JUNE 2023

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COMMON JOINT MRI

My approach and a few key points

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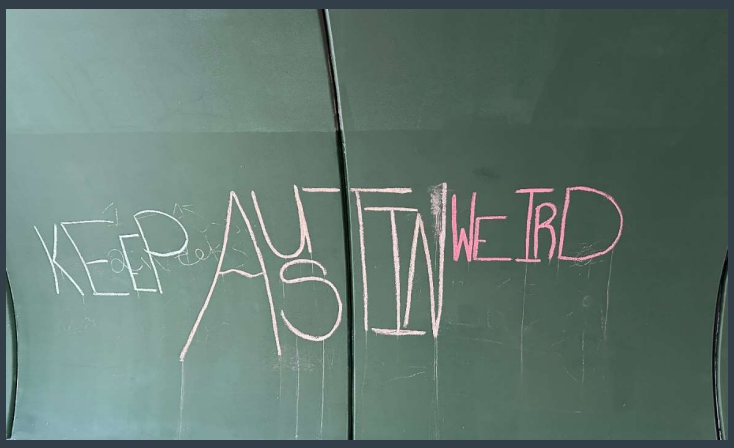
DISCLOSURE:

I HAVE NO RELEVANT RELATIONSHIPS WITH INELIGIBLE COMPANIES TO DISCLOSE WITHIN THE PAST 24 MONTHS. (NOTE: INELIGIBLE COMPANIES ARE DEFINED AS THOSE WHOSE PRIMARY BUSINESS IS PRODUCING, MARKETING, SELLING, RE-SELLING, OR DISTRIBUTING HEALTHCARE PRODUCTS USED BY OR ON PATIENTS.)



Imaging Modalities

- Plain Film/Radiographs
- CT
- MRI
- Ultrasound
- Nucs

MRI

- Great for soft tissues
- Internal derangement
- Great in synergy with PFs (punctate avulsions)
- Expensive and time intensive
- Implants
- Infection/Inflammation/Tumor

MRI

- T1/T2/STIR/PD – say what?!
- “Fluid Sensitive”
- Marrow – Muscle Rule
- Edema is your friend
- Contrast

MRI

T1	T2	PD	STIR
Fat Bright	Fat Bright	Fat Bright	Fat Dark
Fluid Dark	Fluid Bright	Fluid Bright	Fluid Bright

T2 FS	PD FS
Fat Dark	Fat Dark
Fluid Bright	Fluid Bright

Approach

5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9

Approach

-Regimented approach makes the crazy case approachable.

Cases:

- Joint – (Knee, Shoulder, Hip, Elbow, Ankle)
- Report Findings Ex
- Search Pattern
- Example Case(s)
- ASK QUESTIONS!!!!!

KNEE MRI -

FINDINGS:
MEDIAL MENISCUS: Medial meniscus is intact. Normal morphology.
LATERAL MENISCUS: Lateral meniscus is intact. Normal morphology.

ACL: Anterior cruciate ligament is intact.
PCL: Posterior cruciate ligament is intact.
MCL: Medial collateral ligament is intact.
LCL complex: Lateral collateral ligament complex is intact.

EXTENSOR MECHANISM: The patellar and visualized distal quadriceps tendons are intact.

ARTICULAR CARTILAGE:
Patellofemoral compartment: The patellofemoral cartilage is intact.
Medial compartment: The medial compartmental cartilage is intact.
Lateral compartment: The lateral compartmental cartilage is intact.

OSSEOUS STRUCTURES: Normal bone marrow signal intensity.
JOINT:
SOFT TISSUES: No Baker's cyst. Remaining visualized soft tissues are unremarkable.

IMPRESSION:

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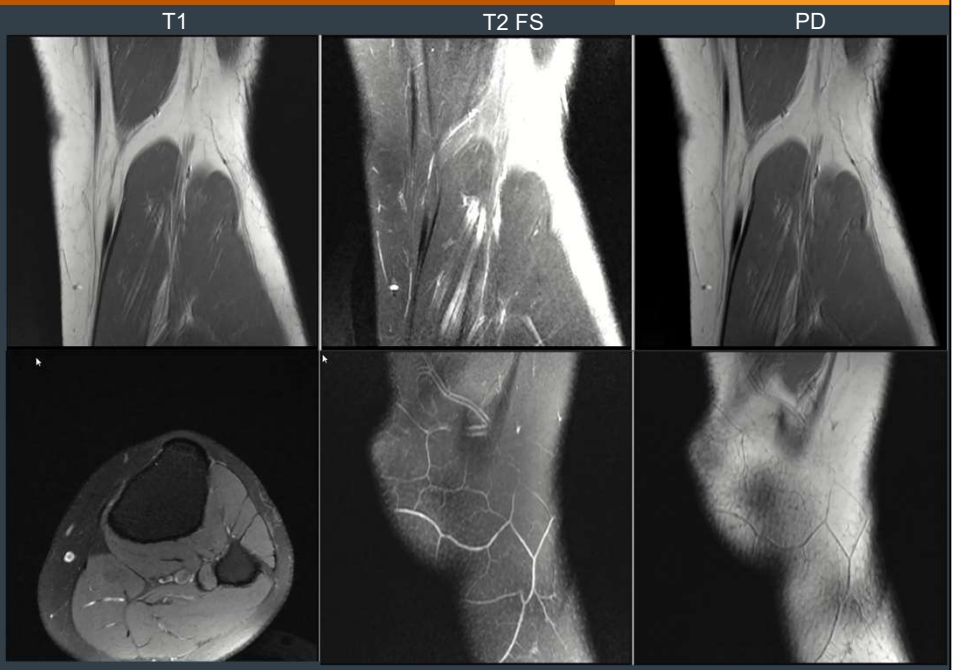
WHAT STARTS HERE CHANGES THE WORLD

Knee MRI

- Menisci
- Cruciates
- Collaterals
- Extensor
- Joint
- Cartilage
- Extras



Case 1:

History: 18 y.o. M Medial and lateral right knee pain from being hit on the lateral aspect playing Lacrosse, Injury, 1 wk ago, Right knee join feels tight, no surgery, no fracture, History of Cancer.

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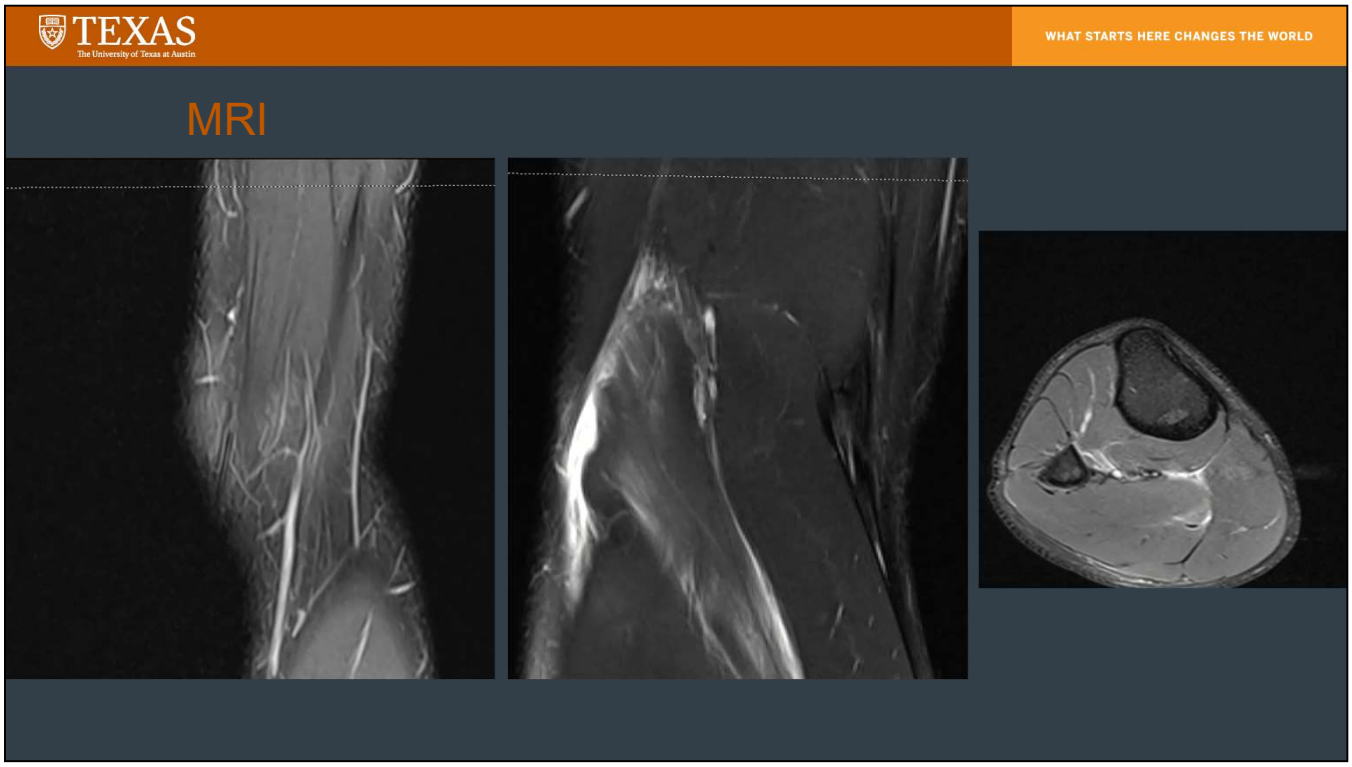
WHAT STARTS HERE CHANGES THE WORLD

Case 1: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WHAT STARTS HERE CHANGES THE WORLD
MRI

ACL; Ramp; MCL

Case 2:

History: 27 yo M Twisted knee, golfing, medial pain, no MRI, no surgery, no cancer.

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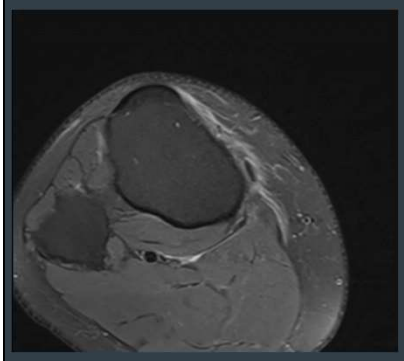
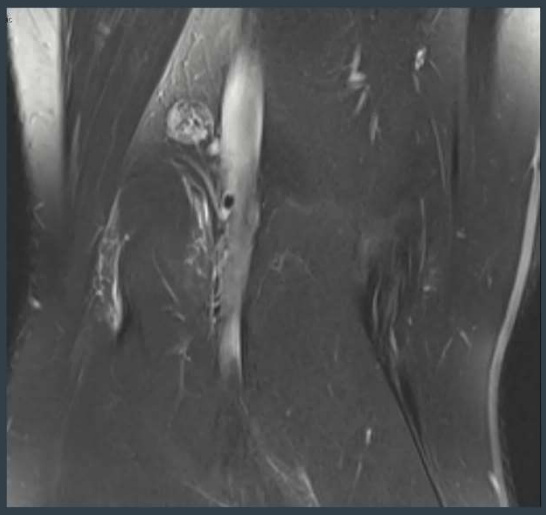
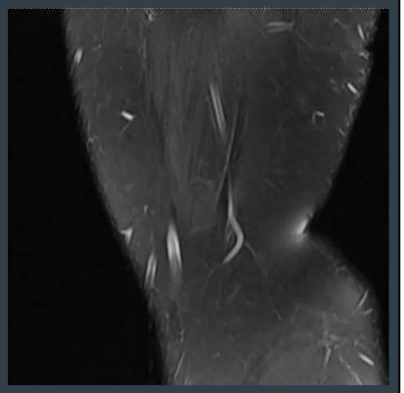
WHAT STARTS HERE CHANGES THE WORLD

Case 2:







IMPRESSION:

1. Ruptured ACL.
2. Large complex medial meniscal tear with displaced bucket-handle flap.
3. Large complex lateral meniscal tear with displaced bucket-handle flap.
4. Low-grade MCL sprain.
5. Mild lateral and minimal medial compartmental degenerative chondrosis.

