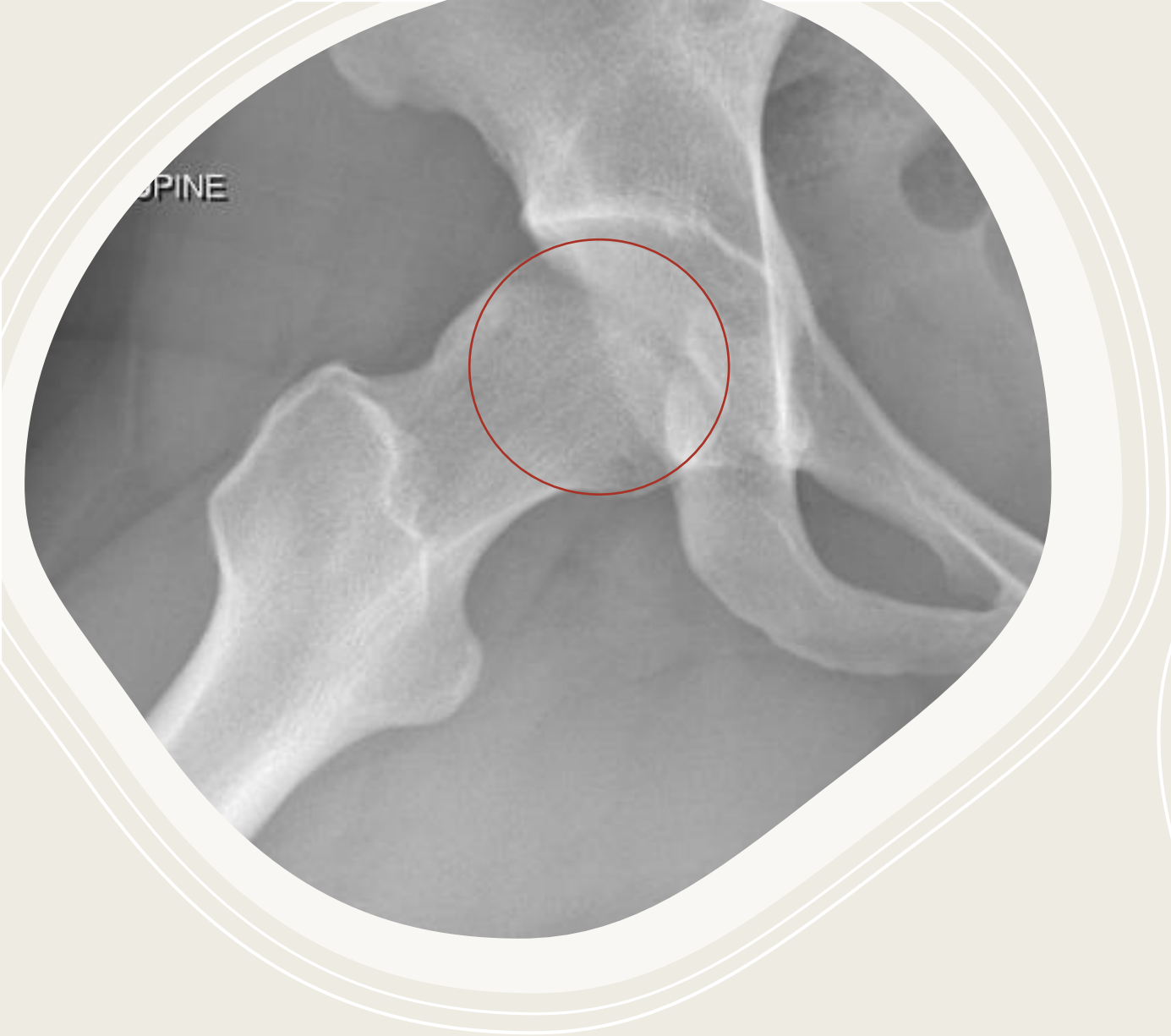

CYST




LABRAL TEAR

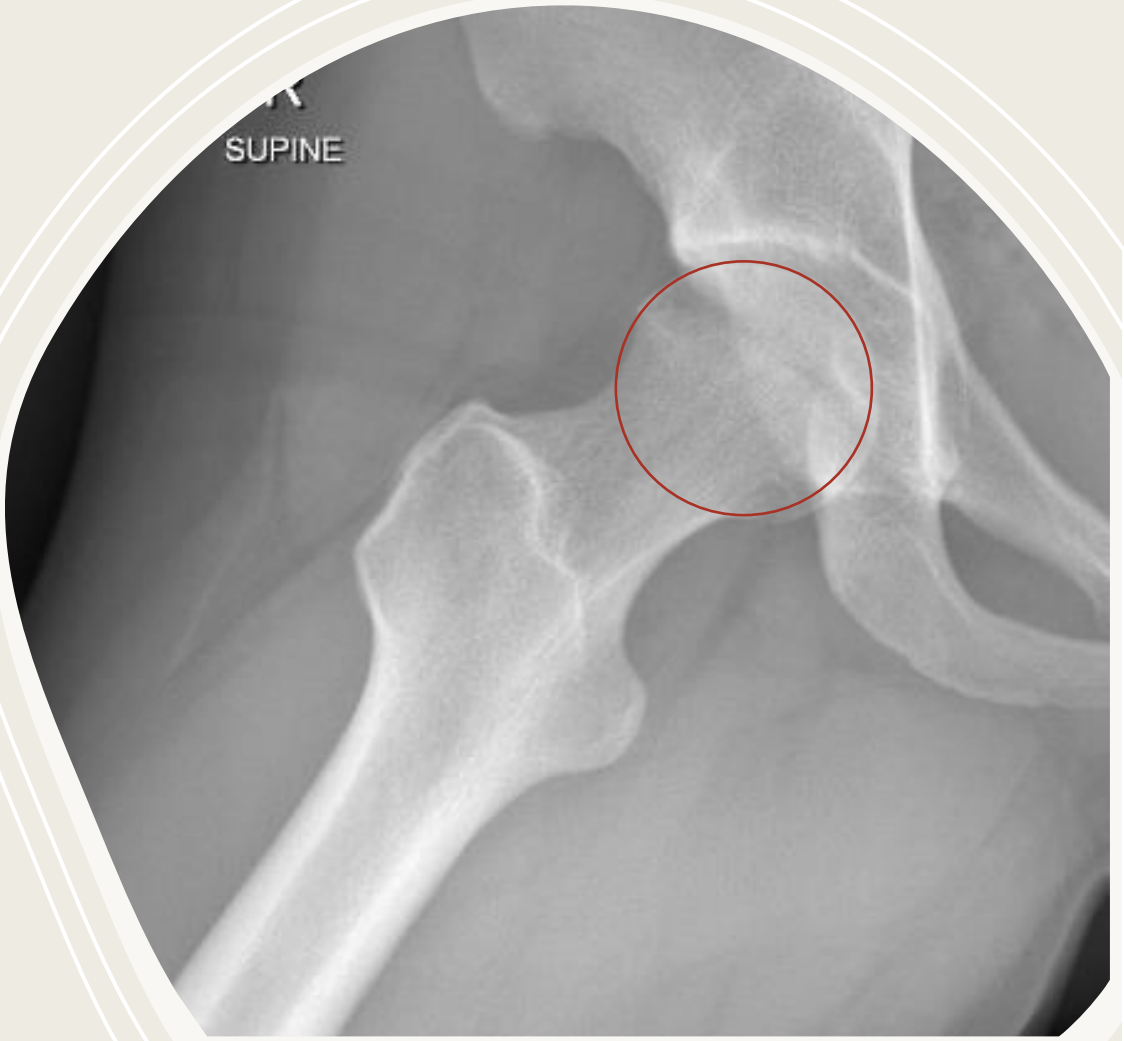
BEFORE

AFTER



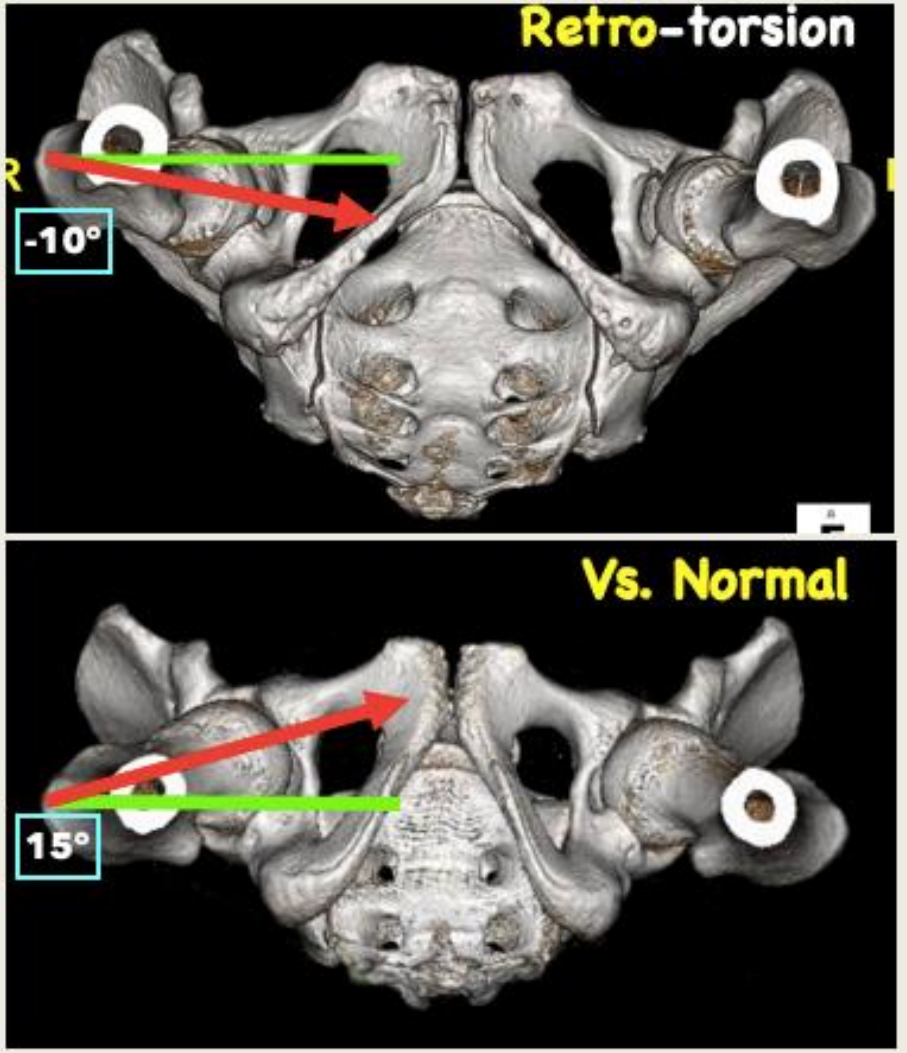
BEFORE CAM RESECTION

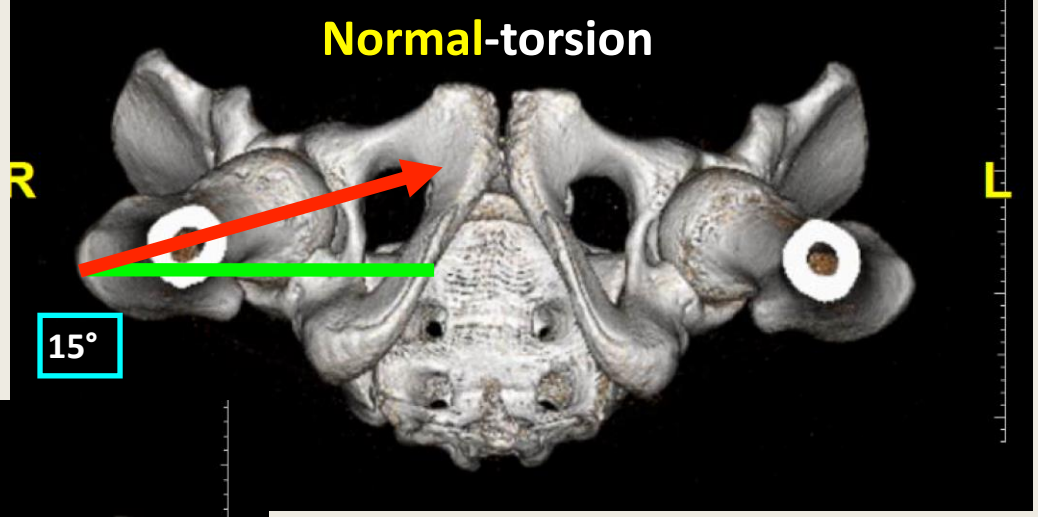
AFTER CAM RESECTION

