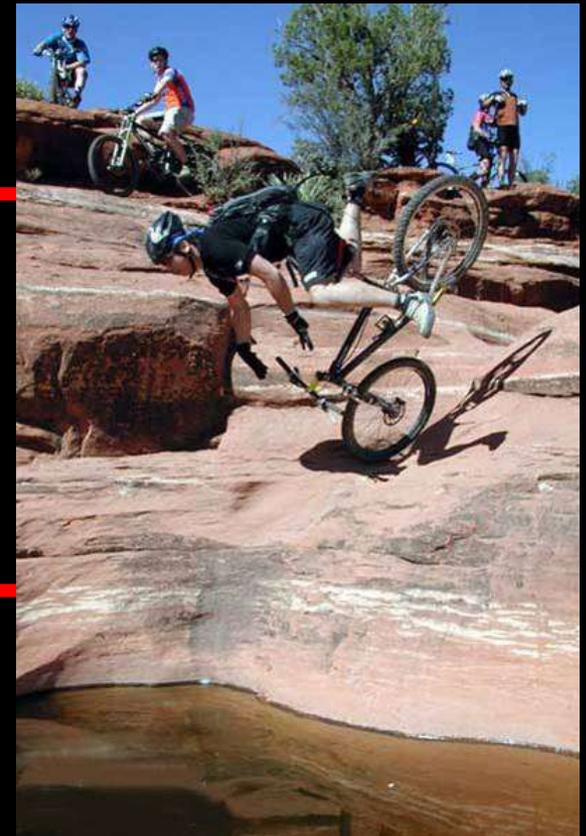




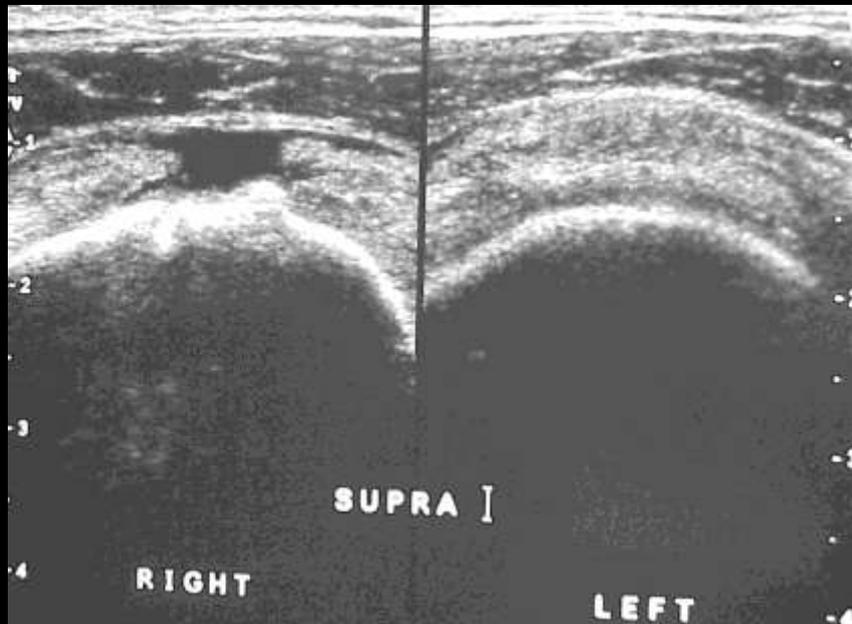
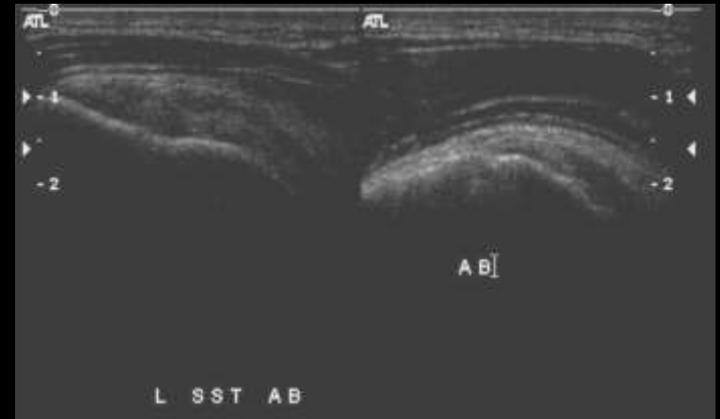
Sports Injuries

Dr. Tudor H. Hughes M.D., FRCR
Department of Radiology
University of California School of Medicine
San Diego, California



Weightlifter's Shoulder

- RCT
- Overhead and flexion
- Impingement

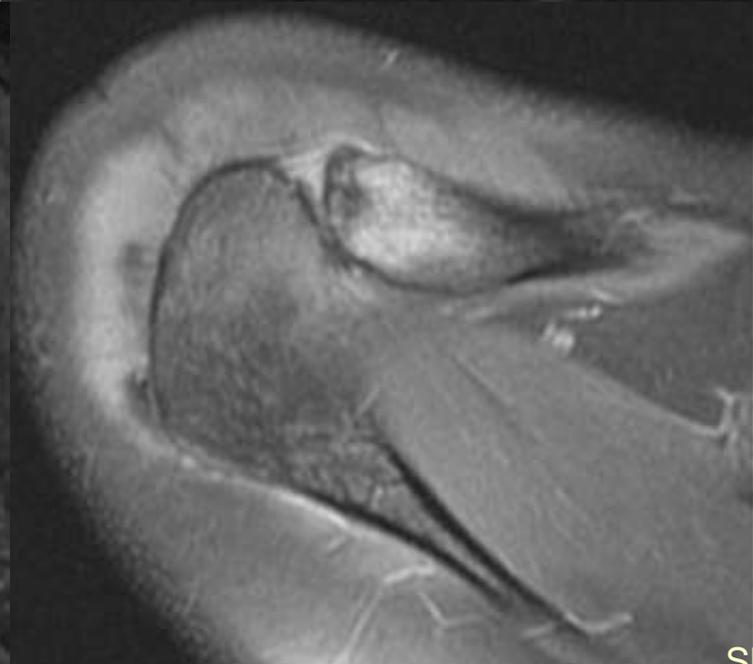
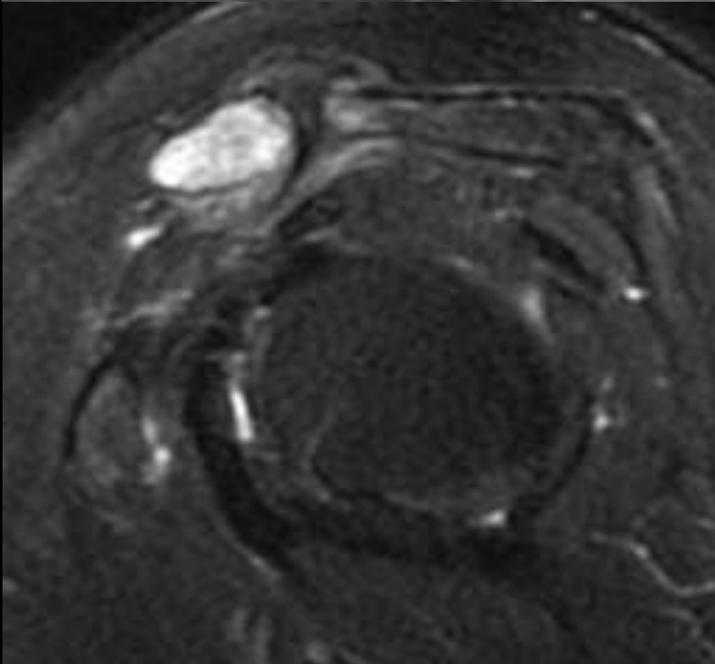
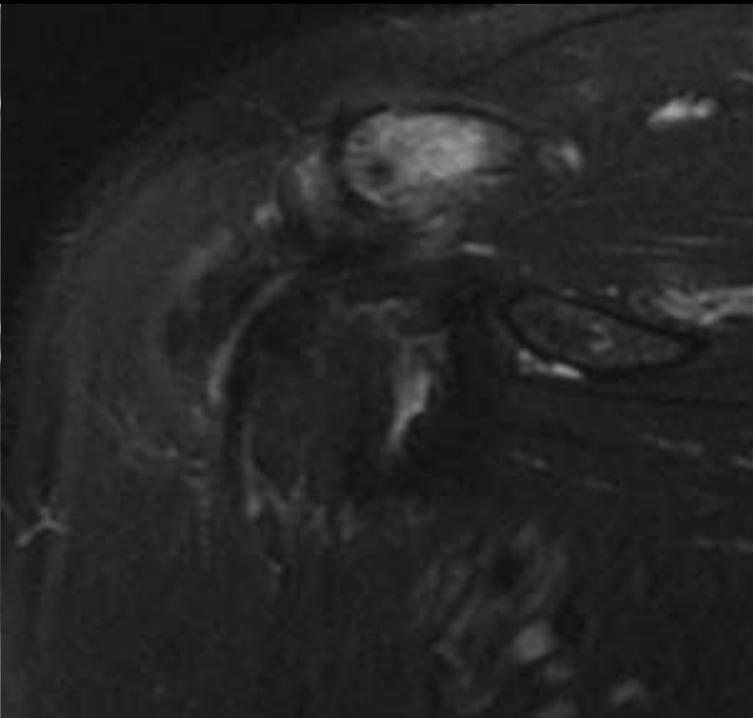
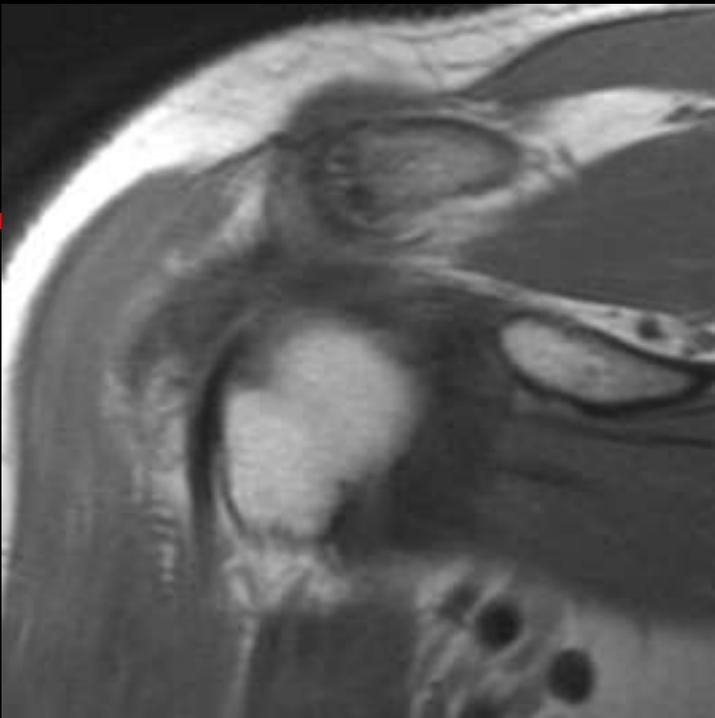


Weightlifter's Shoulder



- Distal clavicle osteolysis

Synovitis secondary to repetitive trauma



Shoulder pain

Weightlifter's Shoulder



35M with right shoulder pain, injured after lifting weights

Weightlifter's Shoulder



35M with right shoulder pain, injured after lifting weights

Weightlifter's Shoulder



ECHO#: 1

35M with right shoulder pain, injured after lifting weights

Weightlifter's Shoulder

SEX:M

ST:3.0 mm



35M with right shoulder pain, injured after lifting weights

Weightlifter's Shoulder

DOB: 10/15/81
SEX: M

CE: 11.204 mm
ST: 3.0 mm



35M with right shoulder pain, injured after lifting weights

ECR10#1

DDX: Distal Clavicular Resorption/Osteolysis

- Post-Traumatic/Stress Induced Osteolysis
- Rheumatoid Arthritis
- Hyperparathyroidism
- Renal Osteodystrophy
- Septic Joint
- Scleroderma
- Gout

Thrower's Shoulder

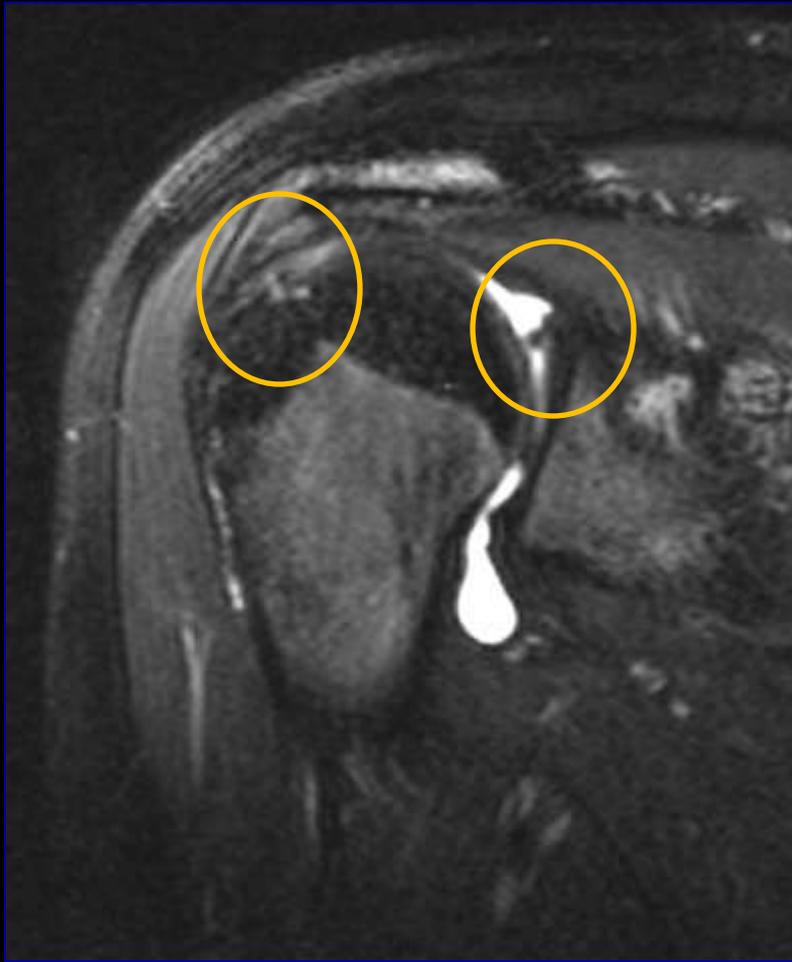


- Posterosuperior Impingement
 - Of
 - Undersurface rotator cuff
 - Between
 - Labrum
 - Humeral head
 - With
 - Abduction
 - External rotation
 - Causing
 - Labral tear
 - Undersurface RCT

Internal Impingement



Internal Impingement

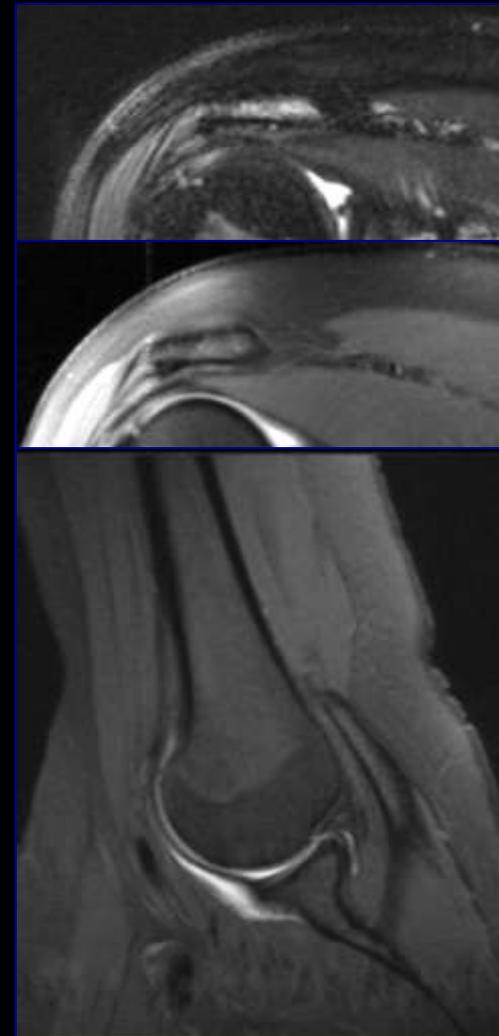


Internal Impingement

- Occurs in athletes when in extreme abduction and external rotation
- Supraspinatus and/or infraspinatus tendon becomes entrapped between the humeral head and posterior glenoid
- Contact here can be normal with overhand movement
- Pathologic findings due to this contact implies the diagnosis

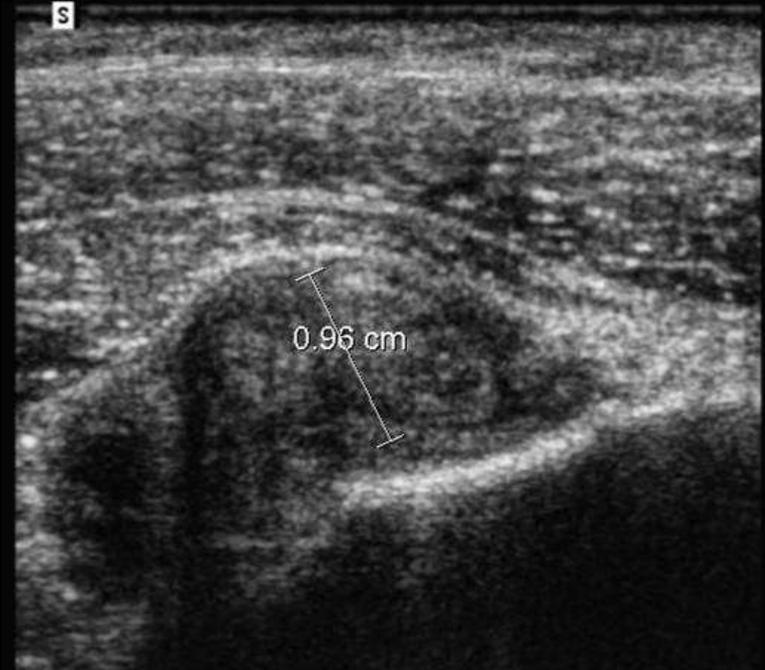
Internal Impingement

- MRI Findings:
 - Posterior humeral head cystic changes
 - Posterosuperior labral pathology
 - Partial undersurface tears in the supraspinatus or infraspinatus tendon



Slot Machine Tendinitis

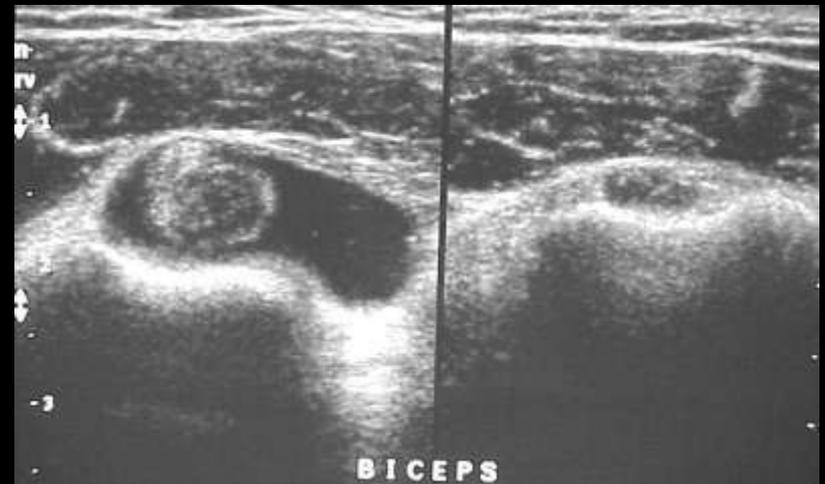
- Tenderness of the shoulder from playing slot machines.
- Tender over biceps in bicipital groove
- Rx – win early



82M Biceps tendinosis

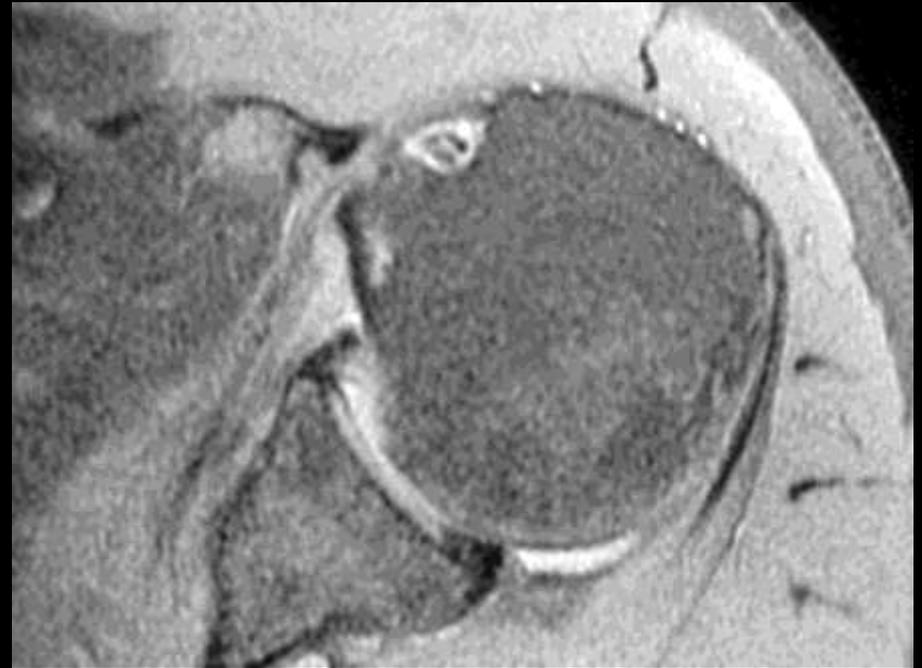
Slot Machine Tendinitis

- Tenderness of the shoulder from playing slot machines.
- Tender over biceps in bicipital groove
- Rx – win early



Slot Machine Tendinitis

- Tenderness of the shoulder from playing slot machines.
- Tender over biceps in bicipital groove
- Rx – win early



Tear of long head of biceps

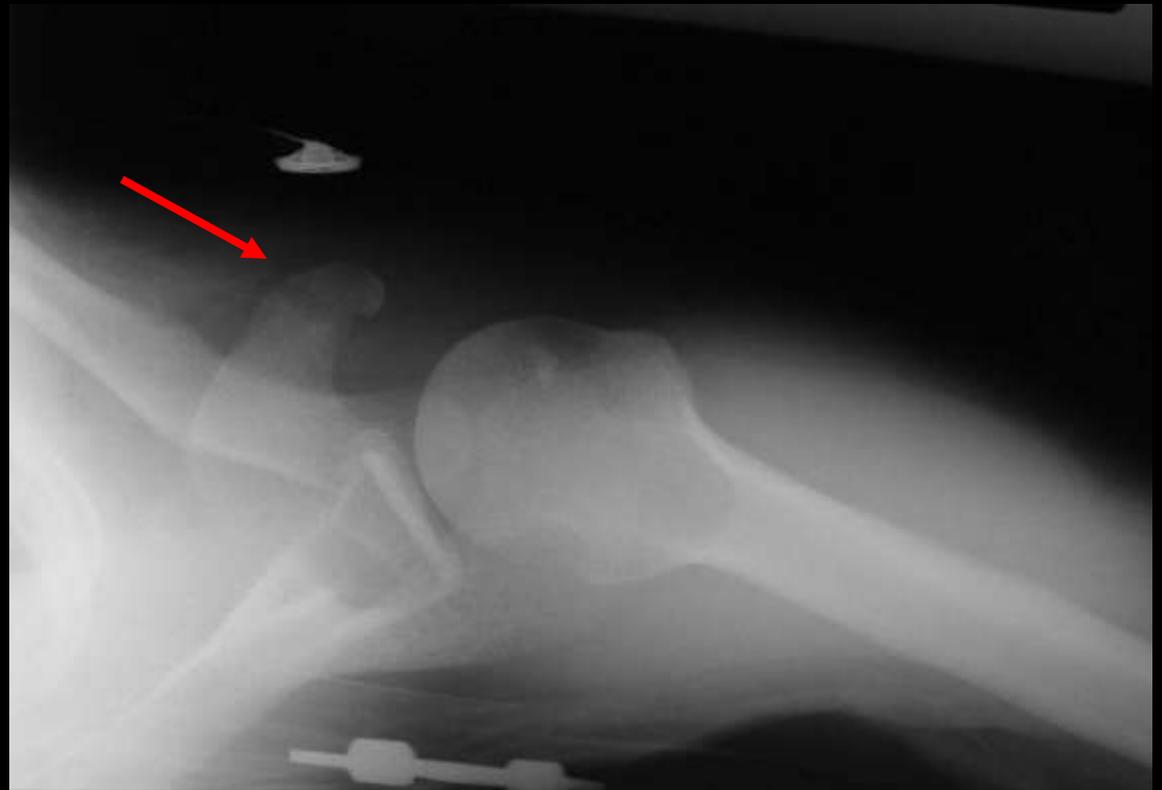
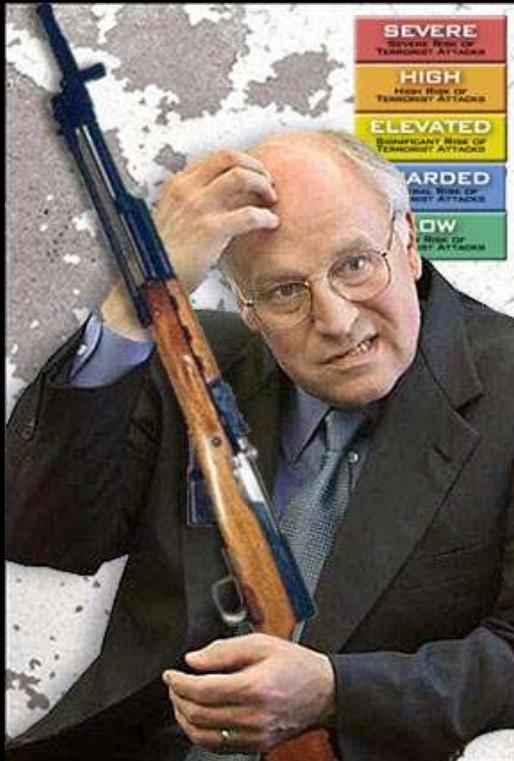
Trap shooter's shoulder