Case 3:

- 62 y.o F Left knee pain, evaluate for osteoarthritis.

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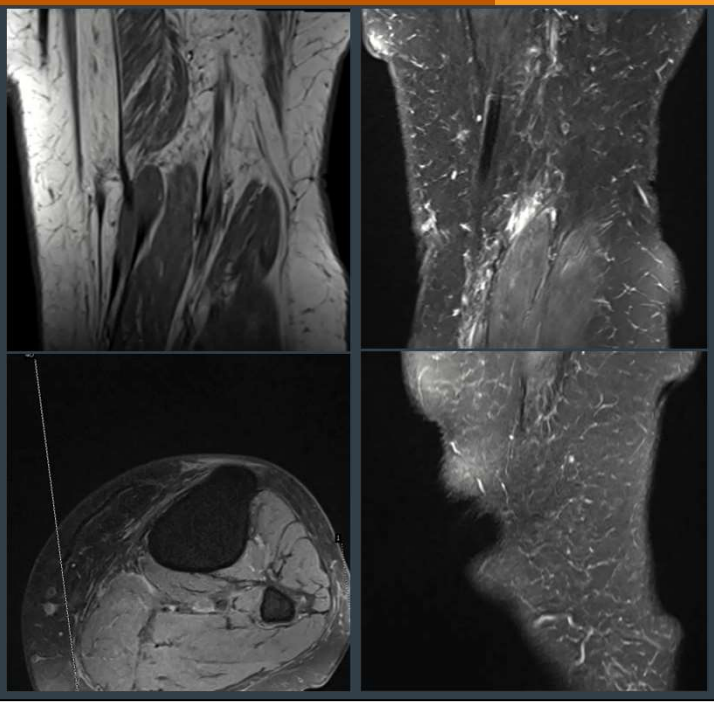
WHAT STARTS HERE CHANGES THE WORLD

Case 3:



IMPRESSION:

1. Subchondral insufficiency fracture in the medial femoral condyle.
2. Degenerative posterior root medial meniscal tear with extruded body.
3. Mild tricompartmental degenerative arthrosis.
4. Lateral meniscal degenerative free edge fraying without discrete tear.

Case 4:

- 24 y.o F Eval for internal derangement.

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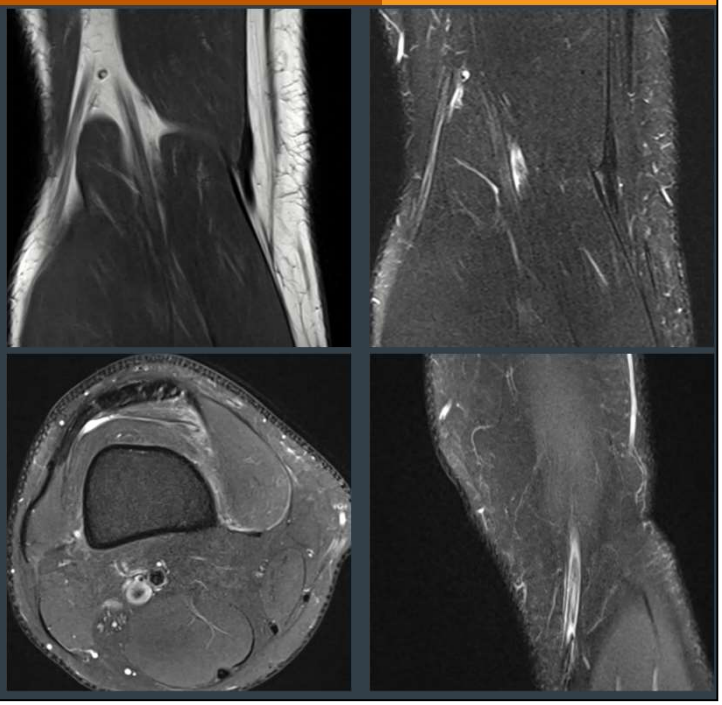
Case 4:



IMPRESSION:

1. Moderate grade MCL sprain (grade 2).
2. Partial tear of the medial patellofemoral ligament and adjacent retinacula from its femoral attachment.
3. Subtle contusion in the medial patellar facet.
4. Very low-grade distal vastus medialis strain.

Case 5:

- 19 y.o M Chronic left knee pain and swelling, derangement of left knee.

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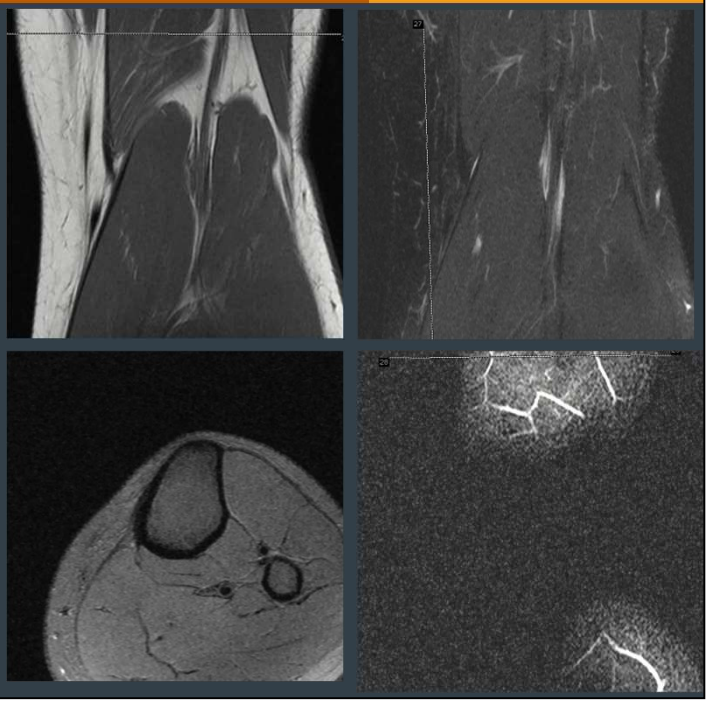
WHAT STARTS HERE CHANGES THE WORLD

Case 5:



IMPRESSION:

1. Moderate grade partial-thickness fibrous disruption of the ACL graft.
2. Peripheral vertical longitudinal tear in the posterior horn medial meniscus.
3. Large focus of anterior arthrofibrosis (cyclops lesion).
4. Intact lateral meniscus, posterior cruciate and collateral ligaments.
5. Posterolateral tibial contusion.

Case 6:

- 17 y.o F Concern for patellar tendinitis.

IMPRESSION:

1. Moderate patellar origin tendinopathy with partial-thickness tearing and tendinosis (AKA moderate to severe jumper's knee).
2. Intact menisci, cruciate and collateral ligaments.

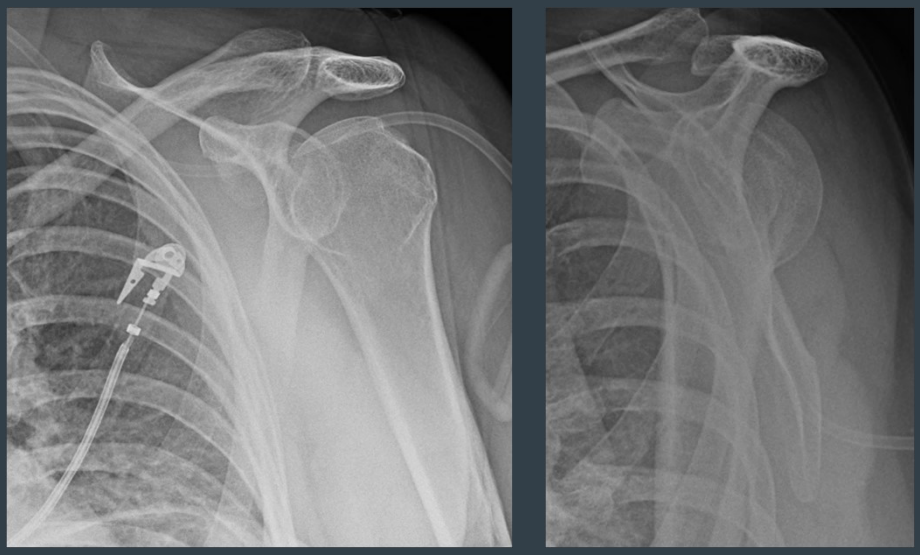
SHOULDER

Case 1:

History: 52 yo F with Pain after fall.

Case 1:

Case 1: Post-Reduction



SHOULDER MRI -

FINDINGS:
ACROMIOCLAVICULAR JOINT: There is minimal degenerative arthrosis of the acromioclavicular joint.

ROTATOR CUFF AND BICEPS TENDONS:
Supraspinatus: Supraspinatus is intact, with normal muscular bulk.
Infraspinatus: Infraspinatus is intact, with normal muscular bulk.
Teres Minor: Teres minor is intact, with normal muscular bulk.
Subscapularis: Subscapularis is intact, with normal muscular bulk.
Biceps: Biceps is intact, normal in caliber and course.

LABRUM: The labrum is intact.

SUBACROMIAL AND SUBDELTOID BURSA: Normal.

OSSEOUS STRUCTURES: Normal.

GLENOHUMERAL JOINT: No joint effusion or synovitis. Cartilage is grossly intact.

SOFT TISSUES: The remaining visualized soft tissues are unremarkable.