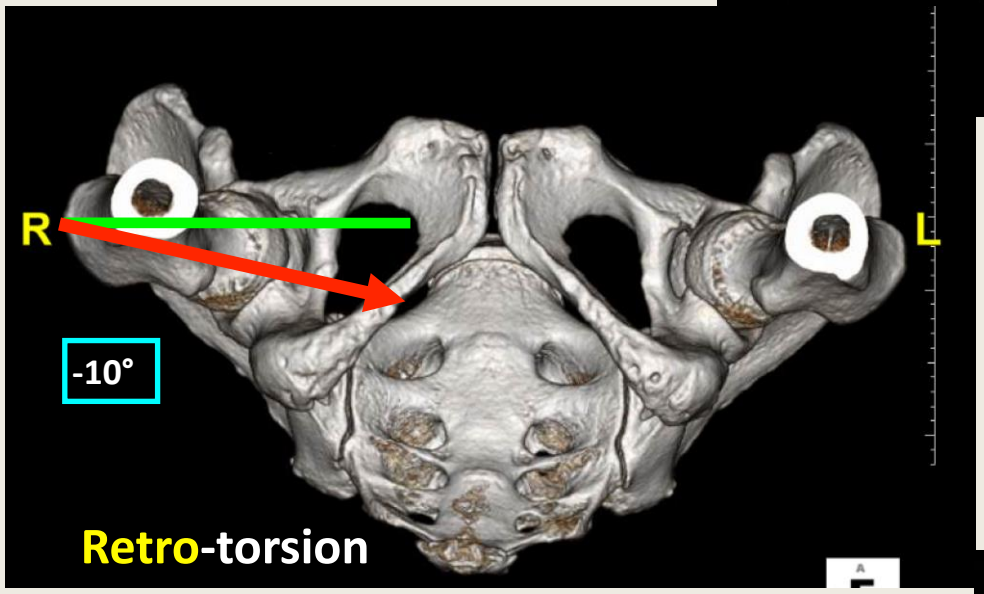


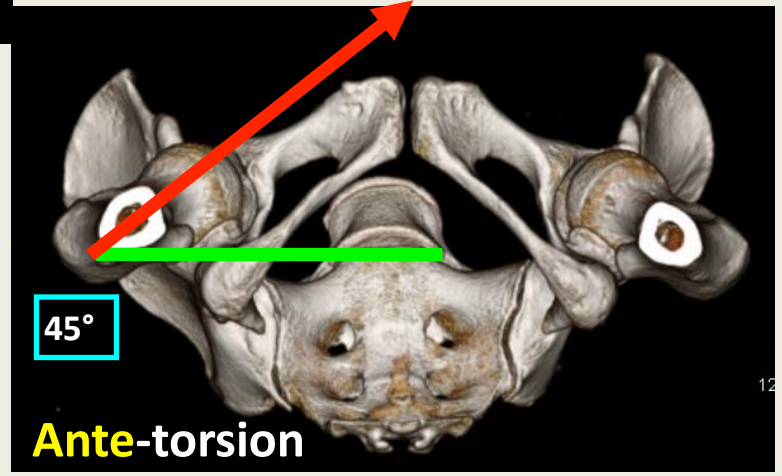
Femoral Malrotation (Retrotorsion)

- “The head looks back to the joint”
- Patients present with excessive passive **EXTERNAL ROTATION** in neutral and prone positions
- Exacerbates impingement