- Stress fracture of coracoid
- Occ. Poor technique acute injury



Trap shooter's shoulder

- Stress fracture of coracoid



Trap shooter's shoulder



W 2000 : L 500

Trap shooter's shoulder



W 2000 : L 500

Trap shooter's shoulder



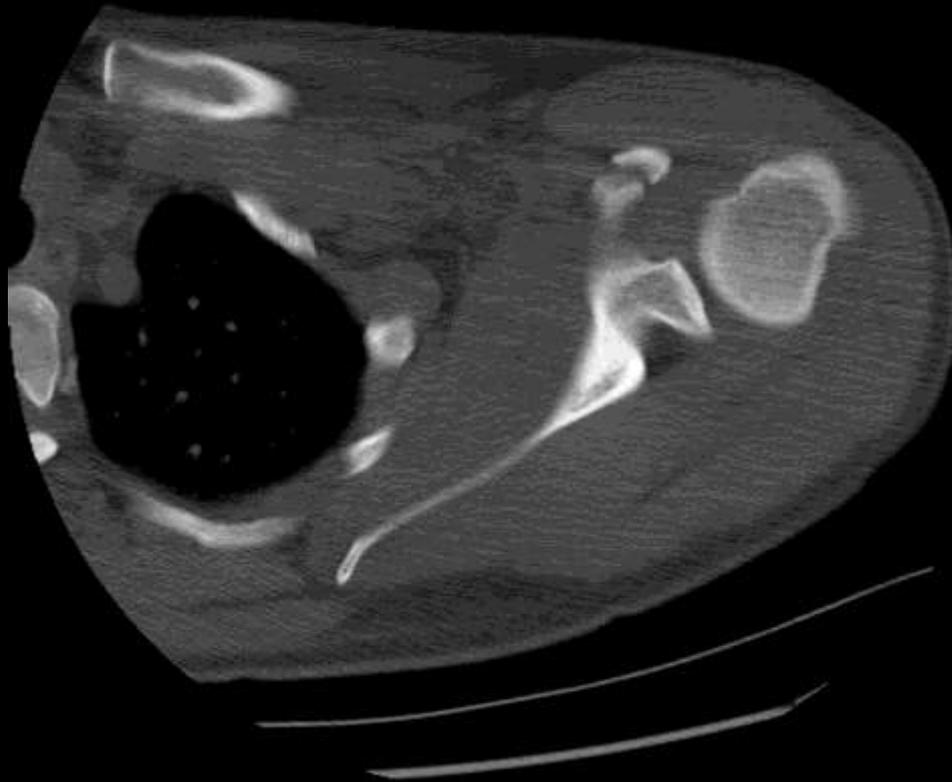
W 2000 : L 500

Trap shooter's shoulder



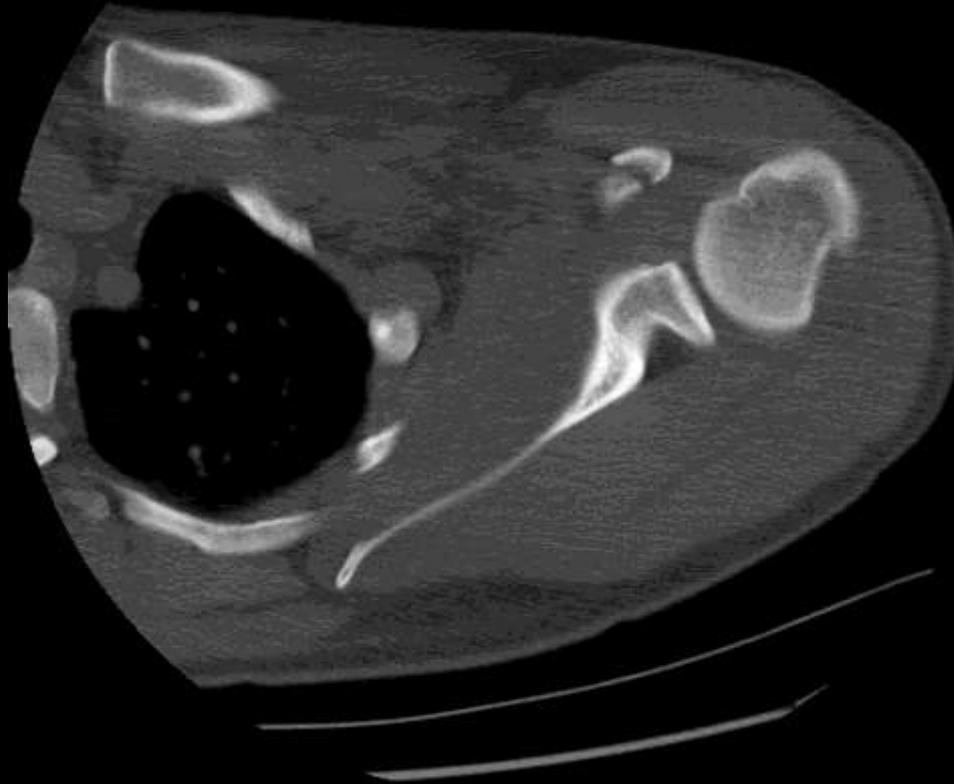
W 2000 : L 500

Trap shooter's shoulder



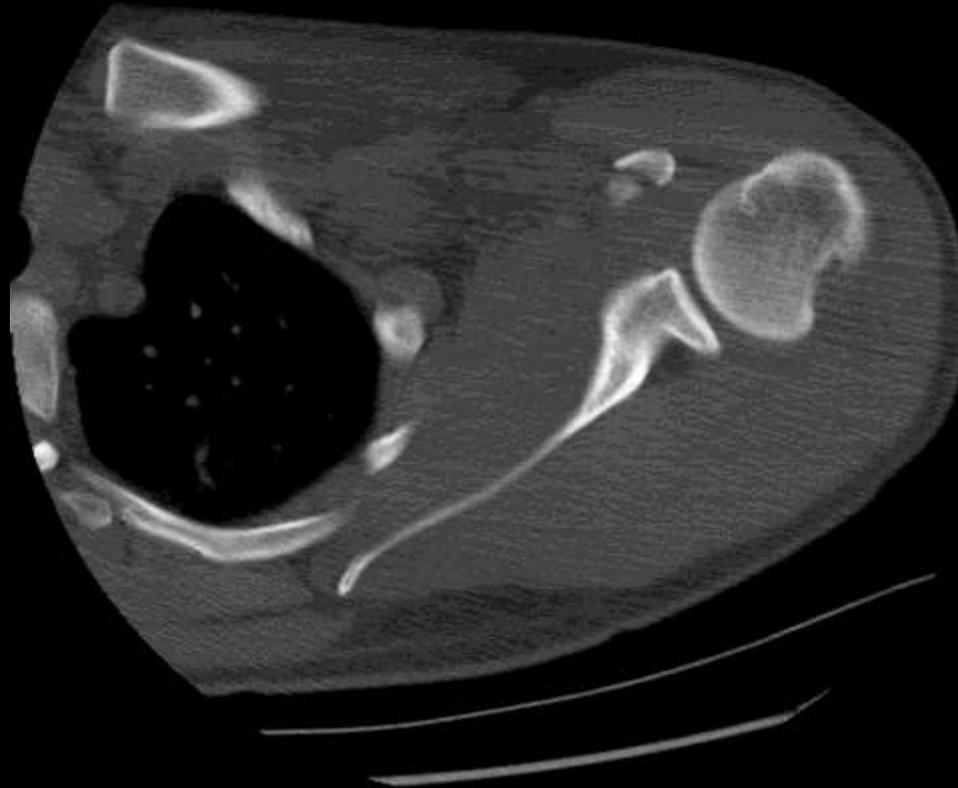
W 2000 : L 500

Trap shooter's shoulder



W 2000 : L 500

Trap shooter's shoulder



W 2000 : L 500

Trap shooter's shoulder



W 2000 : L 500

Trap shooter's shoulder



W 2000 : L 500

Trap shooter's shoulder



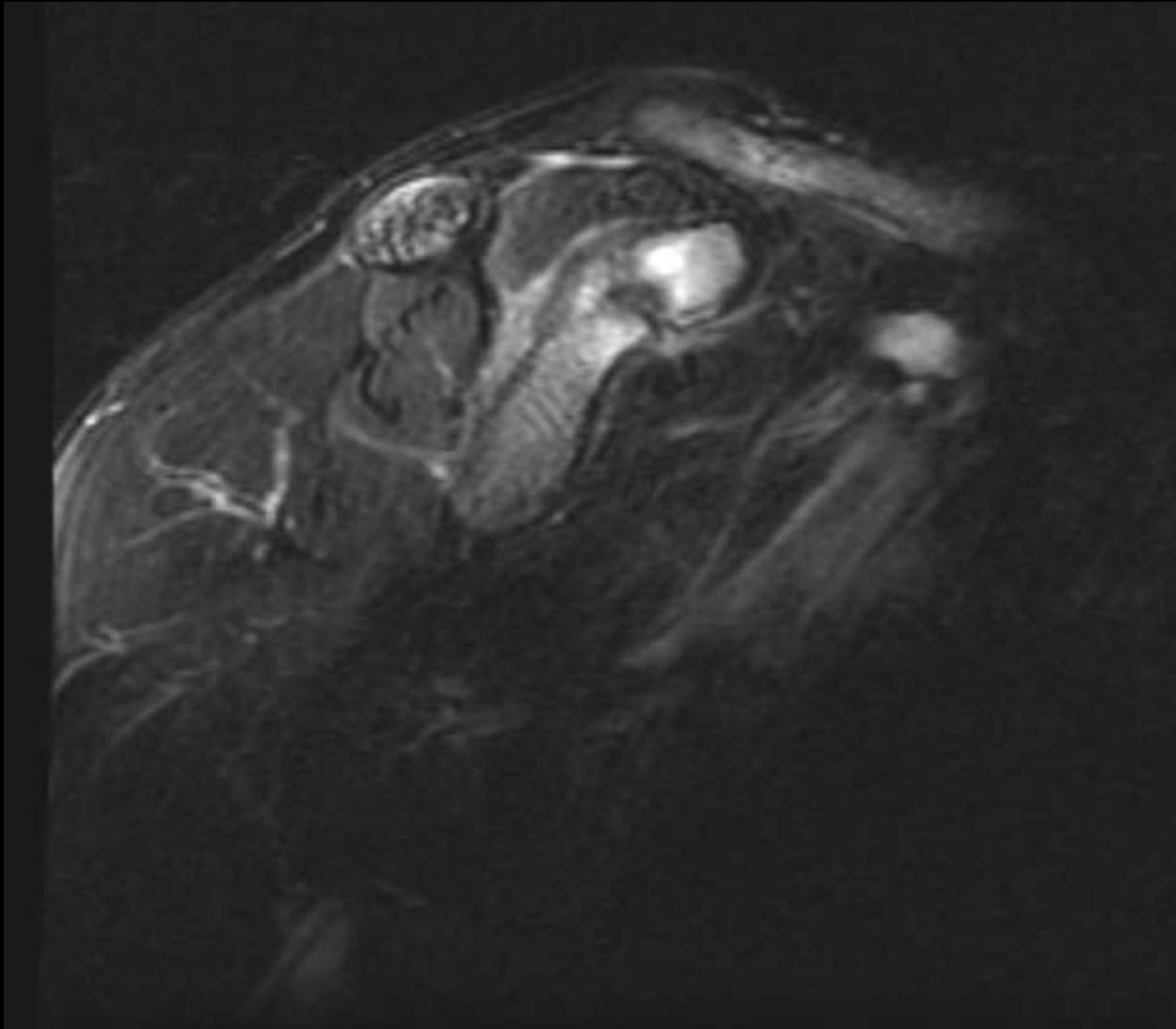
W 2000 : L 500

Trap shooter's shoulder



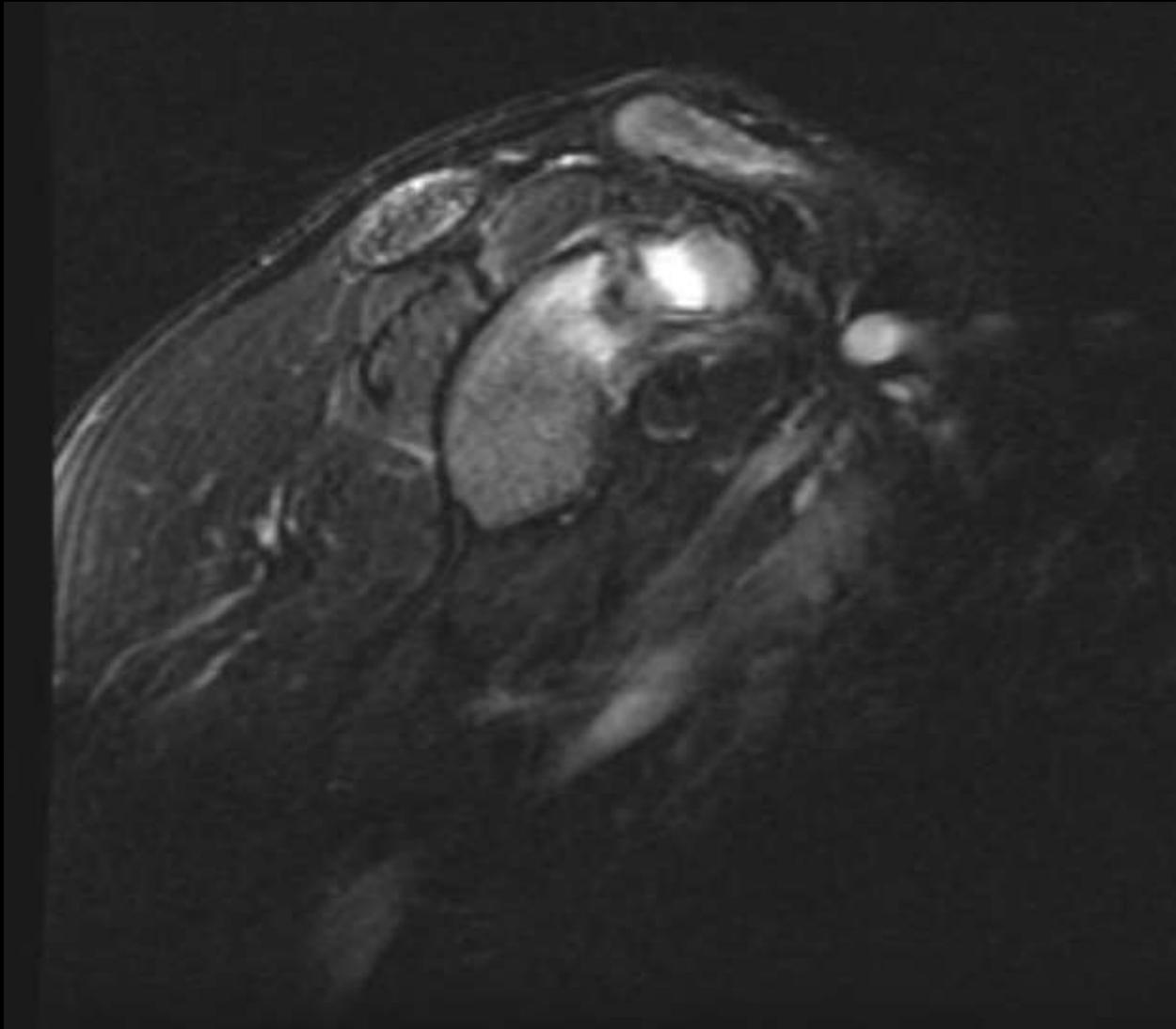
W 2000 : L 500

Trap shooter's shoulder



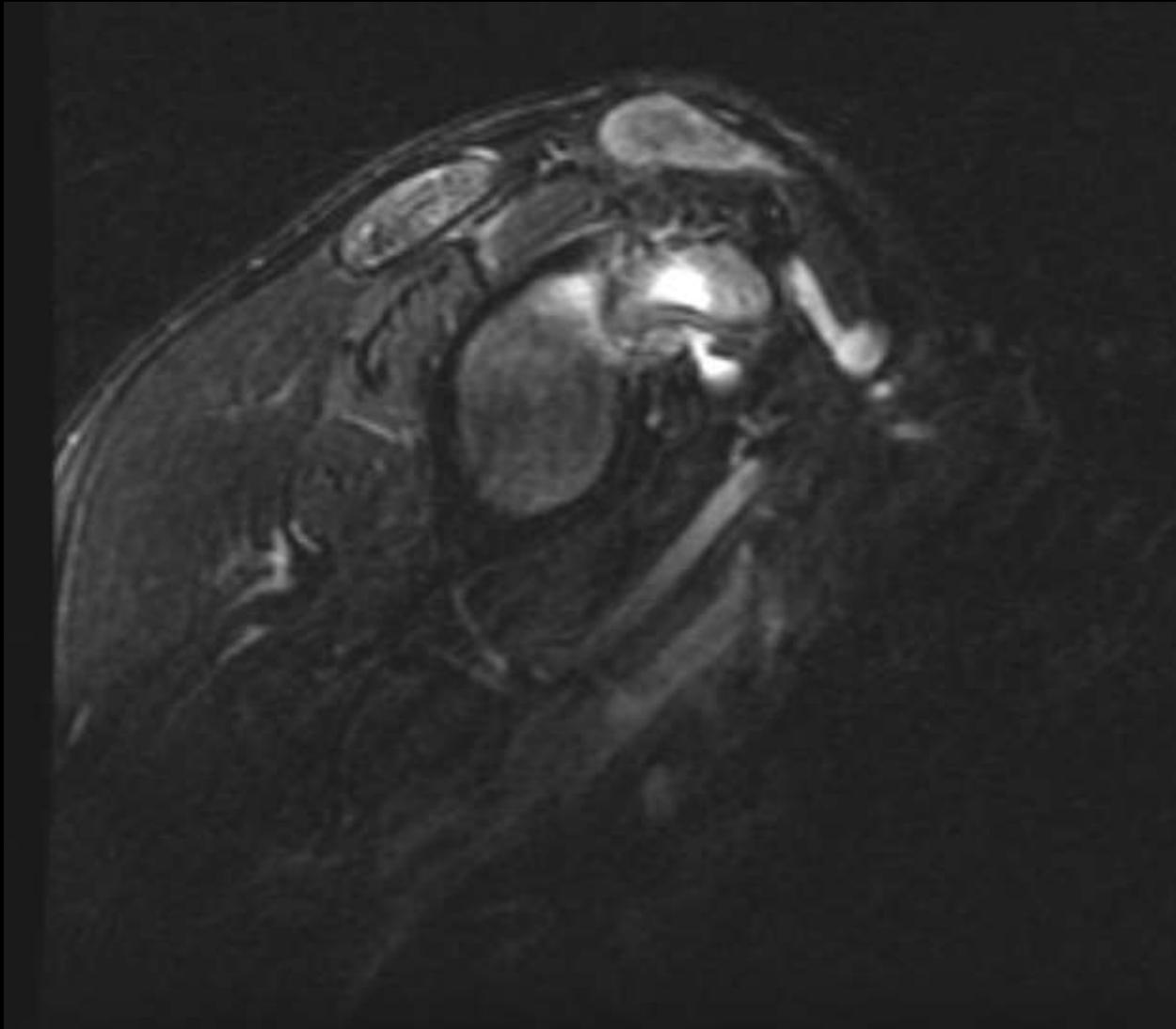
Coracoid physeal injury 15M

Trap shooter's shoulder



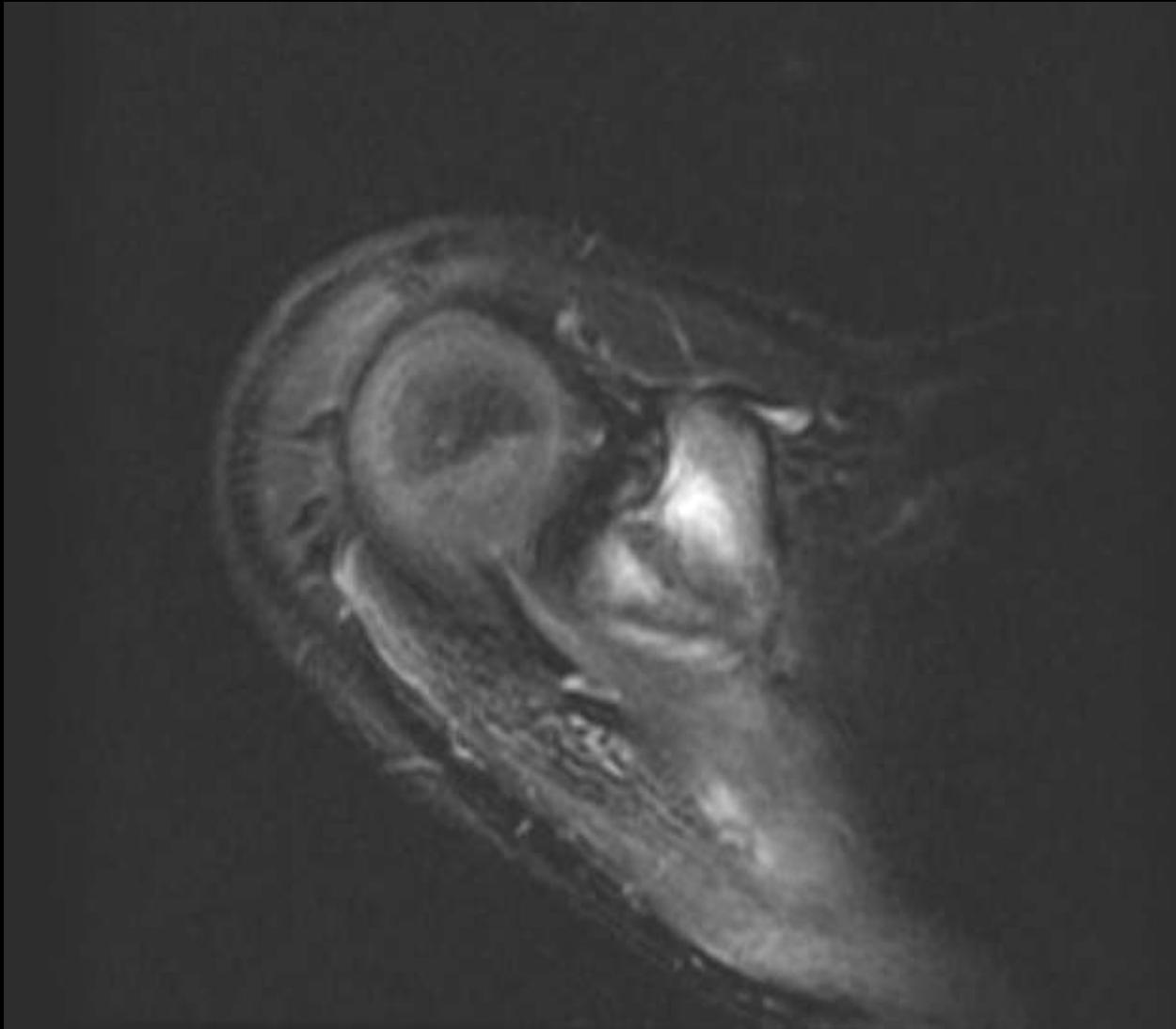
Coracoid physeal injury 15M

Trap shooter's shoulder



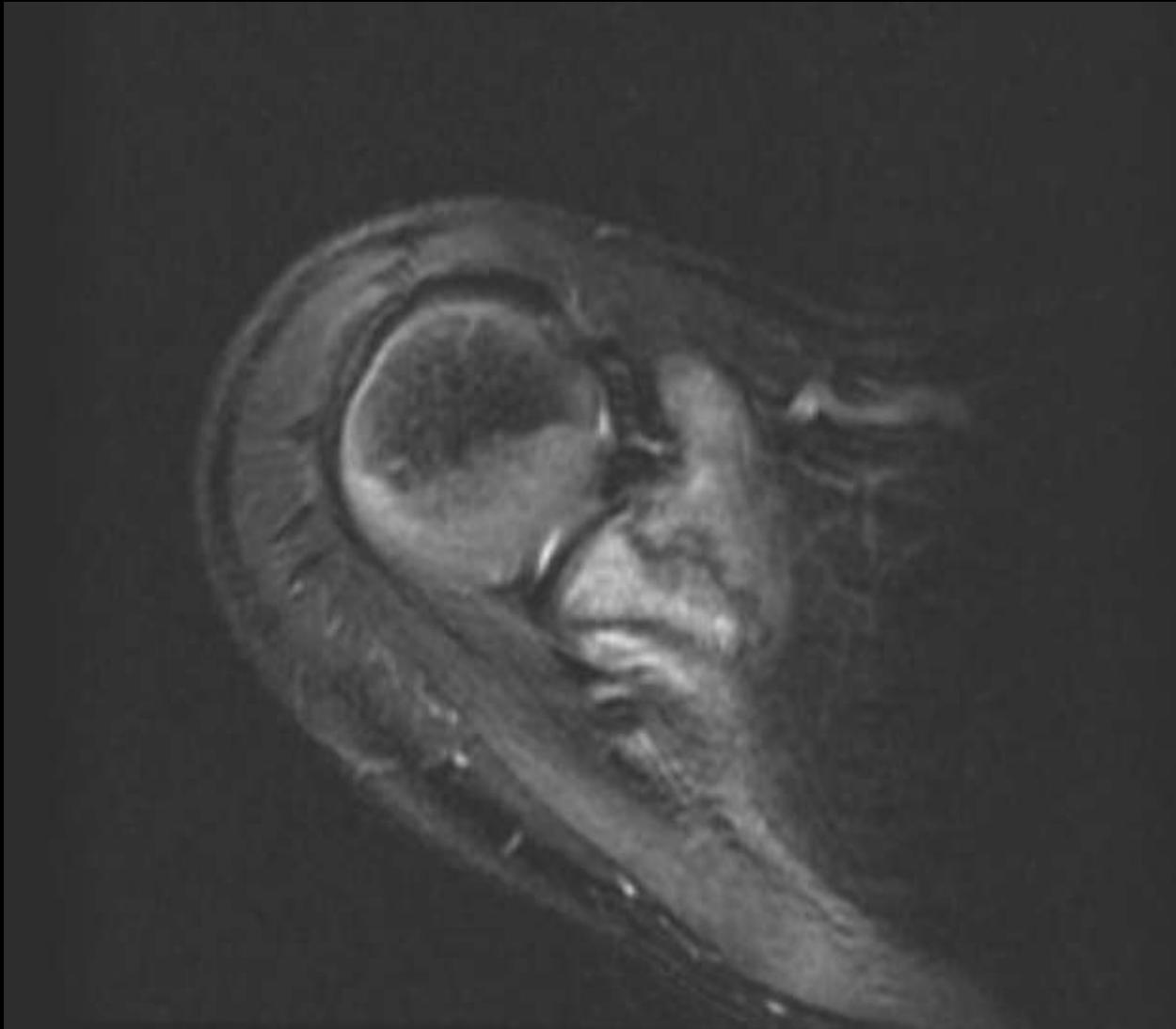
Coracoid physeal injury 15M

Trap shooter's shoulder



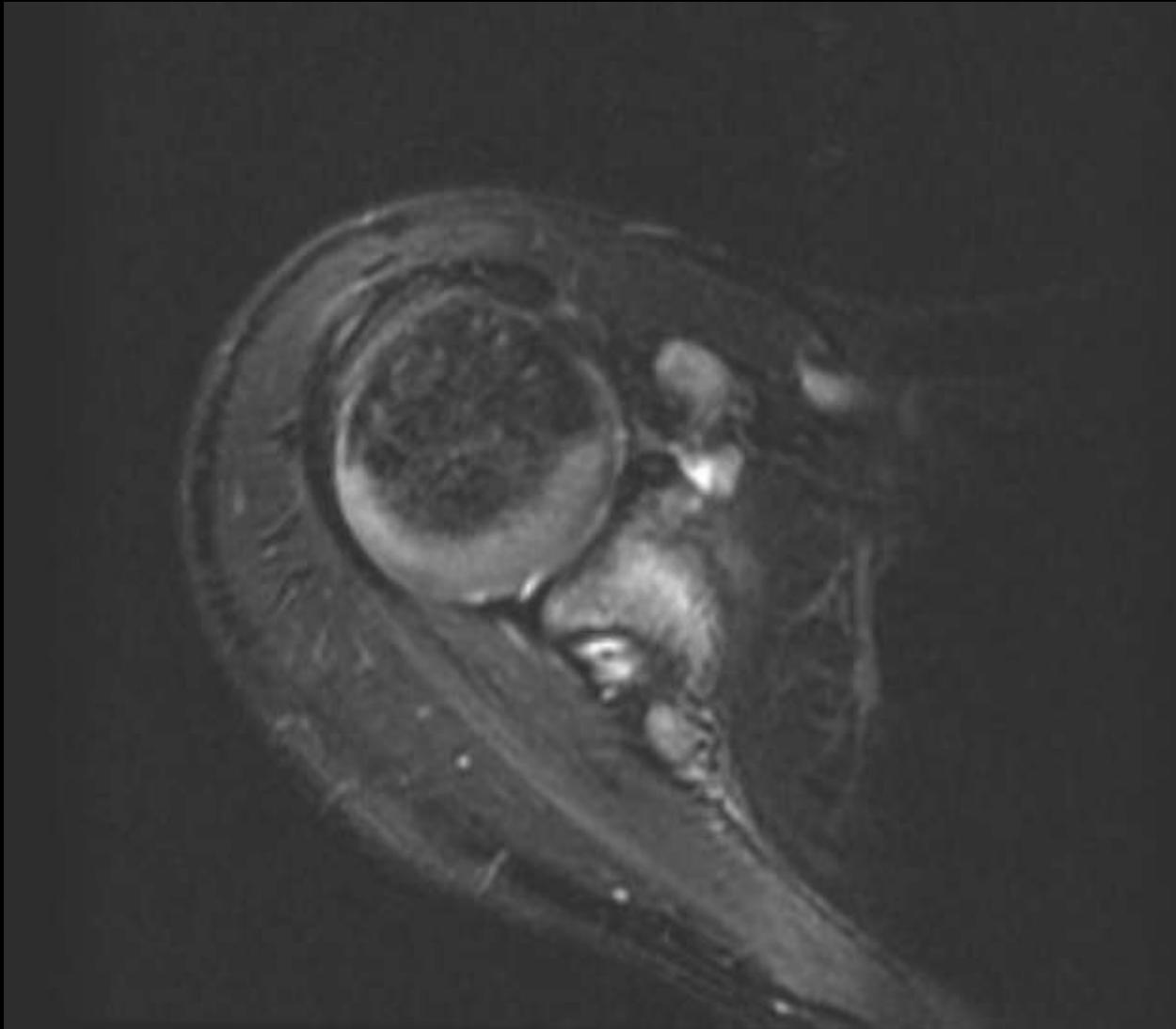
Coracoid physeal injury 15M

Trap shooter's shoulder



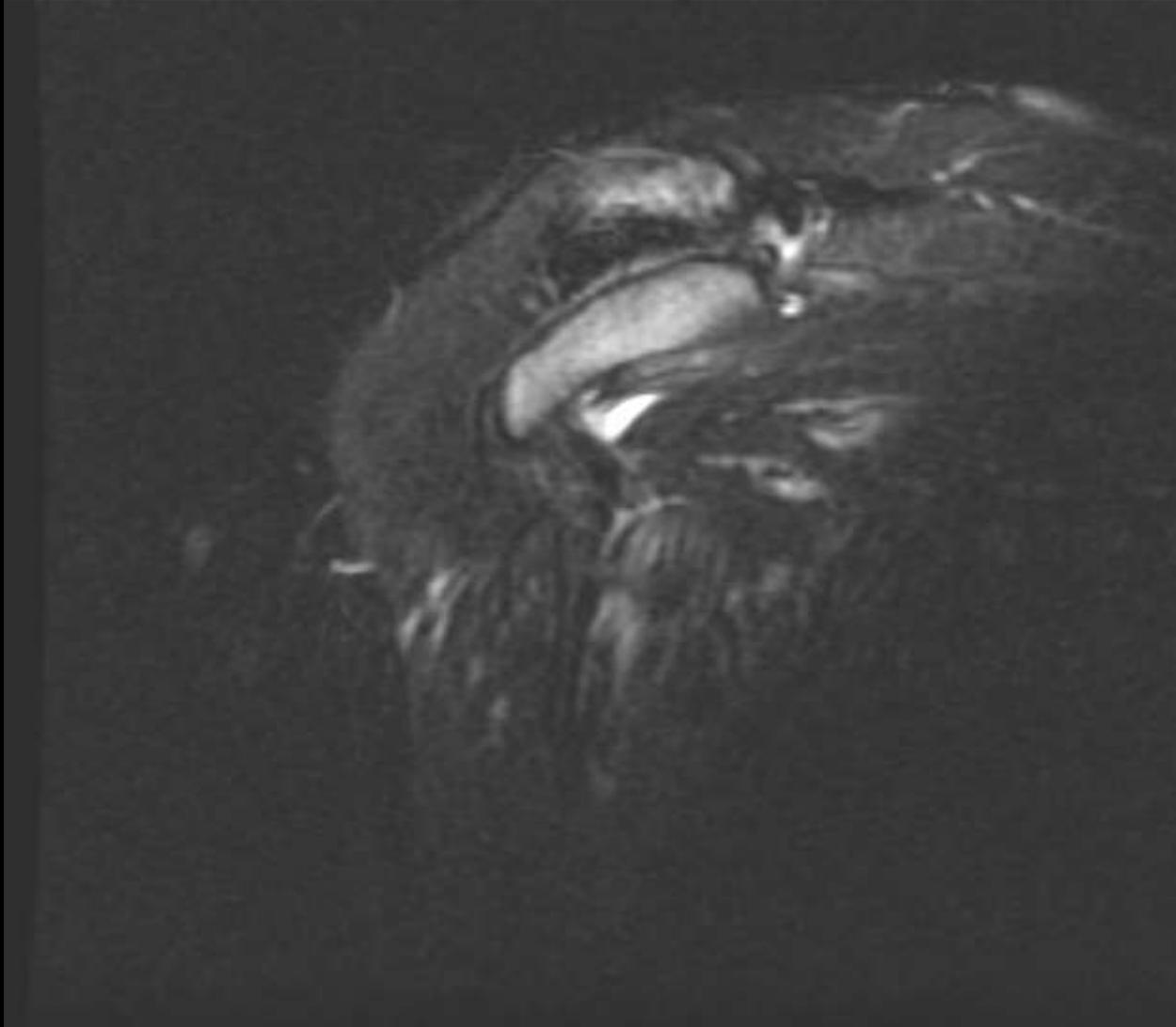
Coracoid physeal injury 15M

Trap shooter's shoulder



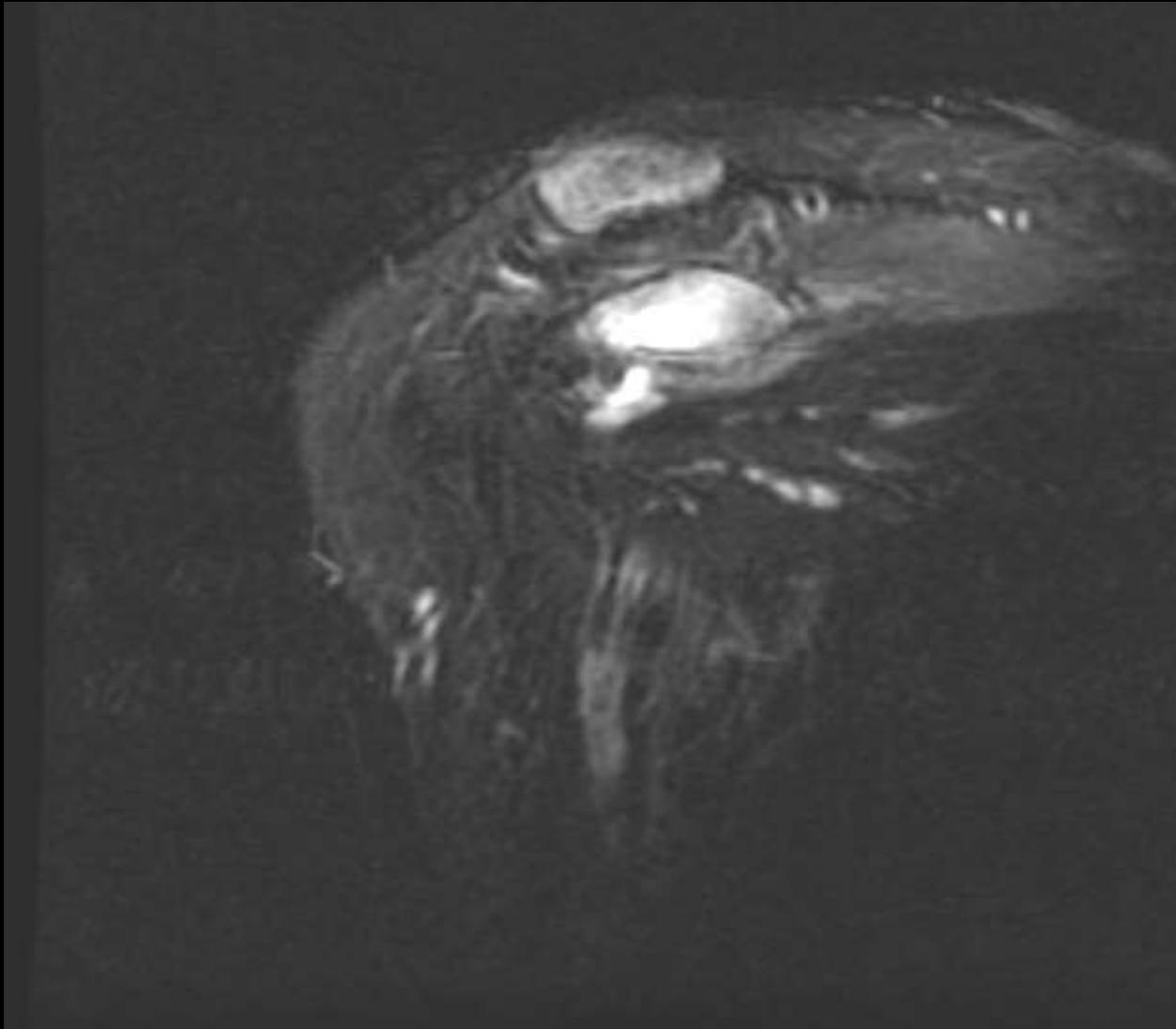
Coracoid physeal injury 15M

Trap shooter's shoulder



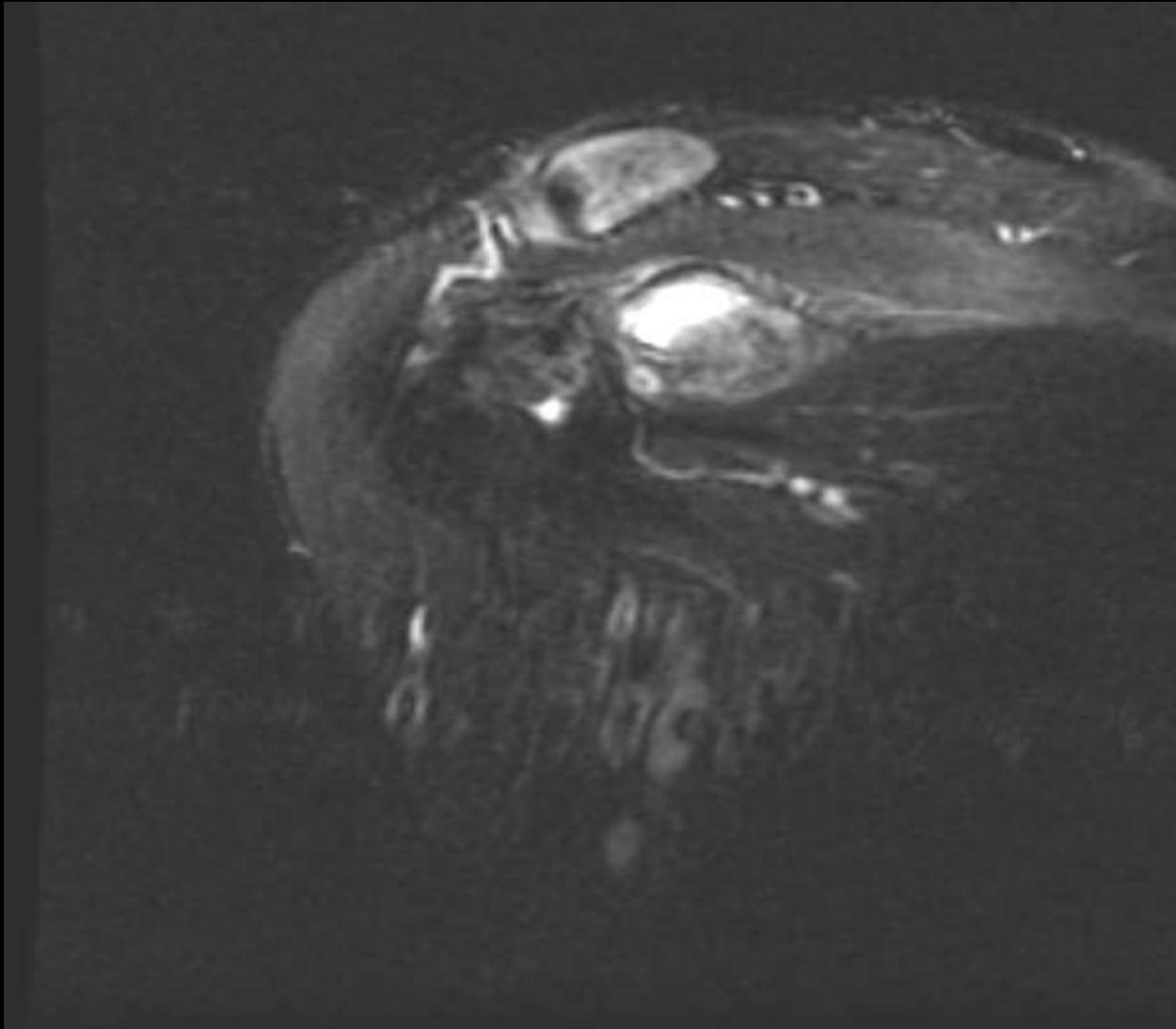
Coracoid physeal injury 15M

Trap shooter's shoulder



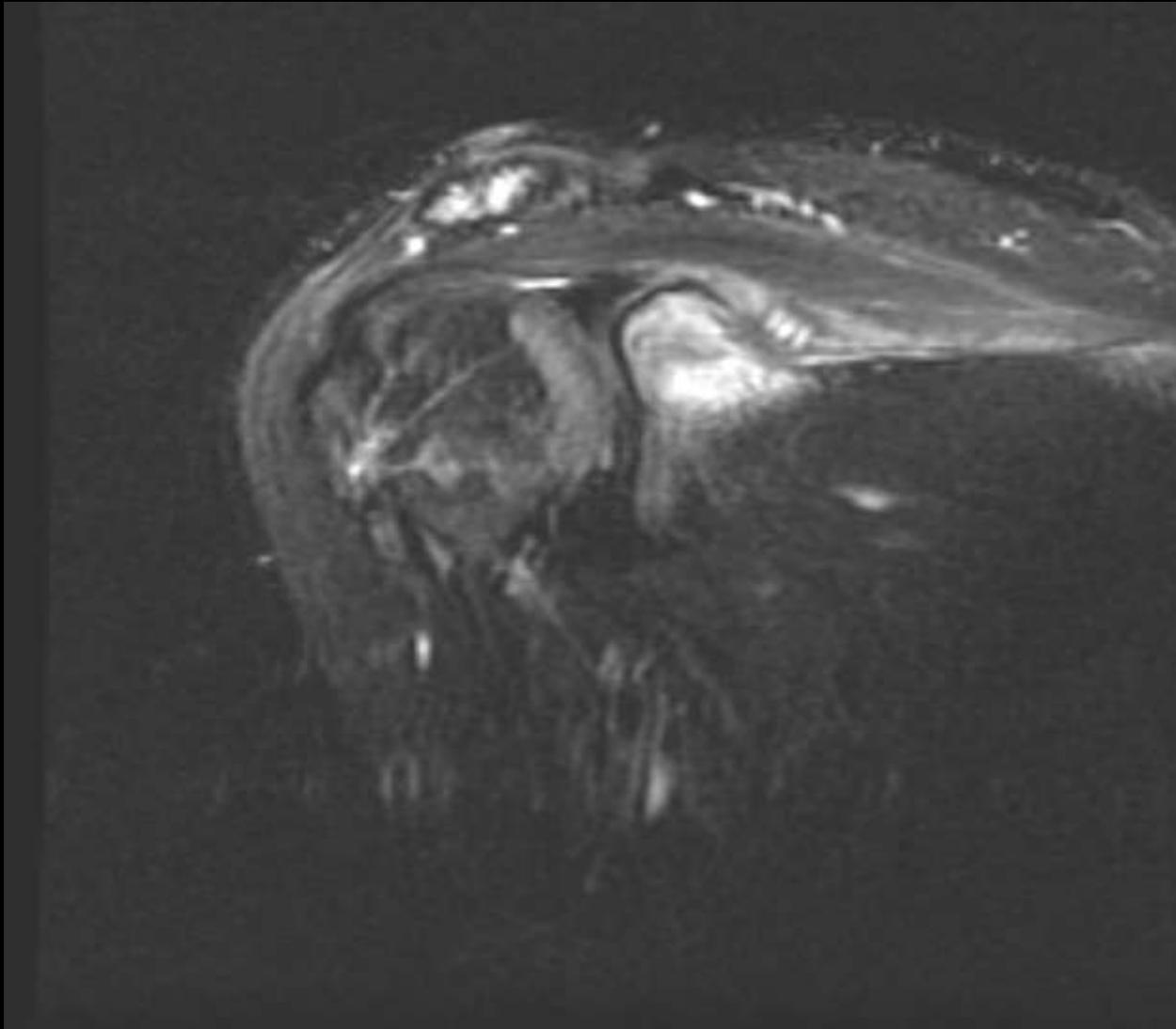
Coracoid physeal injury 15M

Trap shooter's shoulder



Coracoid physeal injury 15M

Trap shooter's shoulder



Coracoid physeal injury 15M

Little Leaguer's Shoulder

- Overuse fatigue
- Proximal humeral physis
- “Salter Harris 1”
- Widened and irregular physis
- Compare with contra



Little Leaguer's Shoulder



Right for comparison



Left handed pitcher



Torsional overload

11-16 boys

83% pitchers

Little Leaguer's Shoulder



Right Handed pitcher

Signs:

Widened laterally

Lateral metaphyseal fragmentation

Lateral metaphyseal calcification

Demineralization

Metaphyseal sclerosis

Rarely slipped capital humeral epi.

Little Leaguer's Shoulder



Right Handed pitcher

Complications:

Limb shortening 10%

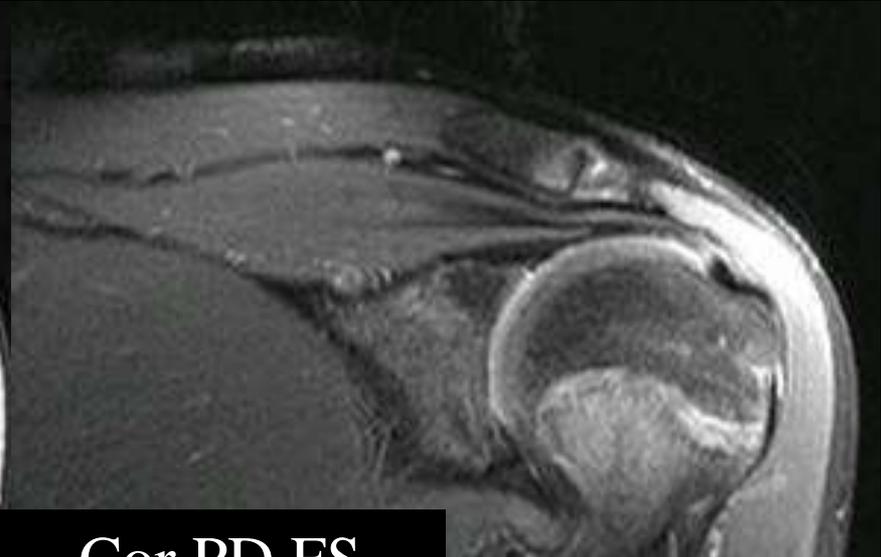
Osteonecrosis of humeral head

Humerus varus deformity

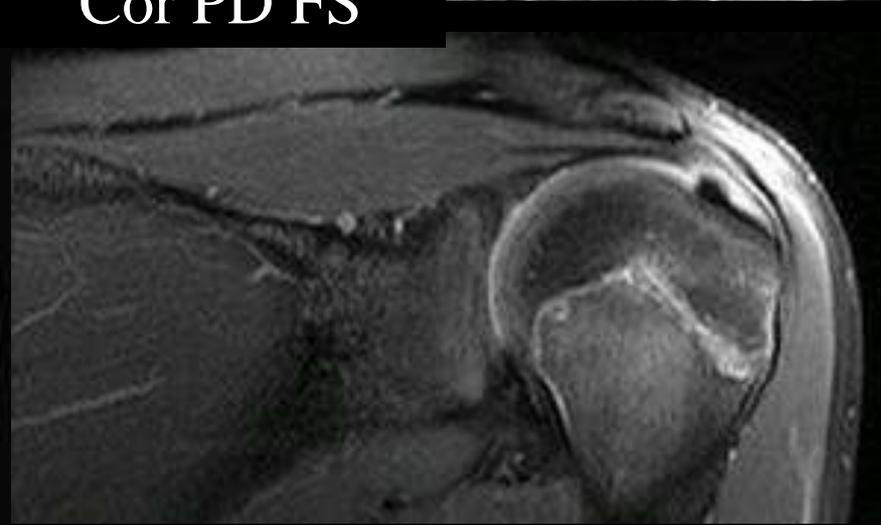
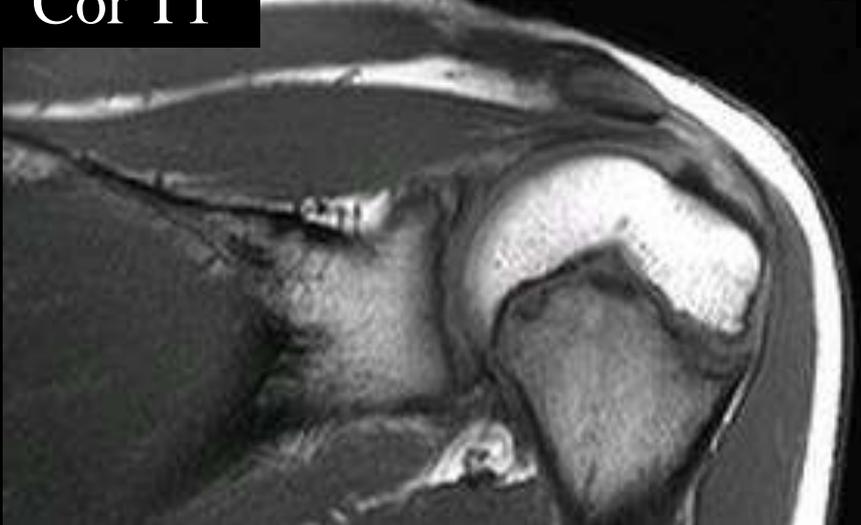
Little Leaguer's Shoulder



Cor T1



Cor PD FS



SH2 Proximal humerus

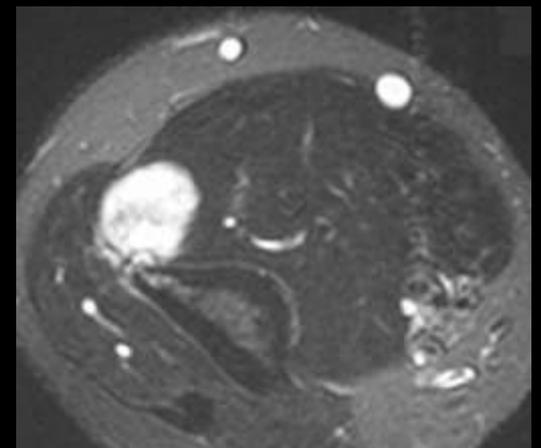


Blocker's Arm

- Blocker's or Tackler's Exostosis
- Anterolateral humerus
- Distal to shoulder pads
- Heterotopic ossification
- Myositis ossificans
- Periosteal damage
- Grows by accretion

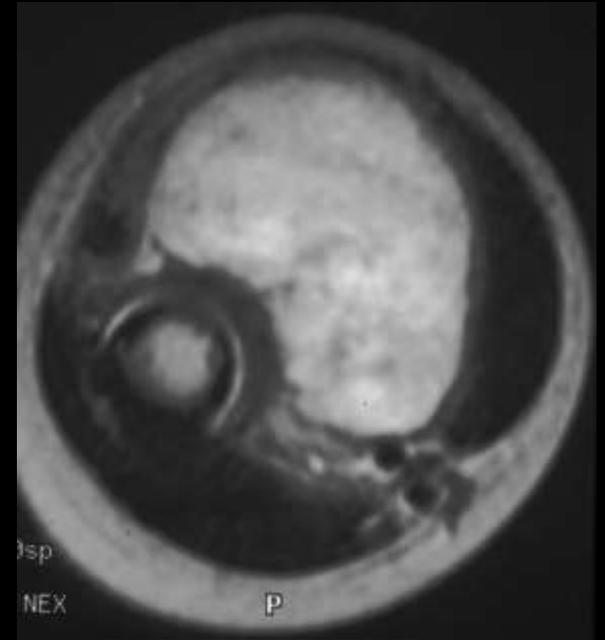


Blocker's Arm



8W post injury

Blocker's Arm



8W post injury

Blocker's Arm

- Post traumatic myositis ossificans
 - 4/52 Faint peripheral Ca
 - Periosteal reaction
 - 8/52 Circumscribed cortex
 - Central lacy pattern
 - 5/12 Maturity
 - >6/12 Regression
 - Separate from bone
 - 1 year Usually disappears
 - Periosteal reaction remains

Blocker's Arm

- Sport related myositis ossificans
 - Single direct blow
 - Repeated minor trauma
 - Adductor longus-Rider's bone
 - Brachialis-Fencer's bone
 - Soleus-Dancer's bone
 - Blocker's arm

Tennis King Kong Arm

- Overdevelopment of dominant arm
- Depressed scapula
- Protracted shoulder posture
- Large forearm



Tennis King Kong Arm

- Overdevelopment of dominant arm
- Depressed scapula
- Protracted shoulder posture
- Large forearm



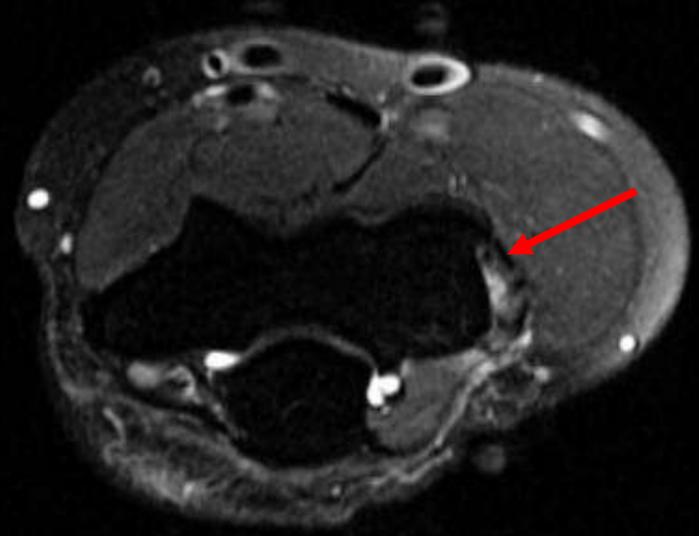
Tennis Elbow

- Coined in the 1880's
- 10-50% of players
- Backhand stroke
- Rare in double handers
- Lateral epicondylitis
 - (no itis)
 - Angiofibroblastic tendinosis
- Common extensor origin
 - ECRB tendinosis
 - ED communis also common



Tennis Elbow

- Risk factors
 - >30 years
 - Improper grip size
 - Metal racket
 - >2hrs per day
 - Tight strings
 - Snapping wrist backhand
- XS motion, vibration, string tension