IMPRESSION:

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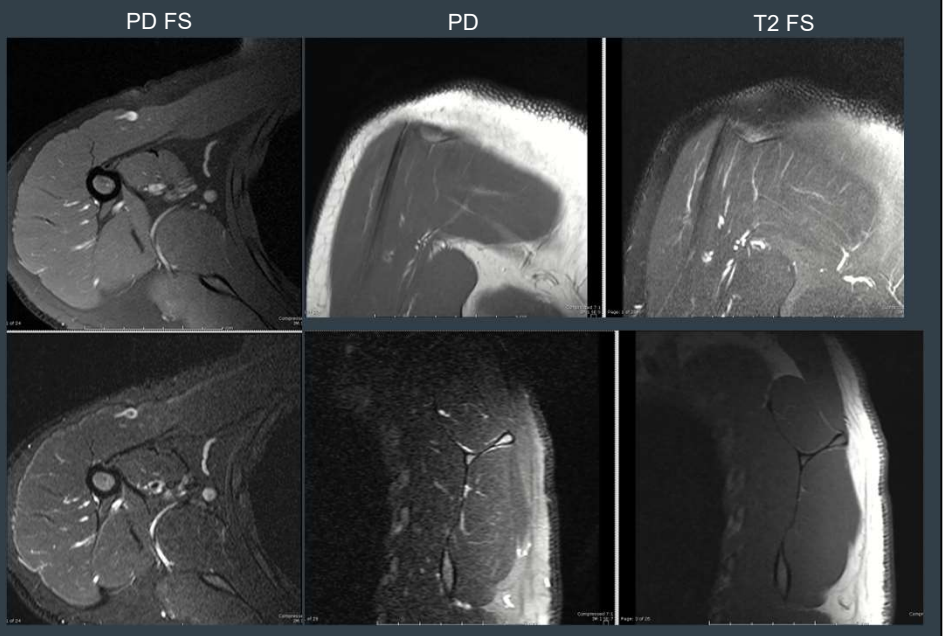
WHAT STARTS HERE CHANGES THE WORLD

Shoulder MRI

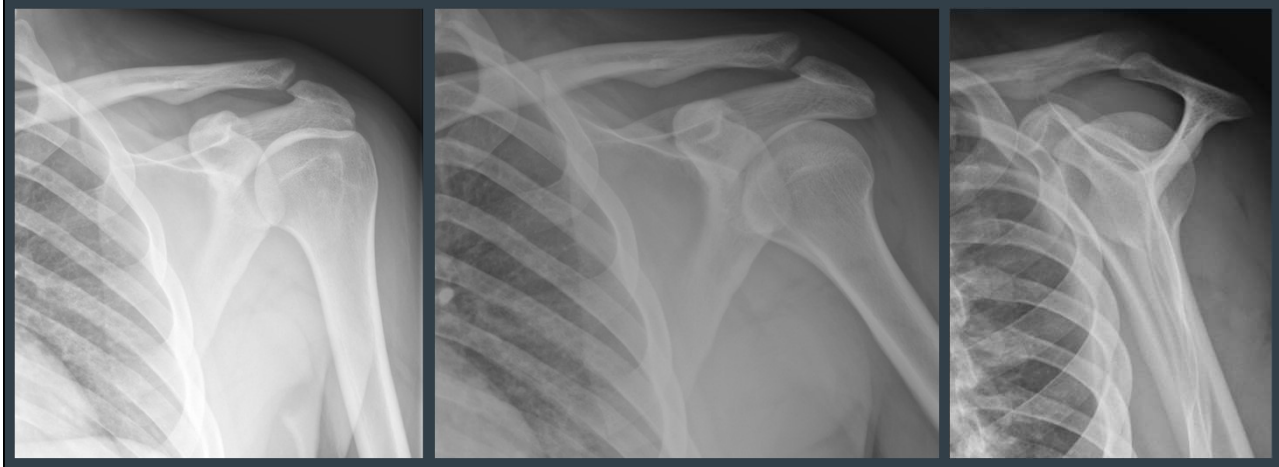
- AC joint
- Cuff Bulk
- Rotator Cuff
- Biceps
- Labrum
- GH joint
- Rotator Int
- Extras



Case 2:

History: 30 y.o. M with post-traumatic pain for 3 weeks.

Case 2:



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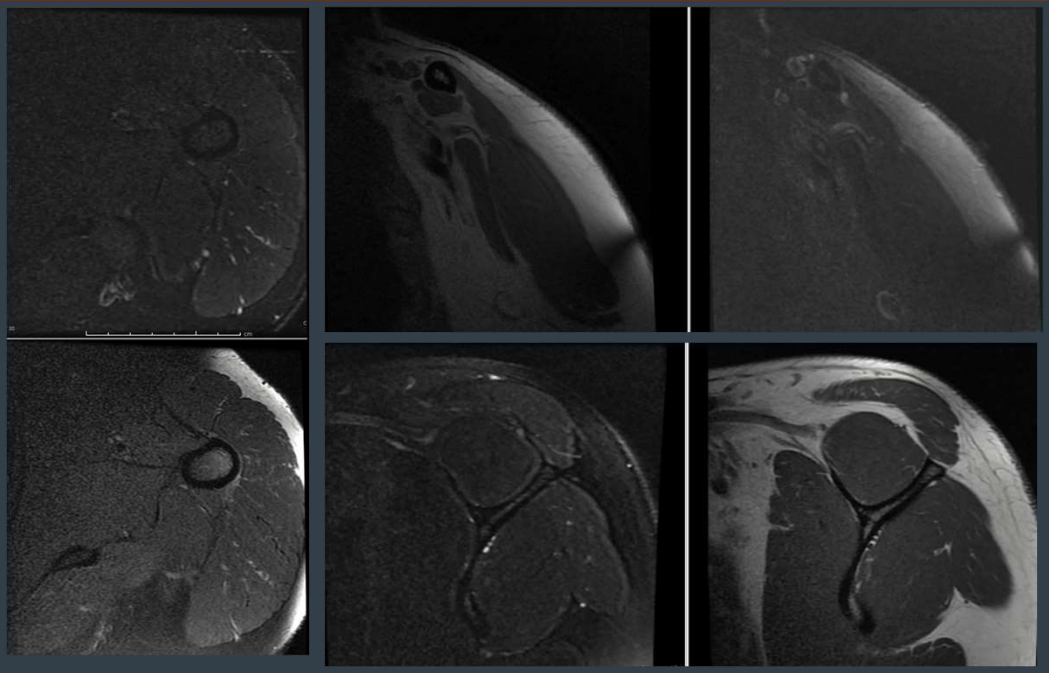
Case 2:

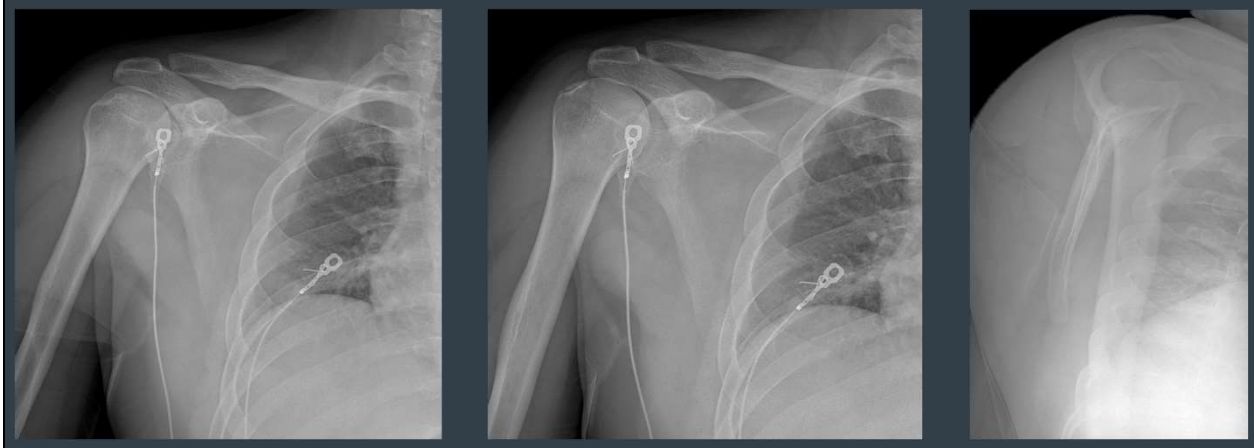


Rockwood I

Case 3:

History: 32 R shoulder pain after MCC approximately 1 month ago.

Case 3:



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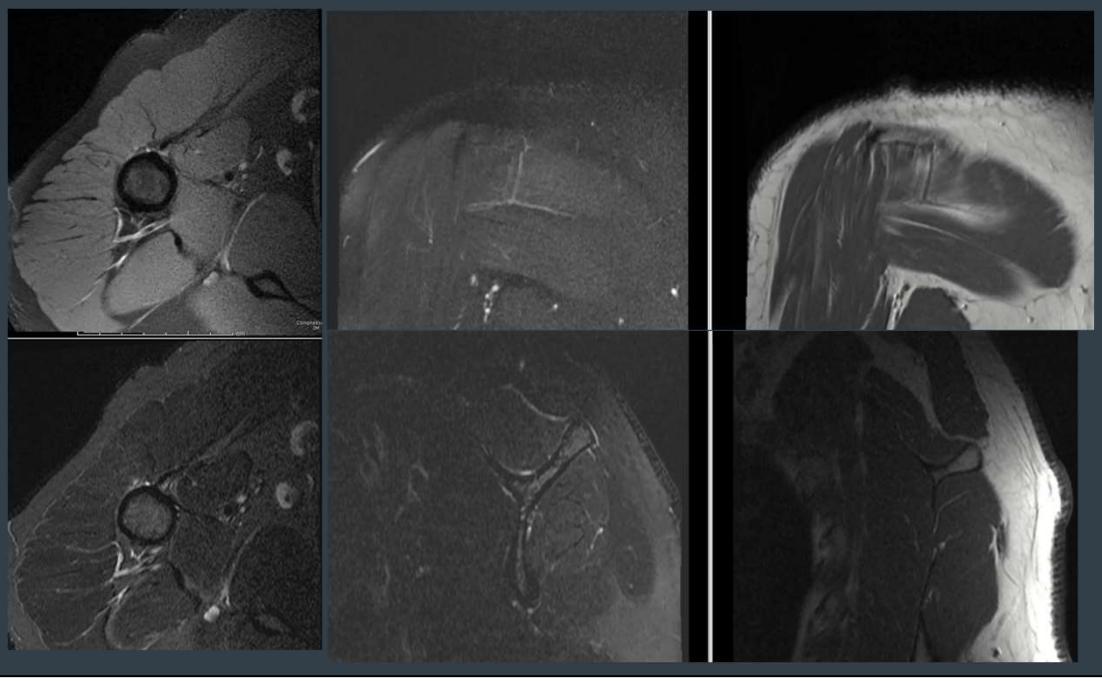
Case 3:

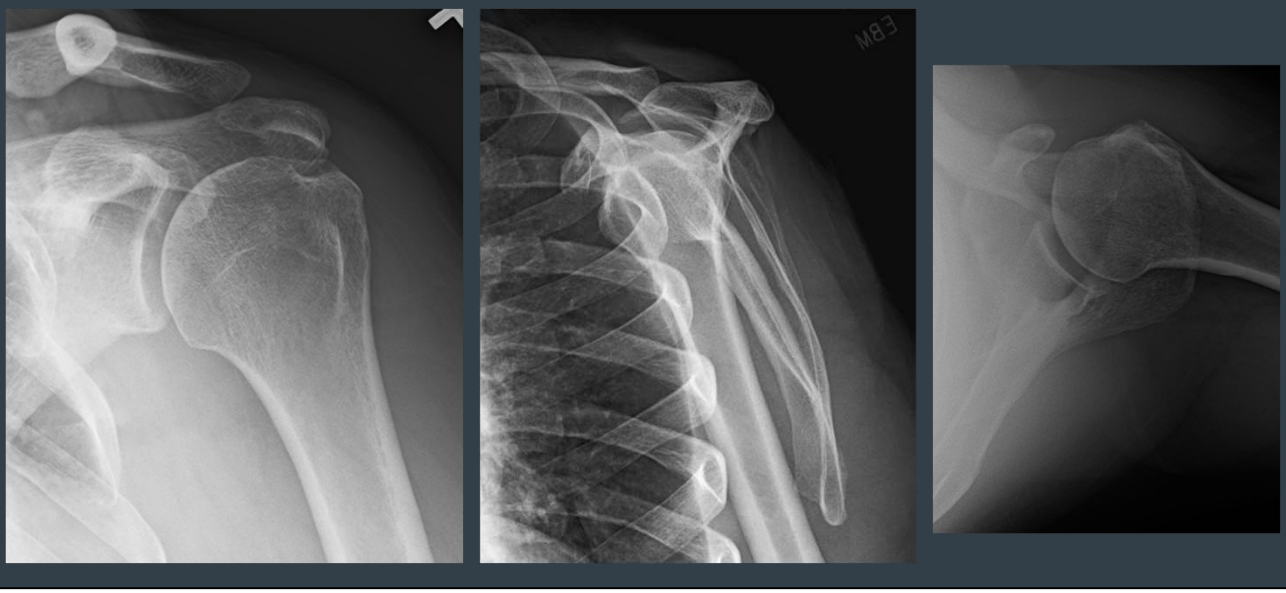


Greater Tub Avulsion Fx

Case 4:

History: 53 y.o. M with pain after fall.

Case 4:



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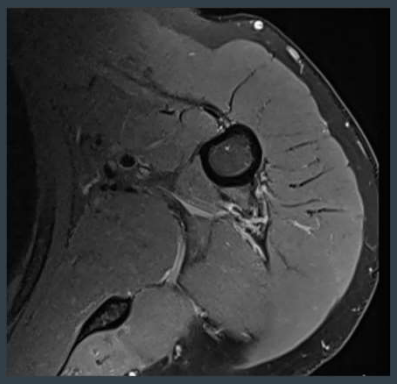
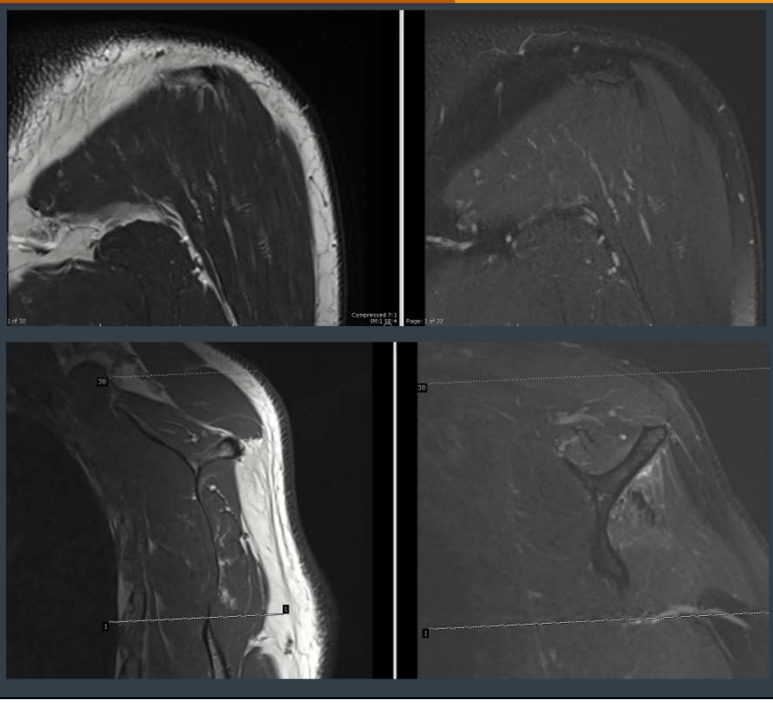
Case 4:





Supra and Infra tear
Labral tear

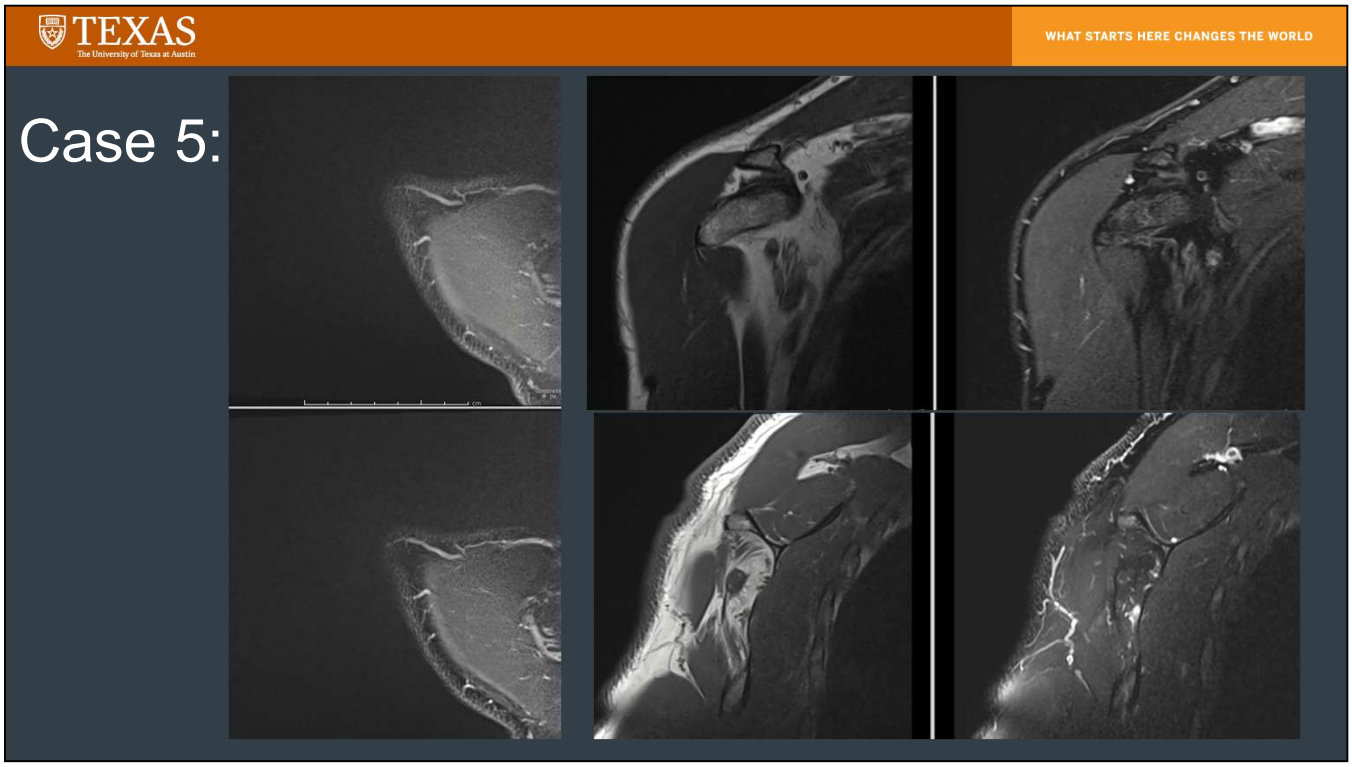
Biceps tendinop

Subscap tendinop and PT

Case 5:

History: 72 y.o. M with pain after fall.

Case 5:



IMPRESSION-RIGHT SHOULDER:
1. Large full-thickness retracted subscapularis tear.
2. Medially dislocated long head biceps tendon.
3. Chronic high-grade partial-thickness supraspinatus and infraspinatus tears with prior postsurgical intervention; severe infraspinatus atrophy.
4. Diffuse superior and posterior degenerative labral blunting.
5. Moderate acromioclavicular degenerative arthrosis.

Case 6:

History: 17 y.o. M Left shoulder pain, repeat dislocations.

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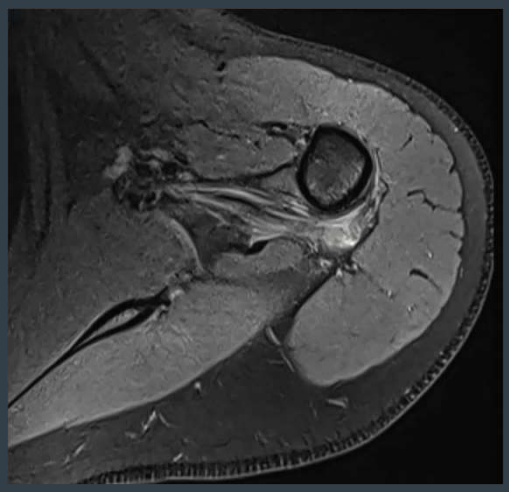
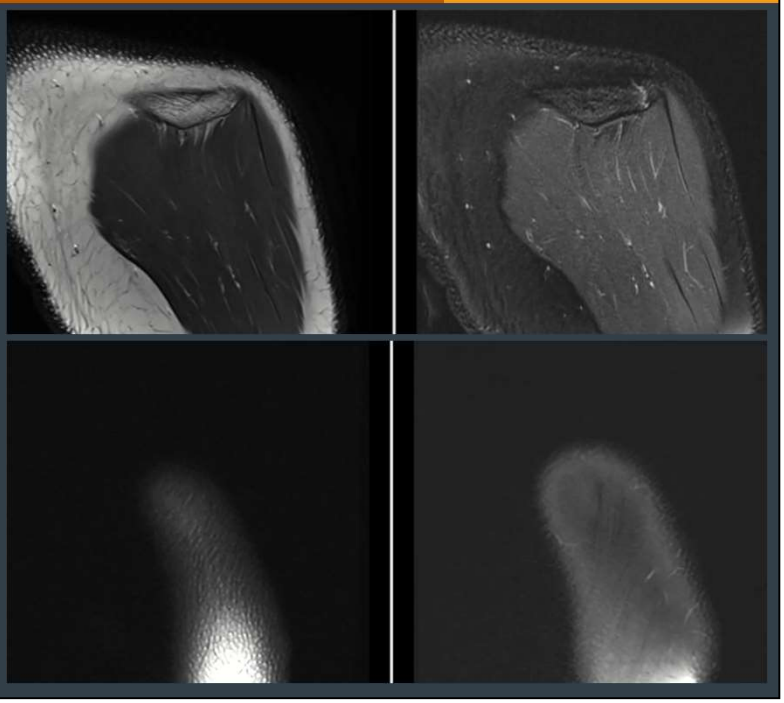
Case 6:





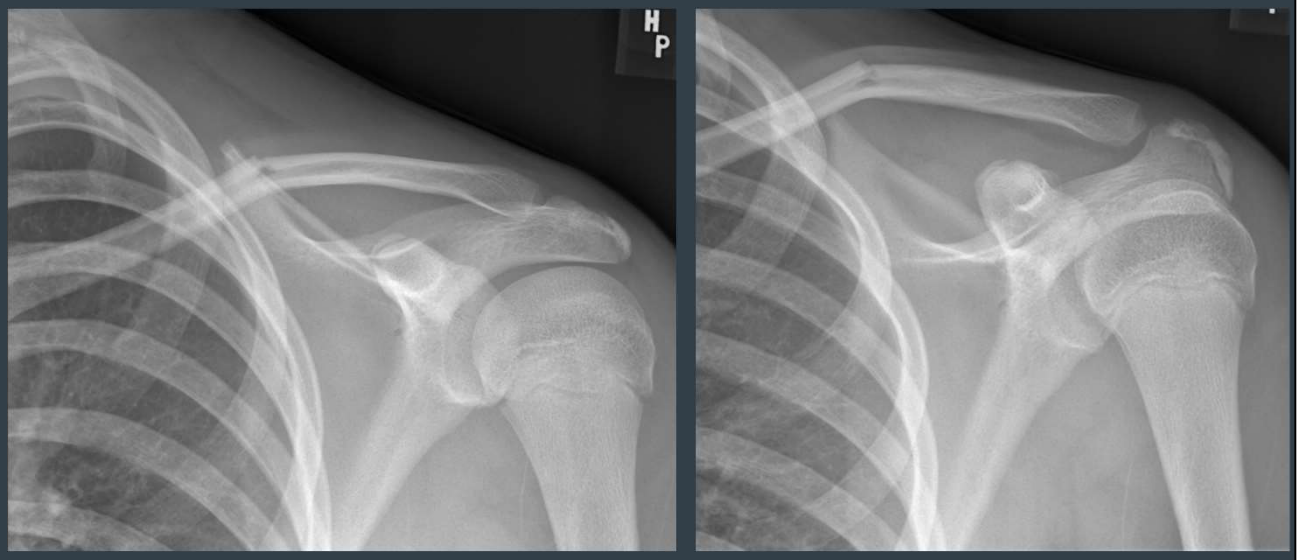
IMPRESSION:

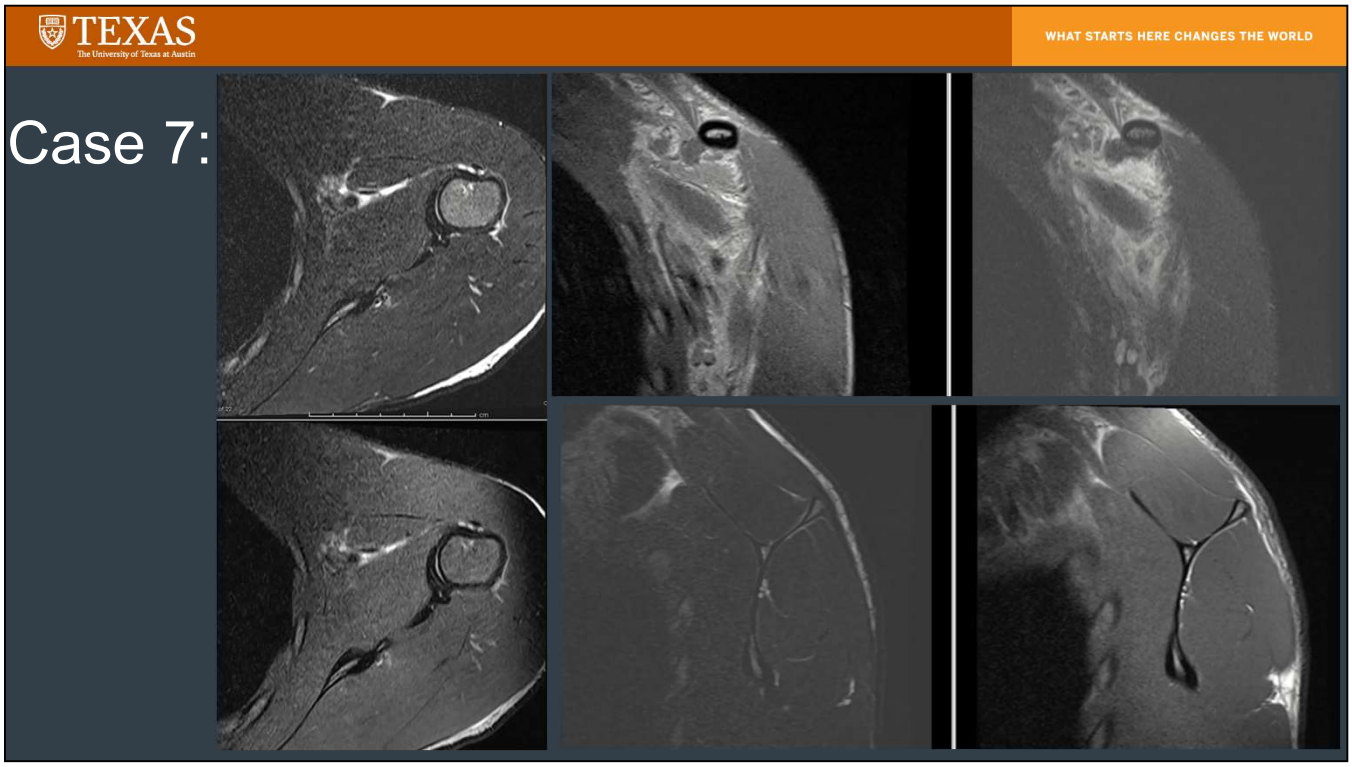
1. Large complex medially displaced Bankart lesion and periosteal stripping injury (ALPSA). No bony component.
2. Moderate-sized shallow acute appearing Hill-Sachs deformity.
3. Intact rotator cuff and long head biceps tendon.

Case 7:

History: 15 y.o. M Evaluate for fracture of left clavicle status post fall two days ago.

Case 7:





IMPRESSION:

1. Type III left shoulder sprain (Rockwood classification).
2. Intact rotator cuff, long head biceps tendon and labrum.

Case 7:

Case 8:

History: 46 y.o. M Pain in right shoulder, Other chronic pain.

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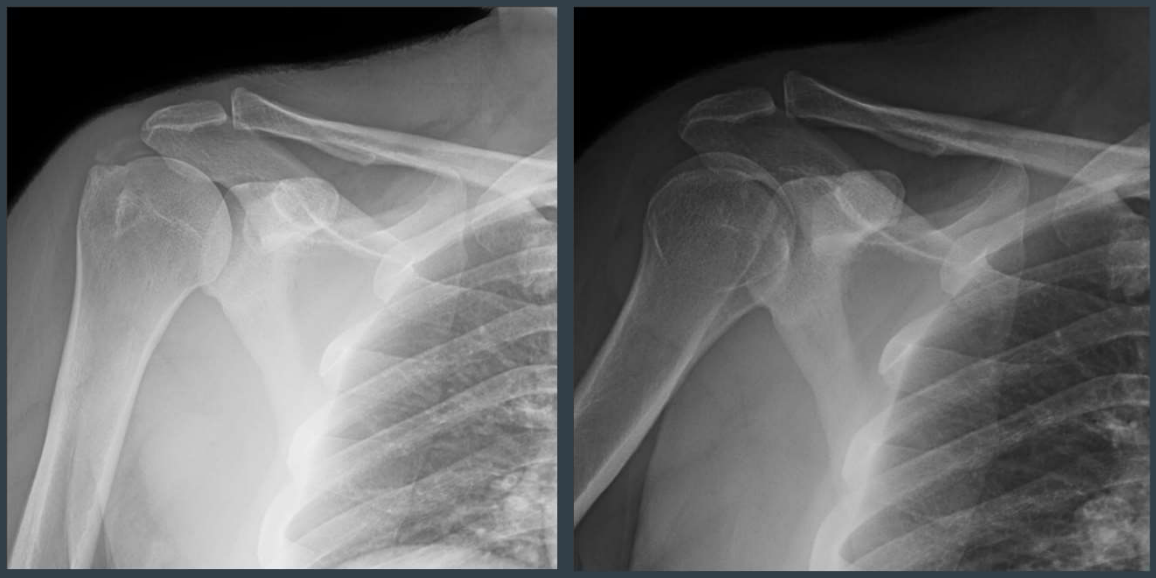
Case 8:



Supra HADD

Case 9:

History: 47 y.o. F Evaluate right shoulder pain for two years non-responsive to conservative treatment.

Case 9:

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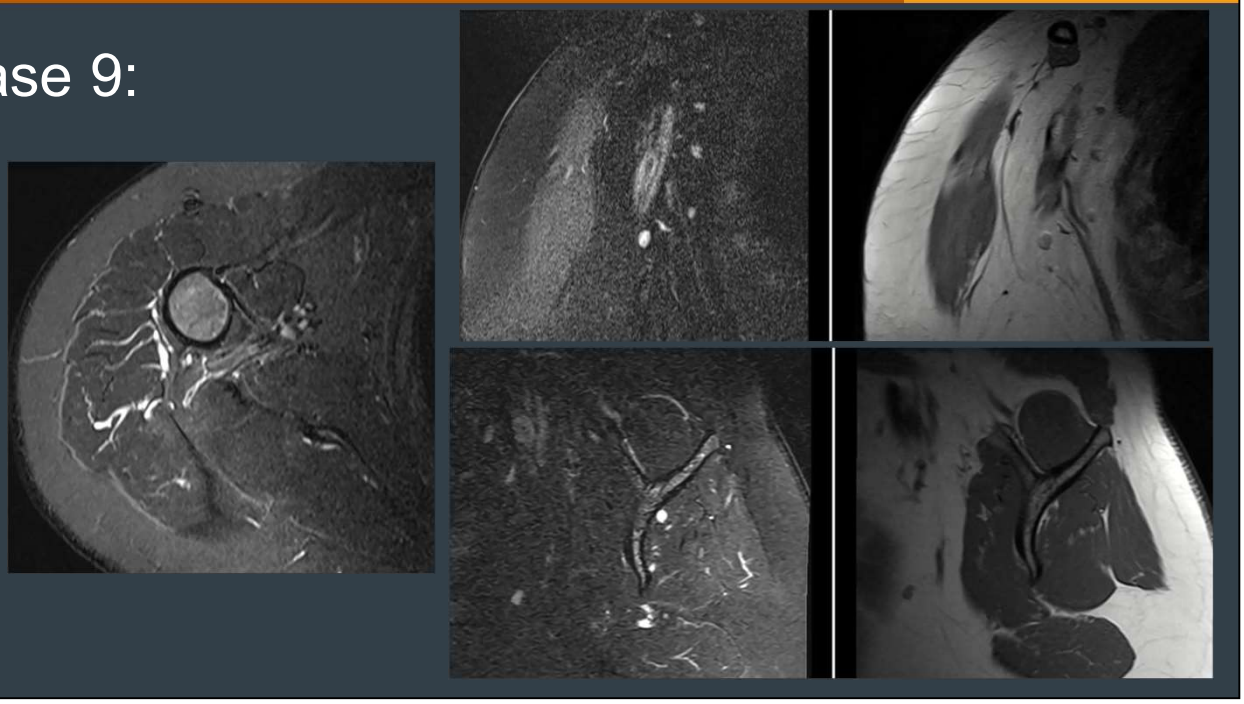
Case 9:



IMPRESSION:

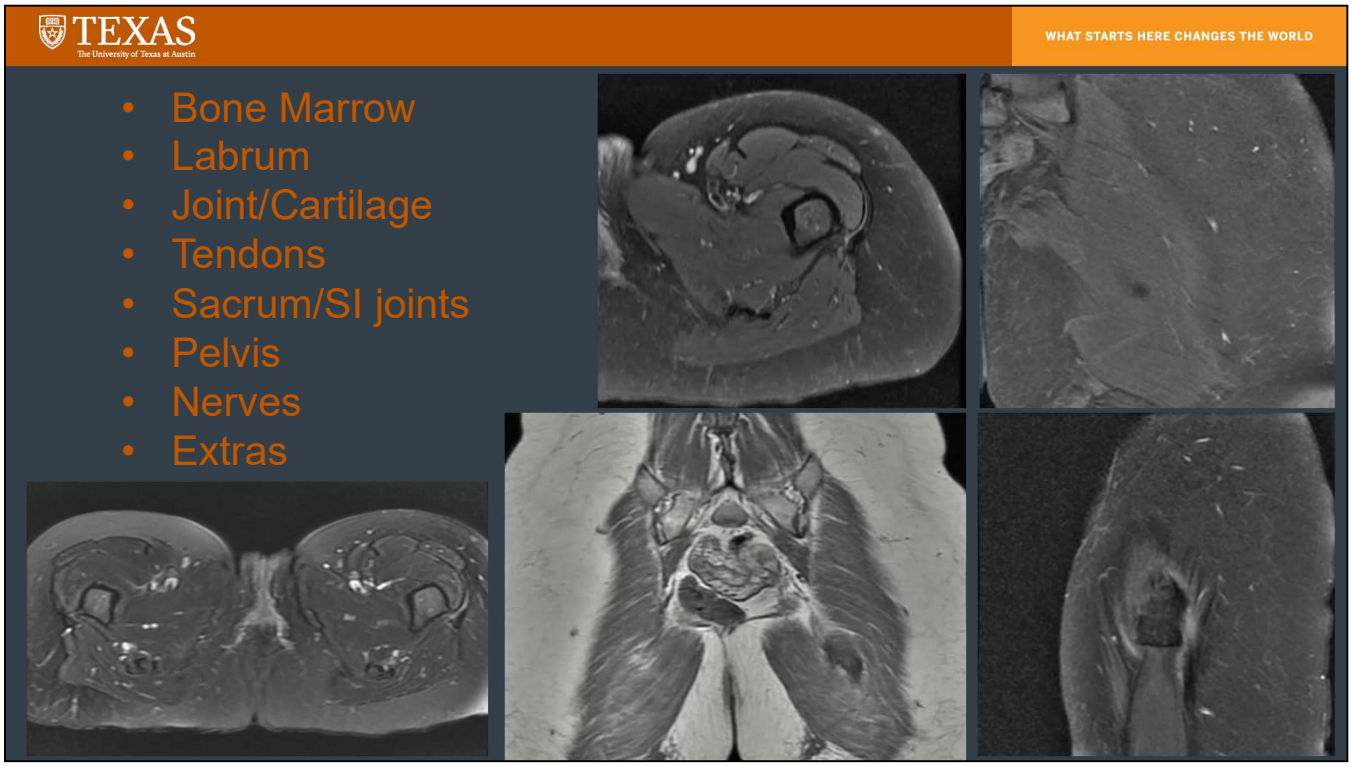
1. Moderate subacromial/subdeltoid bursitis.
2. Posterior superior labral tear.
3. Mild infraspinatus tendinosis with punctate low-grade partial-thickness interstitial tear.
4. Minimal acromioclavicular degenerative arthrosis.

Hip

Hip MRI:

FINDINGS:

- OSSEOUS STRUCTURES: Normal. No evidence for an occult fracture or osteonecrosis is noted.
- JOINT: No joint effusion or synovitis. Cartilage is intact. Ligamentum teres is intact.
- TENDONS: Hamstring, gluteal, adductor, quadriceps, and iliopsoas tendons are intact.
- LABRUM: Labrum appears intact.
- SOFT TISSUES: The remaining visualized soft tissues are unremarkable.
- SACRUM/SI JOINTS: Normal.
- PELVIS: The remaining visualized pelvis is unremarkable.



IMPRESSION:
Intact left hip.

Case 1:

History: 74 y/o M Fall, L hip and thigh pain.

Case 1:

Case 1:

Case 2:

History: 48 y/o M Left hip pain for two months, level of pain fluctuates, increased pain with lack of mobility.

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WHAT STARTS HERE CHANGES THE WORLD

Case 2:

AVN – sub cap collapse

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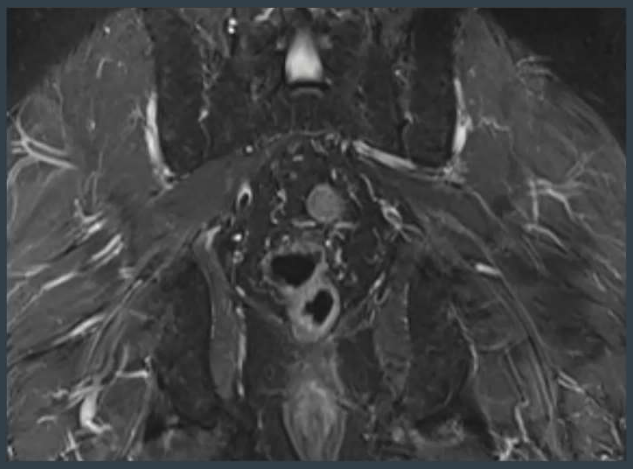
Case 2:

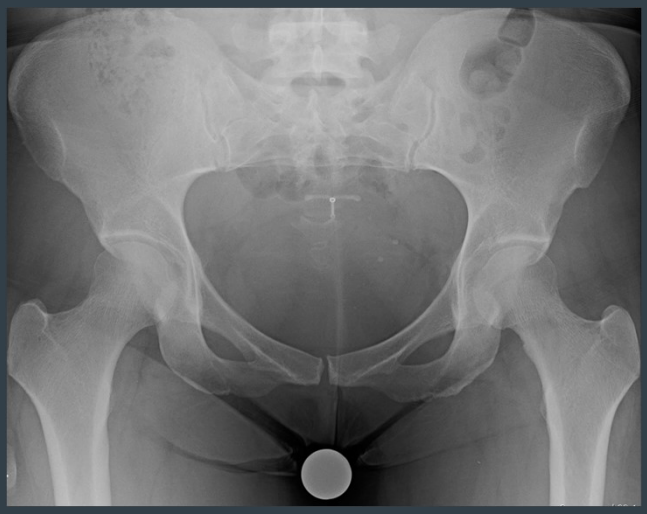


AVN – sub cap collapse – Double line sign

Case 3:

History: 31 y/o F Chronic left hip pain.

Case 3:



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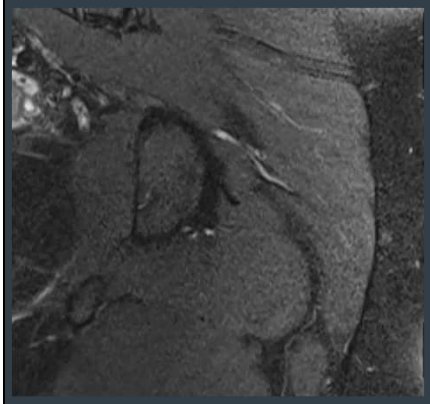
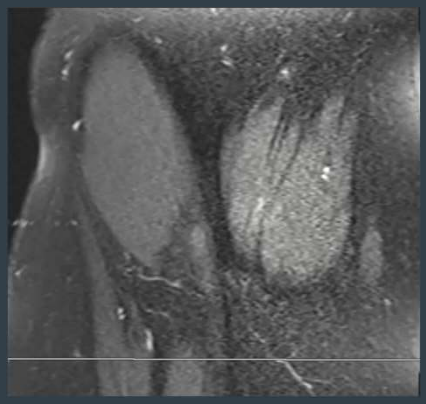
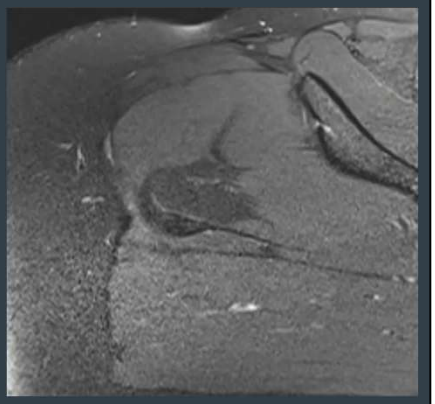
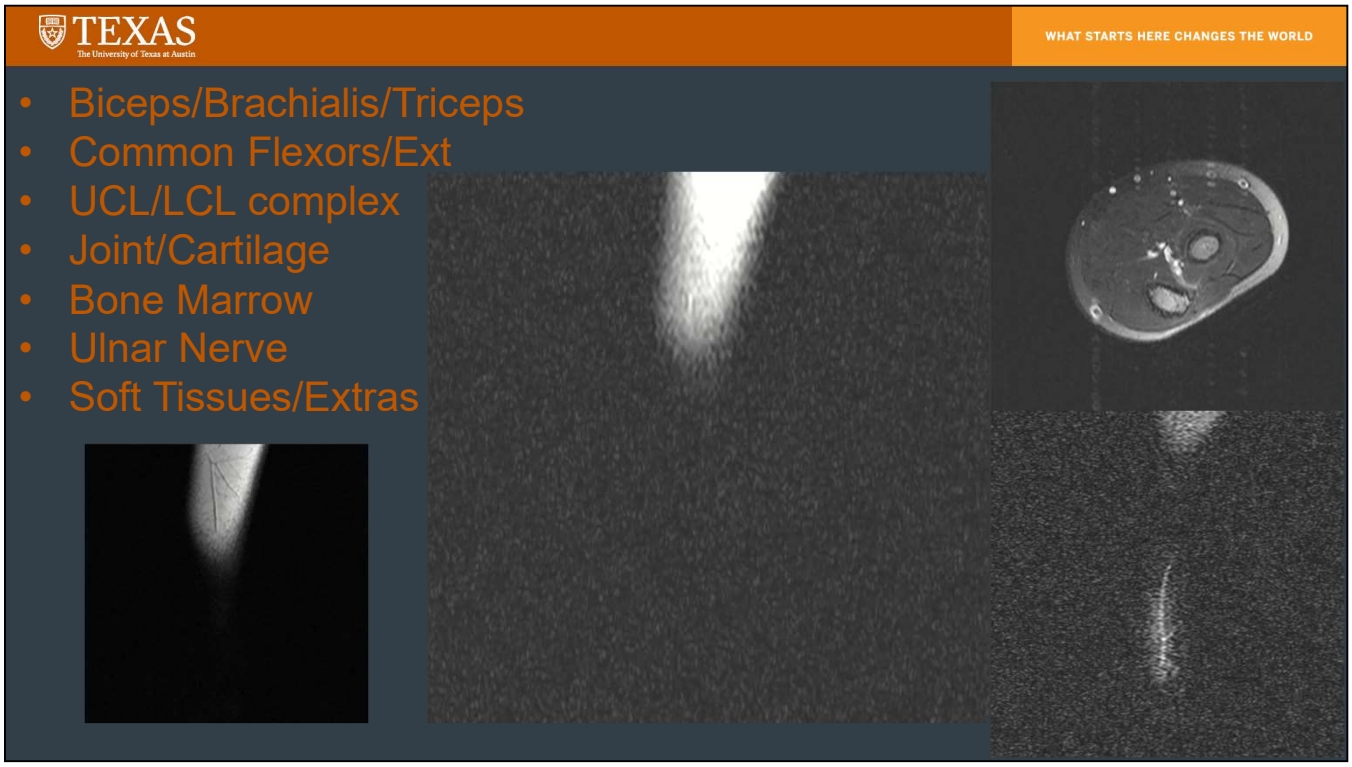