Normal-torsion
R
L
15°


R
L
-10°
Retro-torsion


45°
Ante-torsion

Antetorsing Derotational Femoral Osteotomy

Instability

Bony

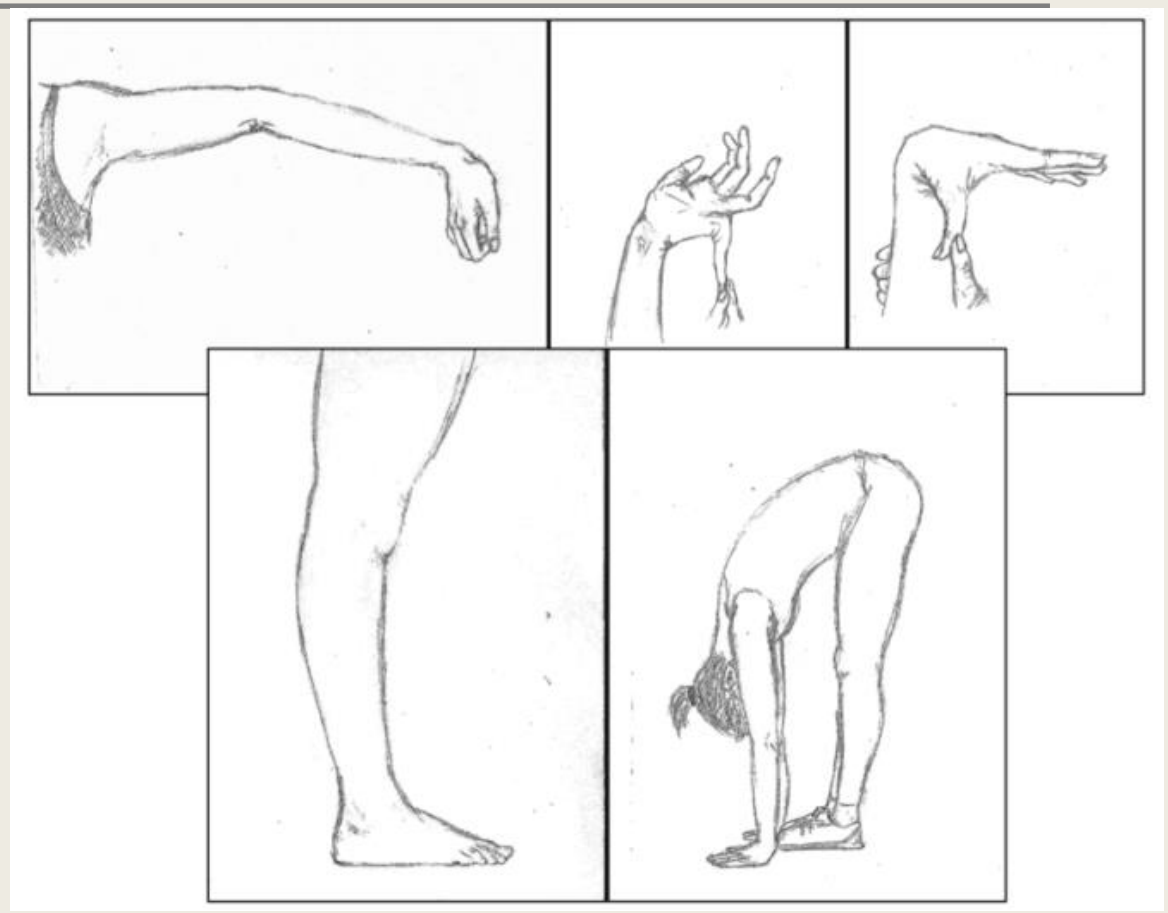
- Acetabular Dysplasia
- Excessive Femoral Antetorsion
- Excessive Femoral Valgus