Tennis Elbow

- Radiographic findings
 - STS
 - Calcification 20-30%



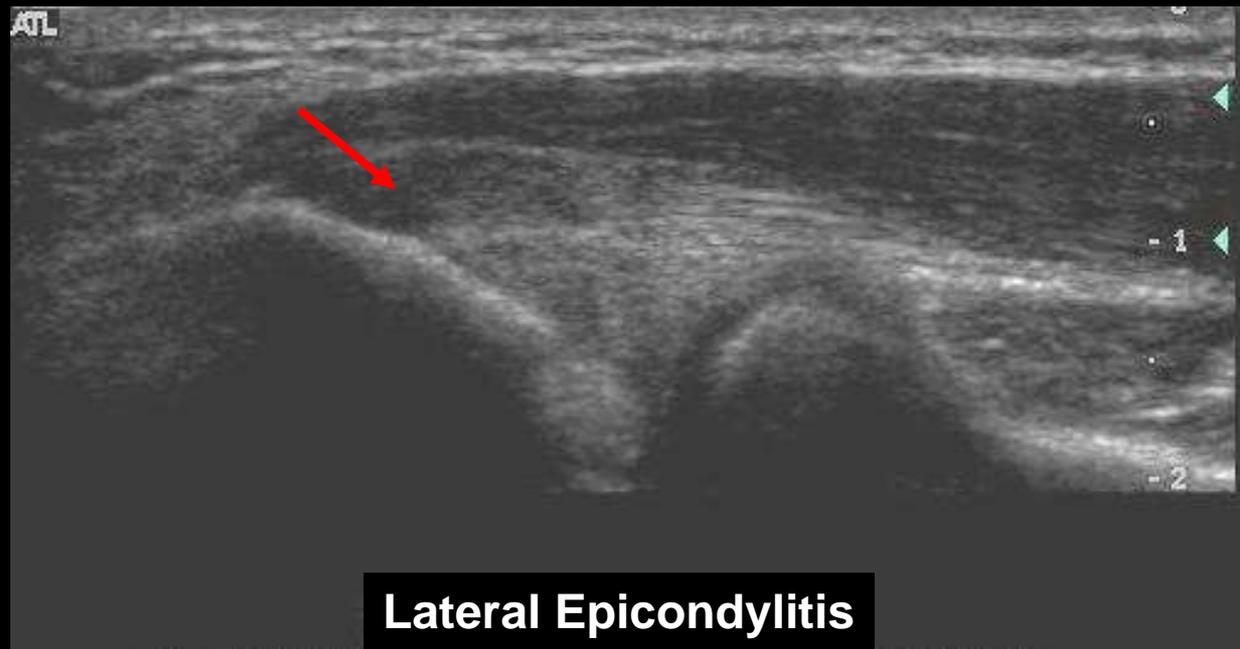
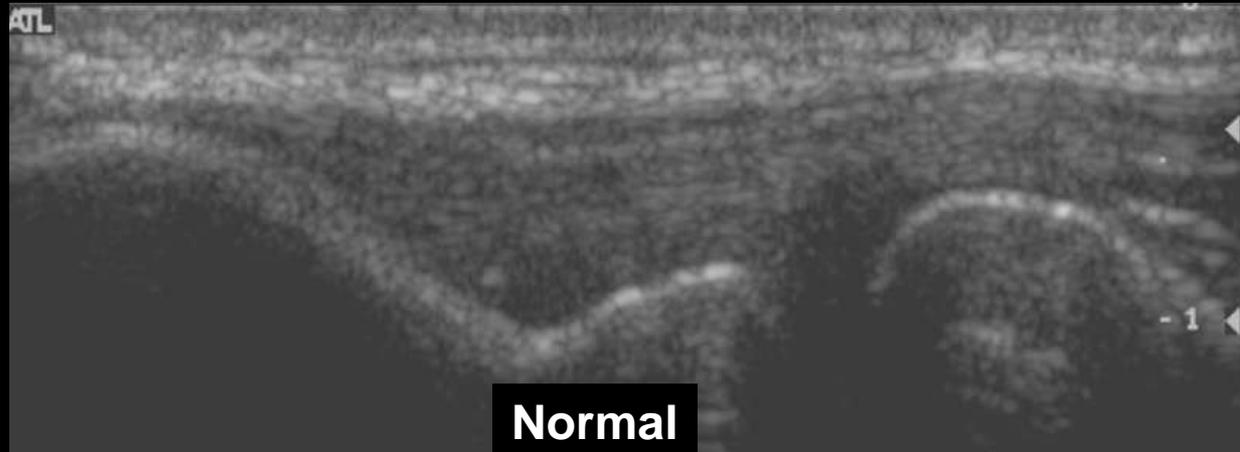
Hooker's Elbow

- Painful elbow swelling suffered by fishermen repeatedly jerking upwards on a fishing line.
- Lateral epicondylitis



Tennis Elbow

Lateral Epicondylitis



Resistant Tennis Elbow

- Radial collateral ligament rupture.
- Radial tunnel syndrome
 - Posterior interosseous branch of radial n.
 - Fibrous arch of supinator (Arcade of Frohse)
 - Distally through supinator



Medial Tennis Elbow

- Medial tennis elbow
 - Lateral:Medial 7:1
 - From acceleration during serving



Medial Epicondylitis

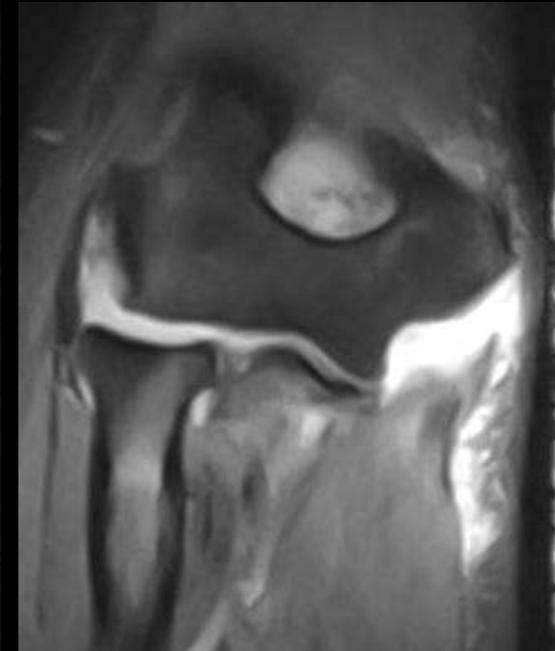
- Baseball pitchers
 - Little league elbow
 - Golfer's elbow
 - Medial Tennis elbow
 - Javelin, Racquetball, Squash, Swimmer's
-
- Epicondylitis 10X more common laterally
 - Disruption more common medially

Medial Epicondylitis

- Tendon degeneration - Tendinosis
- Partial tear
- Tendon disruption
- Muscle strain



Cor T1



Cor T2FS

Disruption more common medially

Golf Arm

- Shoulder and elbow pain after too many rounds of golf.



Golf Elbow

- Historically medial epicondylitis of dominant arm
- Overuse of FCR / pronator muscle mass
- Valgus stress at top of back swing to point of impact
- Hitting the ground
- Associated Ulnar neuropathy
- Medial laxity



Golf Elbow

- **Actually** more common to have lateral epicondylitis of non dominant hand
- Forceful extension with twisting



Common Flexor Tendinosis



Cor T1



Cor PDFS



Cor T2FS

Little Leaguer's Elbow

- Purists
 - 9-12Y
 - Throwers
 - Medial traction apophysitis / epicondylitis
 - Repetitive valgus stress
 - Hypertrophy of medial epicondyle
 - Microtearing of flexor / pronator group
 - Fragmentation of medial epicondylar apophysis



Little Leaguer's Elbow



Rt



Lt

Medial Epicondylitis



Medial Epicondyle Avulsion

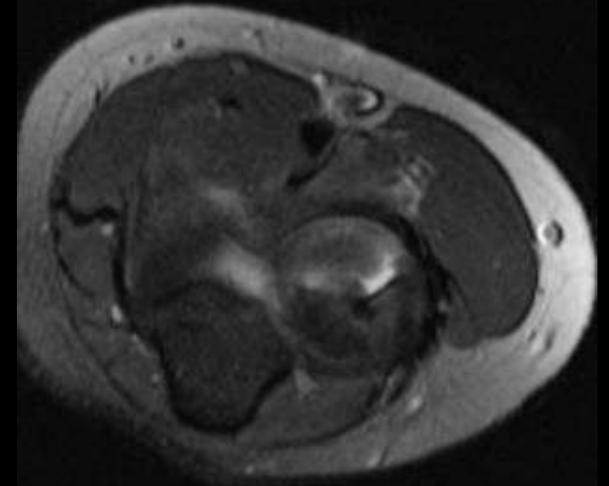


Little Leaguer's Elbow

- Pannars disease
- 5-10Y Boys
- Osteochondrosis of the capitulum
- Trauma history
- Fissuring and increased density
- Decreased size, fragmentation, resorption



Little Leaguer's Elbow

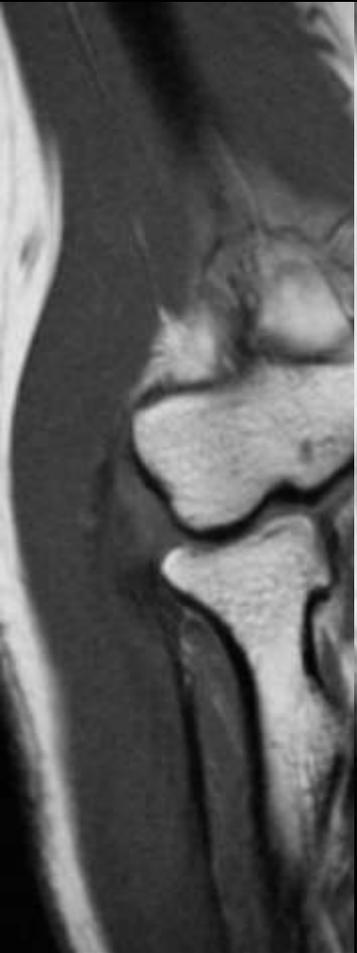


Dog Walker's Elbow

- Pain caused by constant tension and tugs from a dogleash.
- Medial or lateral epicondylitis depending on dog



Dog Walker's Elbow



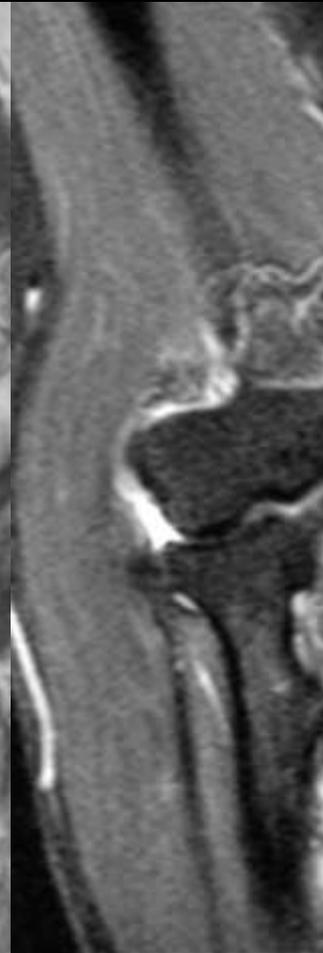
Cor T1



Cor PD



Cor T2



Cor T2FS



Cor STIR

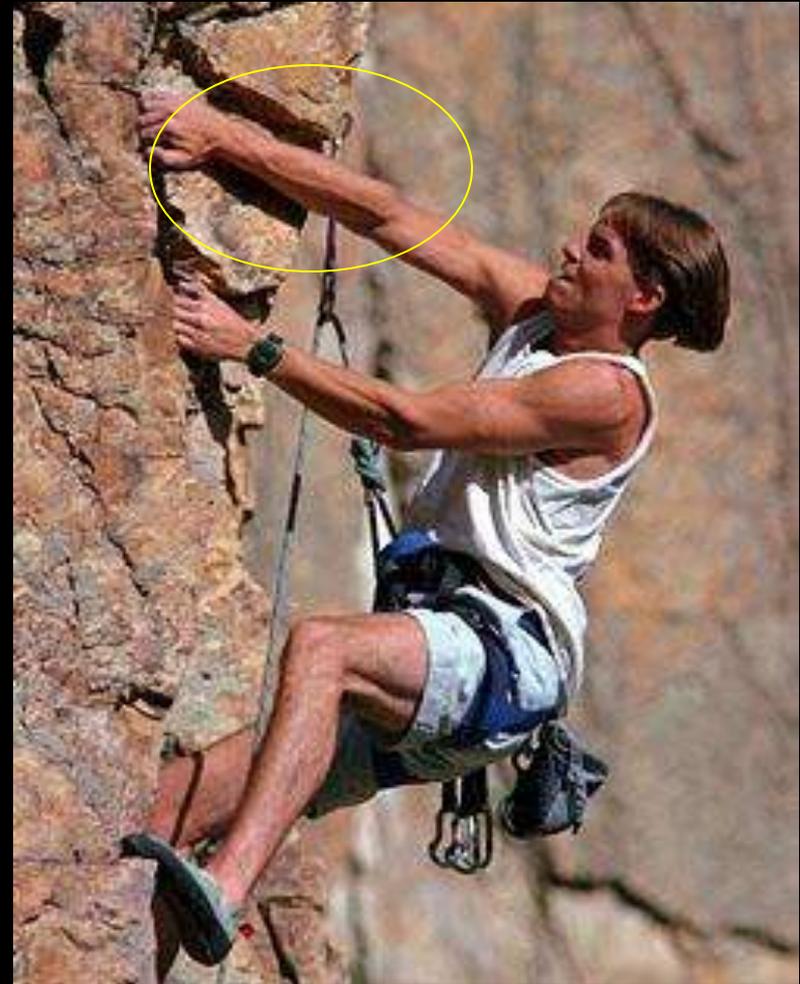
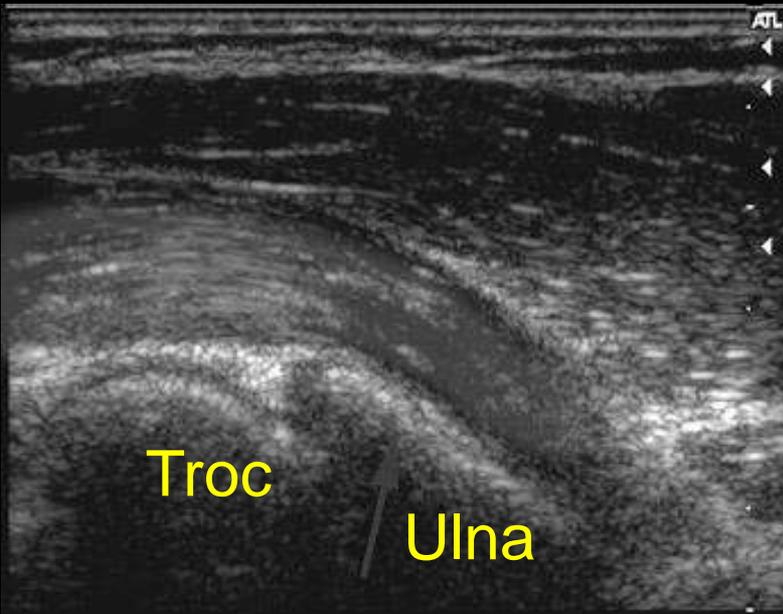
51F with 2 Bouviers. Dog ran off with leash, patient still holding.

Dog Walker's Elbow



Climber's Elbow

- Brachialis tendinosis



Bull riders forearm

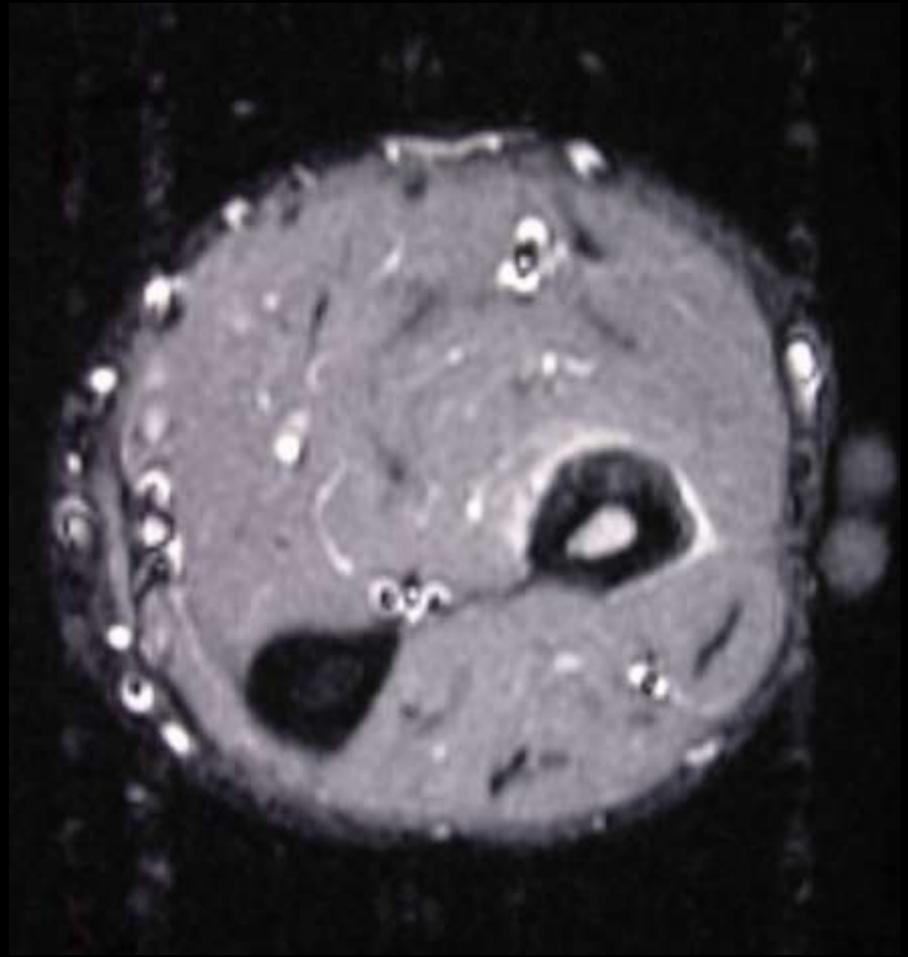


21M

Myers MC. Radiographic Findings of the Upper Extremity in Collegiate Rodeo Athletes.

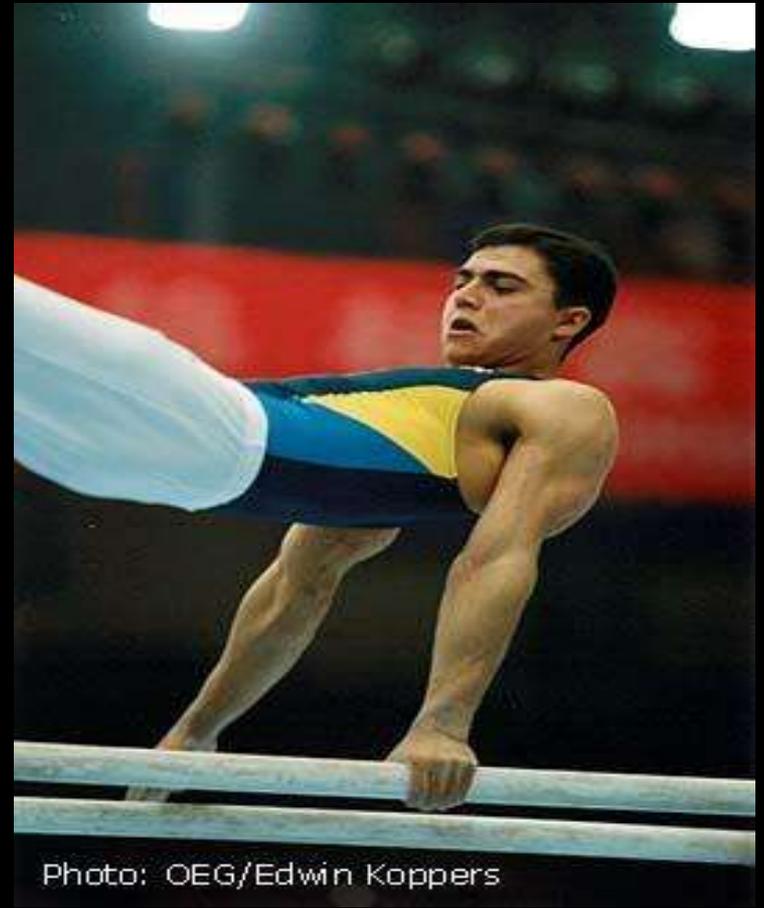
Med. Sci. Sports Exerc., Vol. 35, No. 4, pp. 543-547, 2003.

Bull riders forearm



Gymnast's Wrist

- “Salter Harris 1”
- Repetitive strain
- Distal radial physis



Carter SR, Aldridge MJ, Fitzgerald R, et al. Stress changes of the wrist in adolescent gymnasts. *Br J Radiol* 1988; 61:109-112.

Stress changes of the distal radial epiphysis in young gymnasts: a report of twenty-one cases and a review of the literature.

Roy S, Caine D, Singer KM. *Am J Sports Med* 1985; 13:301-308.

Gymnast's Wrist



Sag PDFS

Oarsmen's / Bugaboo wrist Intersection Syndrome

- Oarsmen's wrist
- Crossover syndrome
- Squeaker's wrist
- Bugaboo forearm
- Peritendinitis crepitans
- Subcutaneous perimyositis
- Abductor pollicis longus bursitis
- Abductor pollicis longus syndrome

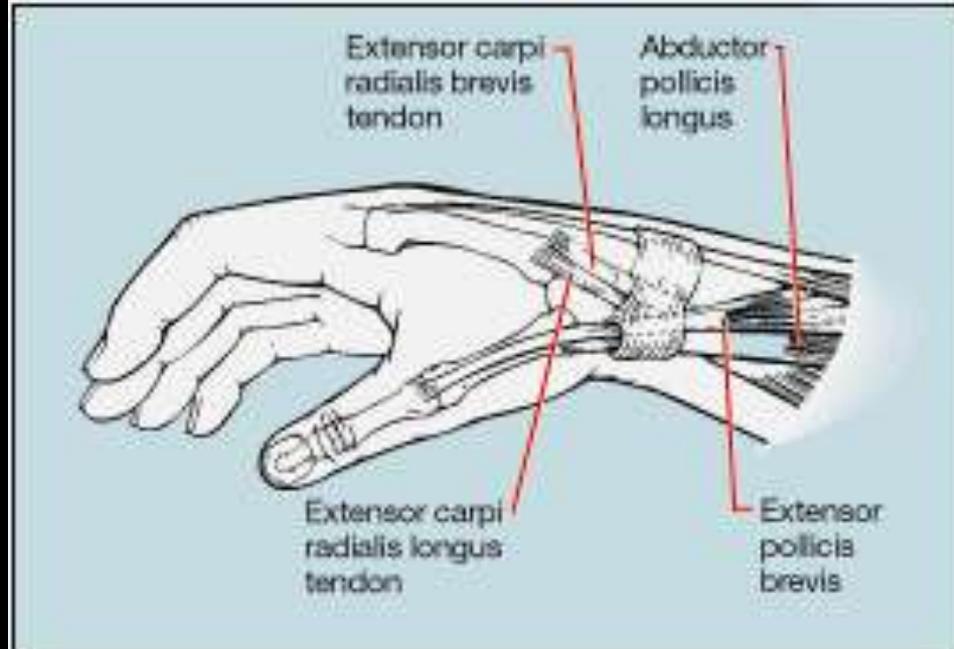


Oarsmen's / Bugaboo wrist

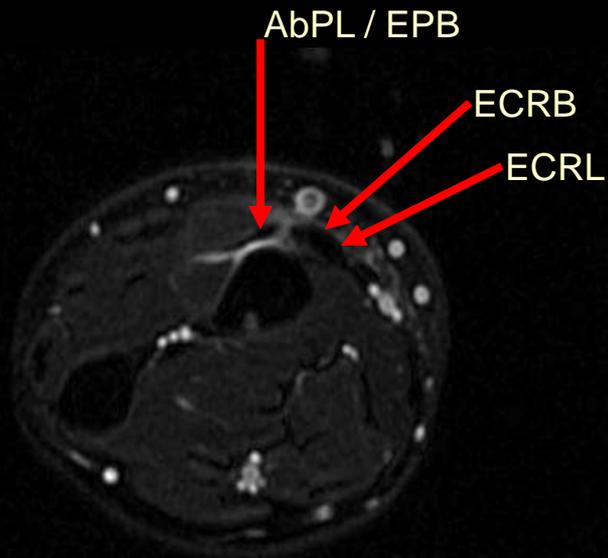
- Overuse syndrome of the distal forearm
- Heavy and repetitive use of the wrist and thumb
- Wringing, grasping, turning and twisting motions
- Secretaries, carpenters, maintenance, filing workers
- Athletes involved in weightlifting, rowing or canoeing
- Rice-harvesting workers in Thailand

Oarsmen's / Bugaboo wrist

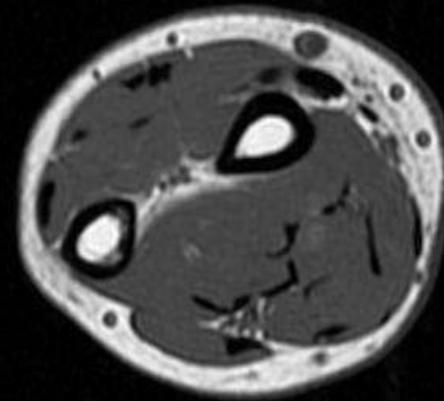
- Inflammation at the intersection of the first dorsal extensor tendon compartment and second dorsal extensor compartment (DETC)
- Friction of the muscle bellies of the 1st DETC with the tendon sheath of the 2nd DETC
- Entrapment from stenosis of the 2nd DETC



Oarsmen's / Bugaboo wrist

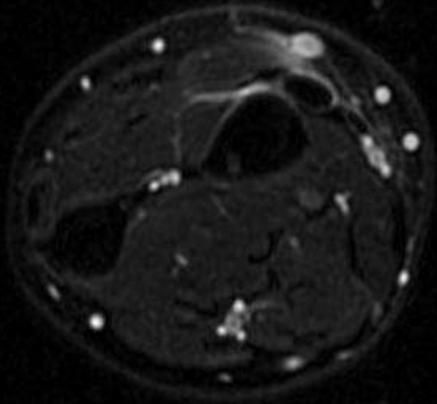


Ax T2FS

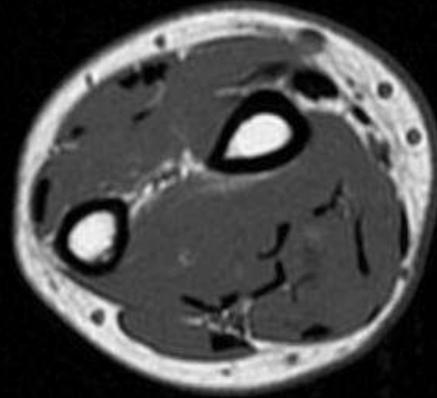


Ax T1

Oarsmen's / Bugaboo wrist

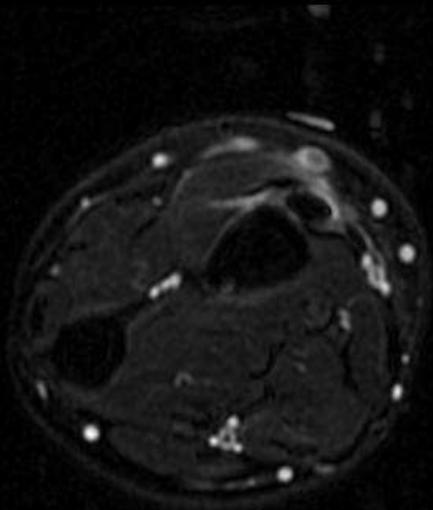


Ax T2FS

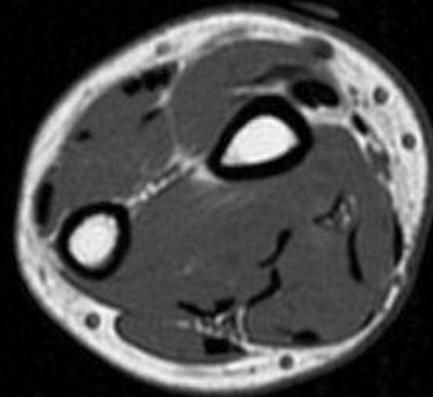


Ax T1

Oarsmen's / Bugaboo wrist

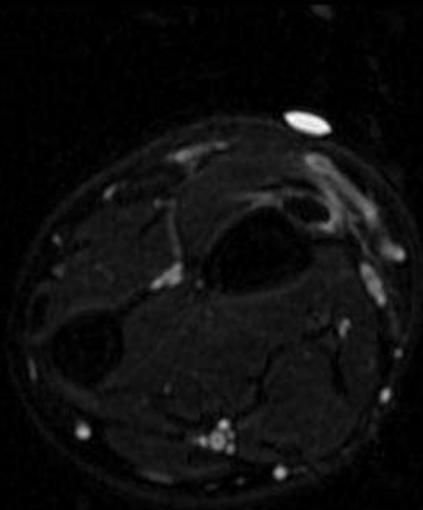


Ax T2FS

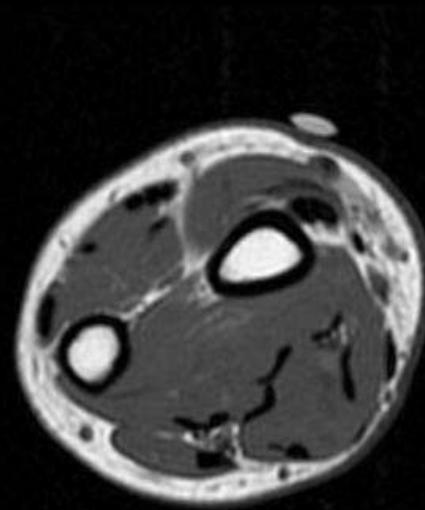


Ax T1

Oarsmen's / Bugaboo wrist

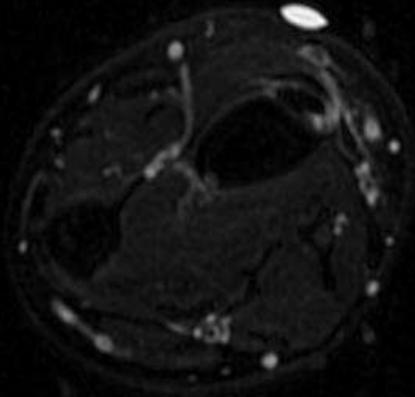


Ax T2FS

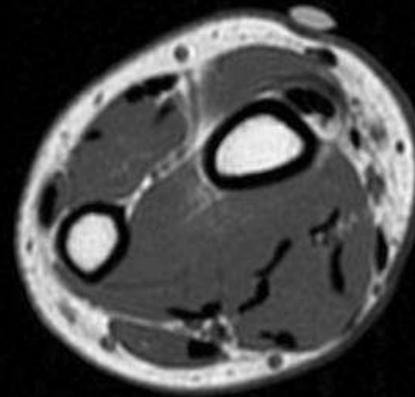


Ax T1

Oarsmen's / Bugaboo wrist

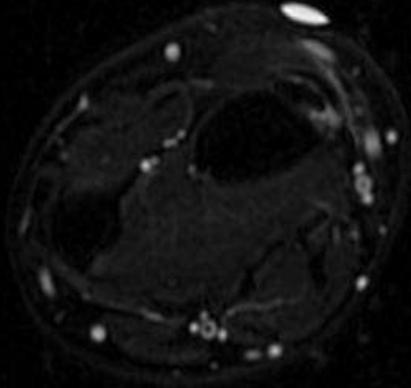


Ax T2FS

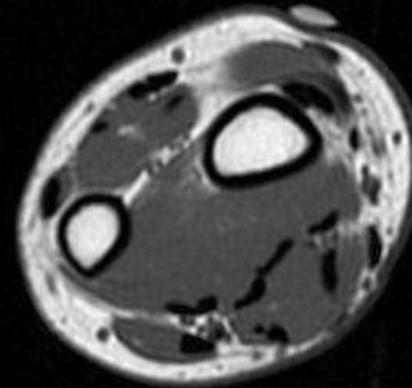


Ax T1

Oarsmen's / Bugaboo wrist

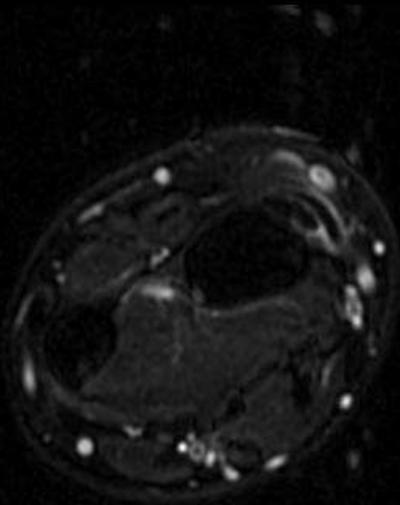


Ax T2FS

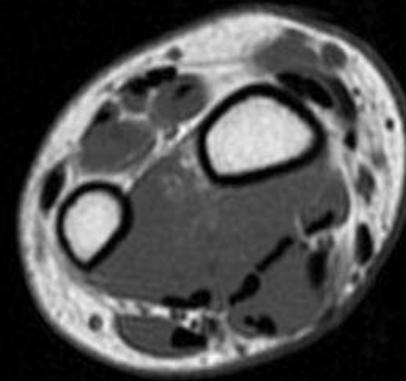


Ax T1

Oarsmen's / Bugaboo wrist

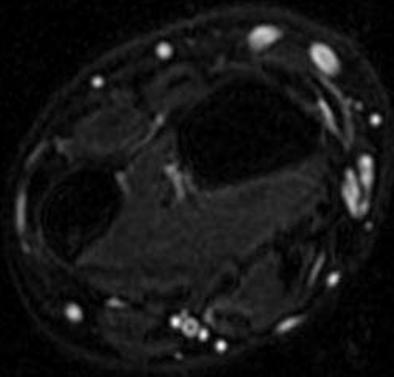


Ax T2FS

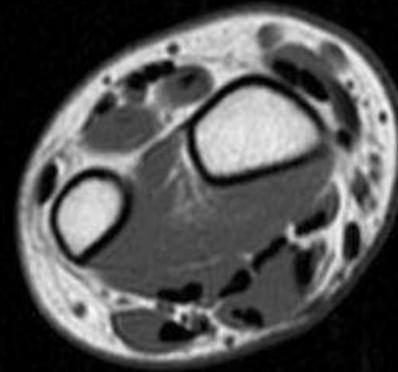


Ax T1

Oarsmen's / Bugaboo wrist

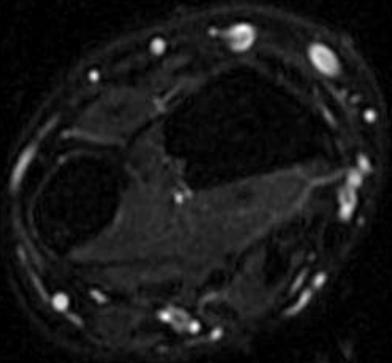


Ax T2FS

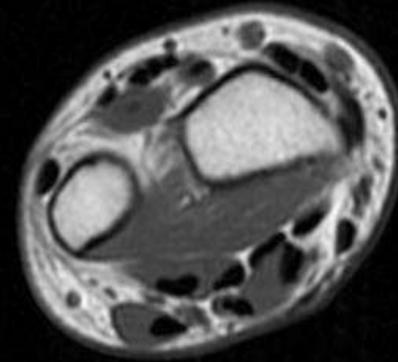


Ax T1

Oarsmen's / Bugaboo wrist

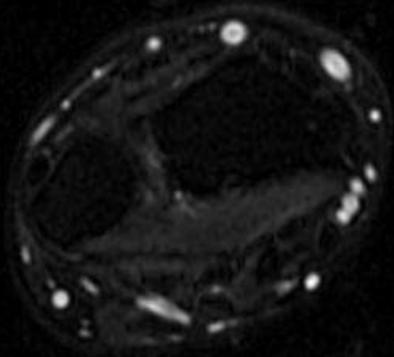


Ax T2FS

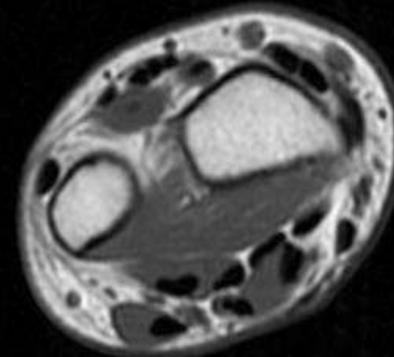


Ax T1

Oarsmen's / Bugaboo wrist

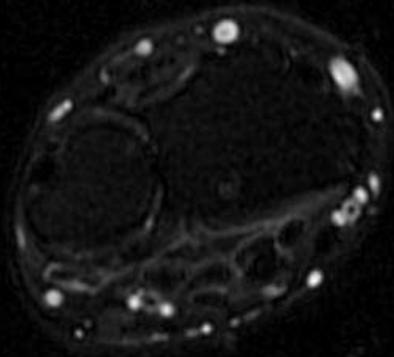


Ax T2FS

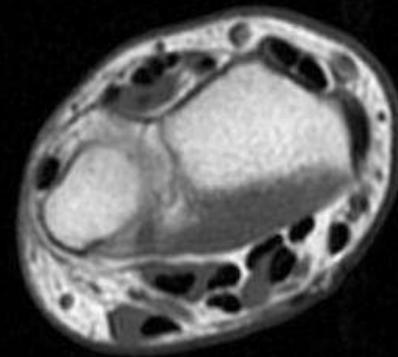


Ax T1

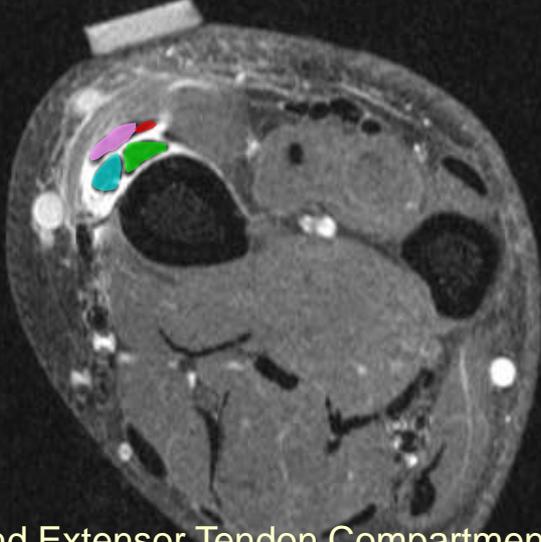
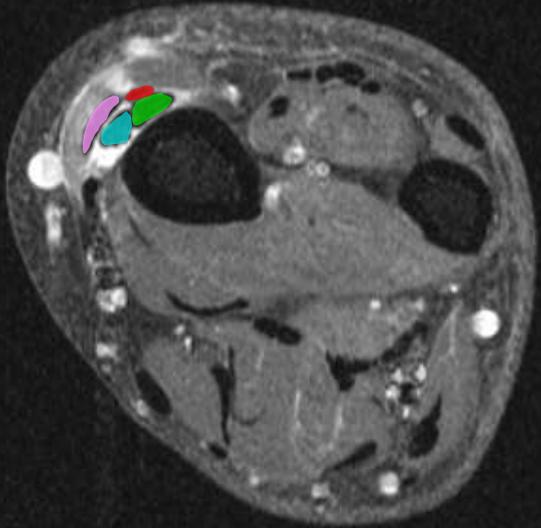
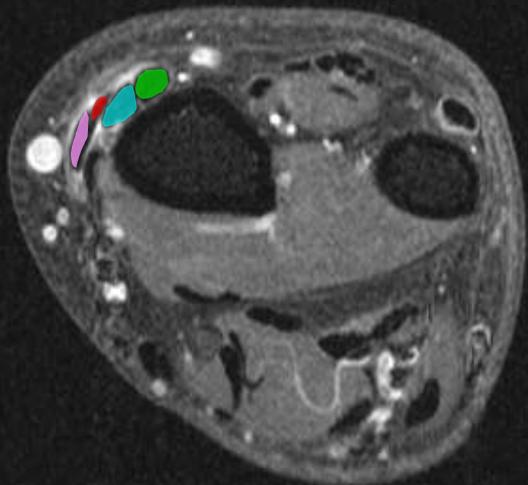
Oarsmen's / Bugaboo wrist



Ax T2FS

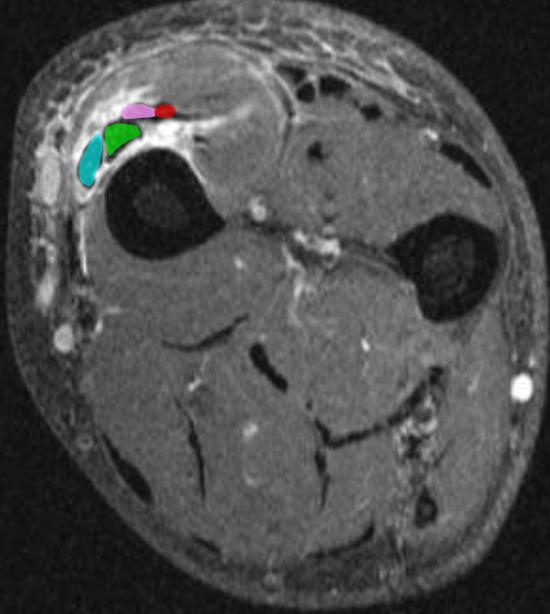
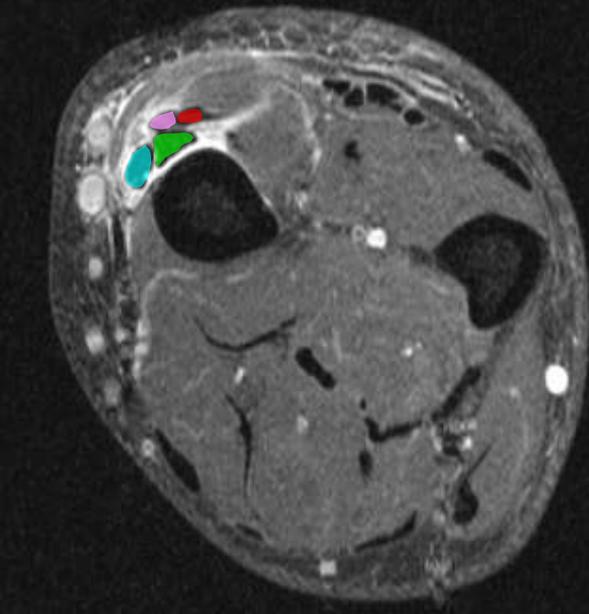


Ax T1



(1st Extensor Tendon Compartment)
Abductor Pollicis Longus
Extensor Pollicis Brevis

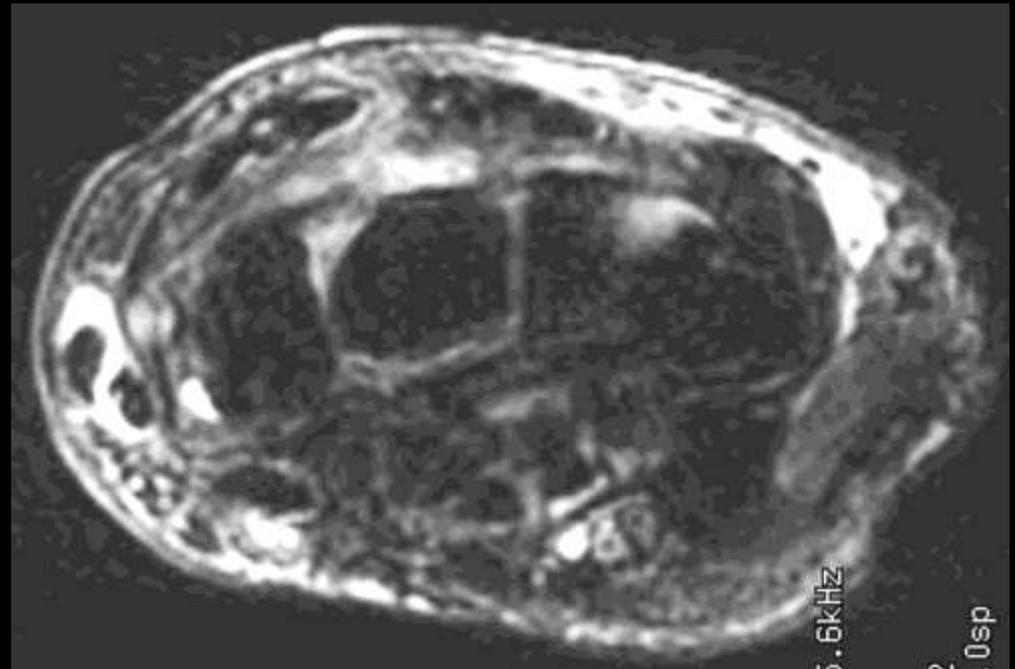
(2nd Extensor Tendon Compartment)
Extensor Carpi Radialis Longus
Extensor Carpi Radialis Brevis



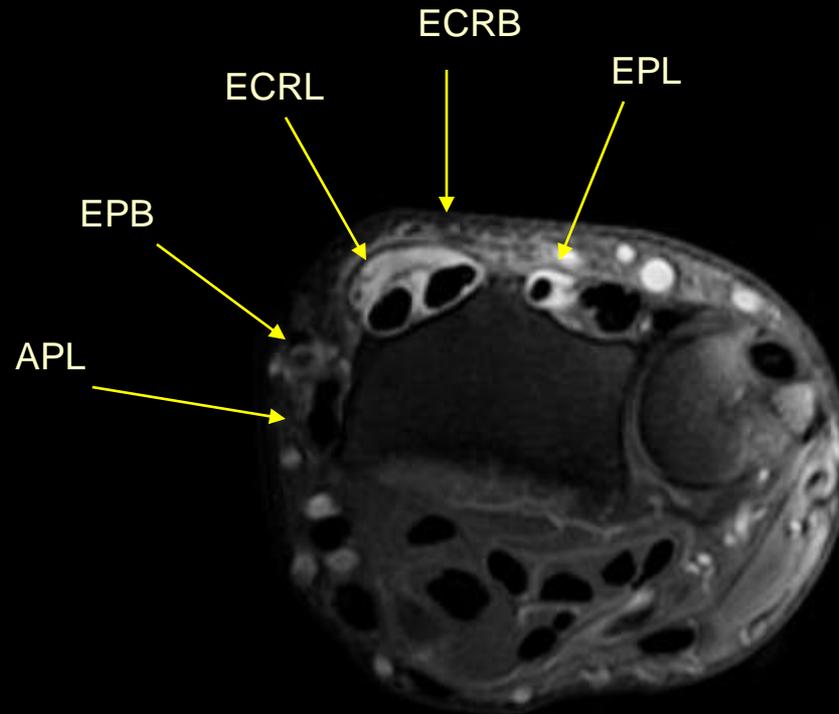
Construction worker with recent worsening of chronic wrist pain. Feels swelling/mass along distal dorsal wrist.