Ant – ant sup labral tear and paralabral cyst – mild pincer type FAI

Elbow MRI:

FINDINGS:

- TENDONS: Biceps, brachialis and triceps insertions are intact. Common flexor tendon origin is intact. Common extensor tendon origin is intact. No tenosynovitis.
- LIGAMENTS: Ulnar collateral ligament is intact. Lateral collateral ligament complex is intact.
- CARTILAGE: No obvious cartilage defect is noted.
- OSSEOUS STRUCTURES: Normal.
- JOINTS: No joint effusion or synovitis.
- SOFT TISSUES: Remaining visualized soft tissues are unremarkable.
- ULNAR NERVE: Normal caliber, course and signal intensity.



IMPRESSION:
Normal Elbow

Case 1:

- History: 29 y.o. M Evaluate for possible tendon tear following an injury. Failed conservative treatment.

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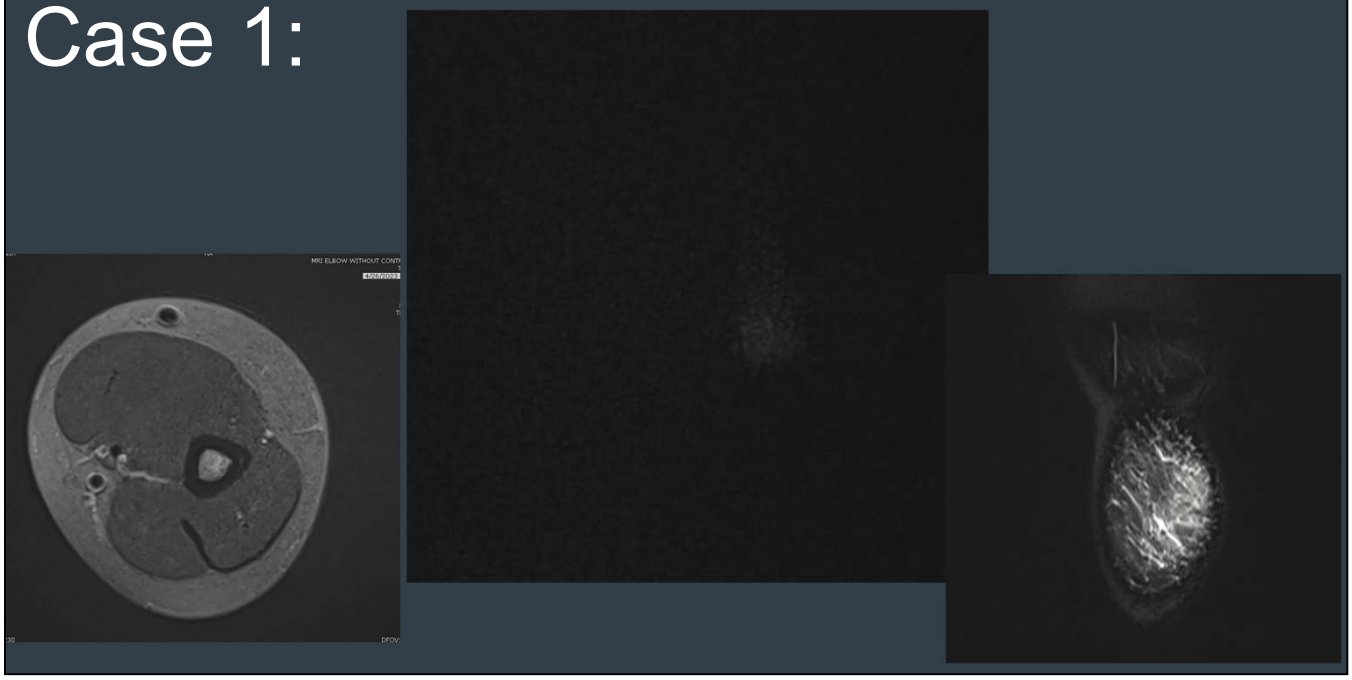
Case 1:

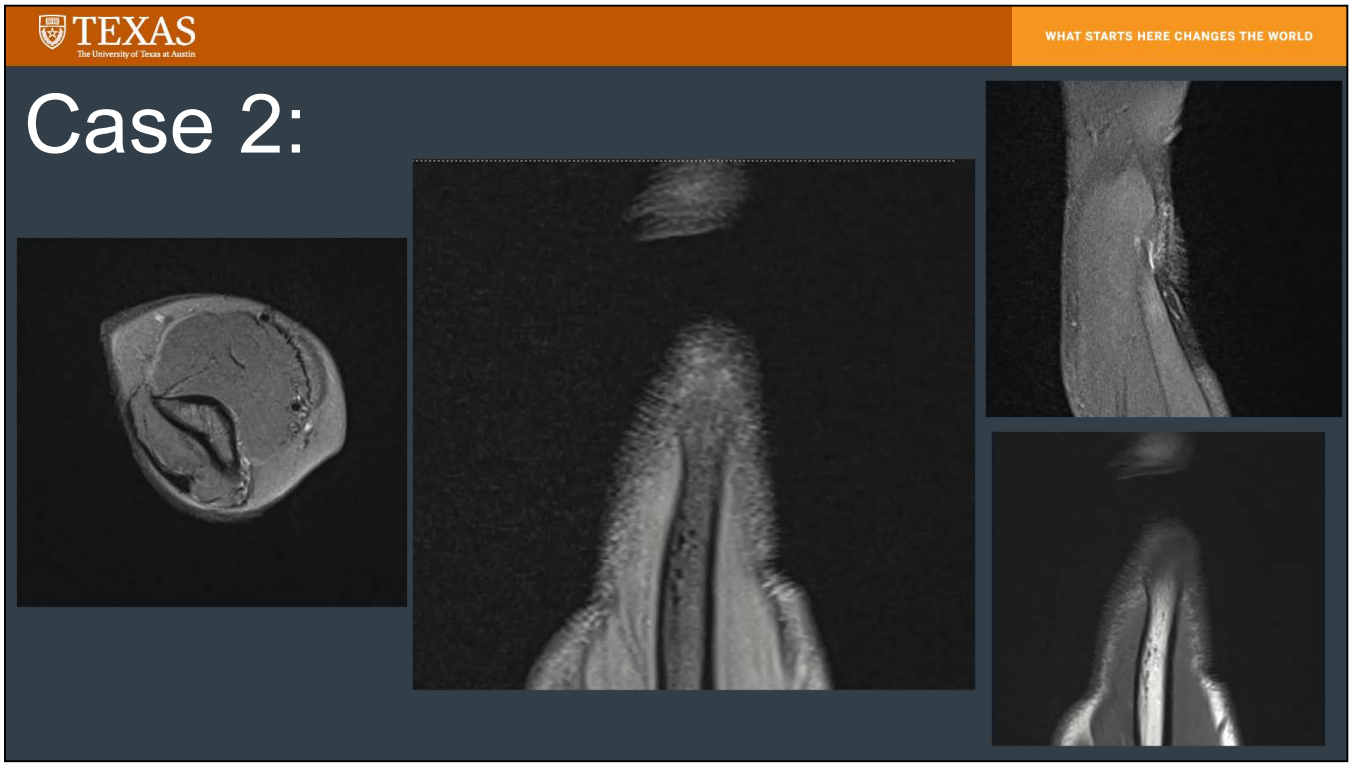


IMPRESSION:

1. Ruptured proximal ulnar collateral ligament.
2. Moderate grade proximal flexor tendon strain/.
3. Short segment ulnar neuritis, favored posttraumatic.

Case 2:

- History: 54 y.o. F Pain in right elbow and forearm for three weeks.



IMPRESSION:

1. Moderate lateral epicondylitis.
2. Low-grade proximal extensor digitorum strain.
3. Minimal insertional biceps tendinosis.
4. Punctate focal partial-thickness cartilage loss in the anterior capitellum.

ANKLE MRI:

FINDINGS:
Anterior Talofibular Ligament: Intact.
Calcaneofibular Ligament: Intact.
Posterior Talofibular Ligament: Intact.

Anterior Tibiofibular Ligament: Intact.
Posterior Tibiofibular Ligament: Intact.

Deltoid Ligament: Intact.
Spring Ligament: Intact.

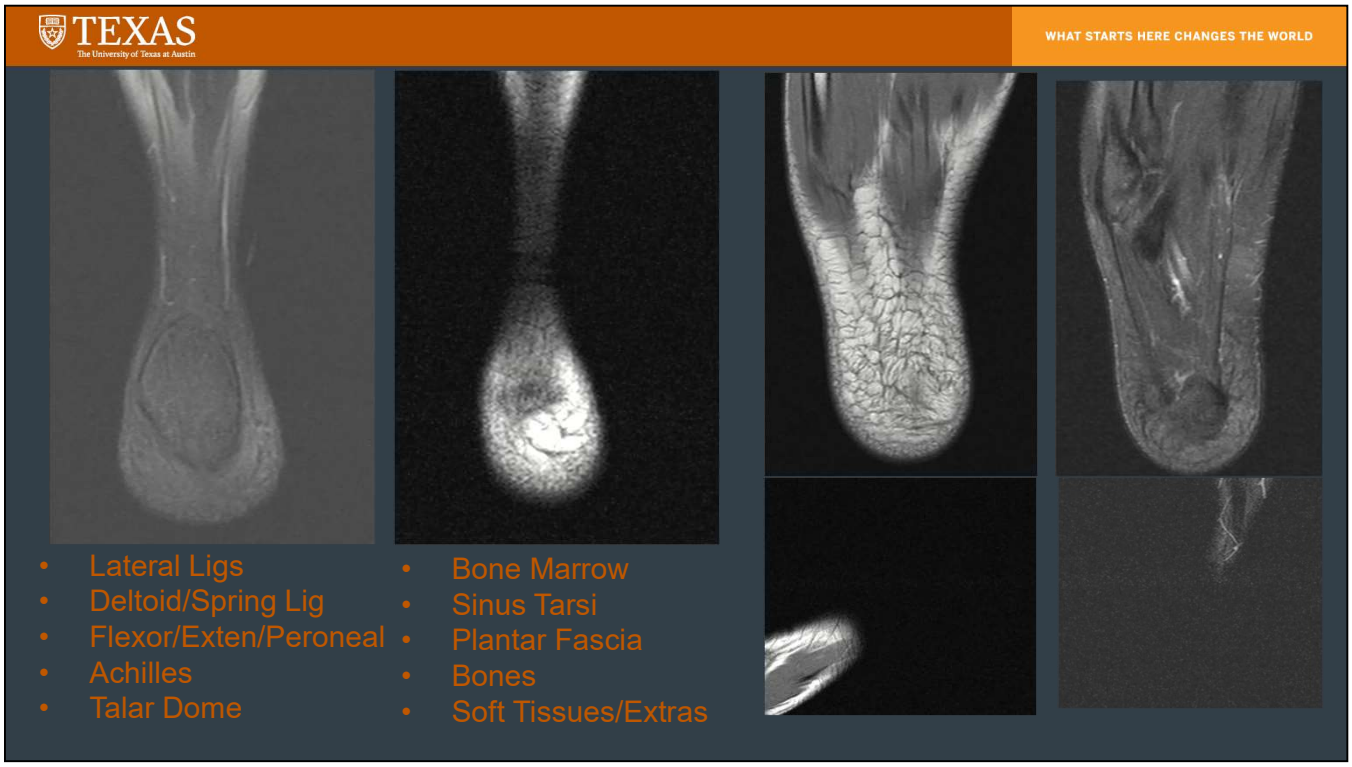
Posterior Tibial Tendon: Intact.
Flexor Digitorum Longus Tendon: Intact.
Flexor Hallucis Longus Tendon: Intact.