Soft Tissue:

- Hyperlaxity
- Everted Labrum
- Ehlers Danlos Syndrome
- Marfan’s Syndrome
- Capsular Insufficiency (post surgical/iatrogenic)

Beighton's Score > 5 = hypermobility

- Elbow hyperextends > 10 degrees (1 point ea)
- Knee hyperextends > 10 degrees (1 point ea)
- Small finger mcp extension > 90 degrees
- Thumb to forearm (1 point ea)
- Palms to floor



Bony Instability: Acetabular Dysplasia

Pediatric Hip Dysplasia
-Newborns screened clinically
-bracing/surgery sometimes indicated
-these patients are typically followed into adulthood, but they can come back if their hip problems persist
-subtle pediatric dysplasia can grow into adult hip dysplasia
-clinically undetected during childhood and adolescence

Bony Instability: Hip Dysplasia

- Inadequate bony contact between the femoral head and the acetabular socket
- Pain with prolonged sitting, buttock pain
- Acetabular malposition
- Increased acetabular version
- Inadequate lateral coverage
- Inadequate joint congruency
- Dynamic instability: causes levering of the femoral head posteriorly with a resulting posterior hip subluxation and corresponding labral and cartilaginous damage
- Creates an “inside out” cartilage flap
- Surgical Treatment: Periacetabular Osteotomy, PAO

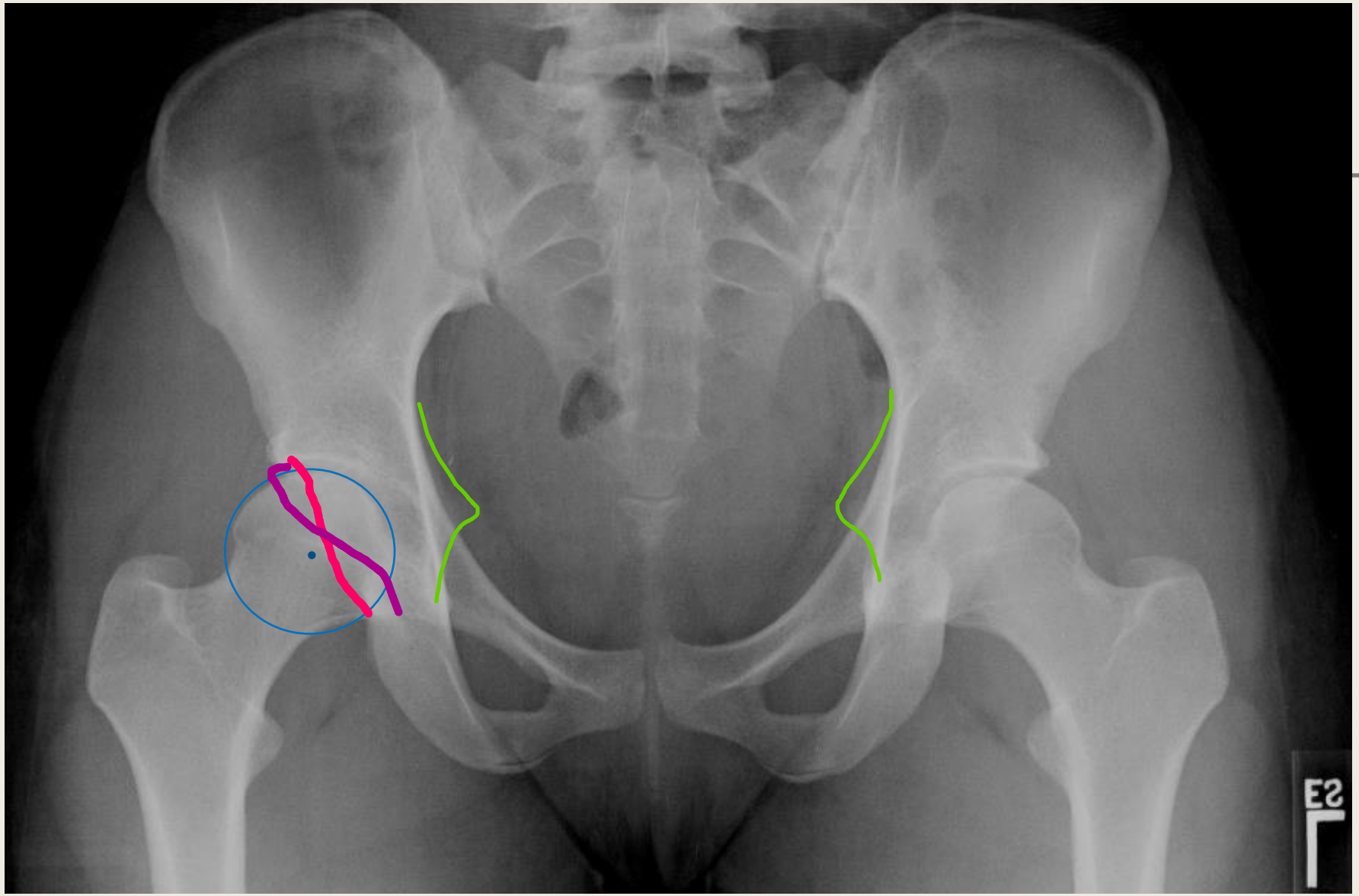
SPF YAY!

SPF NAY!