Tennis Wrist

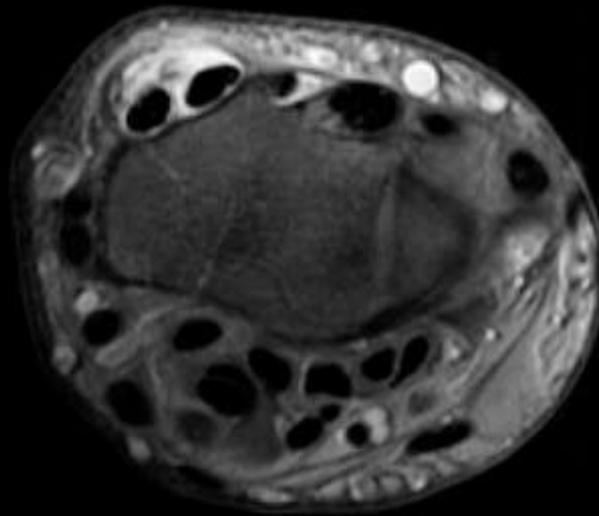
- Tenosynovitis (Tenovaginitis) of the tendons of the wrist in tennis players.



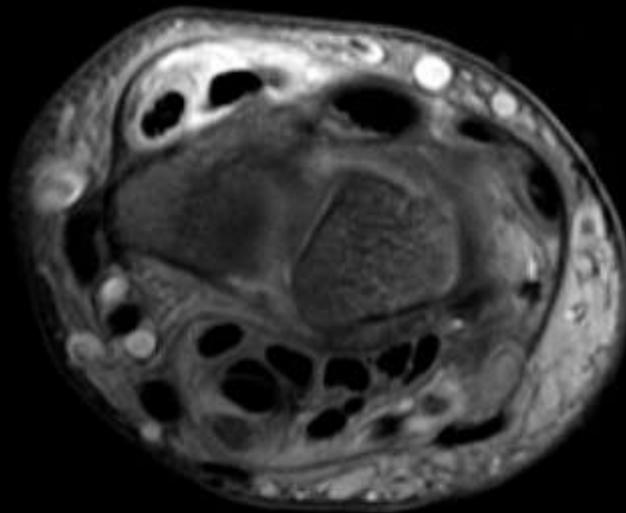
Tennis Wrist



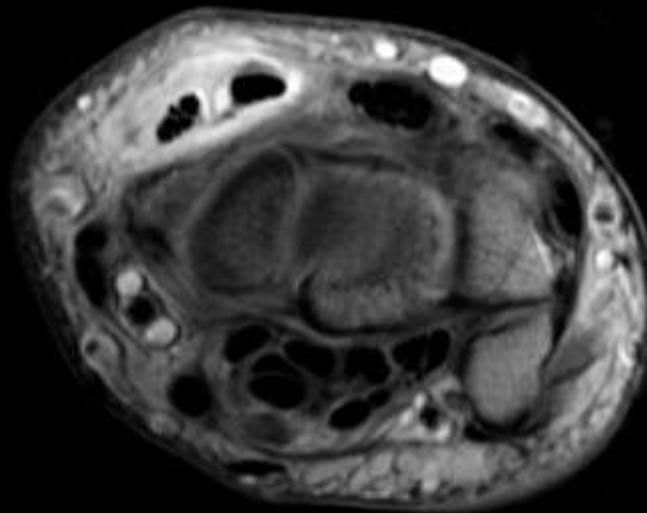
Tennis Wrist



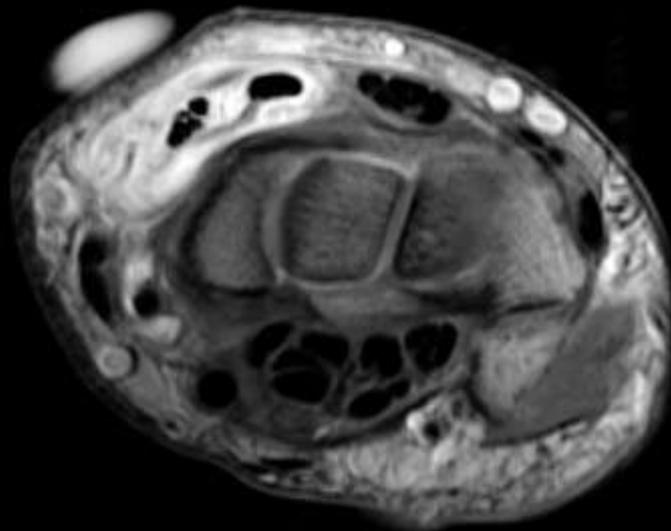
Tennis Wrist



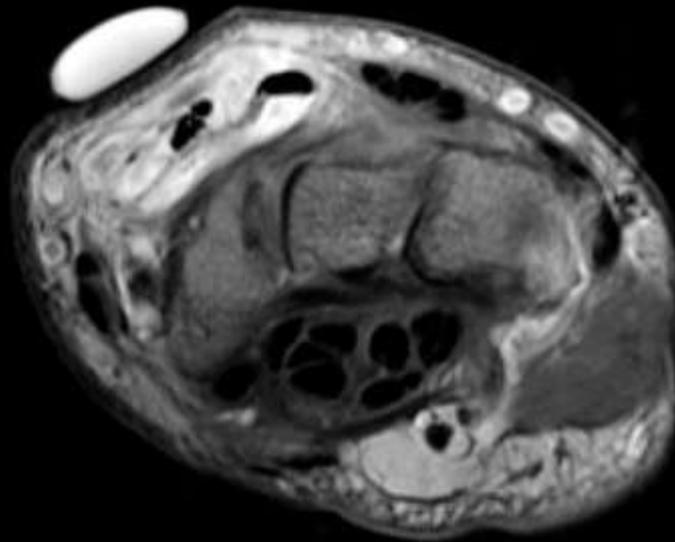
Tennis Wrist



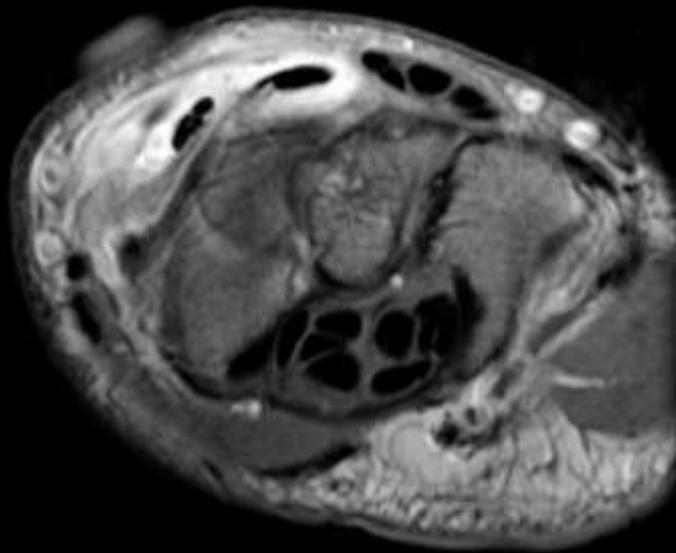
Tennis Wrist



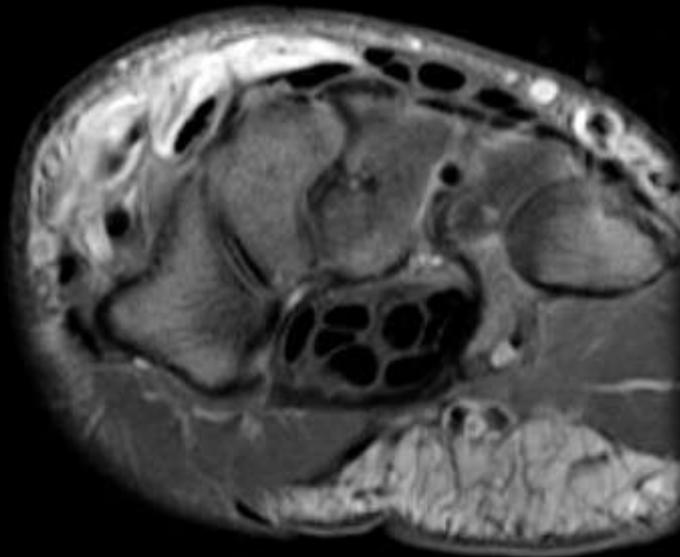
Tennis Wrist



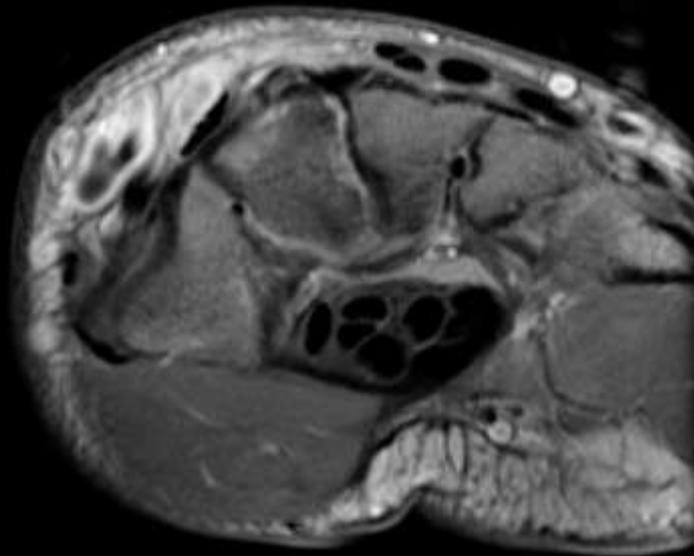
Tennis Wrist



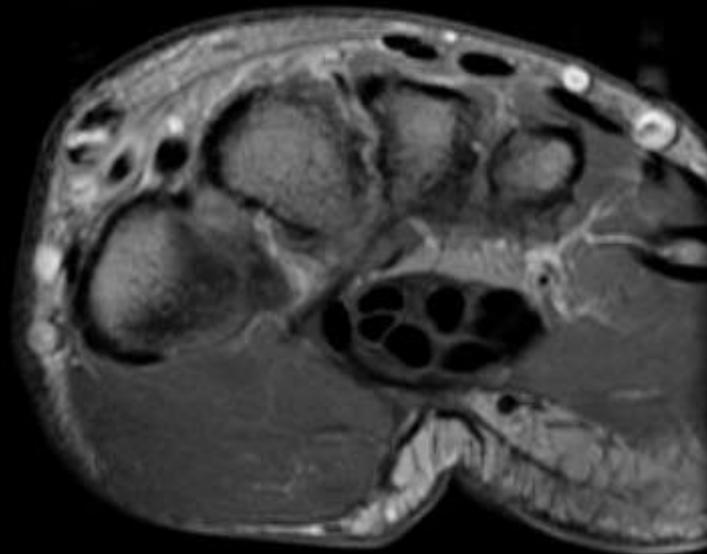
Tennis Wrist



Tennis Wrist



Tennis Wrist



Racket Player's Pisiform

- Repetitive strain on Pisiform.



Racket Player's Pisiform



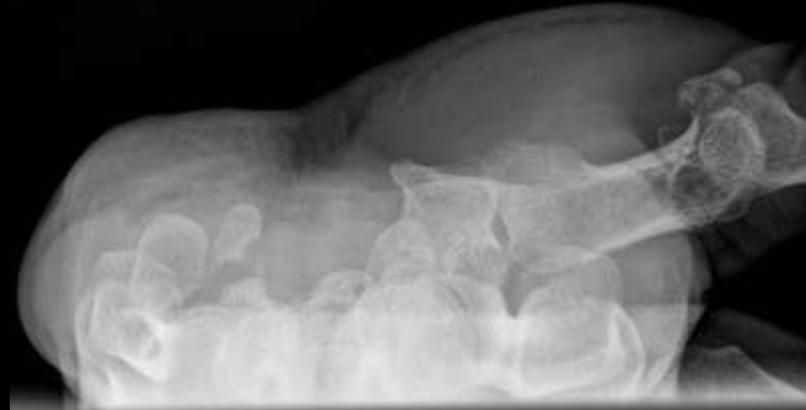
Golfer Wrist

- Stress fracture of hook of hamate
- Non-dominant hand
 - Greater stress closer to butt of club
- Also seen in tennis and baseball

Golfer Wrist

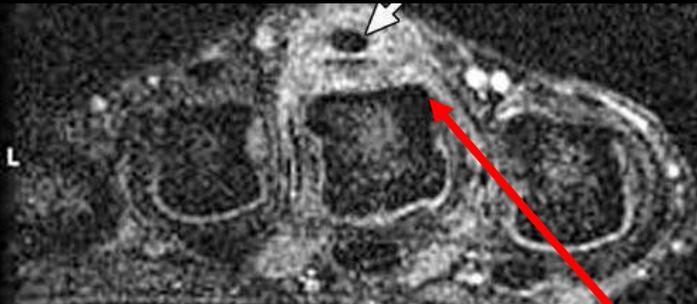


Golfer Wrist



Hook of hamate fracture 53M

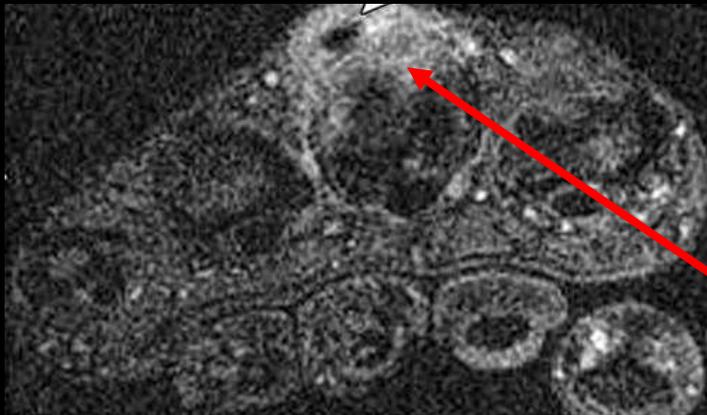
Boxer's Knuckle



Damage to the sagittal bands of the extensor hood which help stabilize the extensor tendon during joint motion.

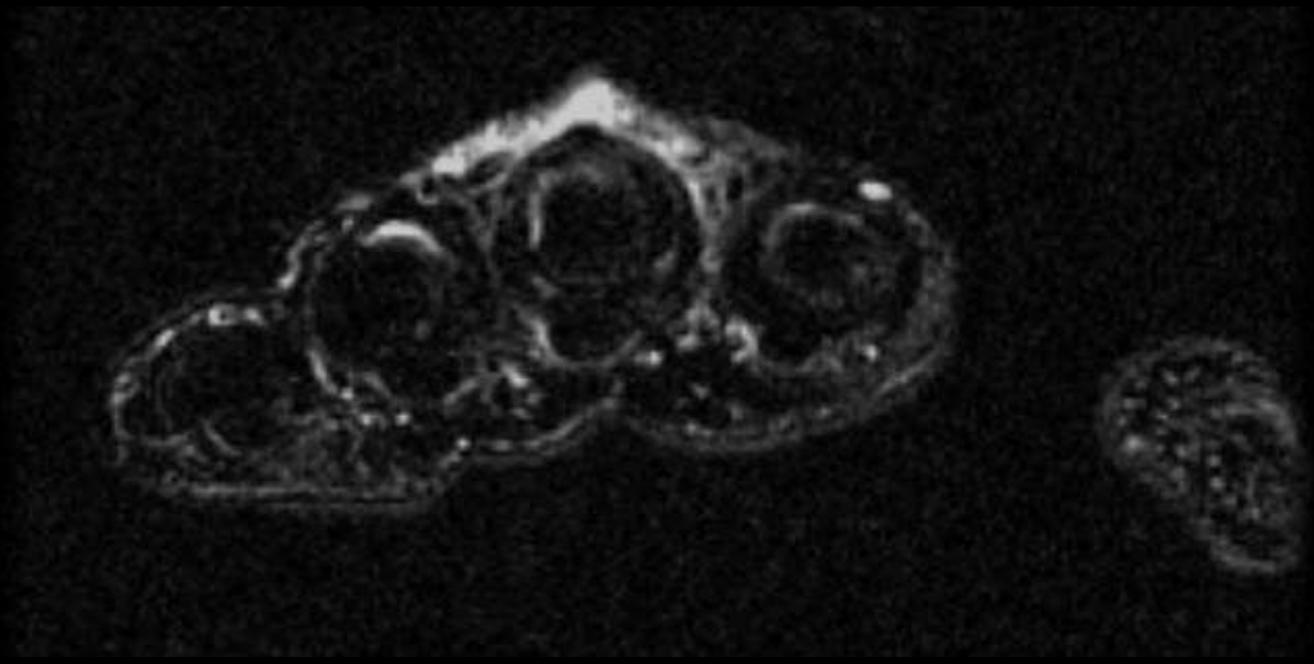
Sxs: pain, swelling, loss of full range of motion, subluxation of the extensor tendon

T2 Fat Sat with fingers extended



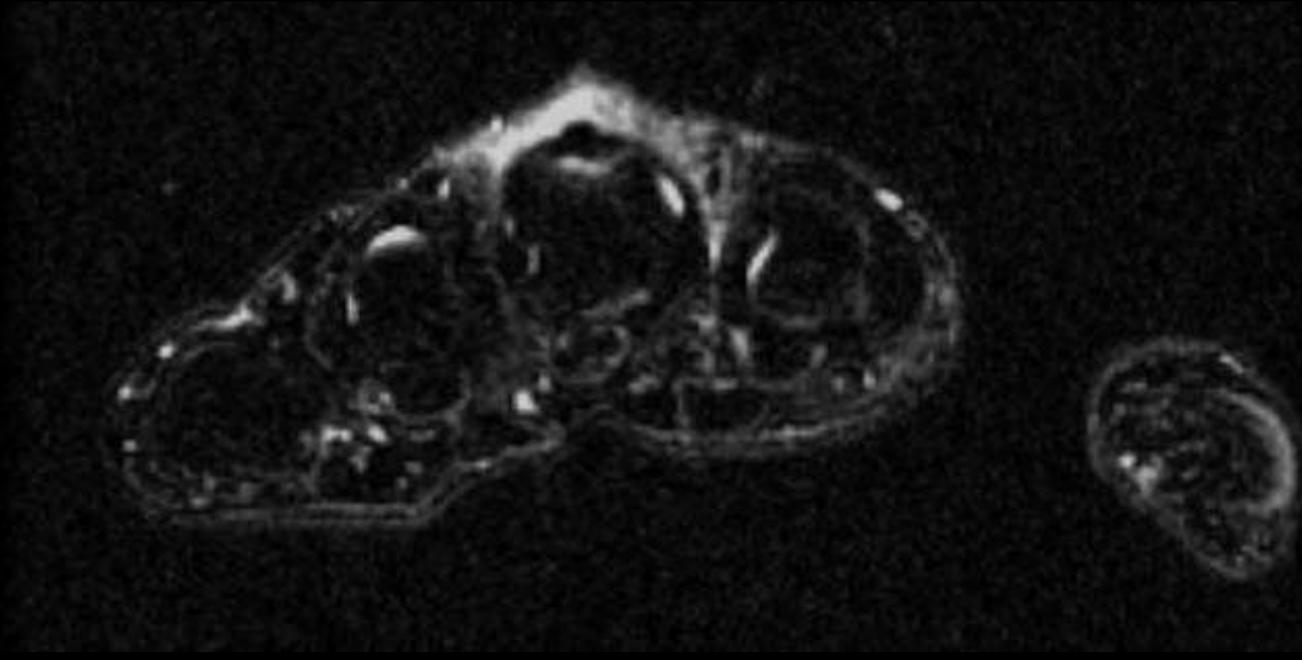
Subluxation of extensor tendon after clenching fist

Boxer Knuckle



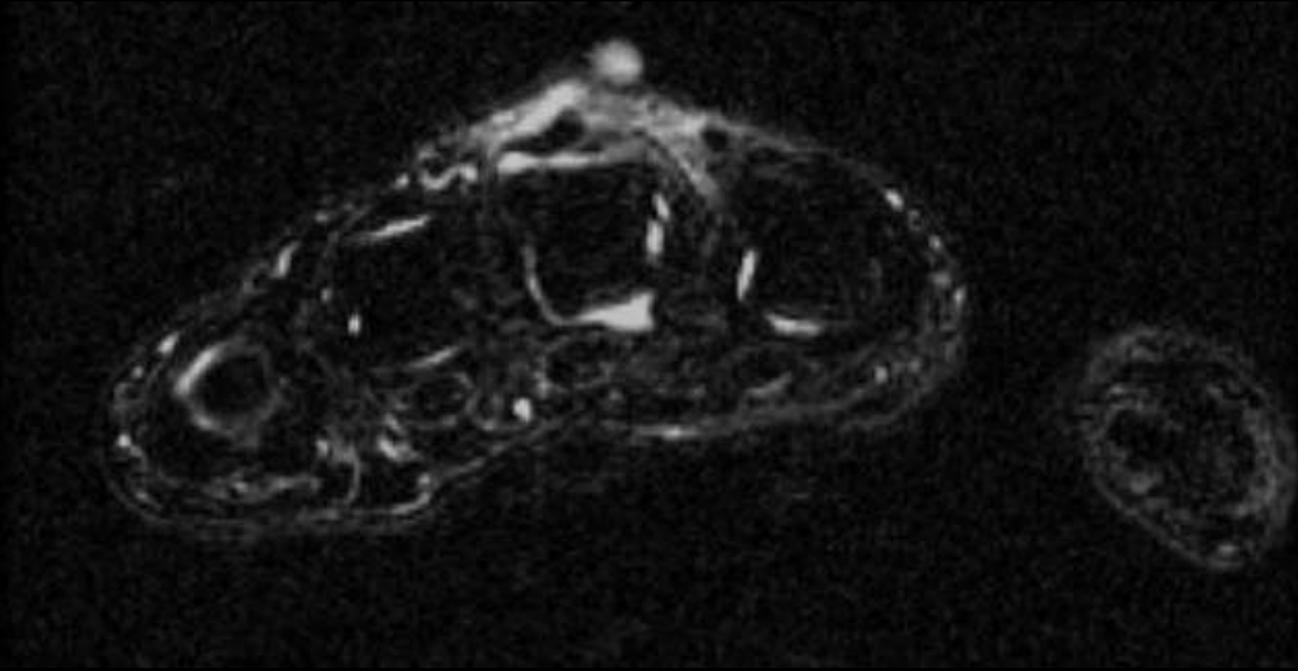
Axial T2FS

Boxer Knuckle



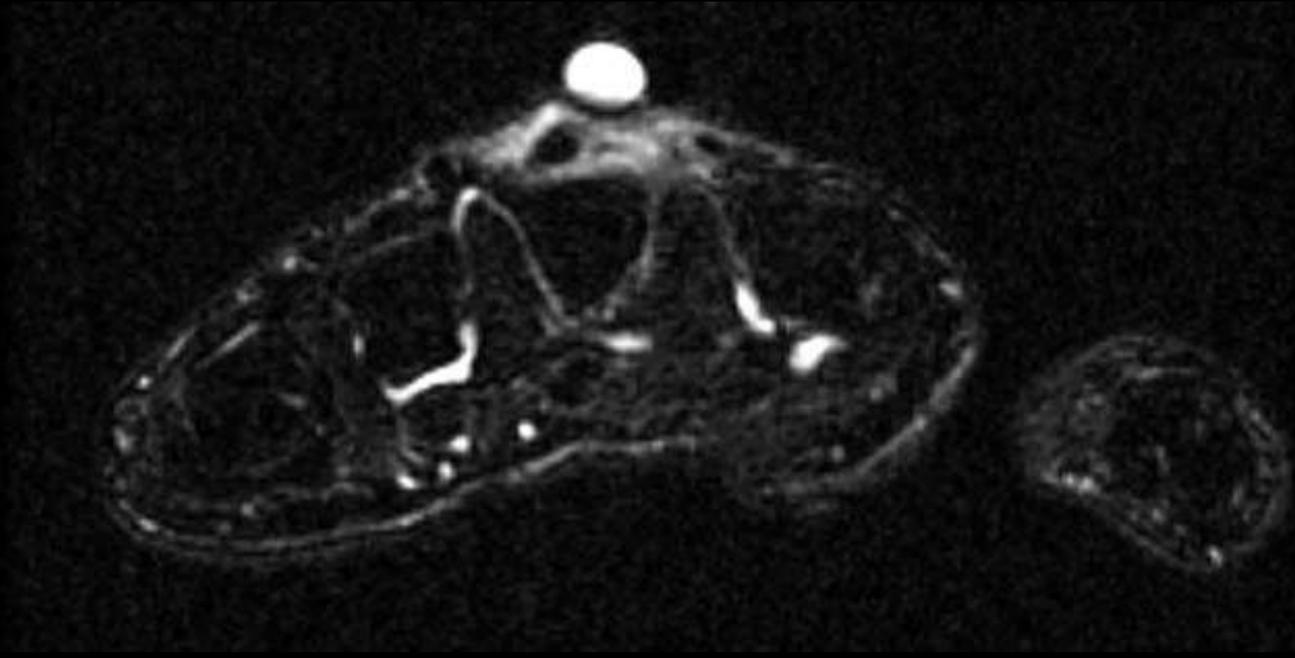
Axial T2FS

Boxer Knuckle



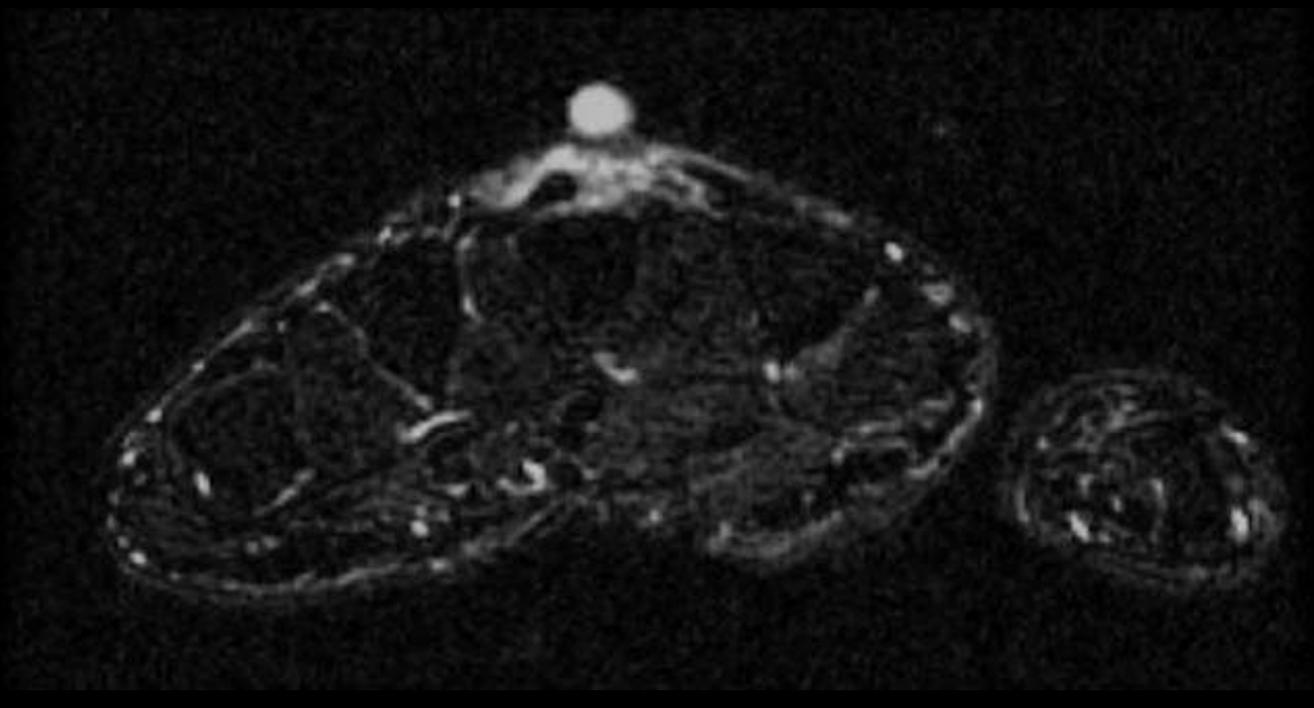
Axial T2FS

Boxer Knuckle



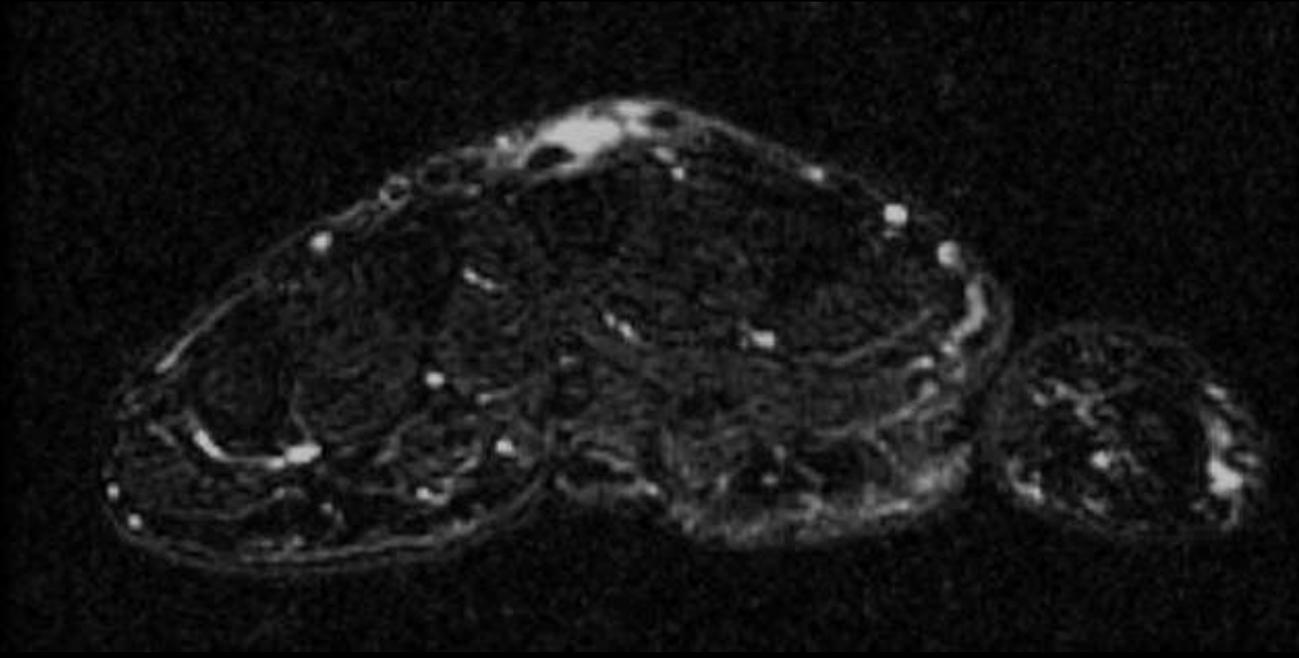
Axial T2FS

Boxer Knuckle



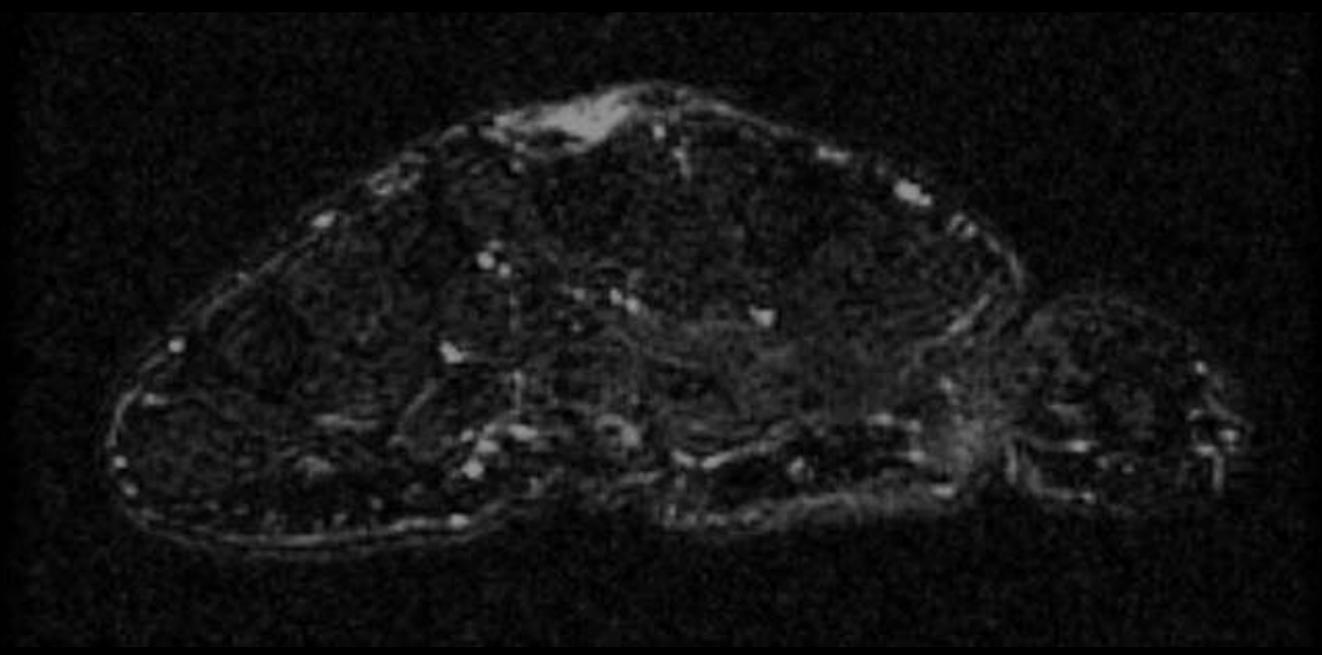
Axial T2FS

Boxer Knuckle



Axial T2FS

Boxer Knuckle



Axial T2FS

Boxer's Fracture

- Saturday night Fx
- Brawler Fx
- 5th MC neck Fx
- Watch for associated base of 4th MC Fx



Rugger Jersey finger

- Jersey grabbing tackle
- Avulsion of FDP at base of distal phalanx
- Ring > Middle
- Tendon often retracts to PIPJ



Wenger DR. Avulsion of the profundus tendon insertion in football players. Arch Surg 1973; 106:145-149.

Avulsion fracture of the flexor digitorum profundus tendon ('Jersey finger') type III.