Peroneal Tendons: Intact.
Extensor Tendons: Intact.
Achilles Tendon: Intact.

Plantar Fascia: Intact. The abductor digiti minimi muscle shows no evidence of atrophy or edema.
Osseous Structures: Normal.

Talar Dome: Intact.
Sinus Tarsi: Intact.

Joint: Normal. The Lisfranc articulation is intact.
Soft tissues: Normal.



IMPRESSION:
Normal Elbow

Case 1:

History: 20 y/o M Pain in left ankle and joints of left foot.

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WHAT STARTS HERE CHANGES THE WORLD

Case 1:

Fib fx

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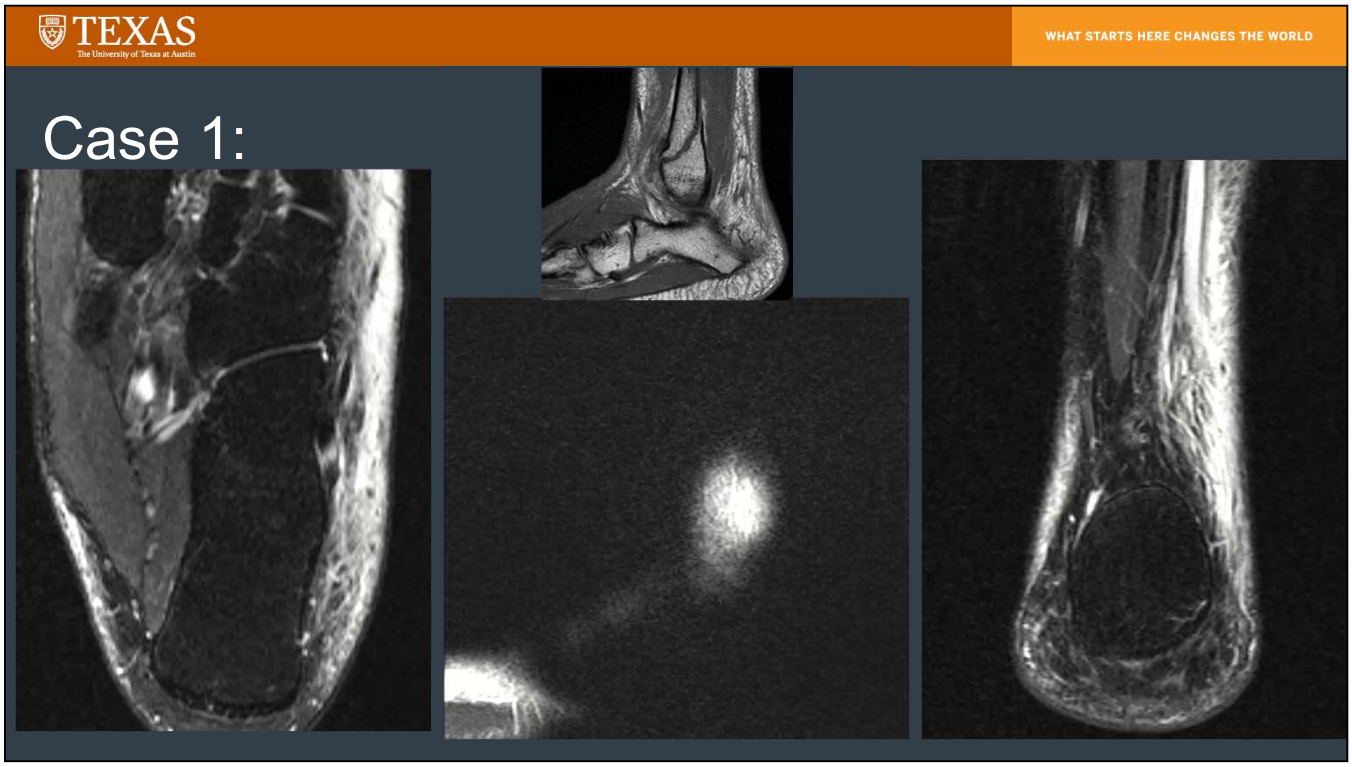
WHAT STARTS HERE CHANGES THE WORLD

Case 1:

Fib fx and widened medial gutter



IMPRESSION:

1. Redemonstrated nondisplaced distal fibular metaphyseal fracture (Weber B).
2. Ruptured anterior tibiofibular ligament.
3. Sprained posterior tibiofibular, anterior talofibular, superomedial spring and deltoid ligaments.
4. Punctate contusion and presumed incomplete nondisplaced subchondral fracture in the far posterior tibial metaphysis.
5. Diffuse soft tissue swelling.

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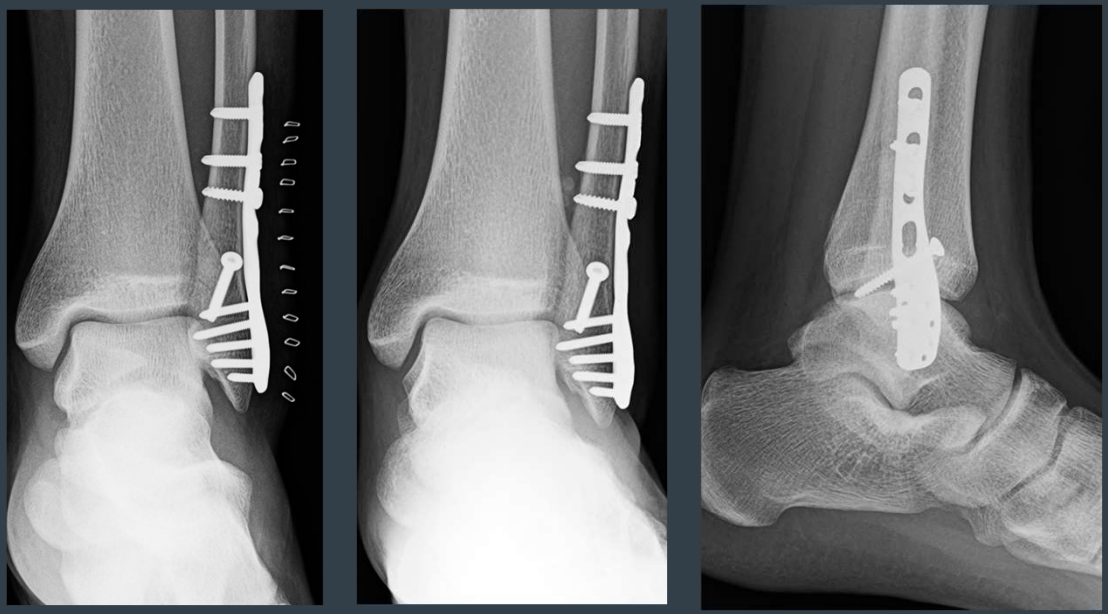


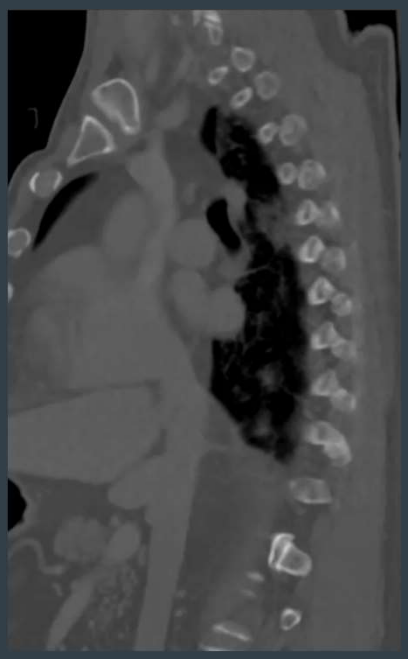
Fib fx

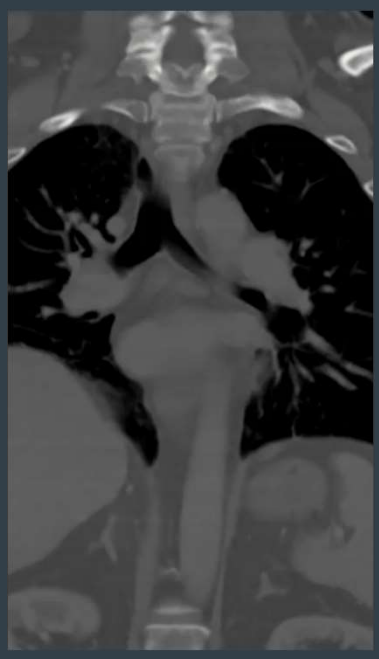
Case 1:

History: 56 y/o M s/p motorcycle crash; Back pain.

SPINE

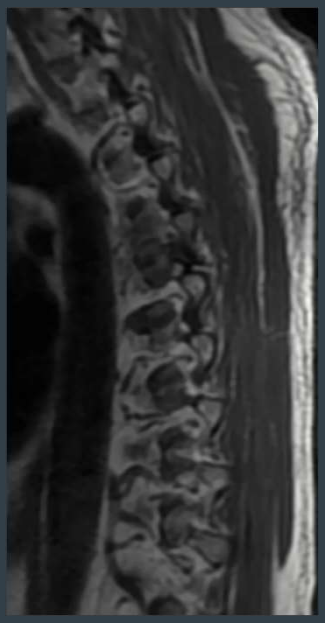
Initial Trauma C/A/P CT:





SPINE

Follow-up T-Spine MRI:



Questions? Comments? Answers?