L
0* ANGLE
WEIGHT BEARING


L
0* ANGLE
WEIGHT BEARING

ISCHIAL SPINE SIGN AND POSTERIOR WALL SIGN

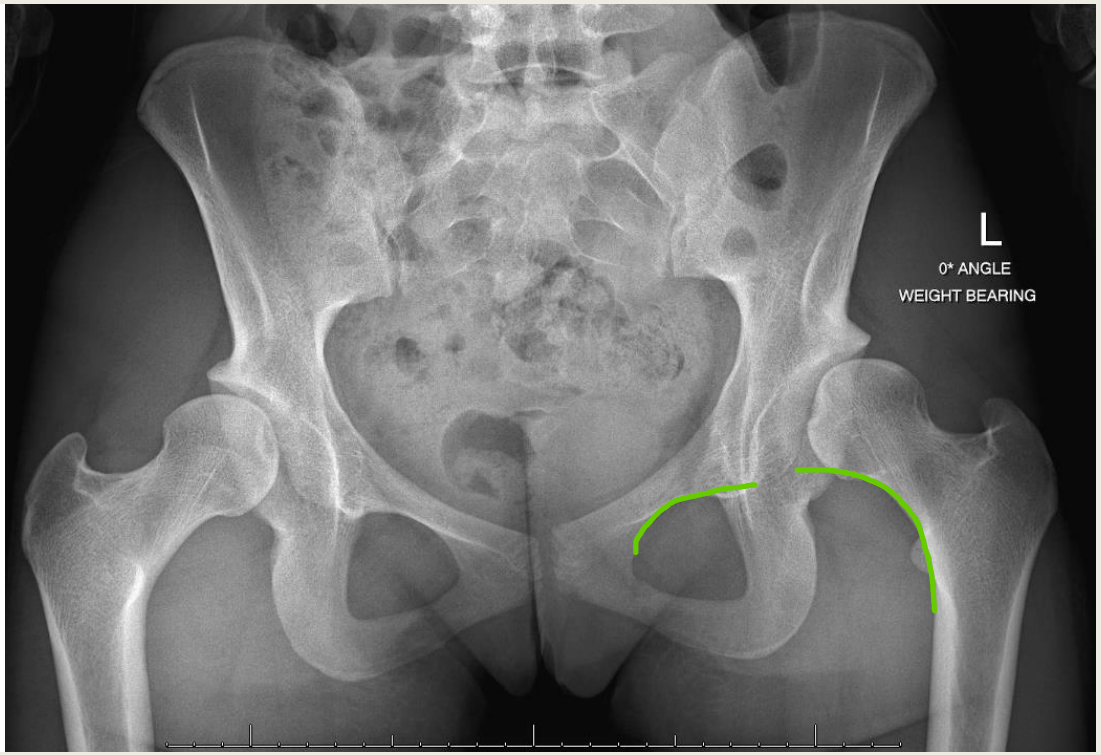


“CROSSOVER SIGN” from posterior wall deficiency vs PINCER morphology

Disrupted Shenton's Line

Normal hip.[42]

Hip dysplasia.[42]

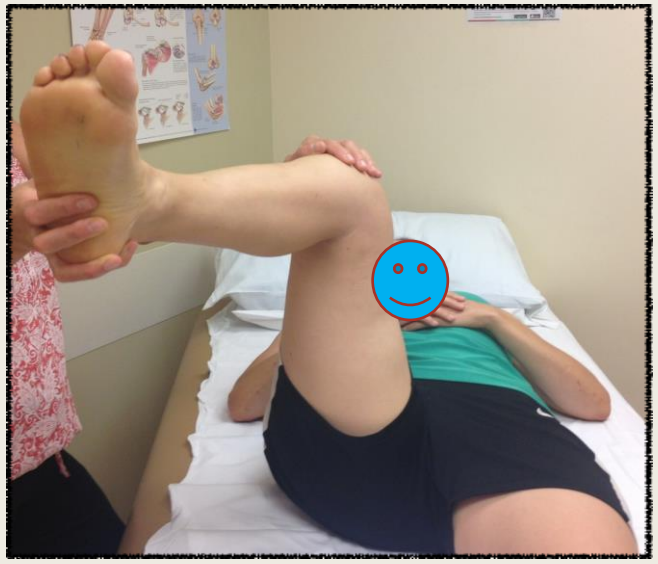


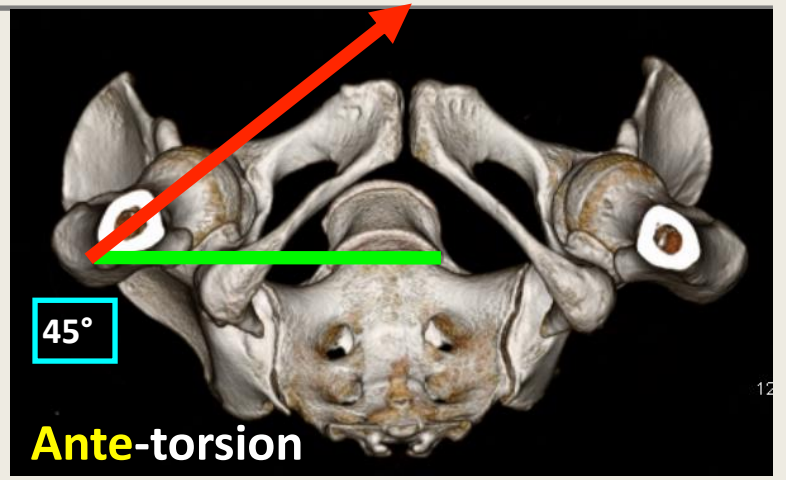
Bony Instability: Femoral Malrotation

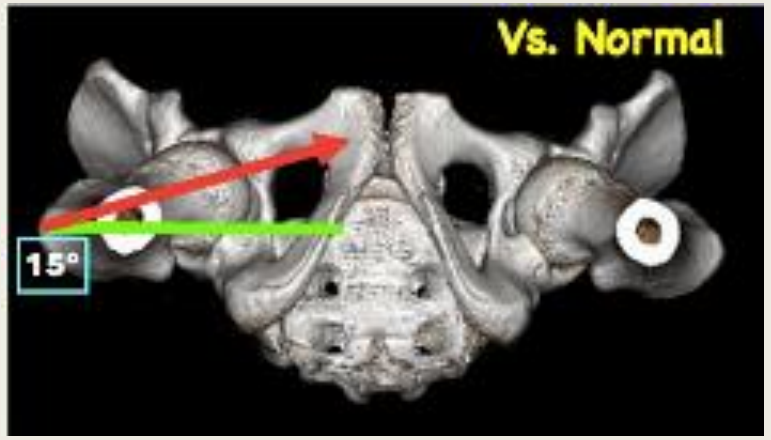
Excessive Antetorsion:

The head looks away from the socket

- Head points “OUT OF” or “Away from” the socket
- Increased INTERNAL ROTATION in neutral and prone passive motion







So, what can be done?