Arch Orthop Trauma Surg. 2002 Apr;122(3):182-3

Rugger Jersey finger

- Jersey grabbing tackle
- Avulsion of FDP at base of distal phalanx
- Ring > Middle
- Tendon often retracts to PIPJ

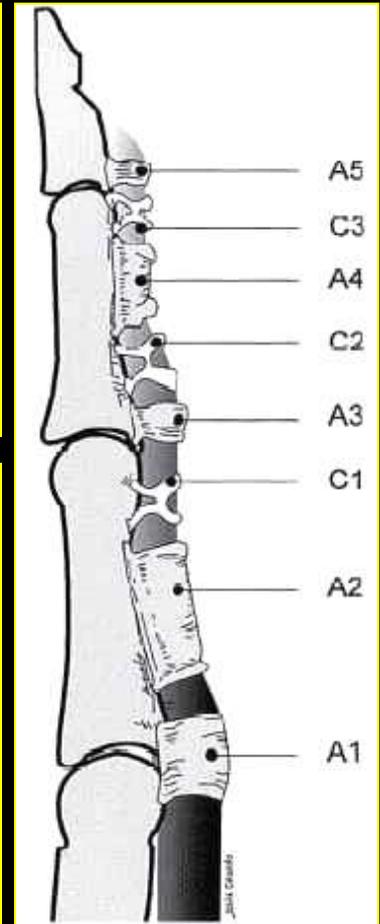
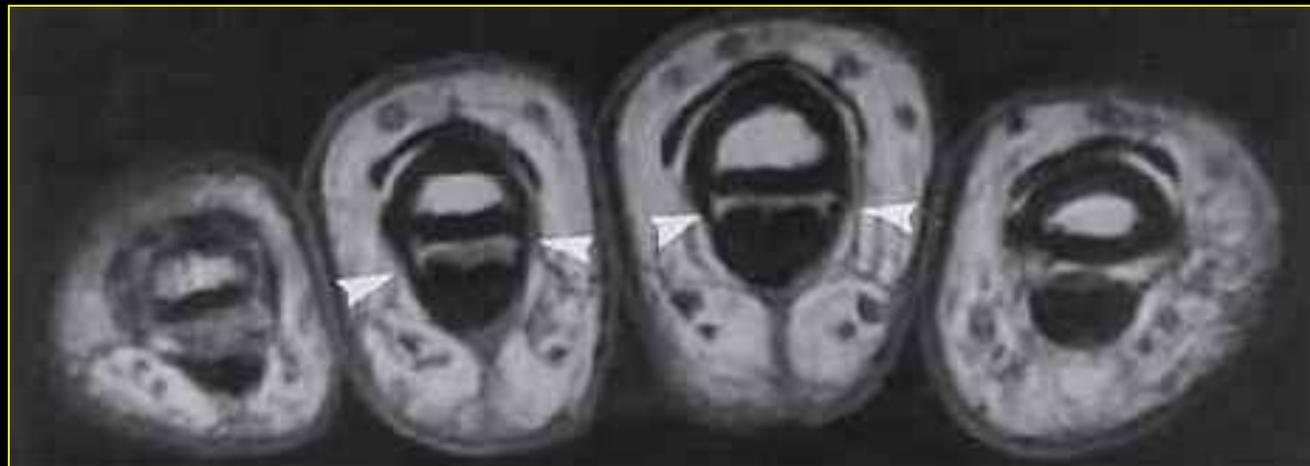
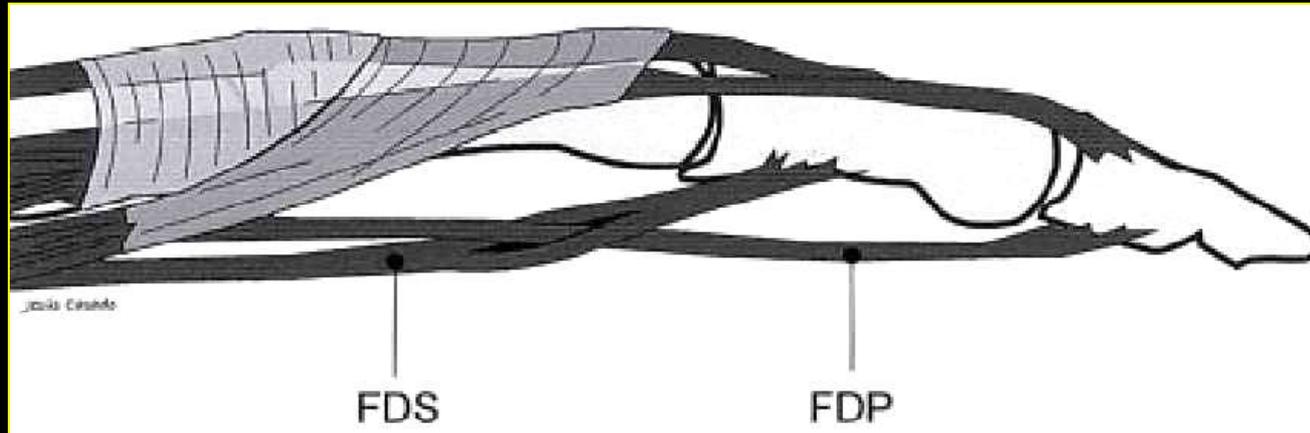


Climber's Finger

- Partial or complete rupture of A2 pulley
- Crimp or pocket grip
- 2nd or 3rd digit
- May extend to A3 and A4 pulleys
- Localized fluid
- Increased distance between tendon and phalanx



Climber's Finger



From: Clavero JA *et al.* MR imaging of ligament and tendon injuries of the fingers. *Radiographics* 2002 Mar-Apr; 22(2):237-256

Climber's Finger



38 year-old man with second finger trauma one month ago. Ultrasound showed flexor tendon thickening.

Wellie Thrower's Finger

- Injury to finger joints sustained in wellie throwing contests.
- Volar plate Fx



Wellie Thrower's Finger

- Injury to finger joints sustained in wellie throwing contests.
- Volar plate Fx



Baseball Finger

- Mallet finger, dropped finger
- Ball or other object striking the end or back of the finger
- Resulting in rupture of the attachment of the extensor tendon.
- Bony or tendon



Baseball Finger



Stark HH, Bayes JH, Wilson JN. Mallet finger.

J Bone Joint Surg Am 1962; 44:1061-1068.

Fish hook finger

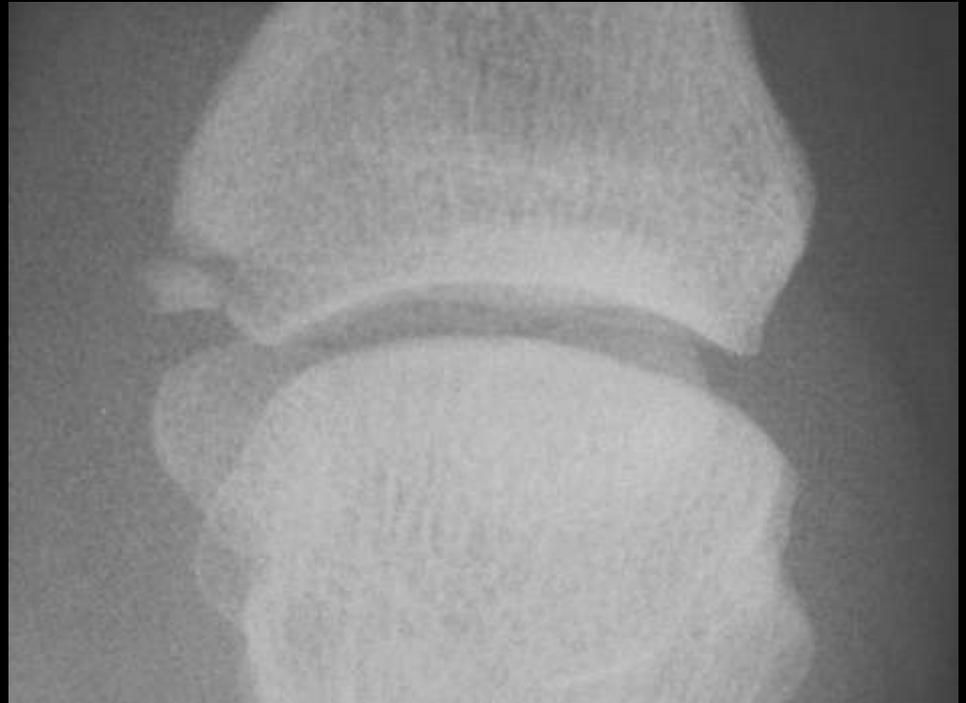


Skier's Thumb

- AKA Gamekeeper's thumb, Break-dancer thumb
- Thumb abduction
- MCP-UCL proper sprain/tear
- Accessory UCL, volar plate and dorsal capsule add stability
- X-ray prior to stress



Skier's Thumb - UCL Avulsion



Skier's Thumb - UCL Complete Rupture



Stress in 20-30 degrees of flexion
10-20 degrees laxity worse than contra
30-35 degrees of absolute laxity



>35 degrees

Skier's Thumb



Skier's Thumb

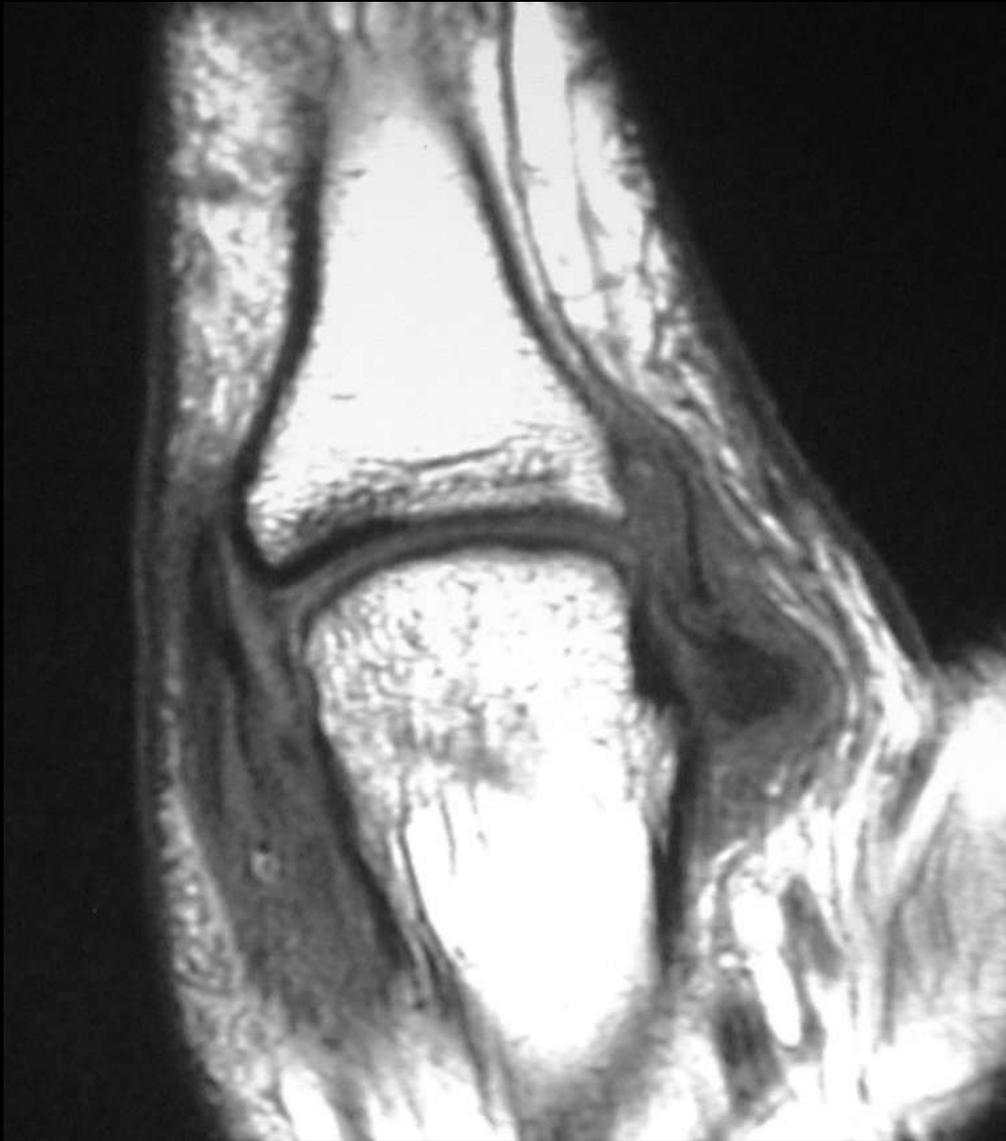
- Stener lesion
- Adductor aponeurosis interposed
- >2-4 mm displaced avulsion
- MRI or US to see
- Need operative repair



Stener B. Displacement of the ruptured ulnar collateral ligament of the metacarpo-phalangeal joint of the thumb:

a clinical and anatomic study. J Bone Joint Surg Br 1962; 44:869-879.

Skier's Thumb - Stener lesion



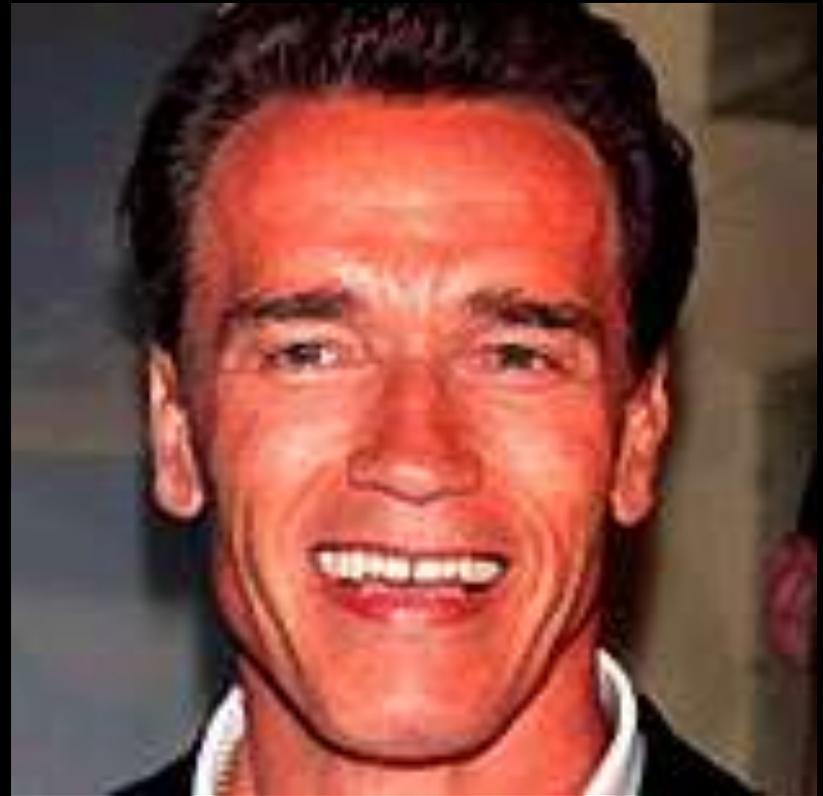
Ping Pong Fracture

- Depressed skull fracture usually seen in young children, resembling the indentation that can be produced with the finger in a ping-pong ball; when elevated it resumes and retains its normal position.



Body Builders Psychosis

- Psychotic episodes associated with the use of anabolic steroids
- Causing:
 - hallucinations
 - paranoid delusions
 - grandiose beliefs
 - manic-depressive symptoms.



Spear Tackler's Spine

- Vertical compression
- Axial loading with mild flexion
- >50% of quadriplegia in AF
- Defensive backs



Torg JS, Am J Sports Med. 1993 Sep-Oct;21(5):640-9.

Brigham CD, JBJS 2003;85-A(2):381-2

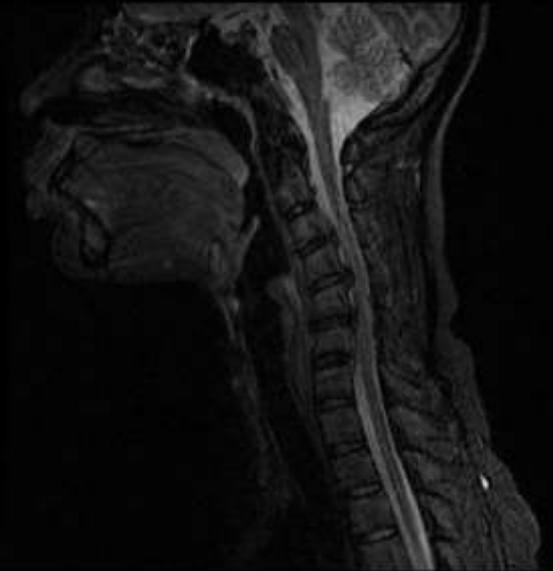
Spear Tackler's Spine



Sag T1



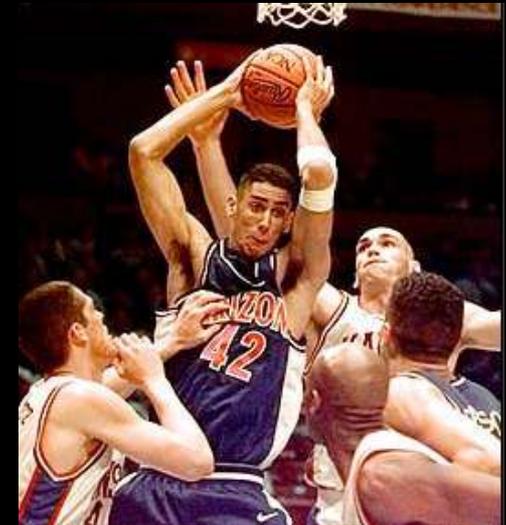
Sag T2



Sag T2FS

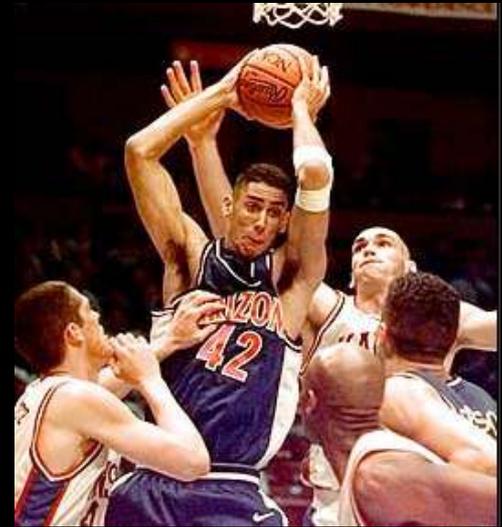
Rebounder's rib

- 1st rib Fx
- Muscular exertion
- Scalenes pull up
- Intercostals pull down



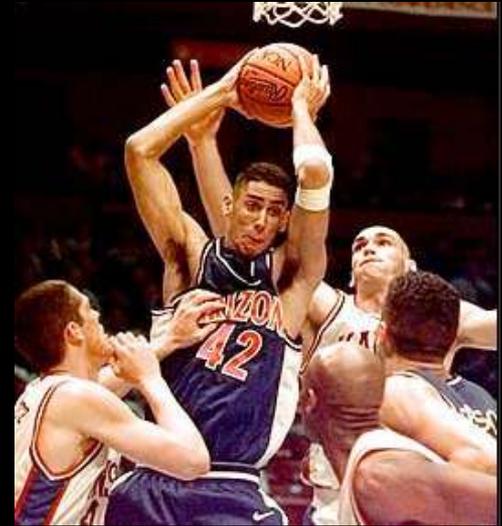
Rebounder's rib

- 1st rib Fx
- Muscular exertion
- Scalenes pull up
- Intercostals pull down

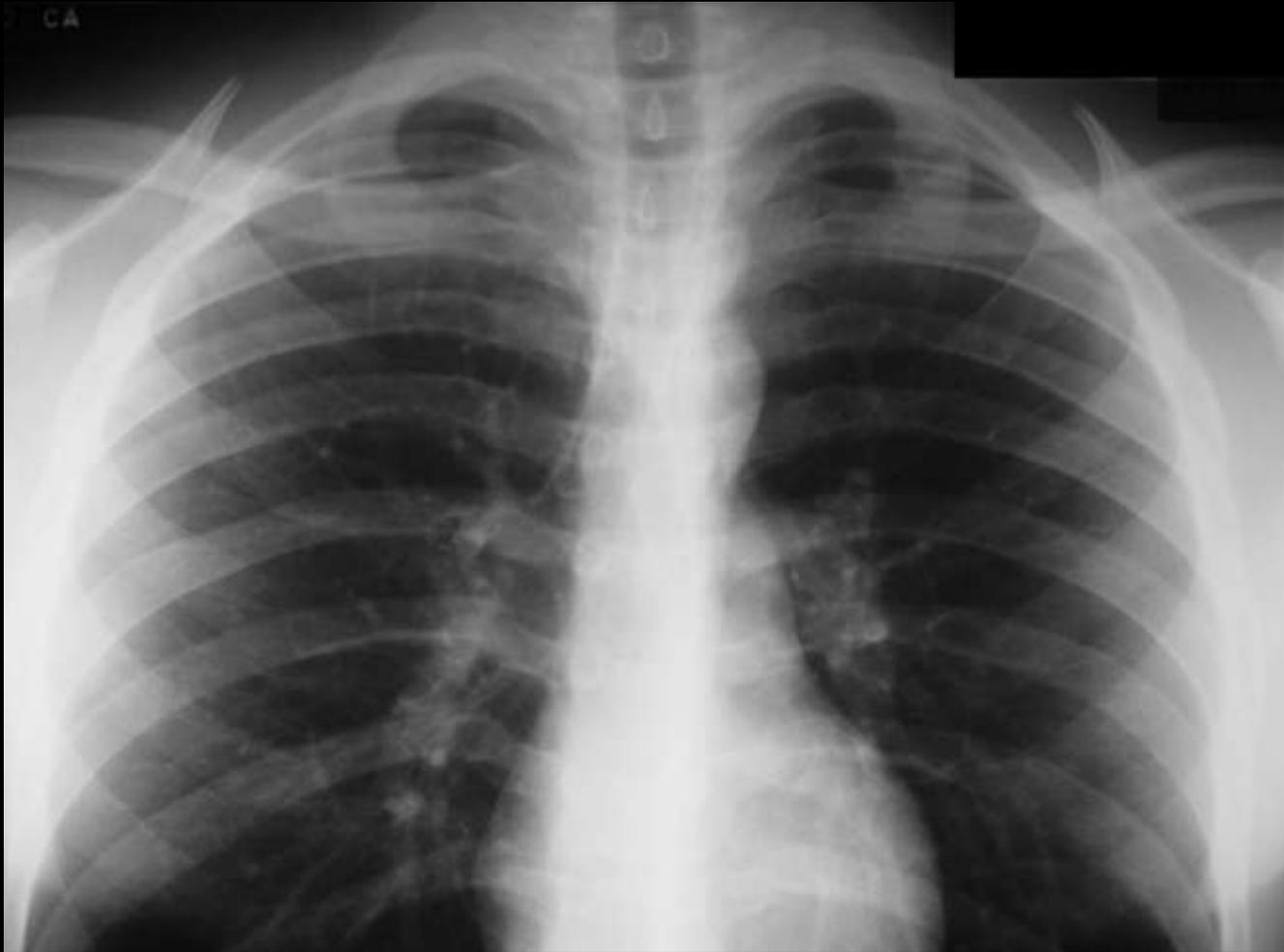


Rebounder's rib

- 1st rib Fx
- Muscular exertion
- Scalenes pull up
- Intercostals pull down



Rebounder's rib



Rebounder's rib



Rebounder's rib

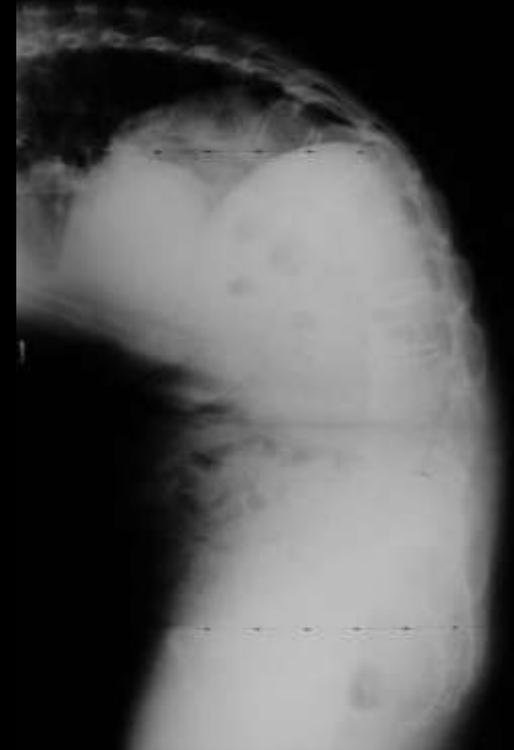


Rebounder's rib



Poker back - Poker spine

- Not related to the game of poker
- Rather a stiff fire-poker
- Sign of ankylosing spondylitis



Rugger Jersey Spine

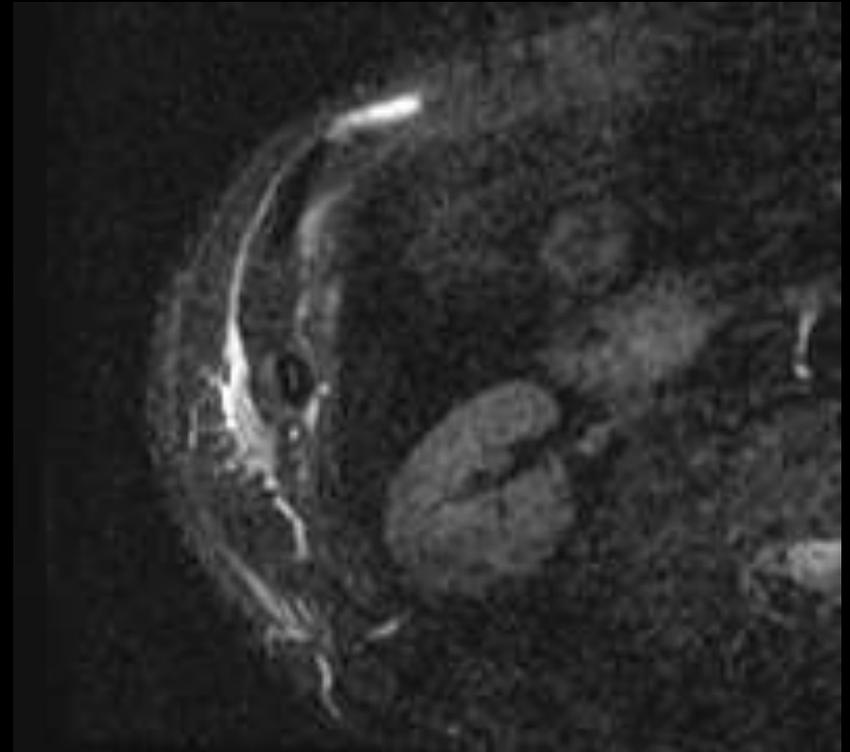
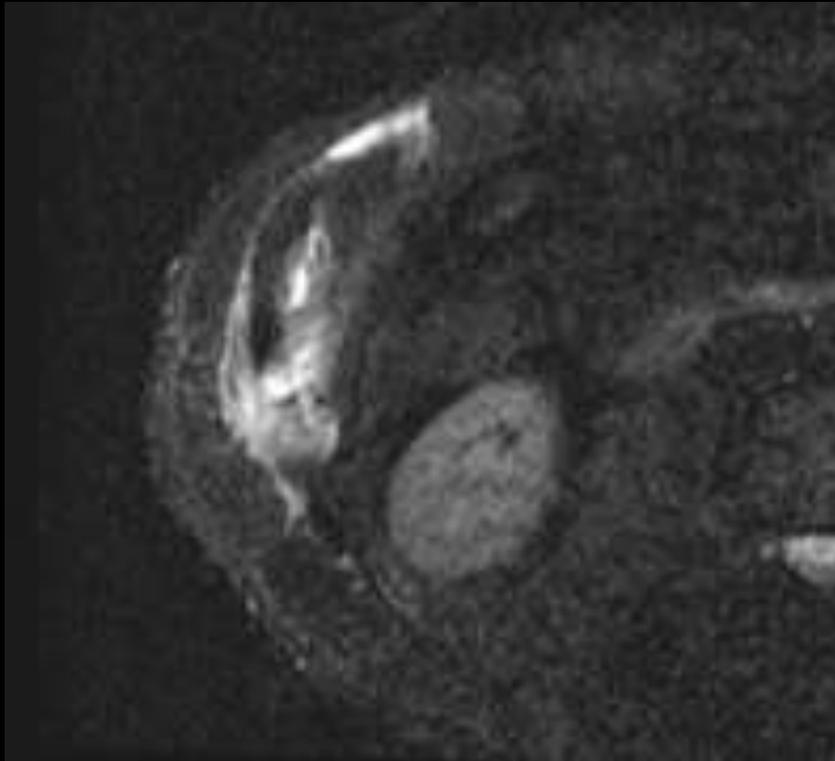
- Renal osteodystrophy
- Osteomalacia
- Secondary hyperparathyroidism



Cricket Bowlers Side Strain

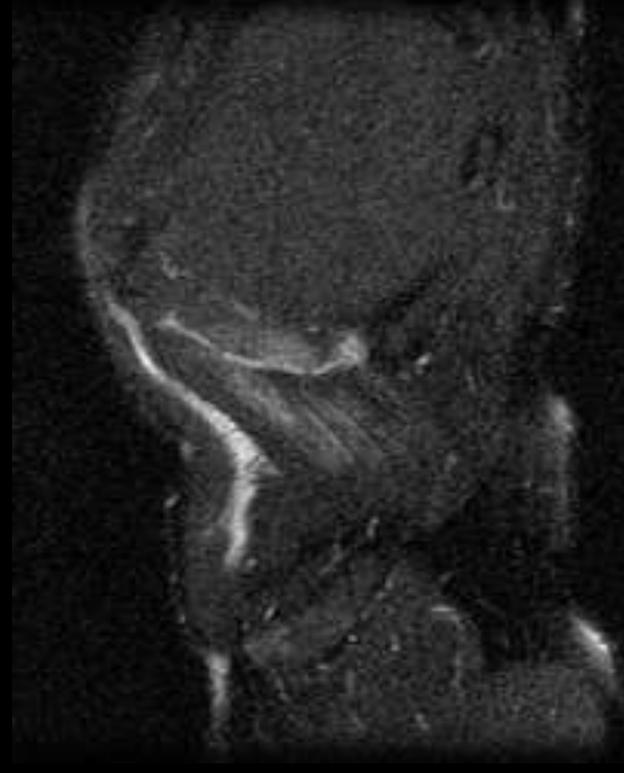
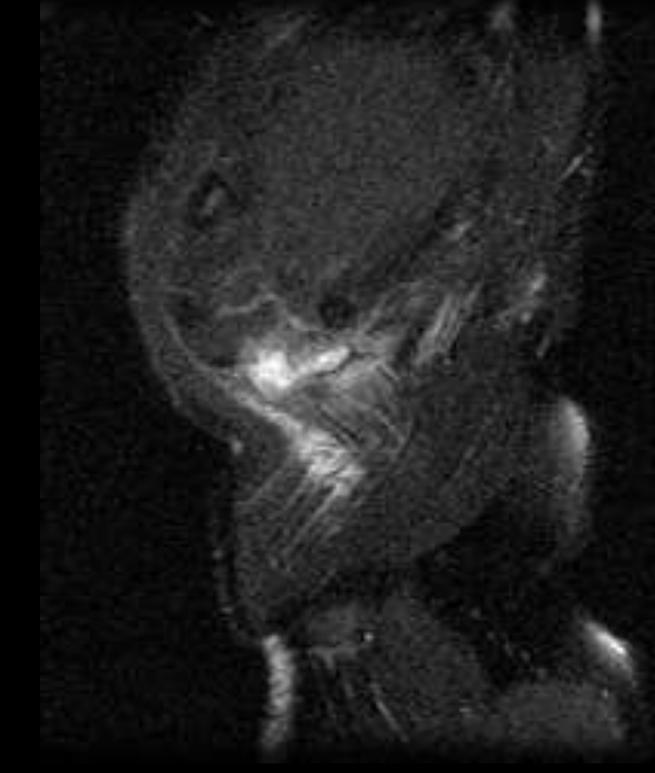
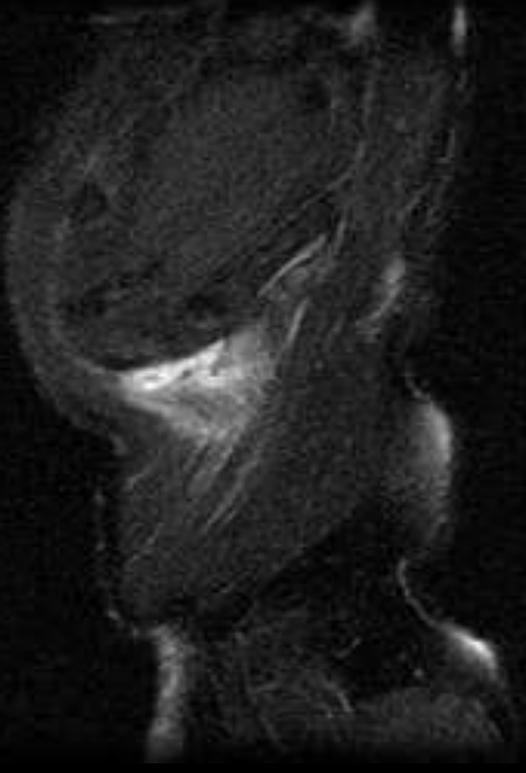
- Uncommon sporting injury presenting with pain and tenderness over anterolateral and posterolateral lower ribcage
- Associated with cricket, golf, and ice hockey – eccentric contraction of trunk muscles
- Partial or complete tear of lateral abdominal wall musculature (internal oblique > external oblique > transversus abdominis)
- May also see avulsion at the muscular origins from the lower ribs
- Full recovery is the norm takes 6-10 weeks

Cricket Bowlers Side Strain



- Partial or complete tear of lateral abdominal wall musculature (internal oblique > external oblique > transversus abdominis)

Cricket Bowlers Side Strain



- Partial or complete tear of lateral abdominal wall musculature (internal oblique > external oblique > transversus abdominis)

Jet Ski Open Book Pelvic Fracture

- Striking the steering column during rapid deceleration



Jet Ski Open Book Pelvic Fracture



Jet Ski Open Book Pelvic Fracture



Jet Ski Open Book Pelvic Fracture



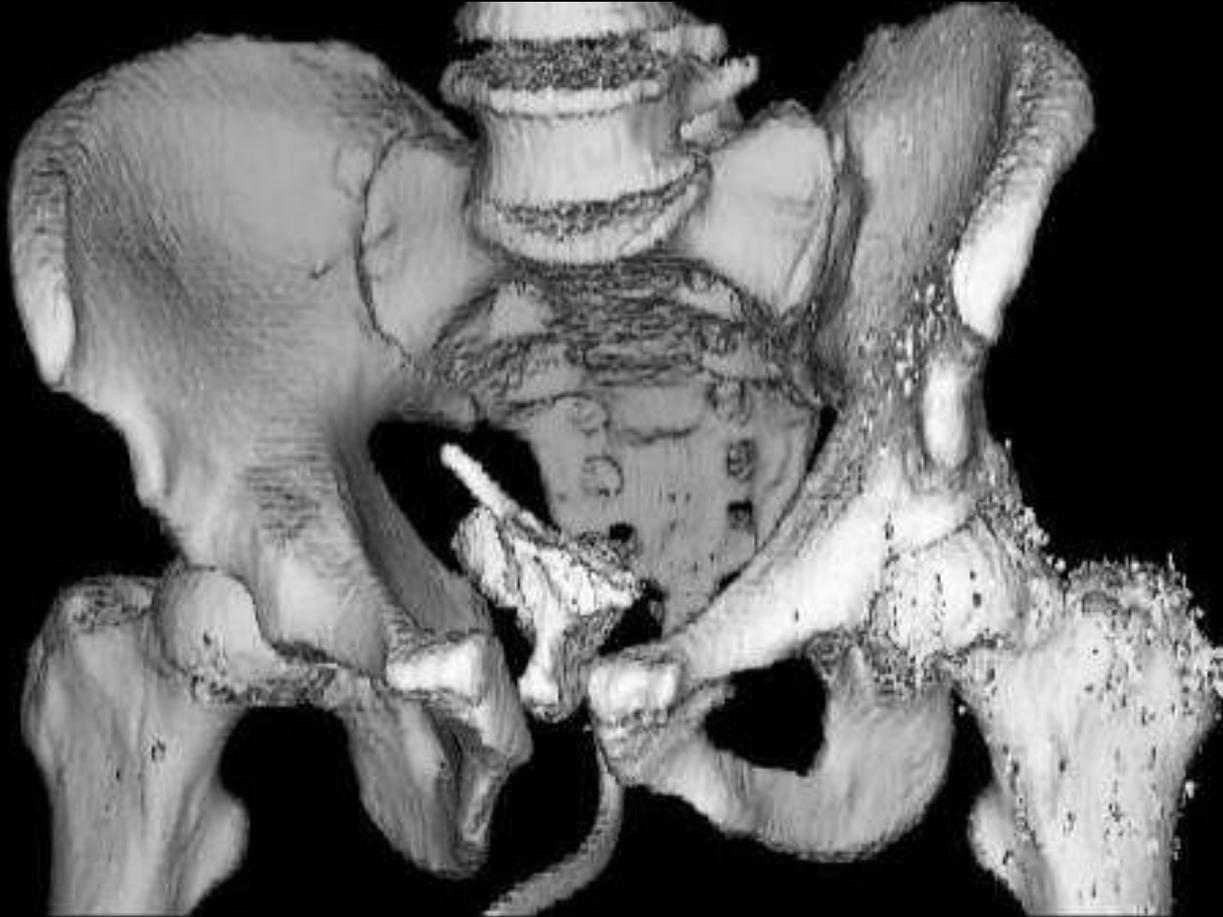
Jet Ski Open Book Pelvic Fracture



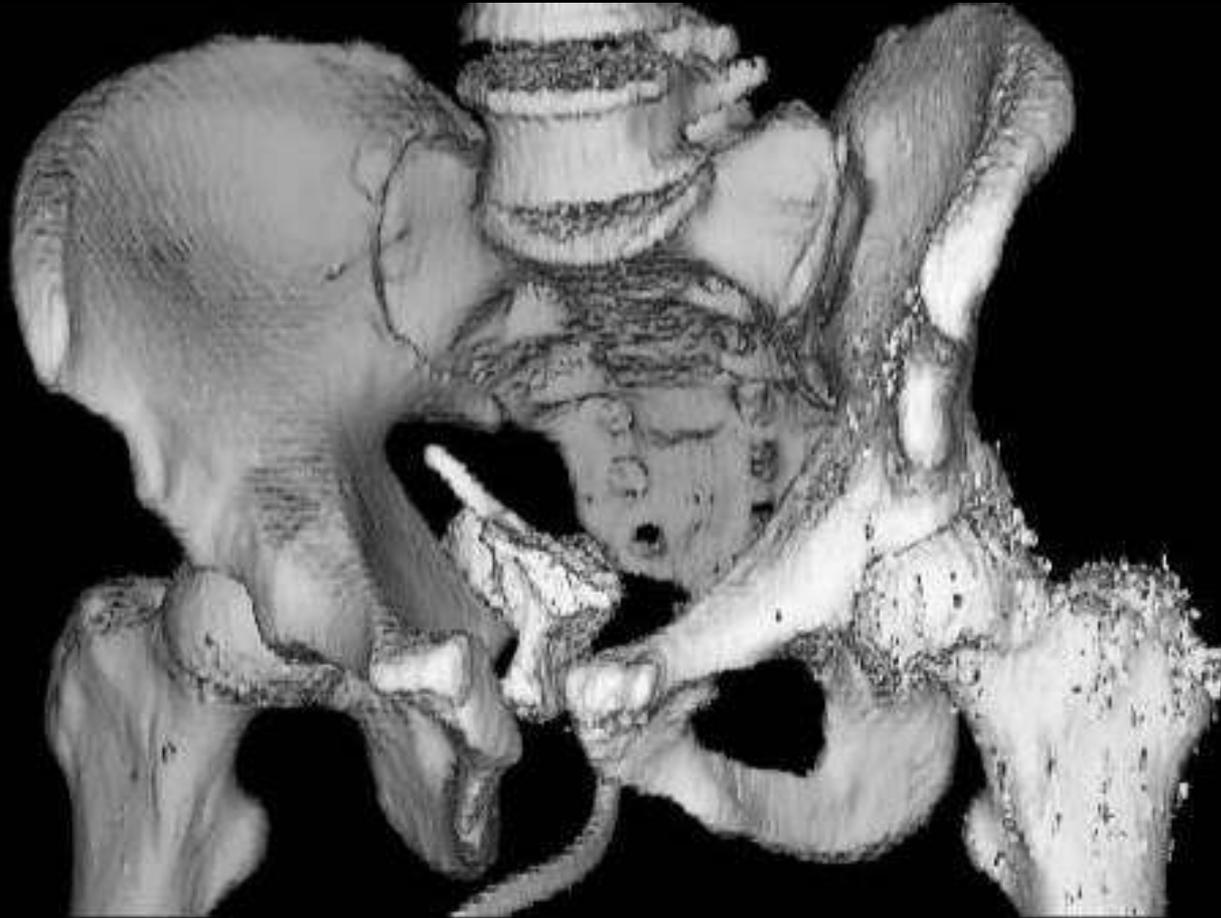
Jet Ski Open Book Pelvic Fracture



Jet Ski Open Book Pelvic Fracture



Jet Ski Open Book Pelvic Fracture



Jet Ski Open Book Pelvic Fracture



Sprinter's Fracture

- Fracture of the anterior superior or inferior spine of the ilium
- Fragment of the bone being pulled off by muscular violence, as at the start of a sprint.



Sprinter's Fracture



Sprinter's Fracture

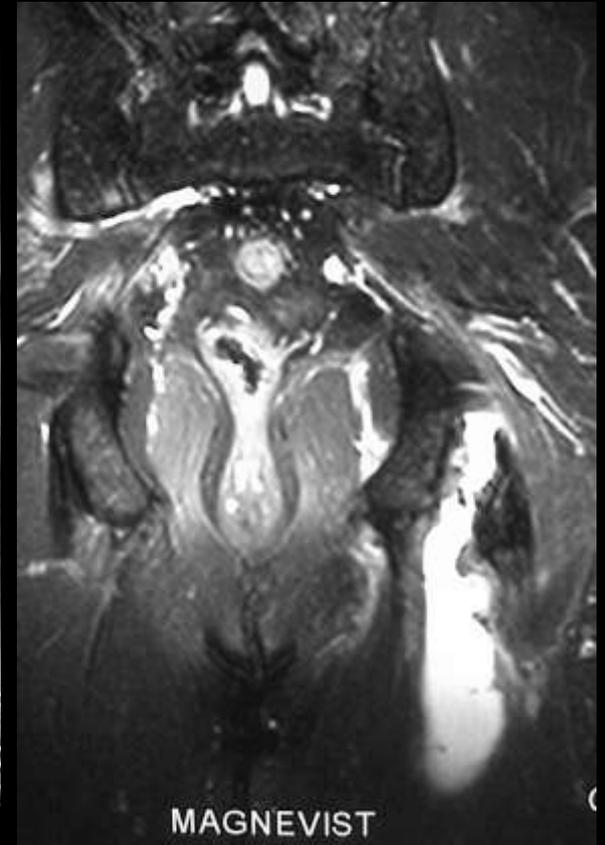
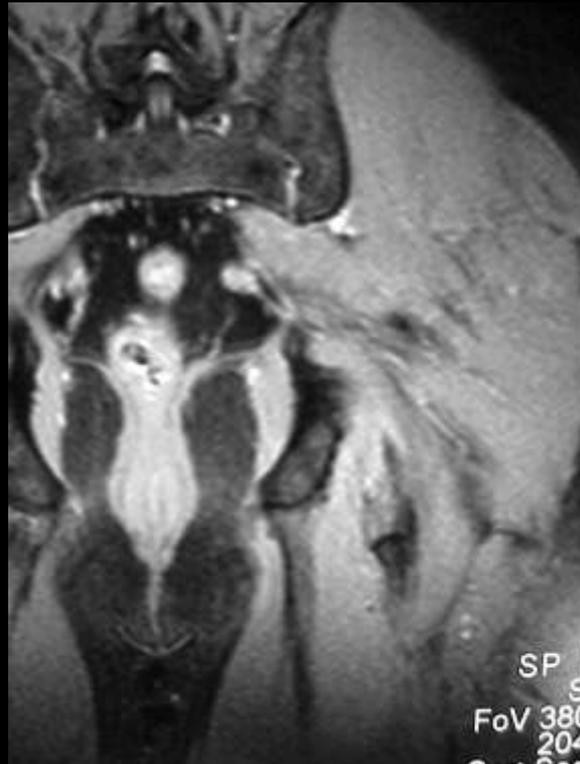
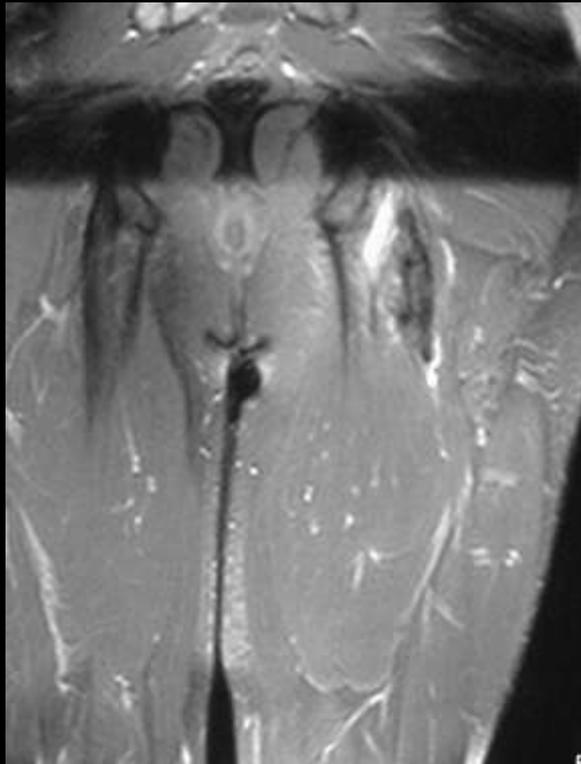


Hurdler's Fracture

- Ischial tuberosity avulsion
- Forced flexion from hyperextension
- Also common in soccer, water skiing



Hurdler's Fracture Total Hamstring Avulsion



Can be one or all components of hamstrings

Bilateral hamstring avulsions



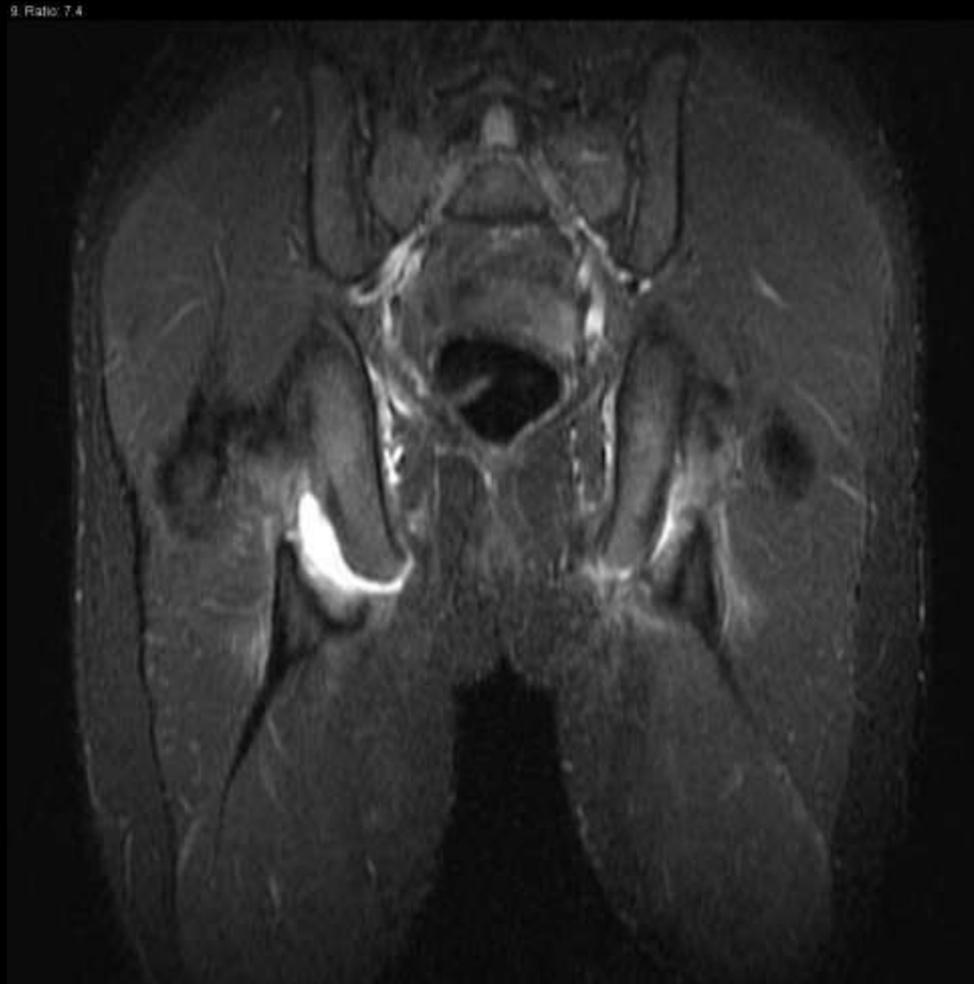
Cor PDFS

Bilateral hamstring avulsions



Cor PDFS

Bilateral hamstring avulsions



Cor PDFS

Bilateral hamstring avulsions



Cor PDFS

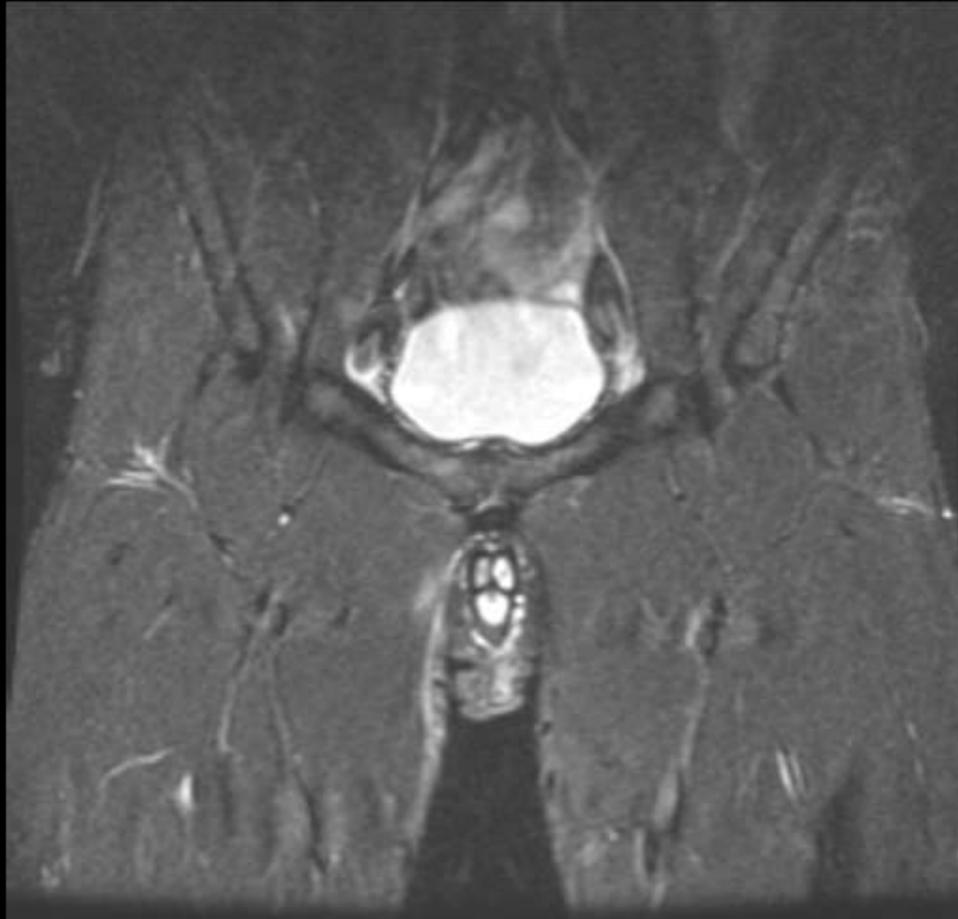
Soccer groin Secondary cleft sign



Secondary Cleft Sign as a Marker of Injury in Athletes with Groin Pain

Radiology 2005 Brennan D et al

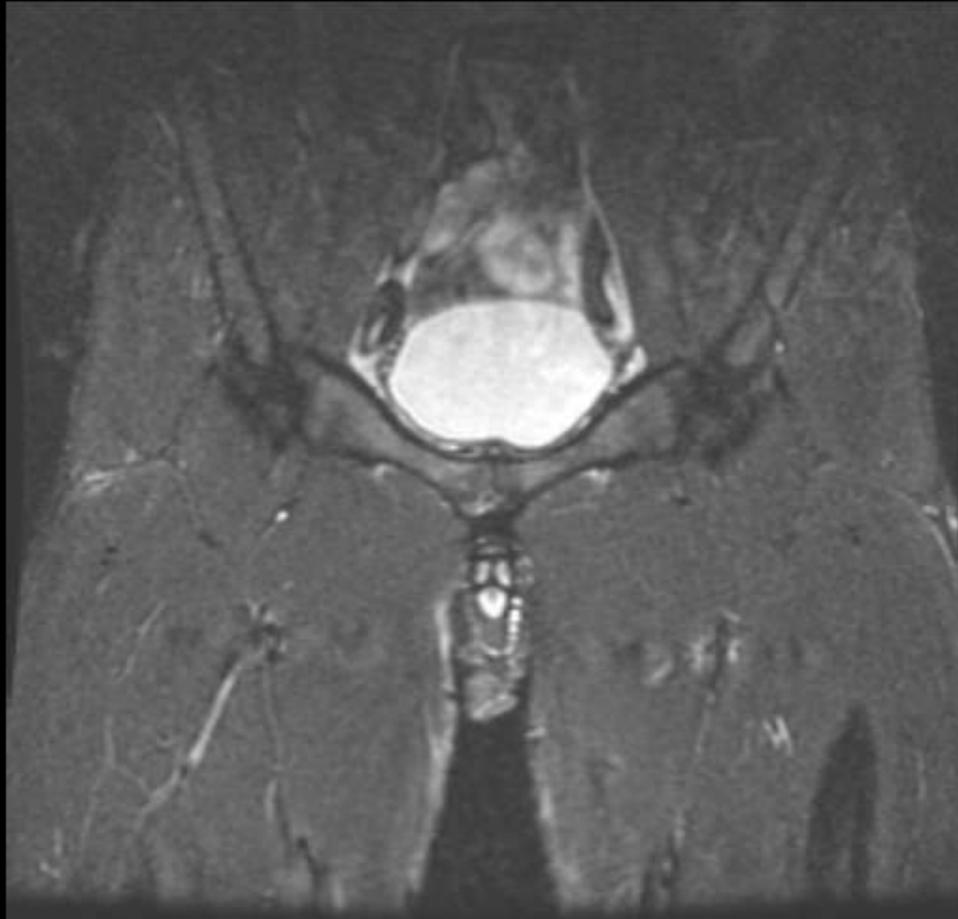
Soccer groin Secondary cleft sign



Secondary Cleft Sign as a Marker of Injury in Athletes with Groin Pain

Radiology 2005 Brennan D et al

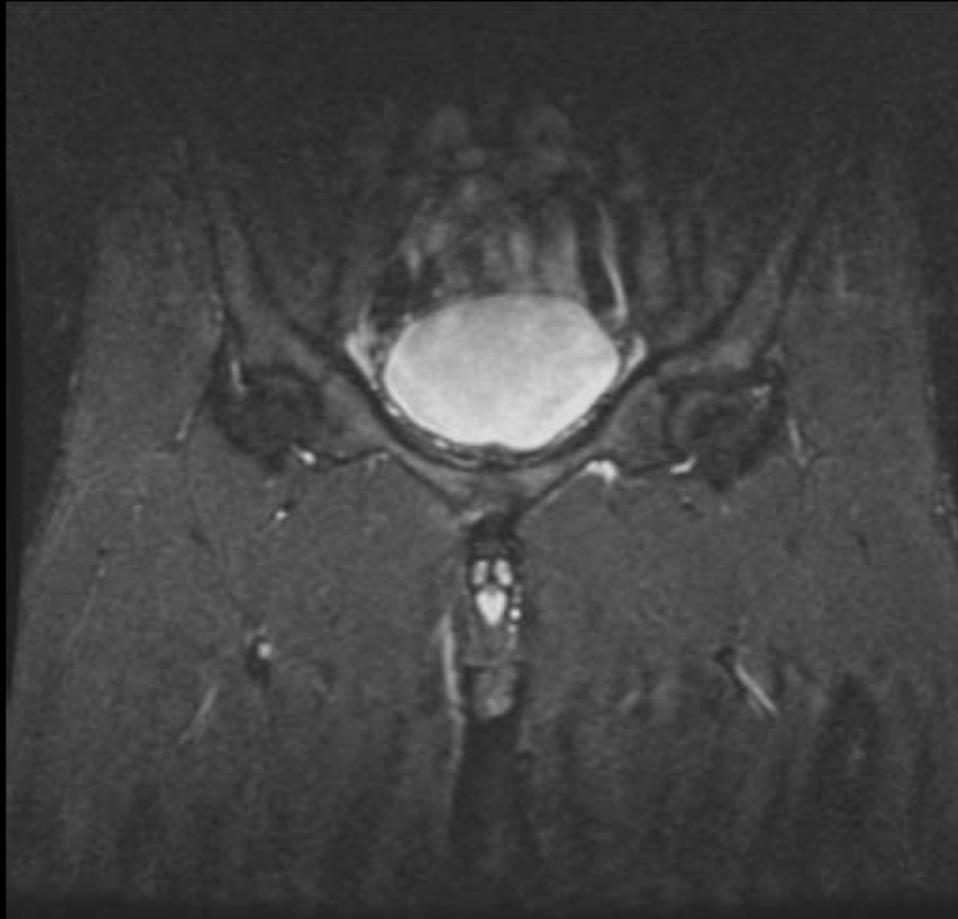
Soccer groin Secondary cleft sign



Secondary Cleft Sign as a Marker of Injury in Athletes with Groin Pain

Radiology 2005 Brennan D et al

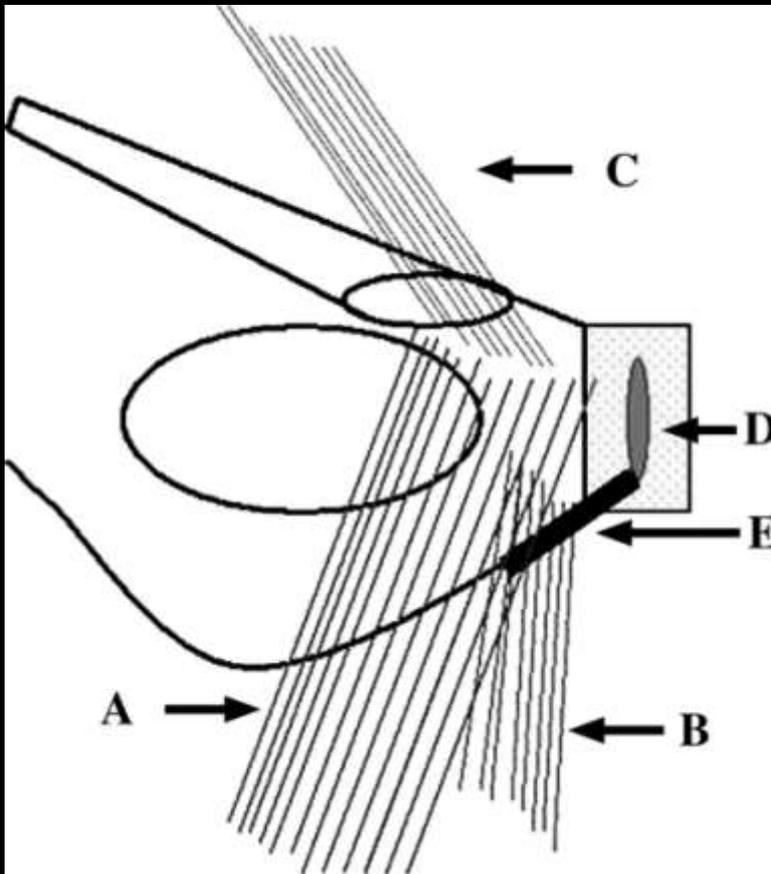
Soccer groin Secondary cleft sign



Secondary Cleft Sign as a Marker of Injury in Athletes with Groin Pain

Radiology 2005 Brennan D et al

Soccer groin Secondary cleft sign



Frontal diagram shows anatomy of the symphysis pubis and the appearance of the secondary cleft.

A = hip adductor aponeurosis

B = gracilis aponeurosis

C = conjoined tendon aponeurosis

D = central physiologic cleft of the fibrocartilaginous disk

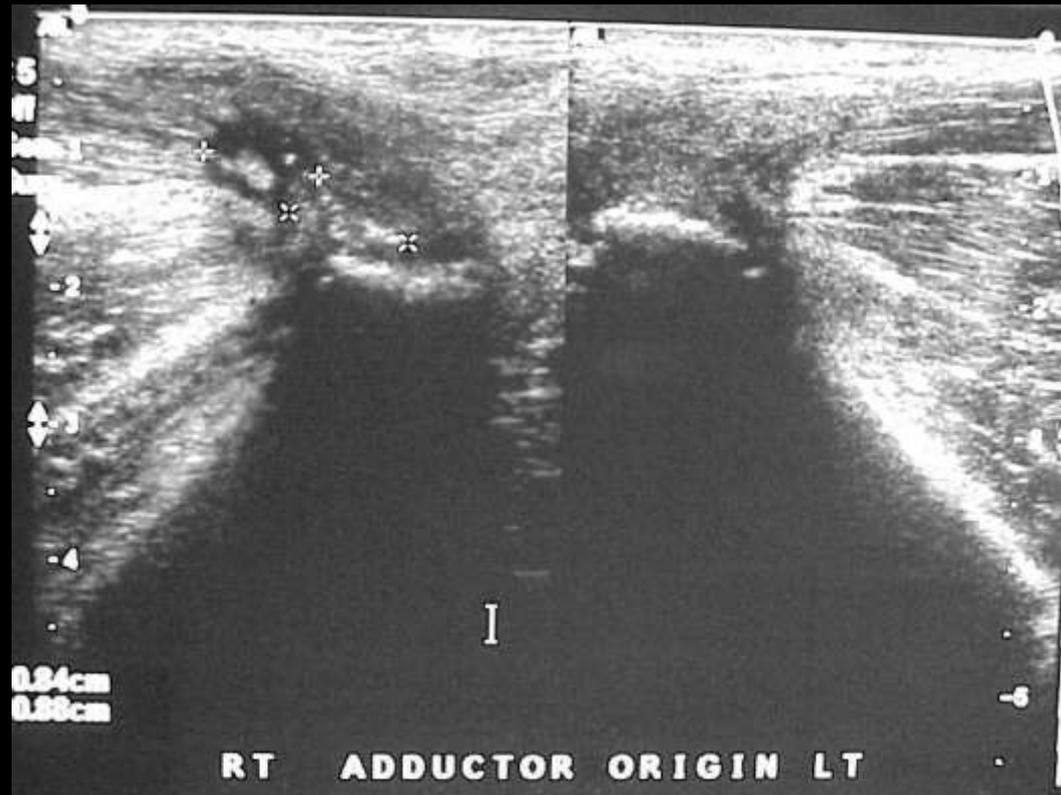
E = secondary cleft.

Rider's Leg

- Strain of the adductor muscles of the thigh in horseback riders.



Rider's Leg - Adductor strain

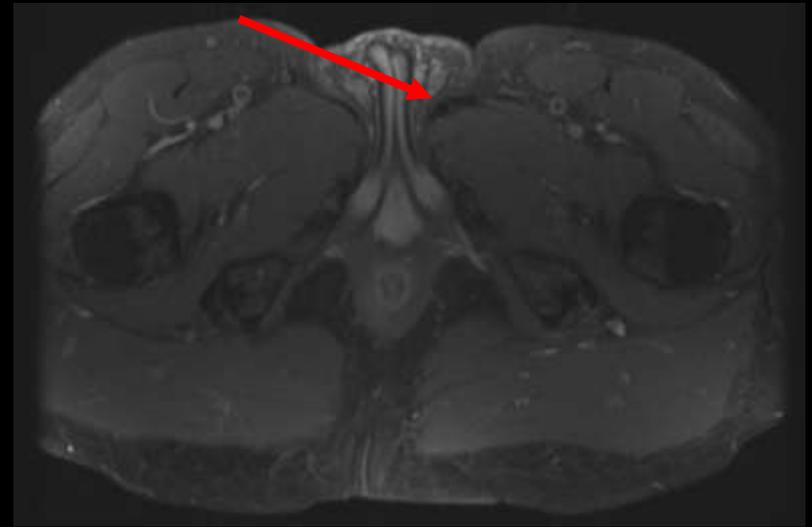
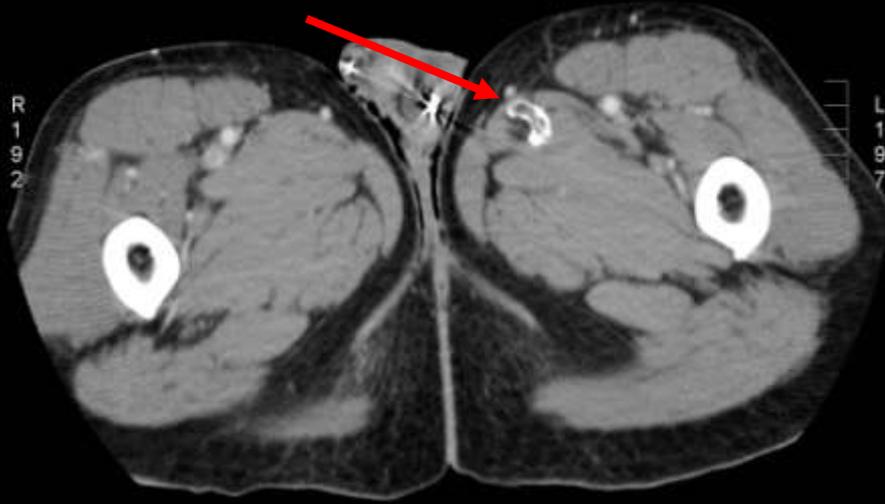


Rider's Leg - Adductor strain



23 · L 511

Rider's Leg - Adductor strain



Horse Rider's Bone

- AKA Cavalry bone
- Localized ossification of the inner aspect of the lower end of the tendon of the adductor muscle of the thigh (adductor tubercle).



Horse Rider's Bone Adductor Magnus Ossification



Cor T1



Cor PDFS

Quick-Draw Leg

- Bullet wound in leg from practicing fast draw from gun in belt holster



Quick-Draw Leg



Quick-Draw Leg



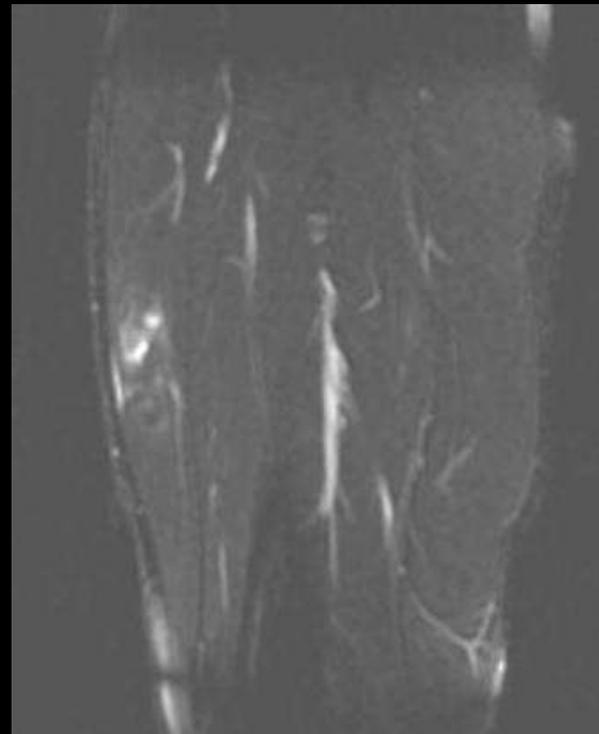
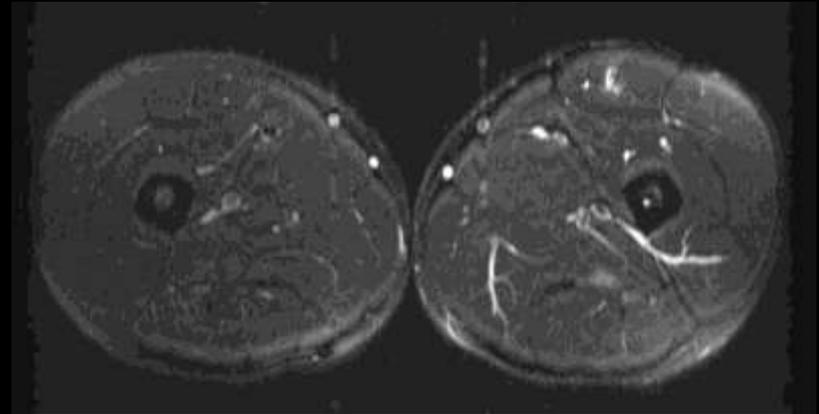
Cricket Thigh

- Rupture of some of the fibers of the rectus femoris, which may occur in playing cricket or football.
- Sometimes the tendon of the quadriceps or that of the patella is also ruptured.



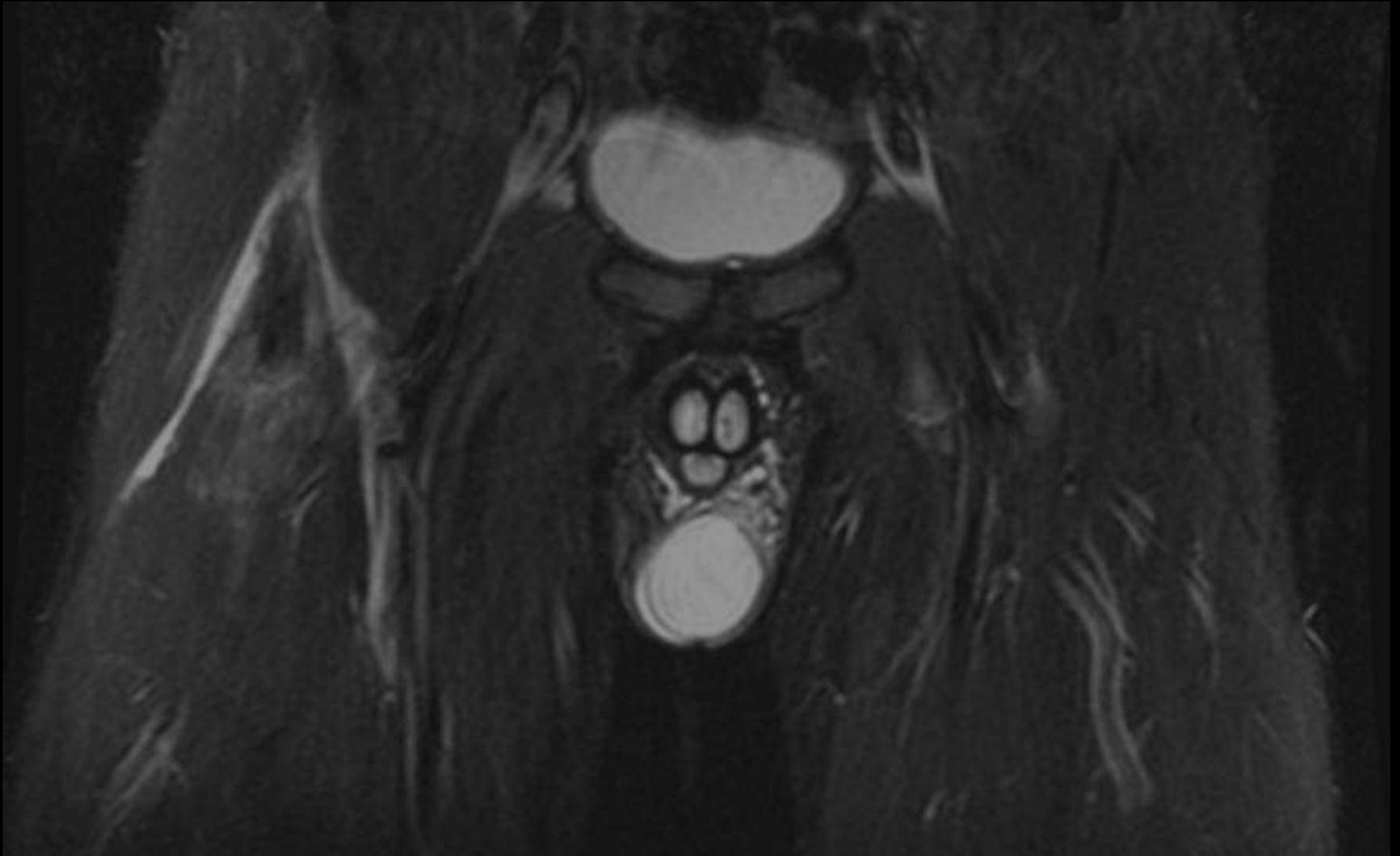
Cricket Thigh Rectus Femoris Strain

- **Grade 1**
 - Few fibers torn
 - No loss of function
 - Feathery fluid signal
- **Grade 2**
 - Some loss of strength
 - Focal mass
 - Partial tear of myotendinous junction
- **Grade 3**
 - Complete rupture
 - Loss of function
 - Retraction



Cricket Thigh

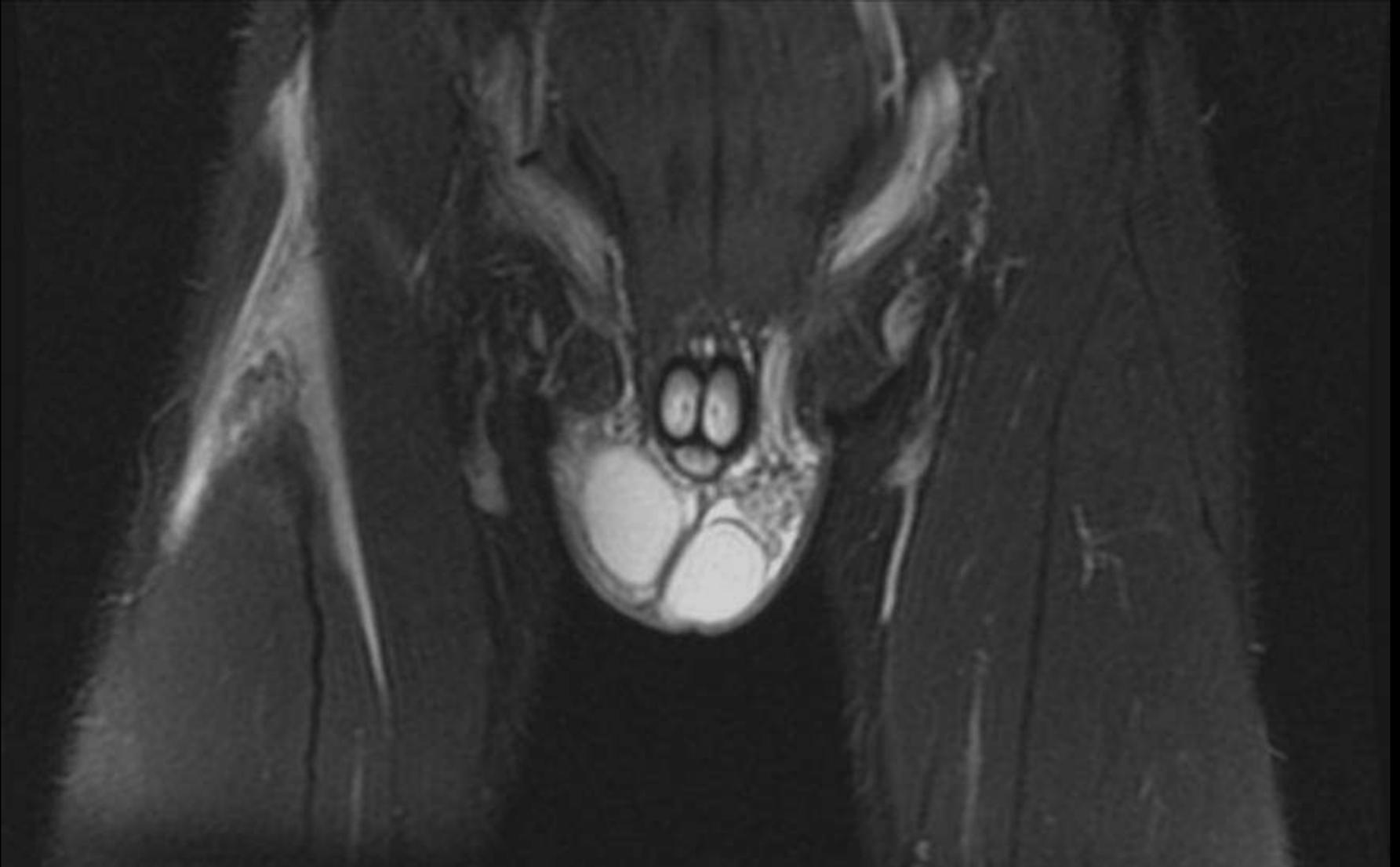
Rectus femoris tendon complete tear



27 year old male with sports related injury.

Cricket Thigh

Rectus femoris tendon complete tear



27 year old male with sports related injury.

Breaststroker's Knee

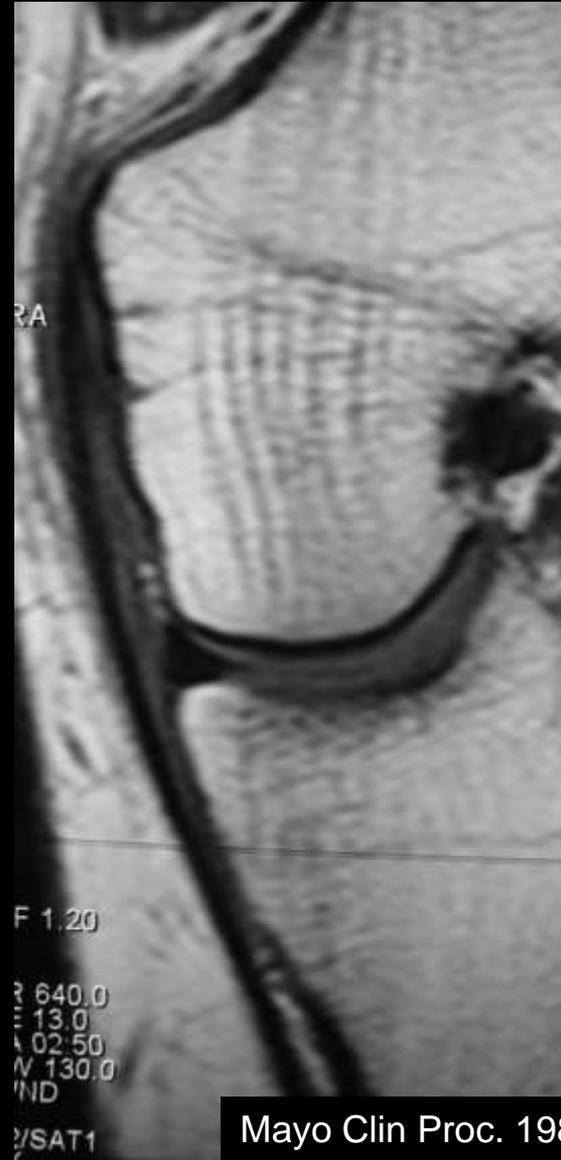
- Valgus strain in whip kick
- MCL stress
- PF dysfunction
- Medial synovial plica syndrome



Breaststroker's Knee MCL Tear



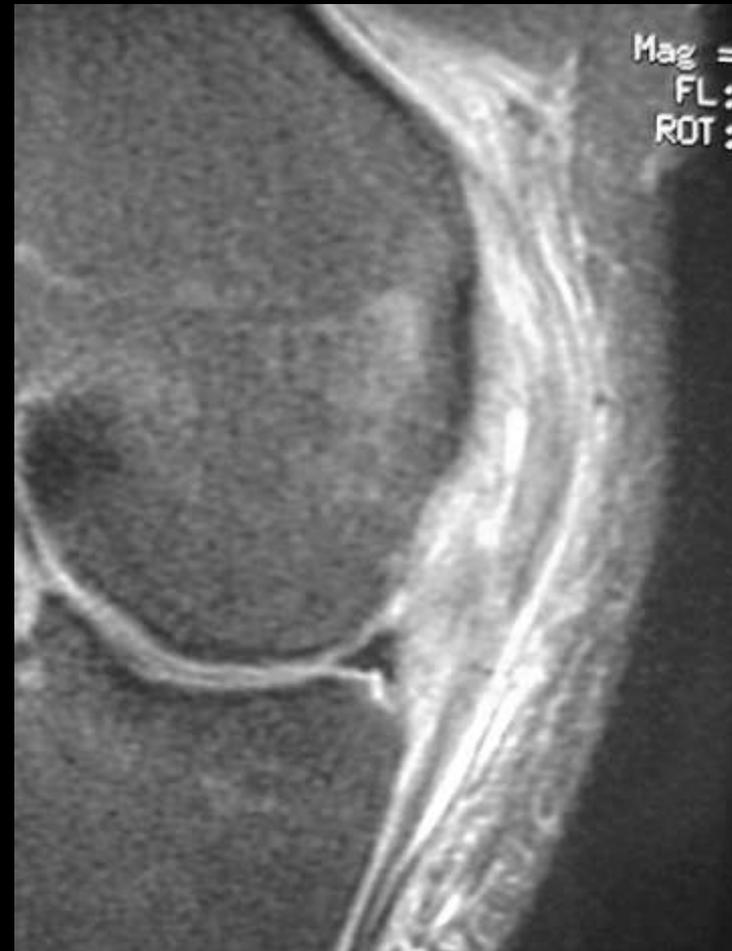
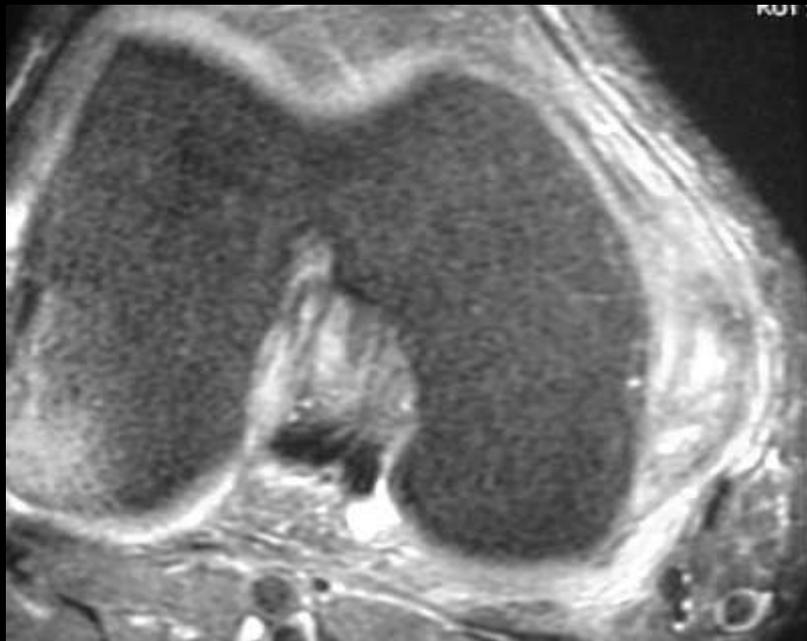
Cor PDFS