1. Fix the intra-articular pathology with a hip arthroscopy

    -Labral repair

    -assess/address cartilage damage

    -cauterize inflamed synovium and ligamentum teres

    -”tighten” capsule with imbrication if necessary

    -bone graft/decompress cysts if present

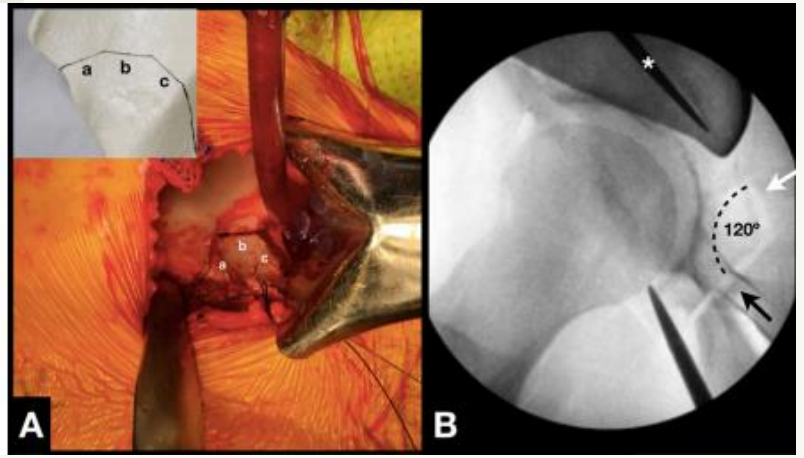
2. Fix the underlying cause

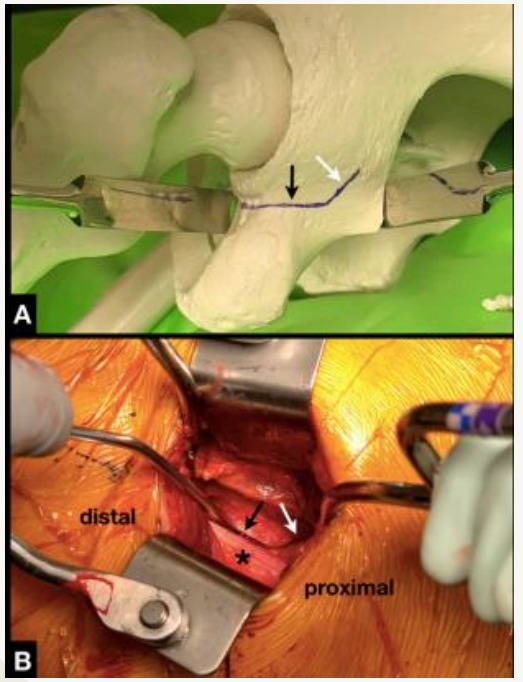