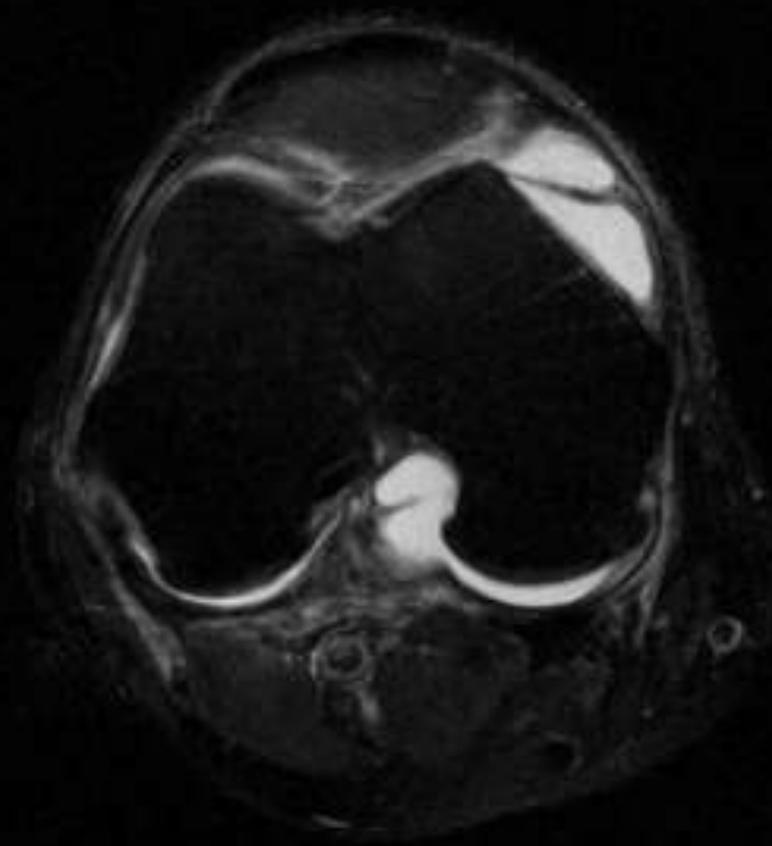
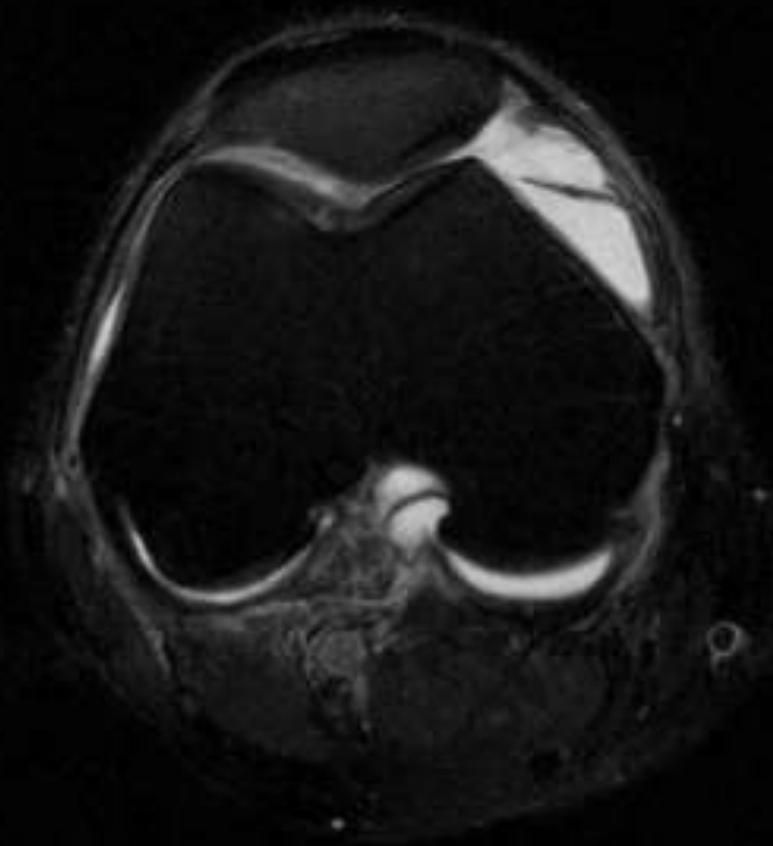
Cor T1

Breaststroker's Knee

MCL Tear



Breaststroker's Knee



Type 1 medial patella plica

Musher's Knee

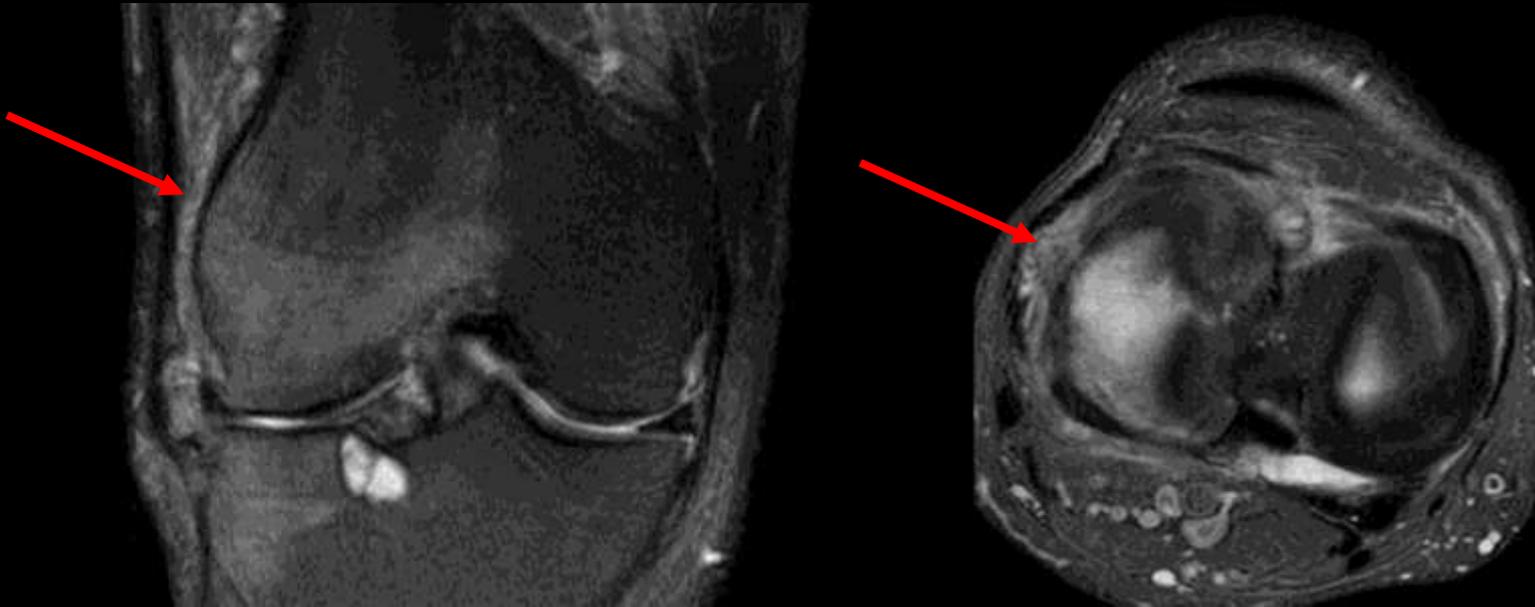
- Iliotibial band syndrome
- Sharp backward kicking of the leg to spur the team



Musher's Knee

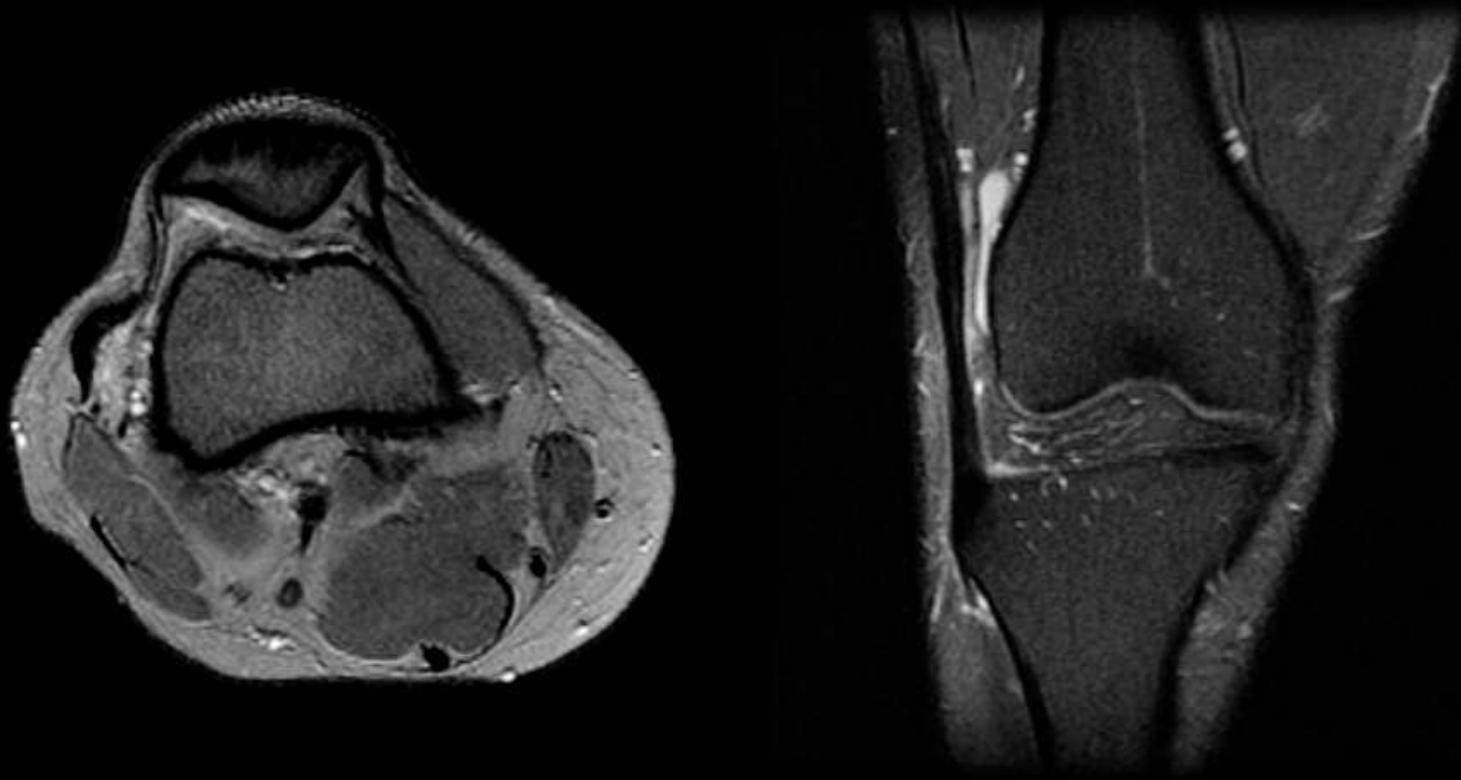
Iliotibial band friction syndrome

- Intense activity leads to abnormal contact between the ITB and the LFC.
- Findings include edema superficial or deep to the ITB, joint effusion, fluid collection deep to the ITB or thickening of the ITB.
- Fluid is likely within an adventitious bursa.



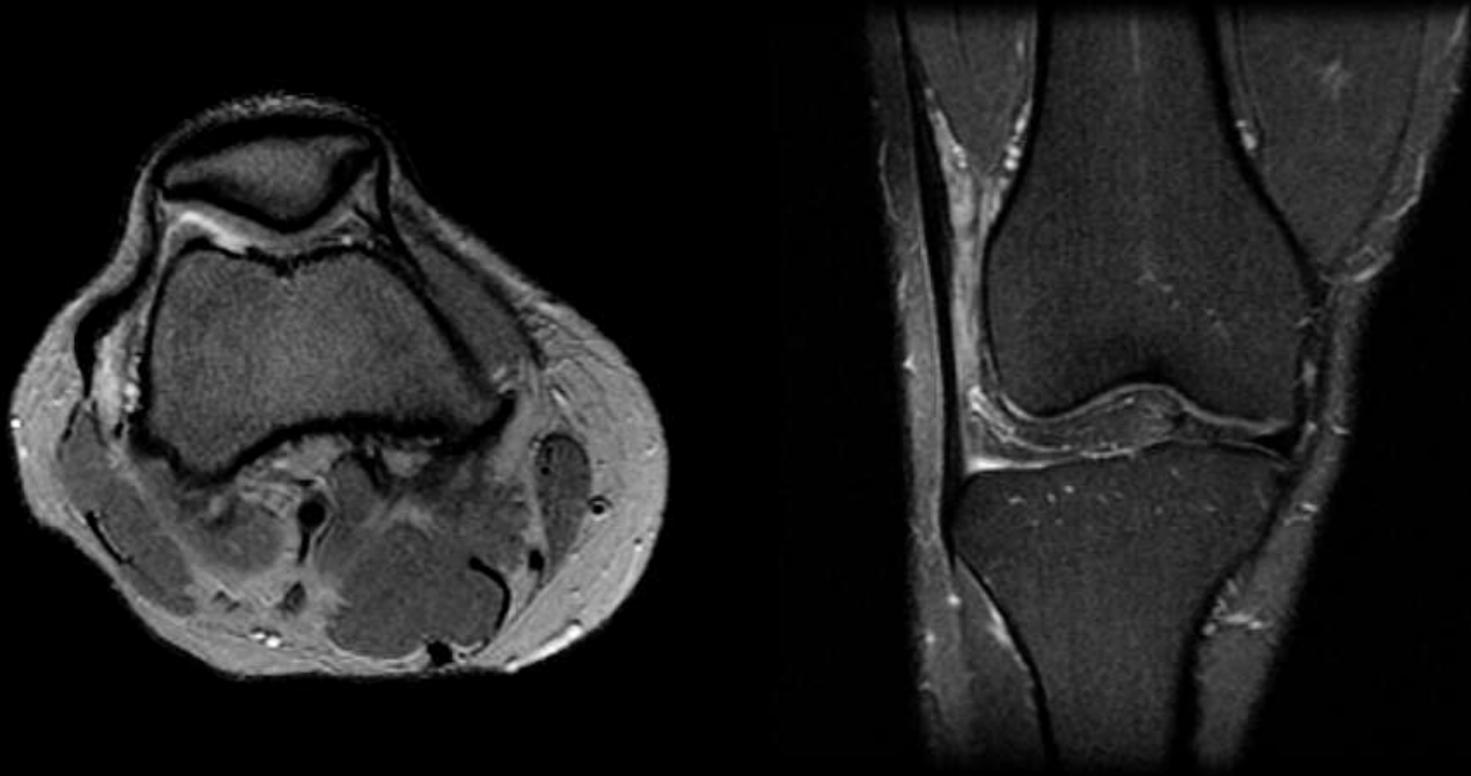
Musher's Knee

Iliotibial band friction syndrome



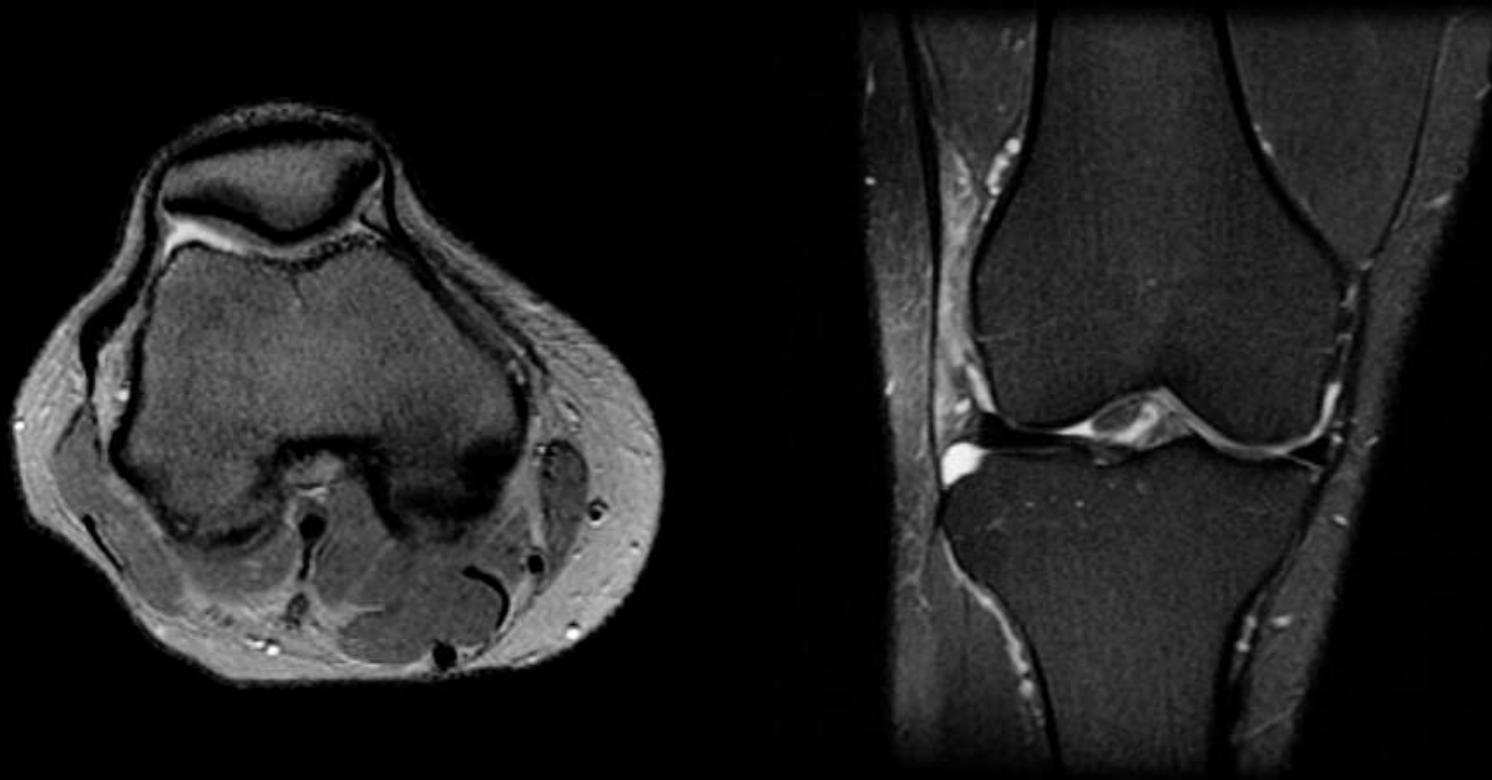
Musher's Knee

Iliotibial band friction syndrome



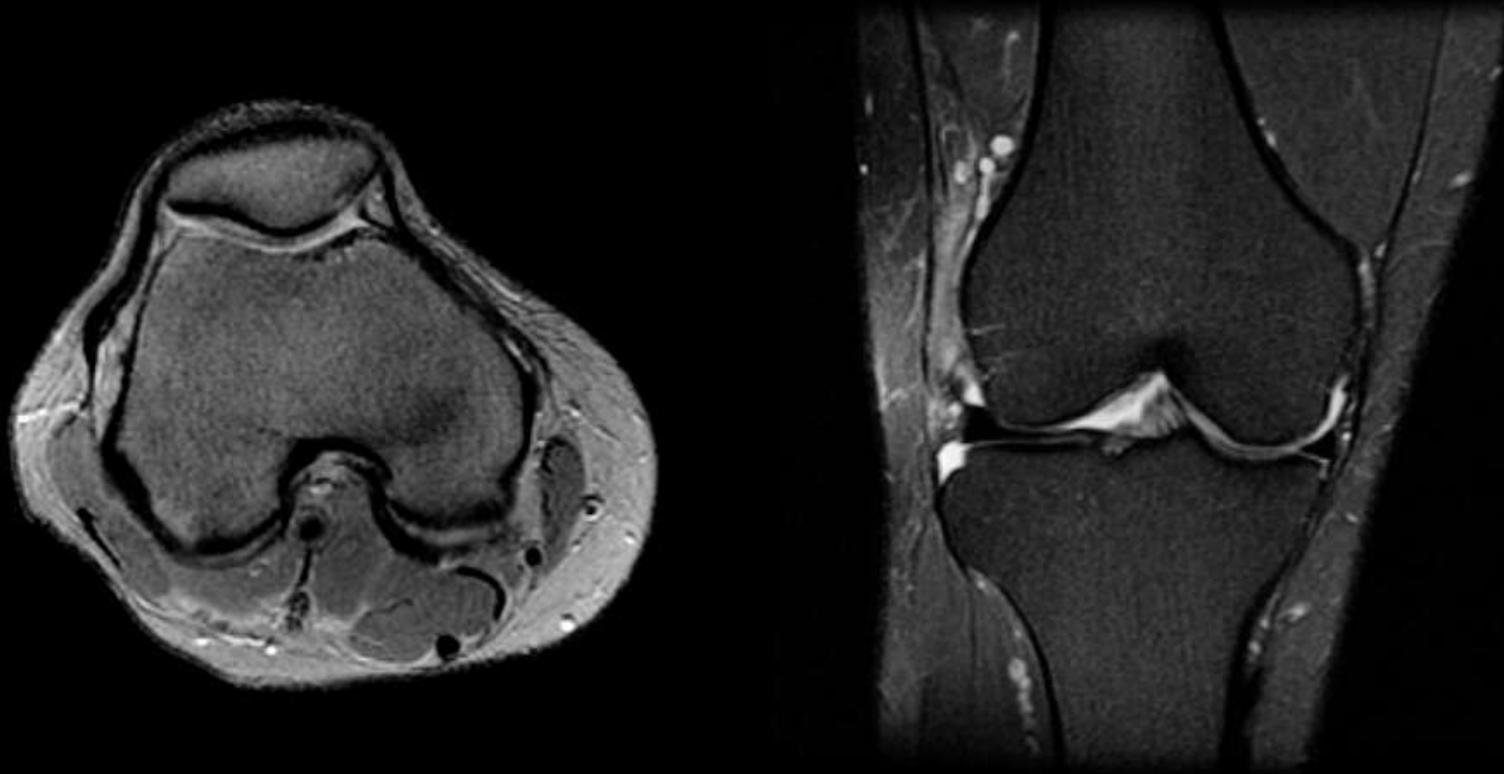
Musher's Knee

Iliotibial band friction syndrome



Musher's Knee

Iliotibial band friction syndrome



Football Knee

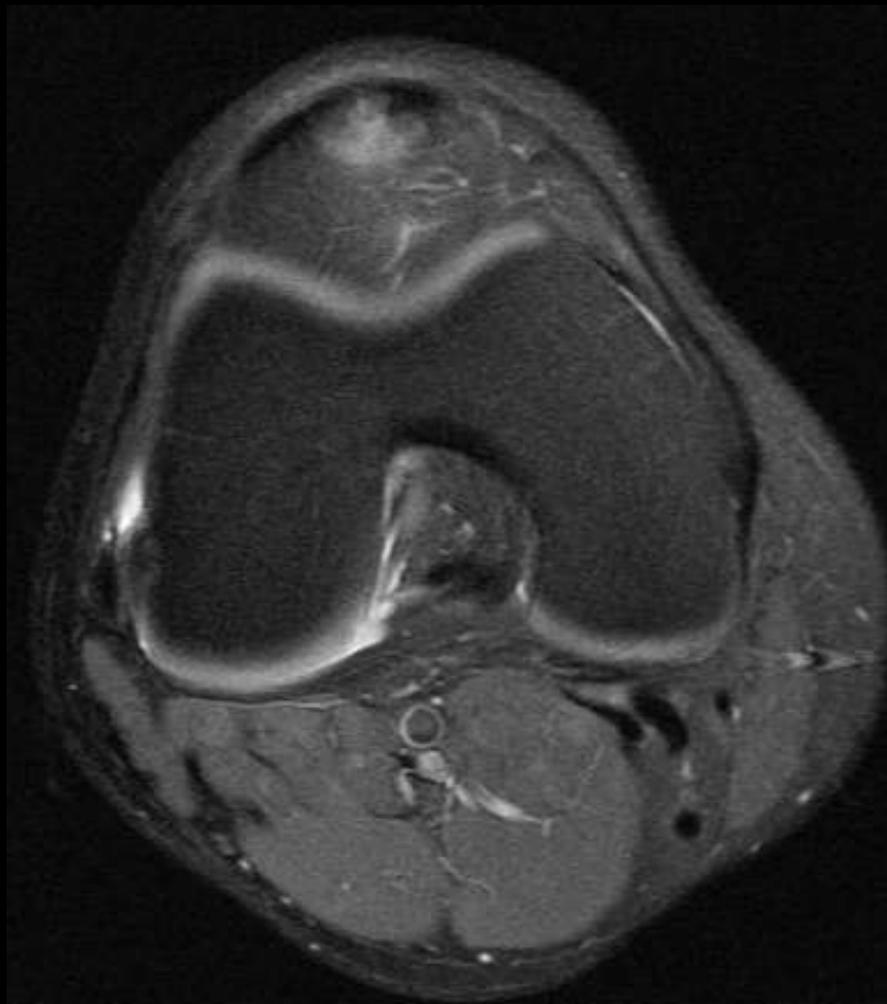
- “A swollen, relaxed, somewhat tender condition of the knee seen in football players”
- Patellar tendinosis
- AKA jumper’s knee
- An insertional tendinopathy
- Proximal patellar tendon (65%)
- Distal quadriceps tendon (25%)
- Distal patellar tendon (10%).

Jumper's Knee

- Patellar tendinosis
- Pain and tenderness over the lower pole of the patella
- Similar to that occurring in Sindig-Larsen-Johansson disease, without radiographic changes
- So called because of its occurrence in athletes
 - Basketball
 - Volleyball
 - Soccer



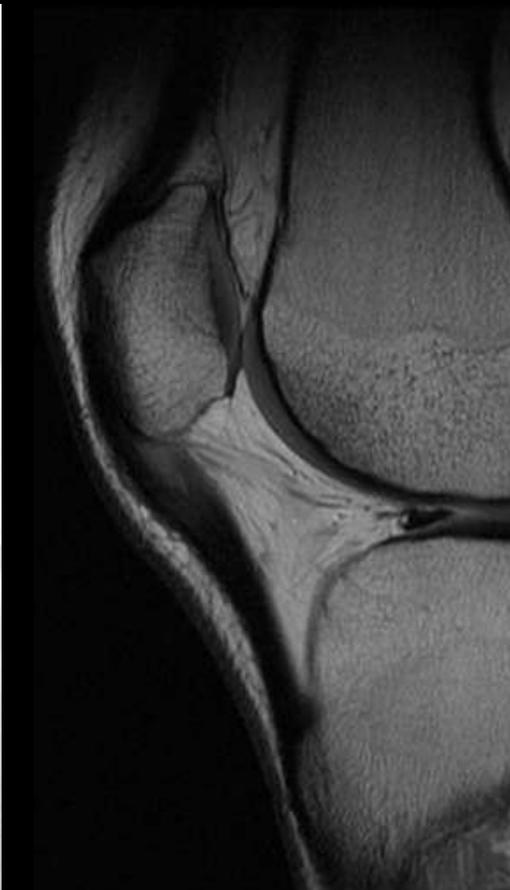
Jumper's Knee



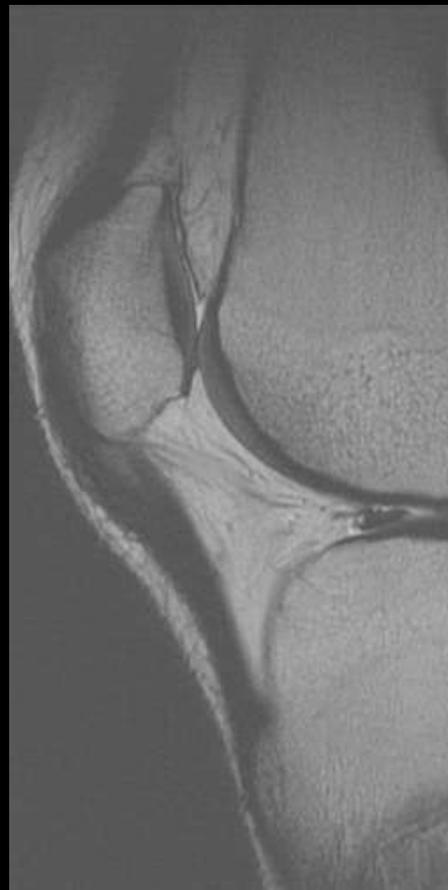
Jumper's Knee



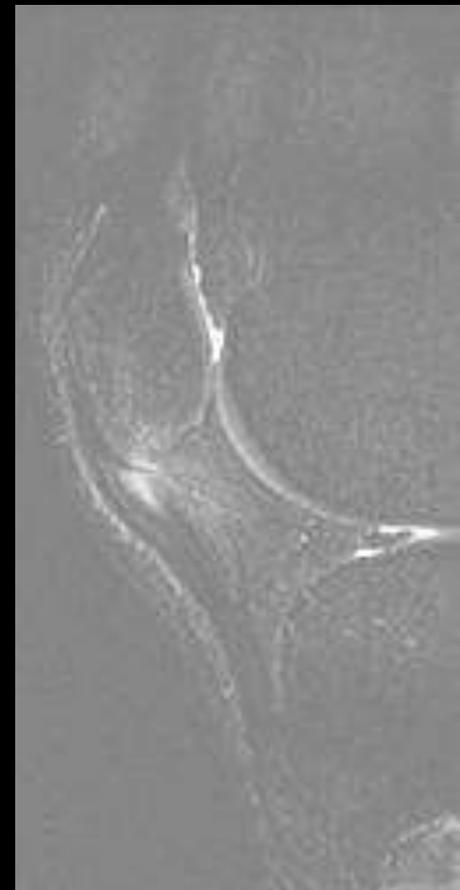
Lat



Sag PD



Sag T2



Sag PDFS

Jumper's Knee

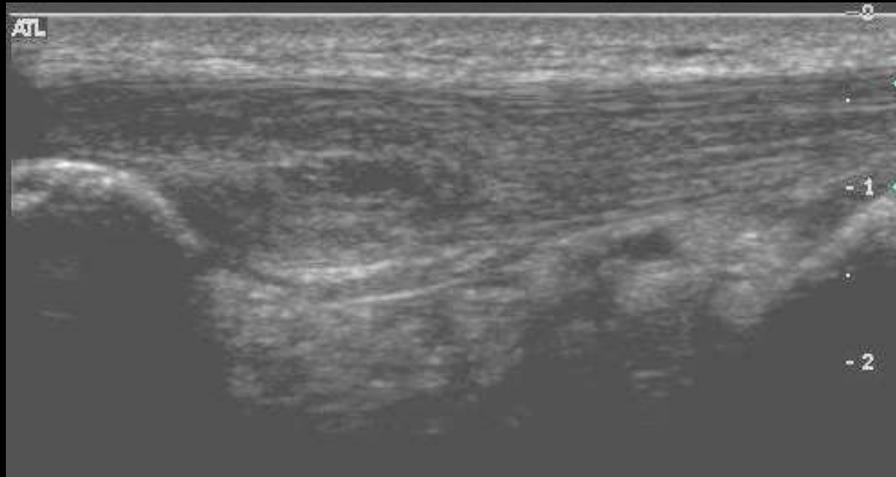
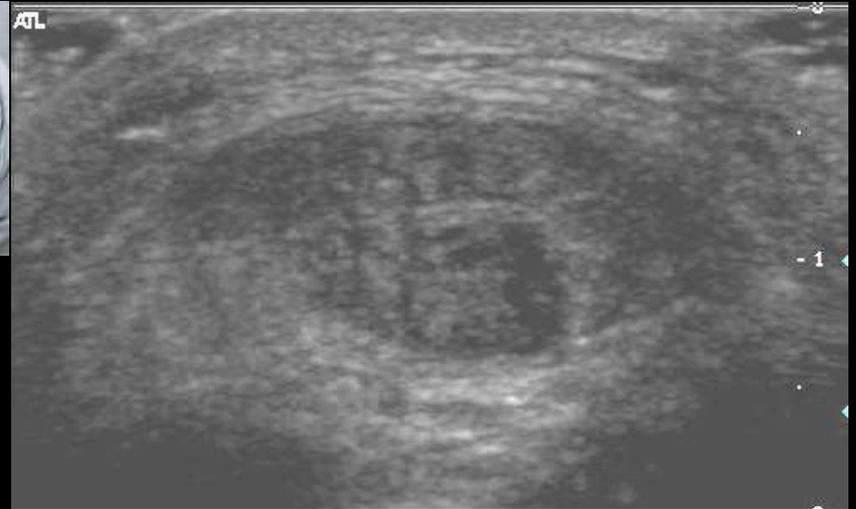


Sag PD



Sag T2

Jumper's Knee



Rugby Knee Osgood-Schlatter disease

- Osgood-Schlatter disease



Rugby Knee Osgood-Schlatter disease

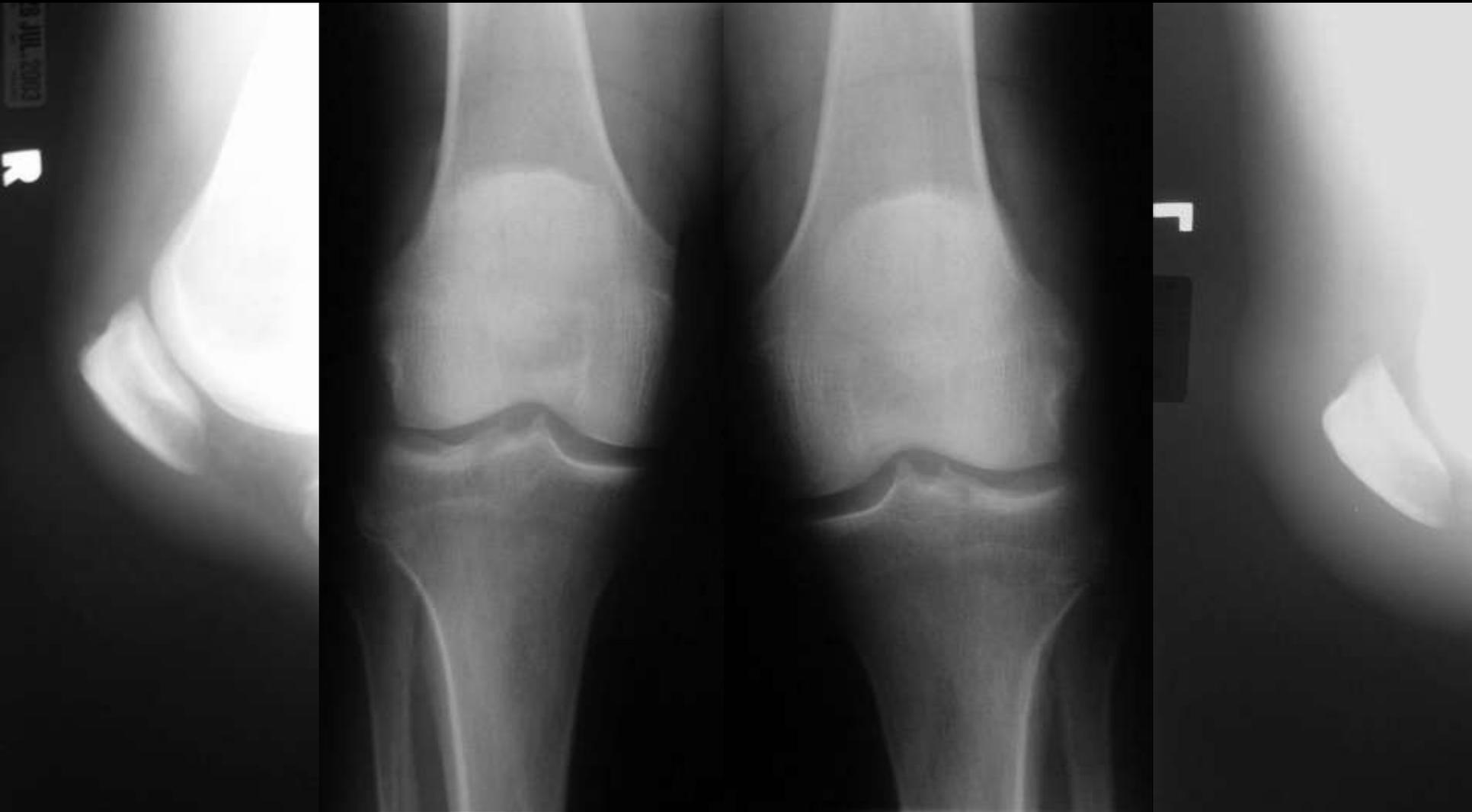


Genu Amoris

Lover's knee

- Swelling and pain in the knee from making love in an unusual position.