    -PAO surgery

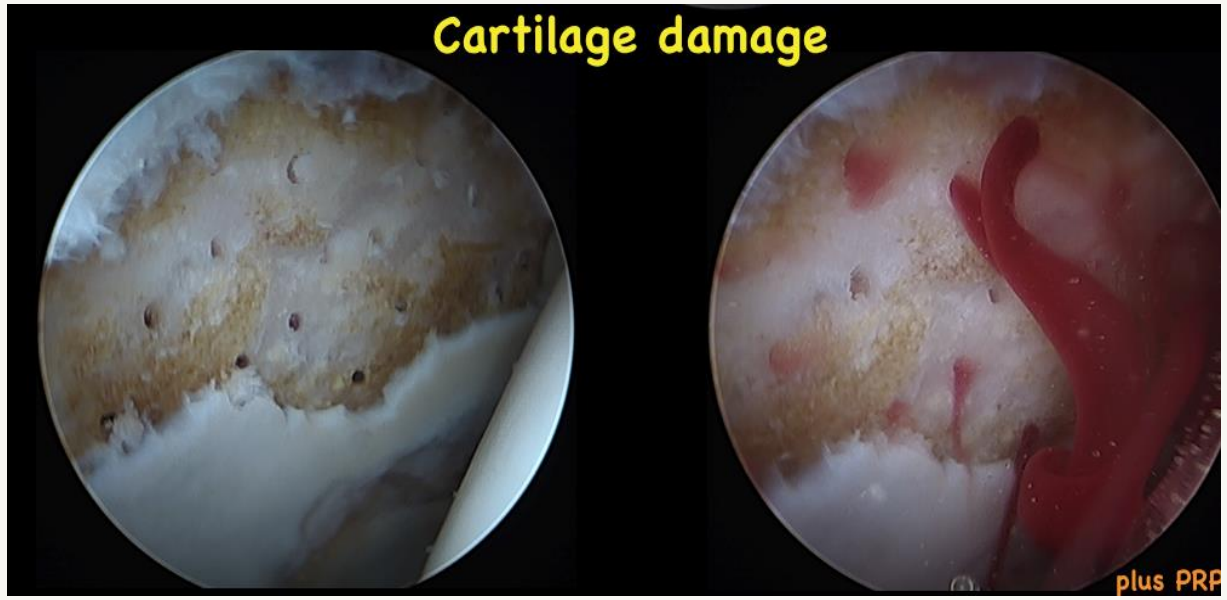
    -DFO surgery as needed

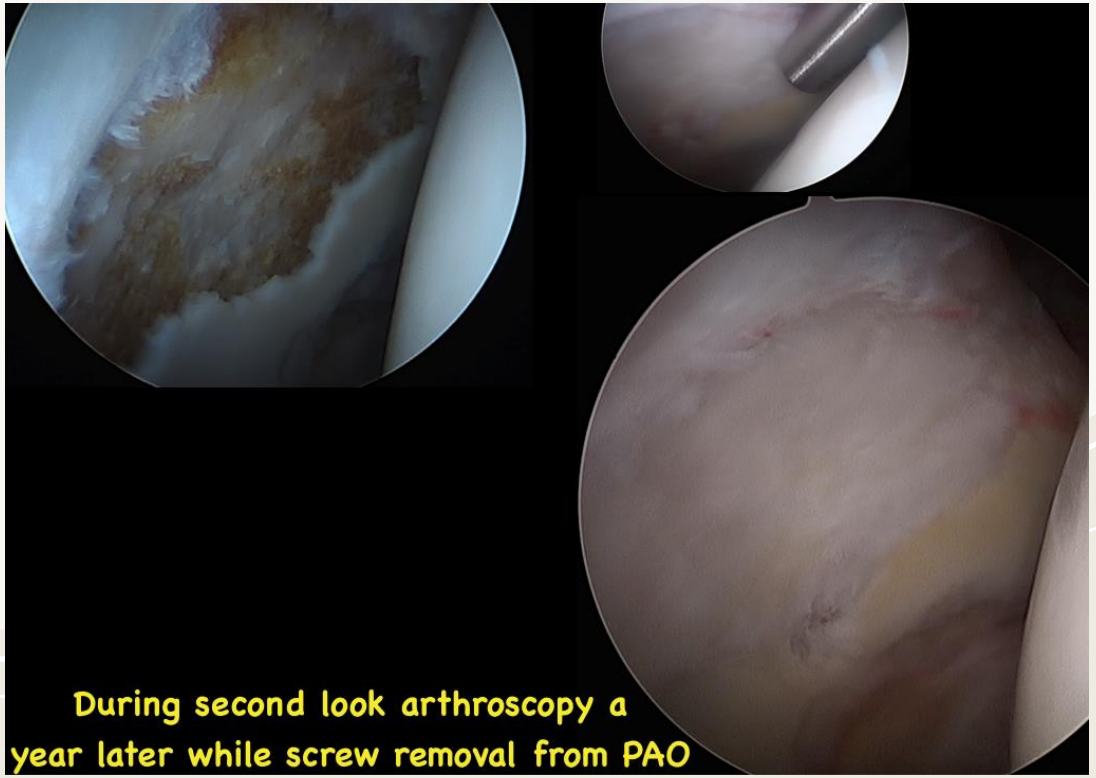
3. PT, PT, PT

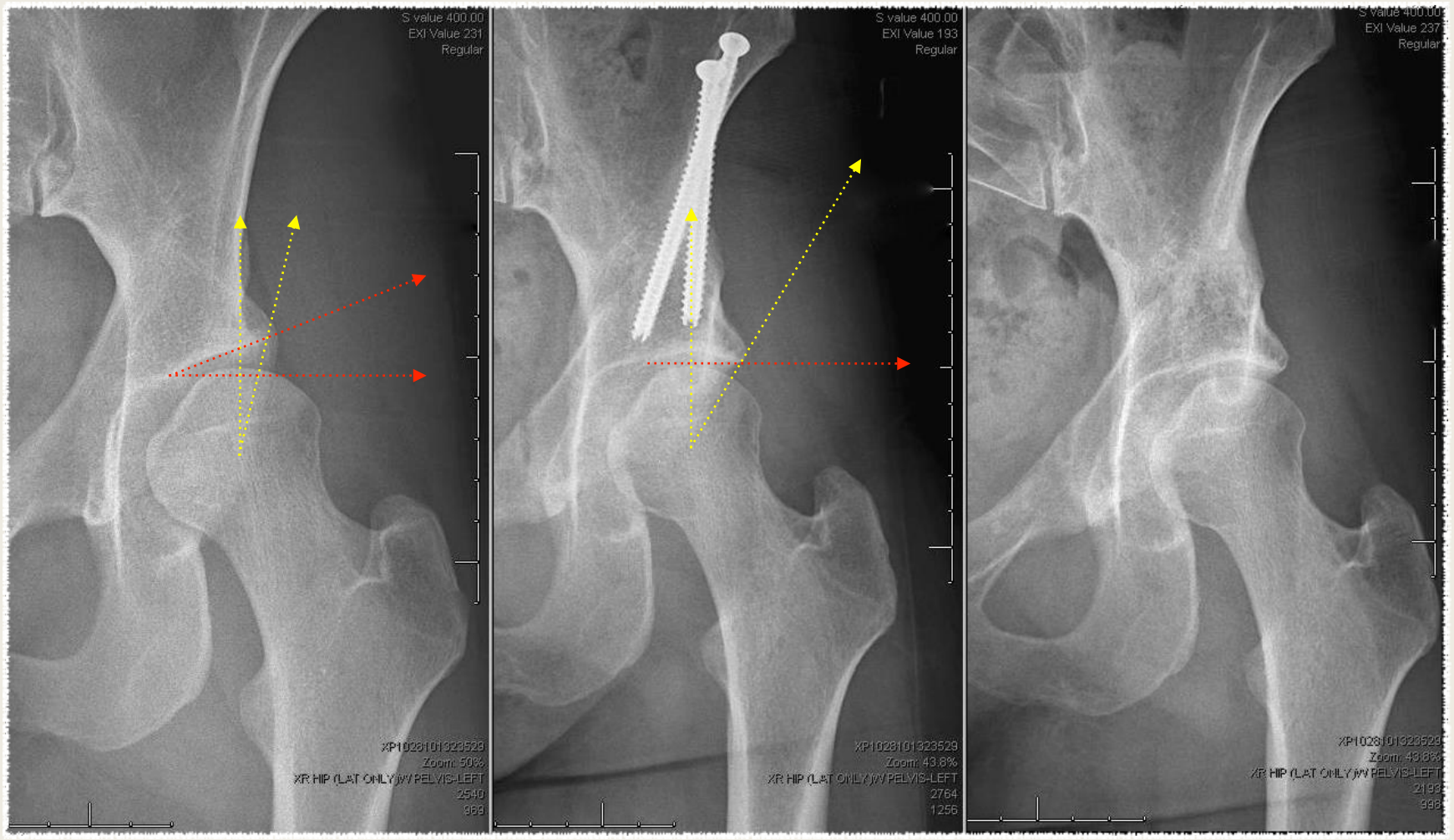
    -surgeries rearrange a patient’s anatomy that they have been accustomed to all of adult life, and so a lot of work on the back end to “learn” new anatomy






Cartilage damage
plus PRP


During second look arthroscopy a
year later while screw removal from PAO


S value 400.00
EXI Value 231
Regular
XP1028101323529
Zoom: 50%
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968
S value 400.00
EXI Value 193
Regular
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2764
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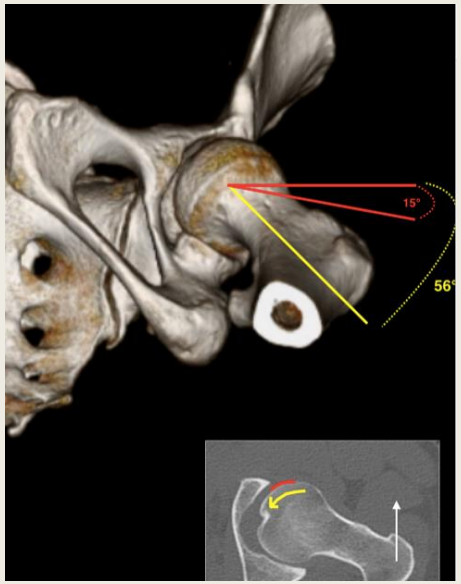
2193
998



Retrotorsing Derotational Femoral Osteotomy

Who can benefit from hip preservation?

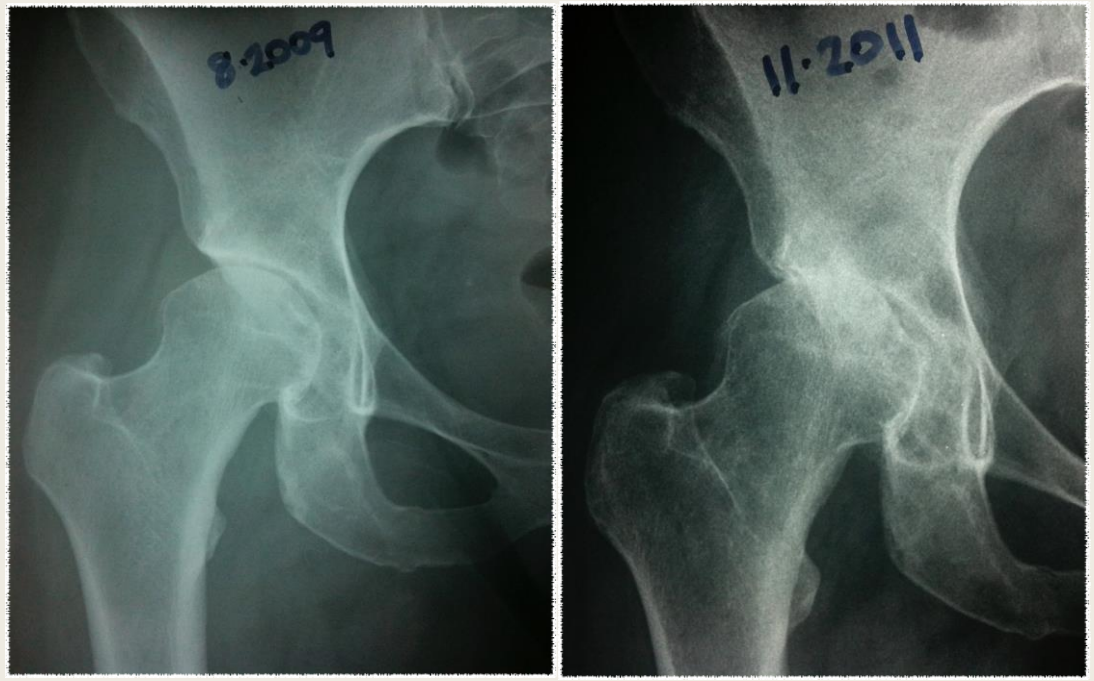
- High Functional Demand
- Desire to continue impact loading activities
- Joint Space >3mm
- No AVN
- Symptomatic hip dysplasia only
- Physiologically “Young”

“Too Young for Hip Replacement”

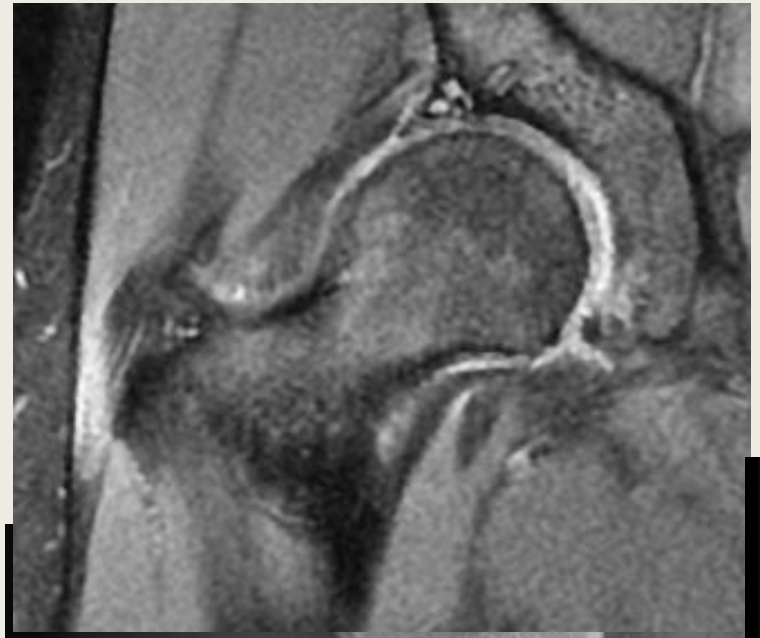
- MISDIAGNOSIS leads to YEARS of symptoms and sometimes the WRONG treatment pathway
- All it takes is asking the right questions

Who needs a hip replacement?

- End Stage Arthritis
- Avascular Necrosis with Collapse
- Don’t want to undergo hip preservation rehab
- Low Functional Demand
- (that’s ok too!)



Subchondral cysts



Take Home Points

- For proper diagnosis, you MUST figure out where the pain is coming from.
- Intra-articular injections (lidocaine only: NEVER STEROID) are an important tool in diagnosing hip pain.
- PRP and PT are useful and effective starting points for treatment.
- The Goal of HIP PRESERVATION is to get high functioning patients to high function activities.
- Know your options: Hip Preservation Surgery WORKS: But PATIENT SELECTION IS KEY TO SUCCESS
- Know your patient: Is this a preservation patient or a recon patient?
- Ask the right questions. Sitting pain, pain following activity, pain with intercourse, pain with urination, pelvic floor pain, etc.

THANK YOU

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Sports Medicine

Questions?

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