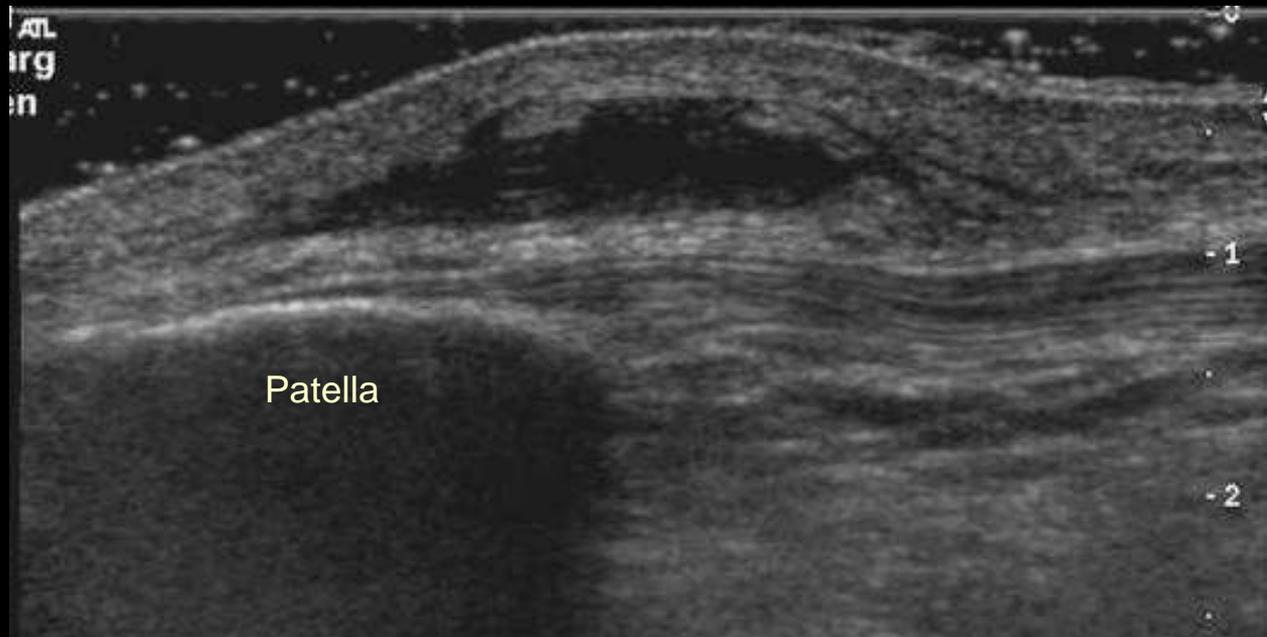
Genu Amoris Lover's knee



Wrestler Knee

- Prepatella bursitis
- AKA Housemaids knee, Carpet layer knee
- Chronic mechanical irritation
- Preacher knee is infrapatella bursitis

Wrestler Knee



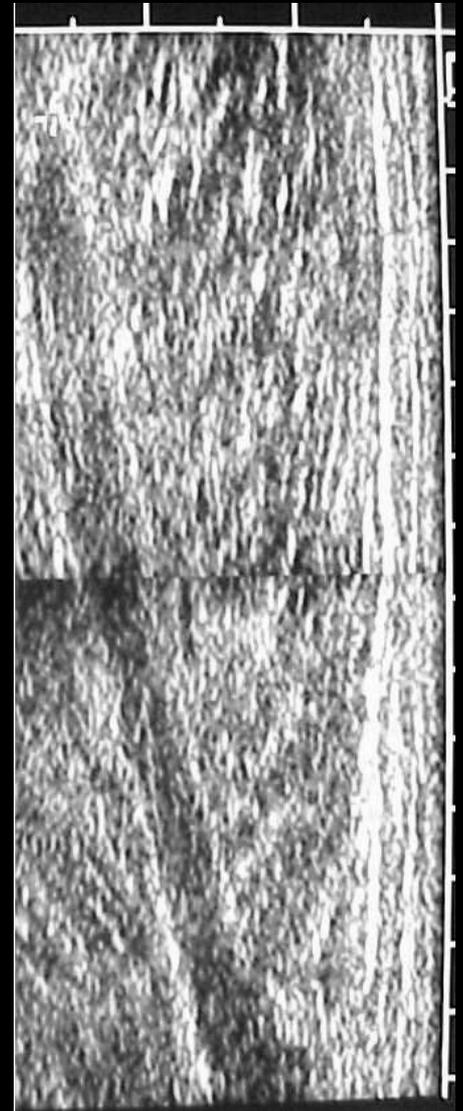
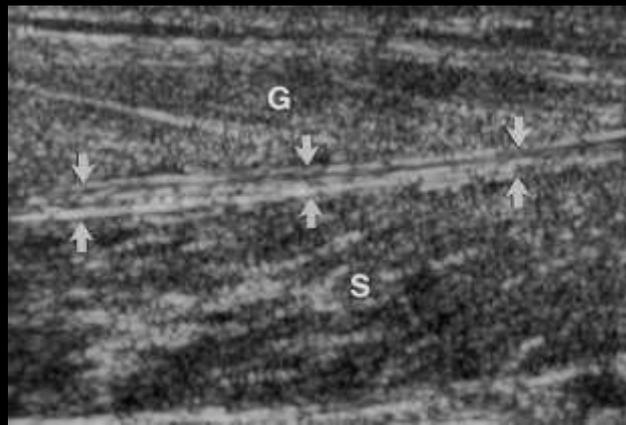
Dancer's Bone



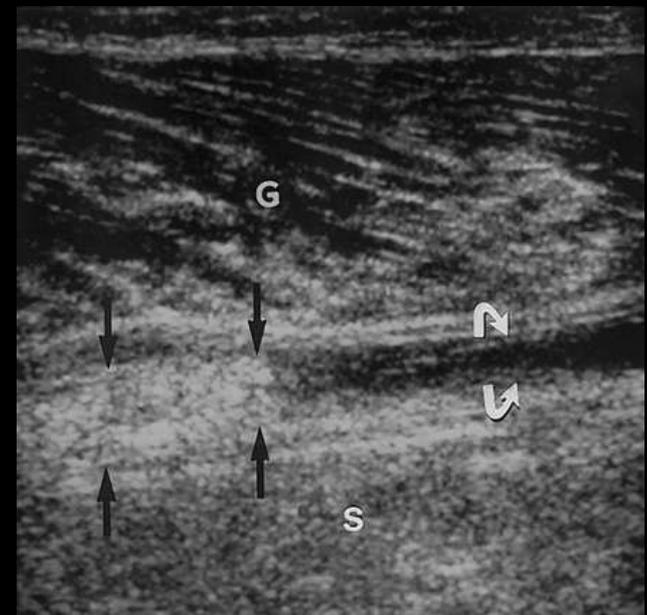
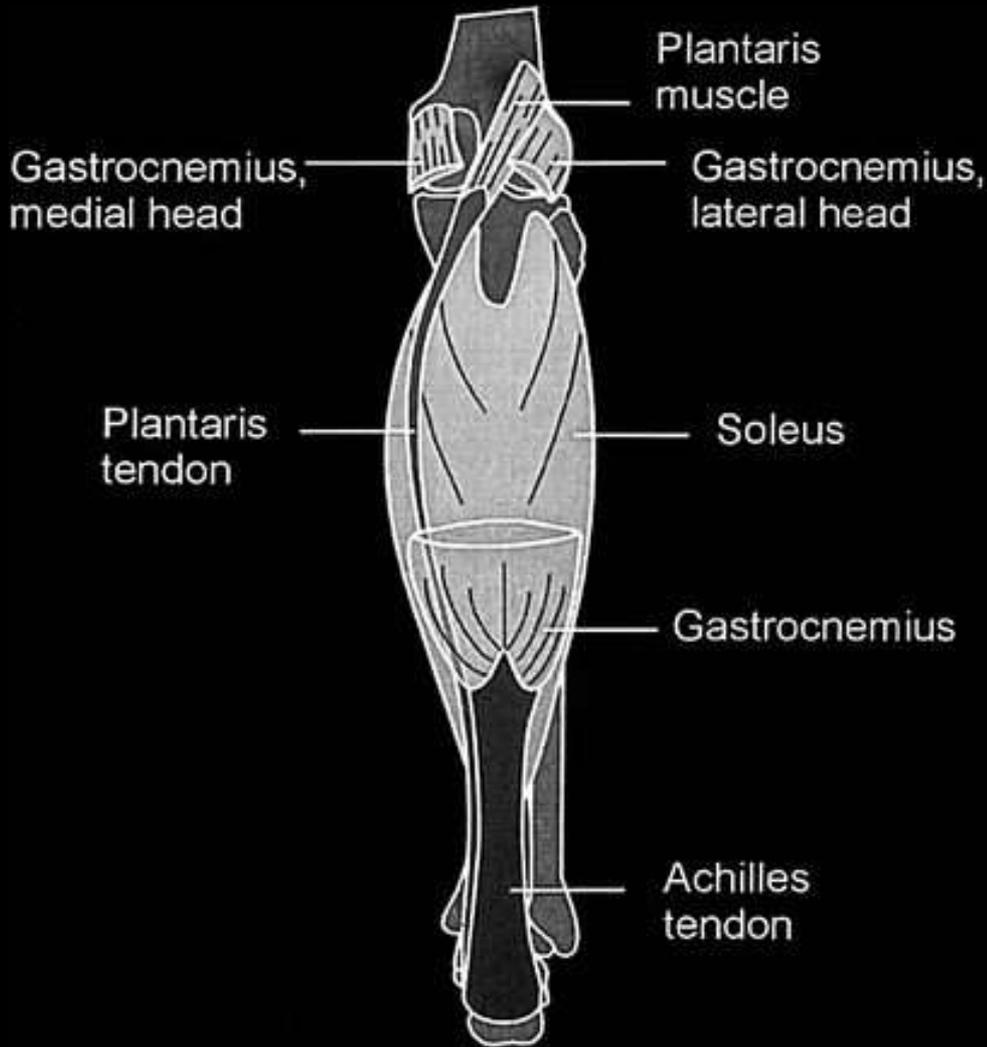
Rt soleus tendon/myotendinous junction ossification.

Tennis Leg

- Previously plantaris tendon rupture
- Medial head of gastrocnemius sudden rupture at MTJ
- Forced dorsiflexion
- Older persons participating in tennis and other sports.

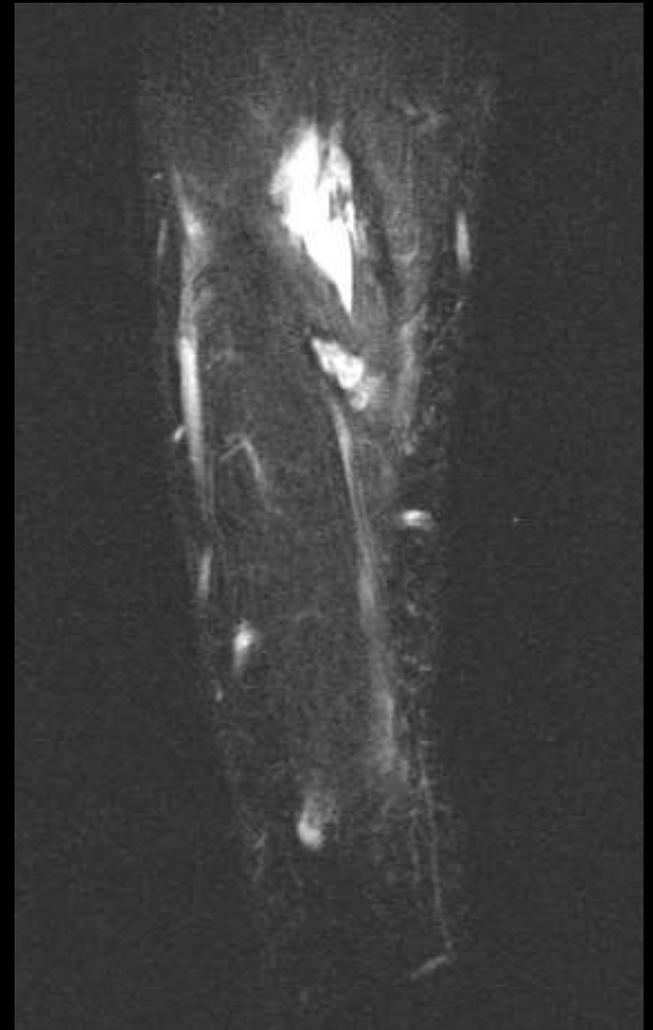
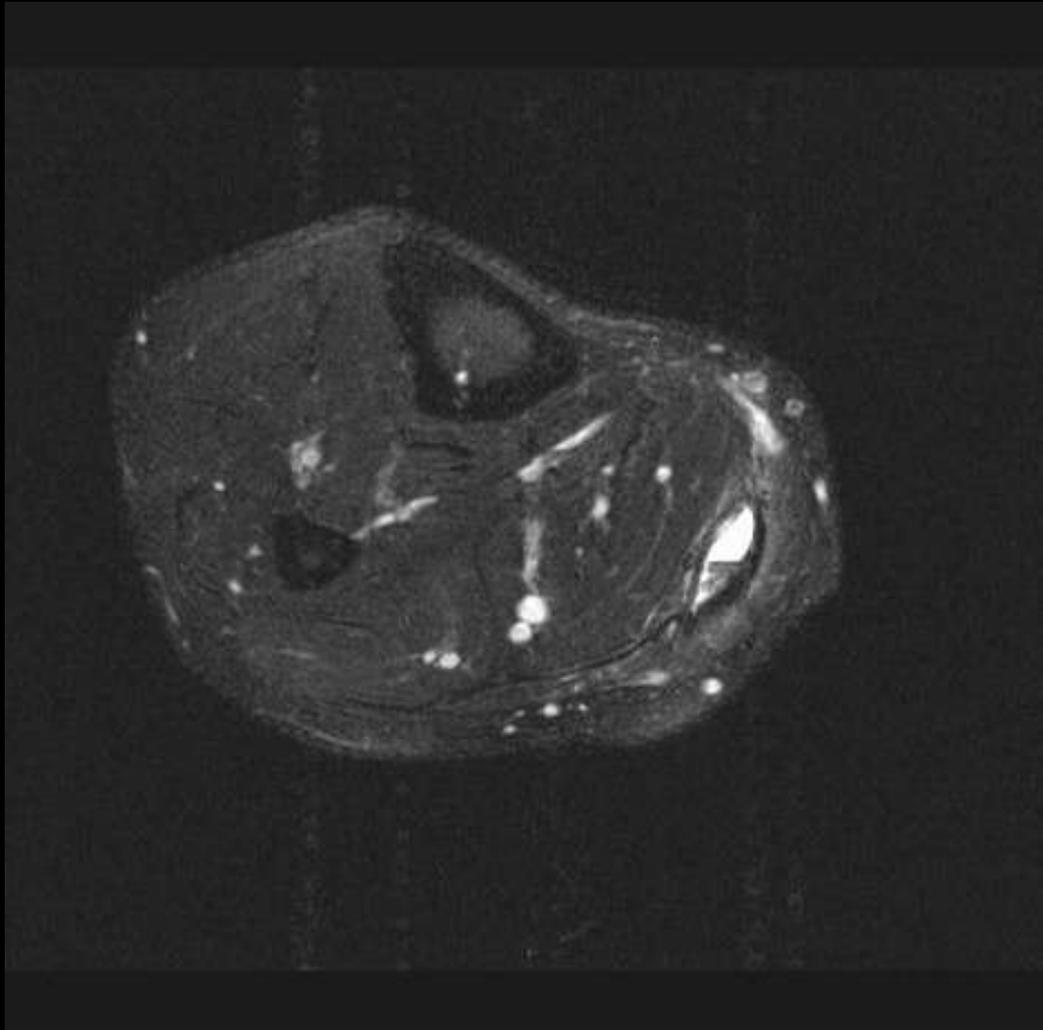


Tennis Leg



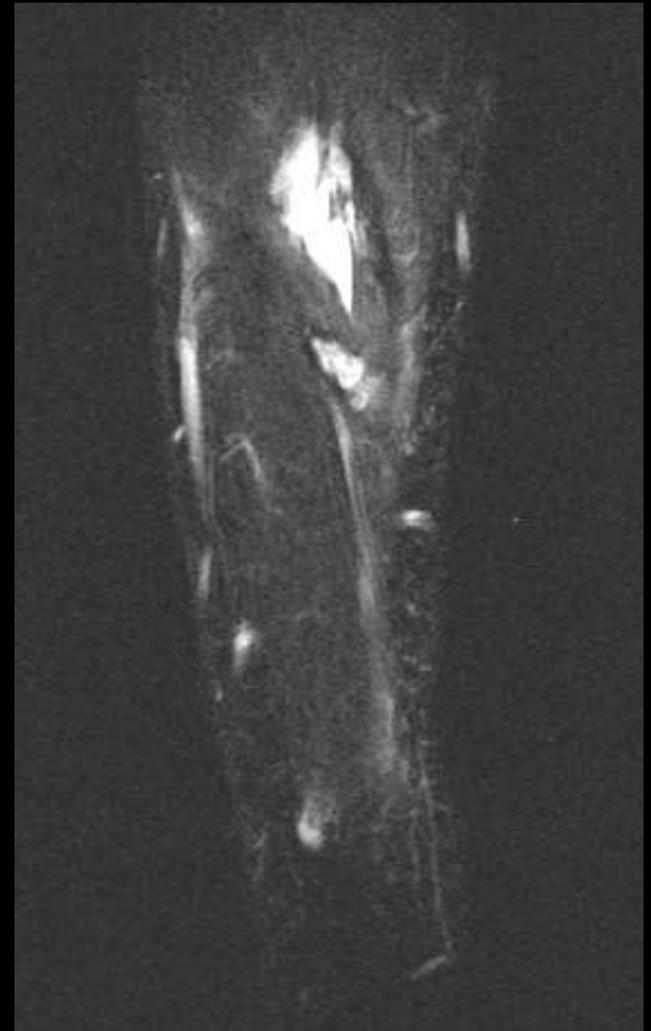
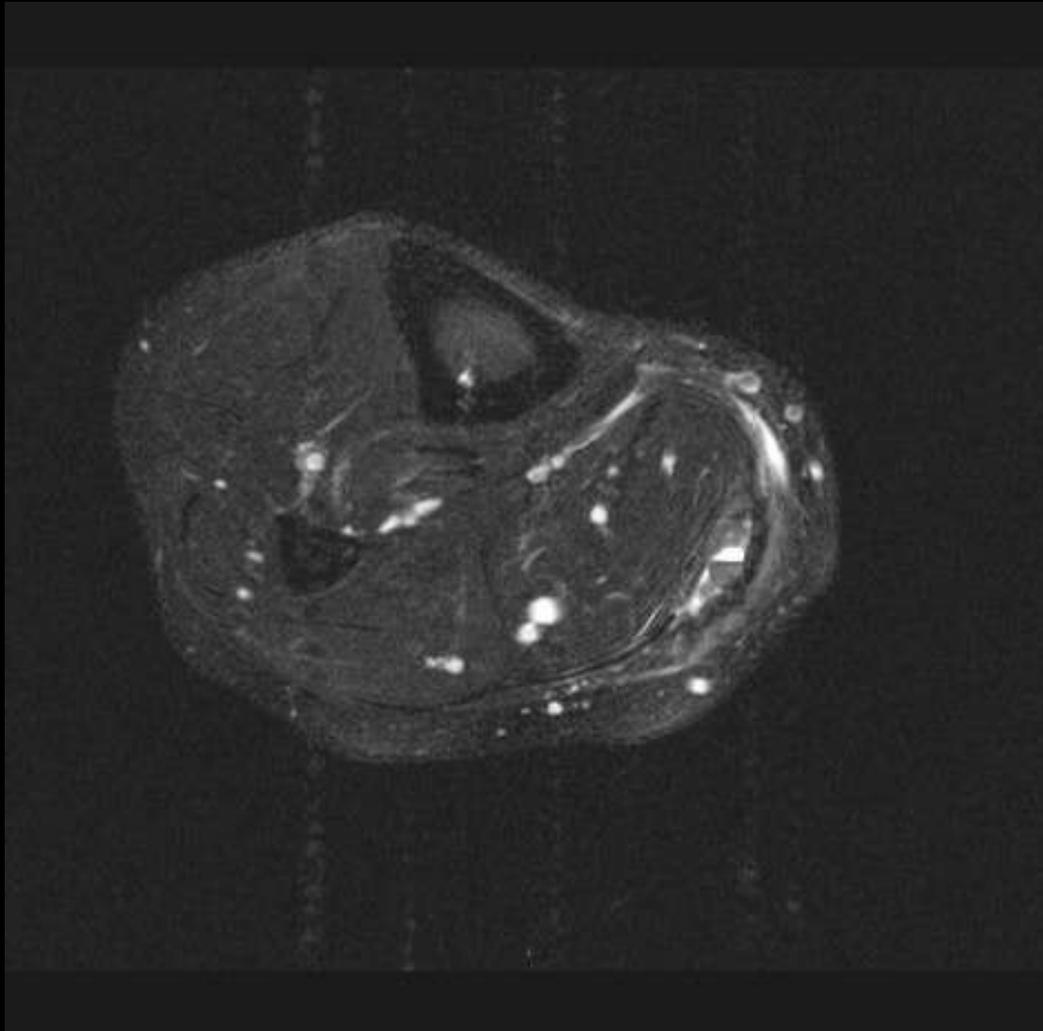
Tennis Leg

Medial head of Gastrocnemius tear



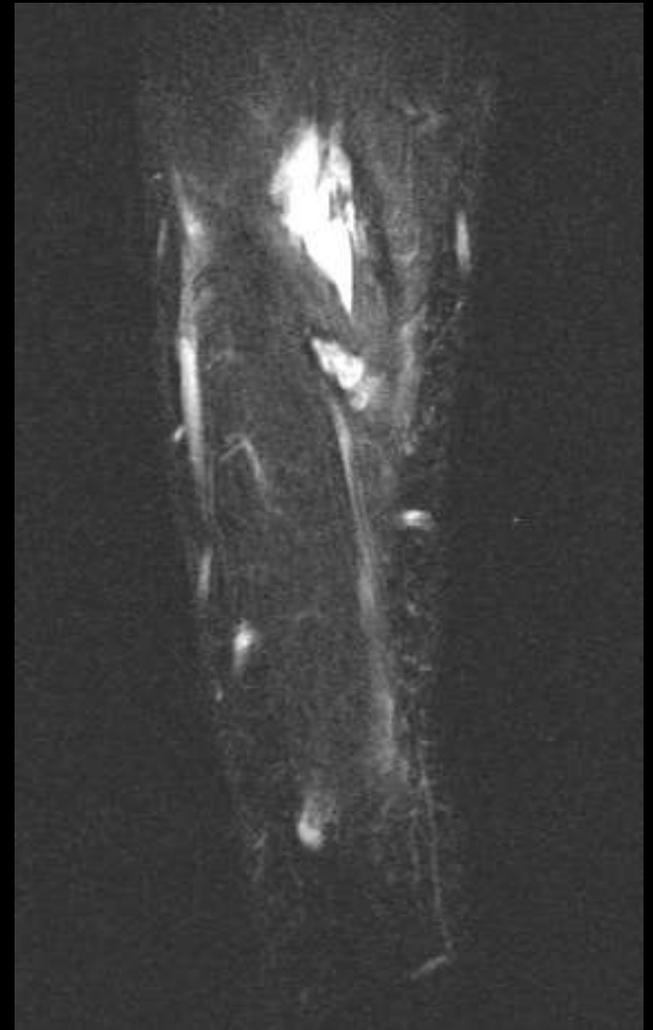
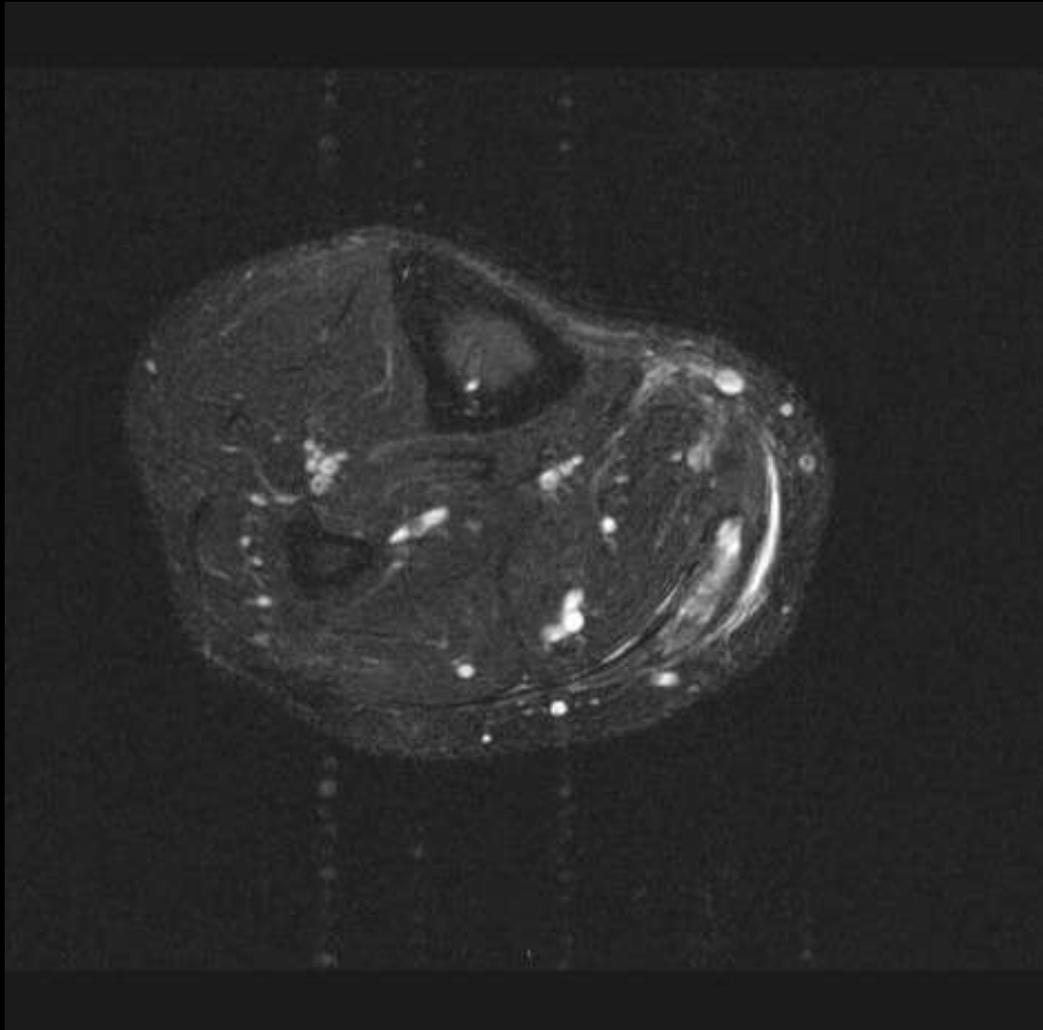
Tennis Leg

Medial head of Gastrocnemius tear

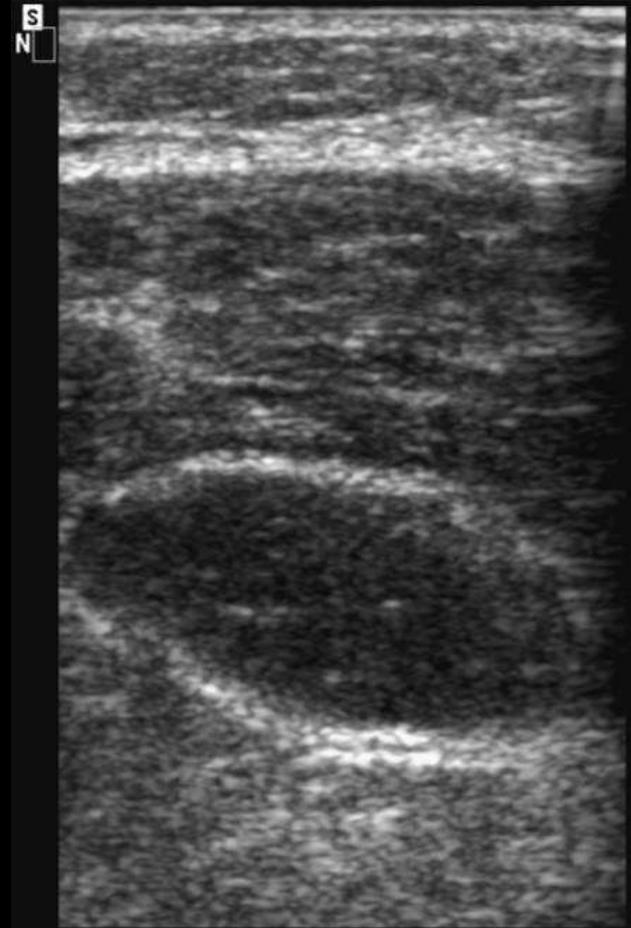
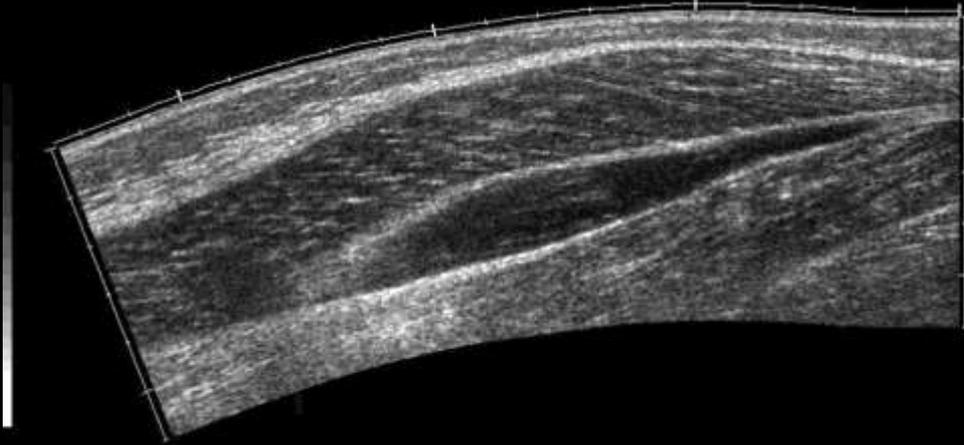


Tennis Leg

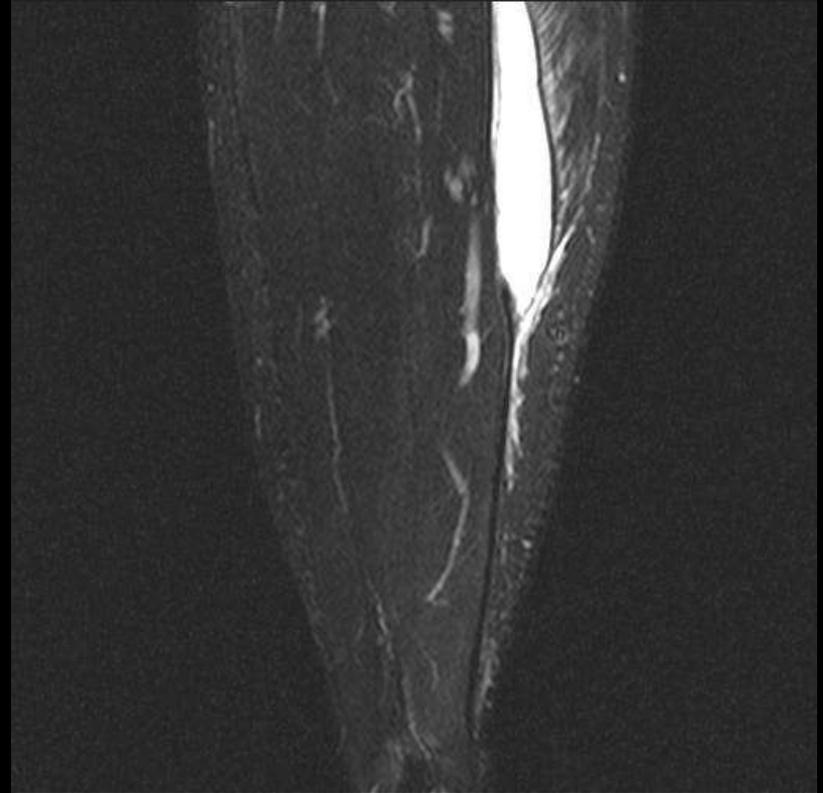
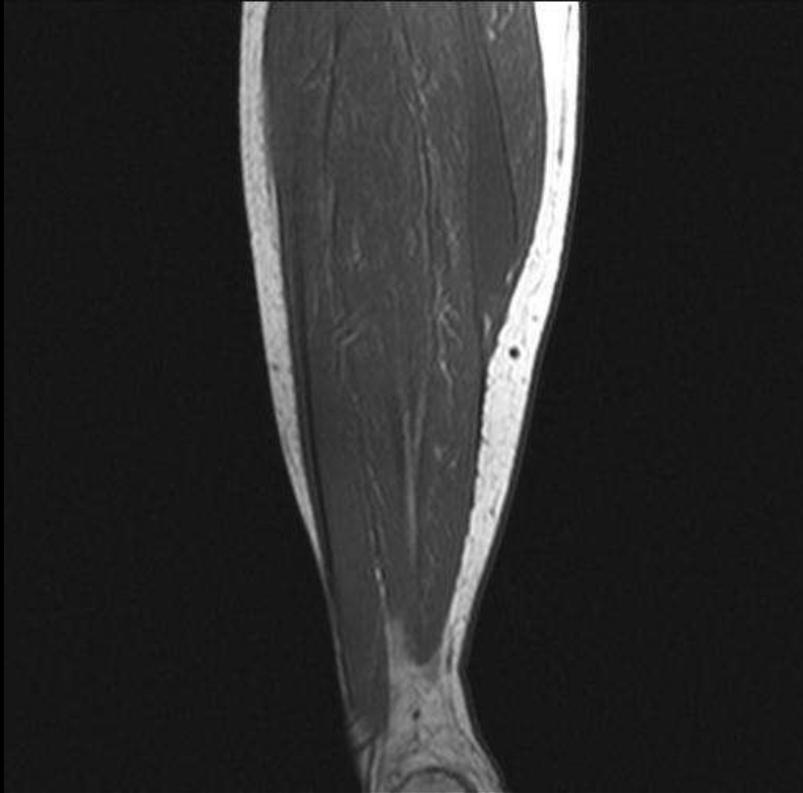
Medial head of Gastrocnemius tear



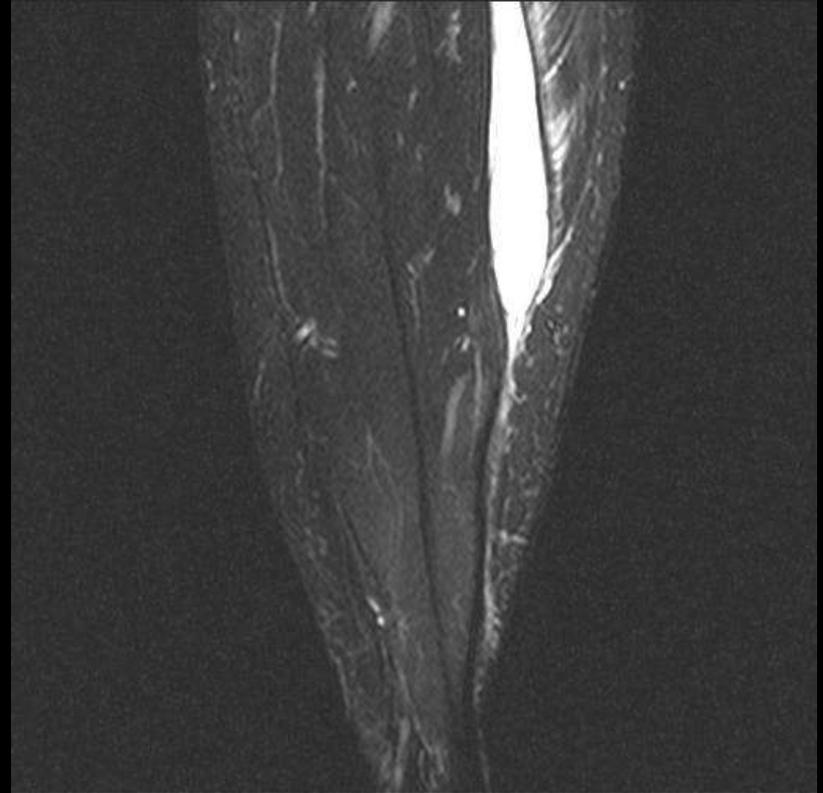
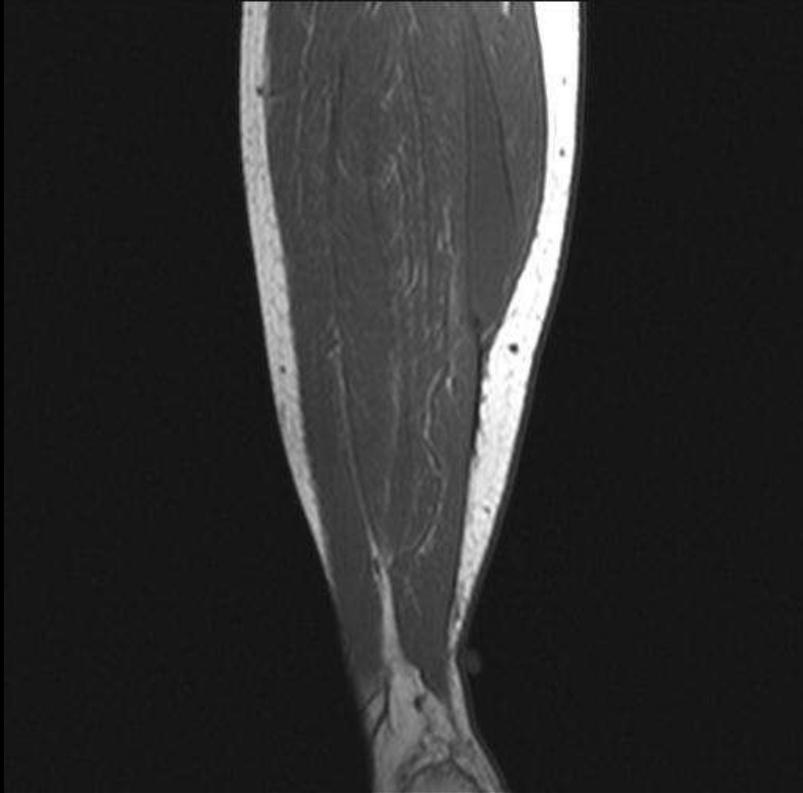
Tennis Leg



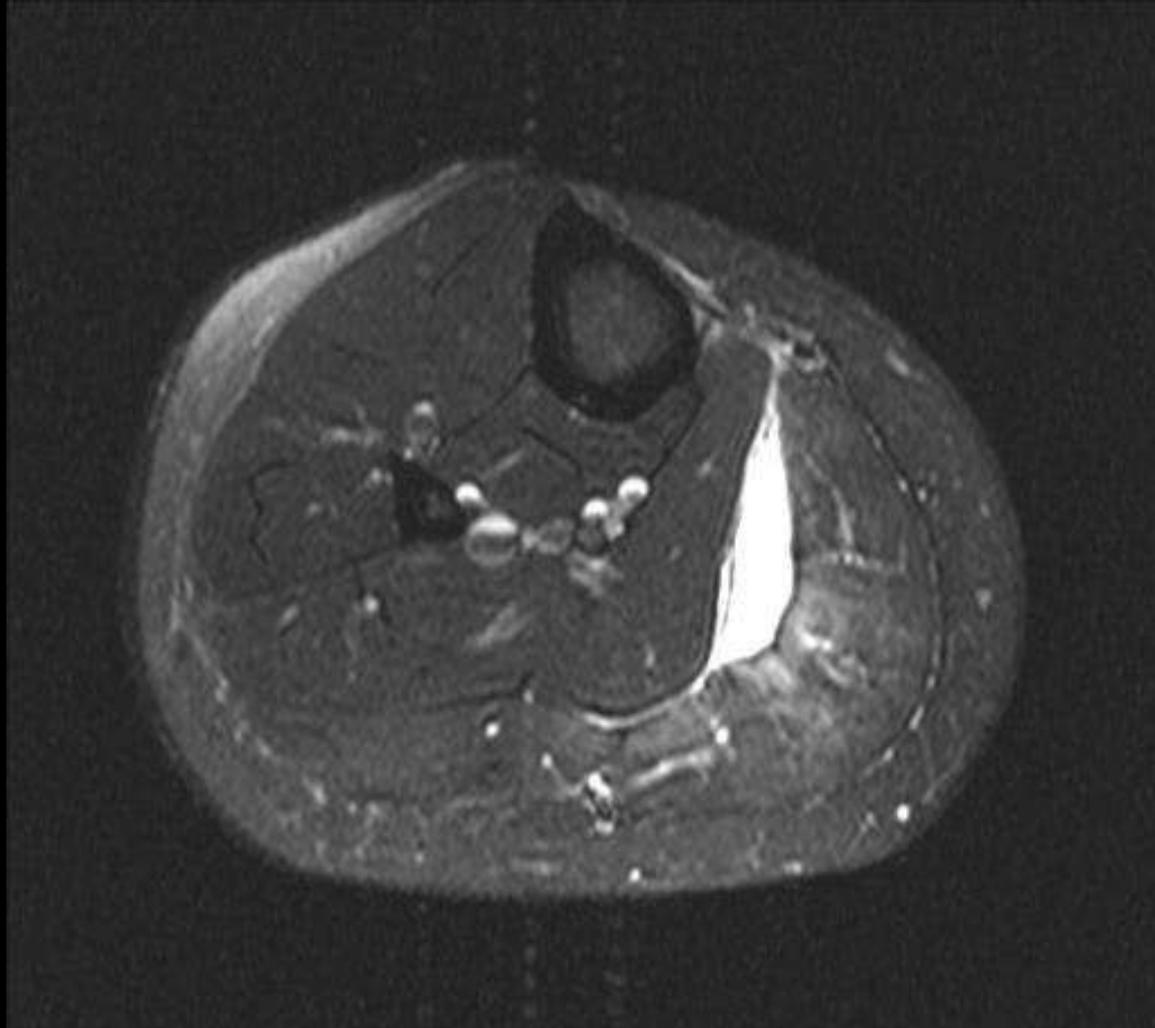
Tennis Leg



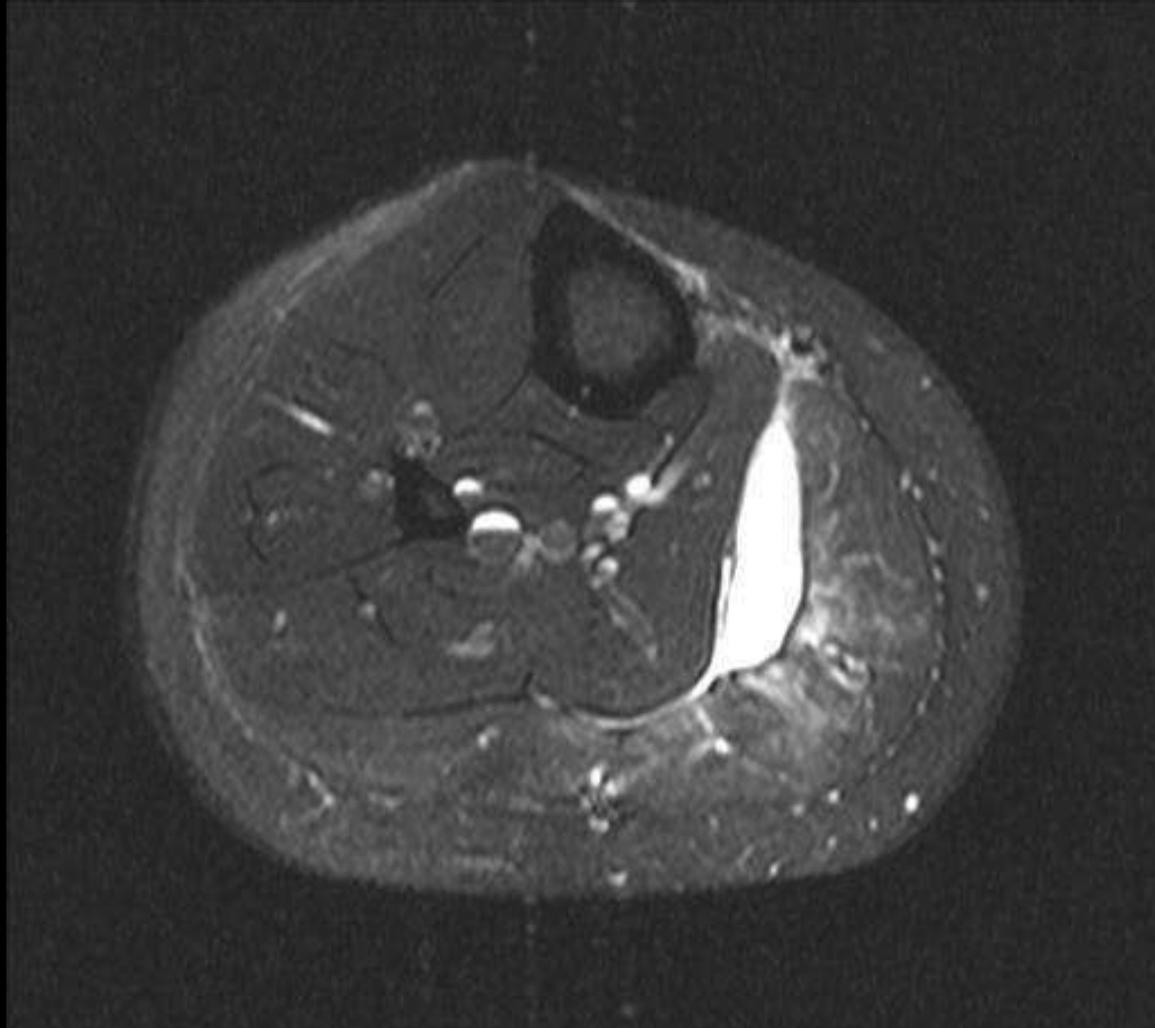
Tennis Leg



Tennis Leg

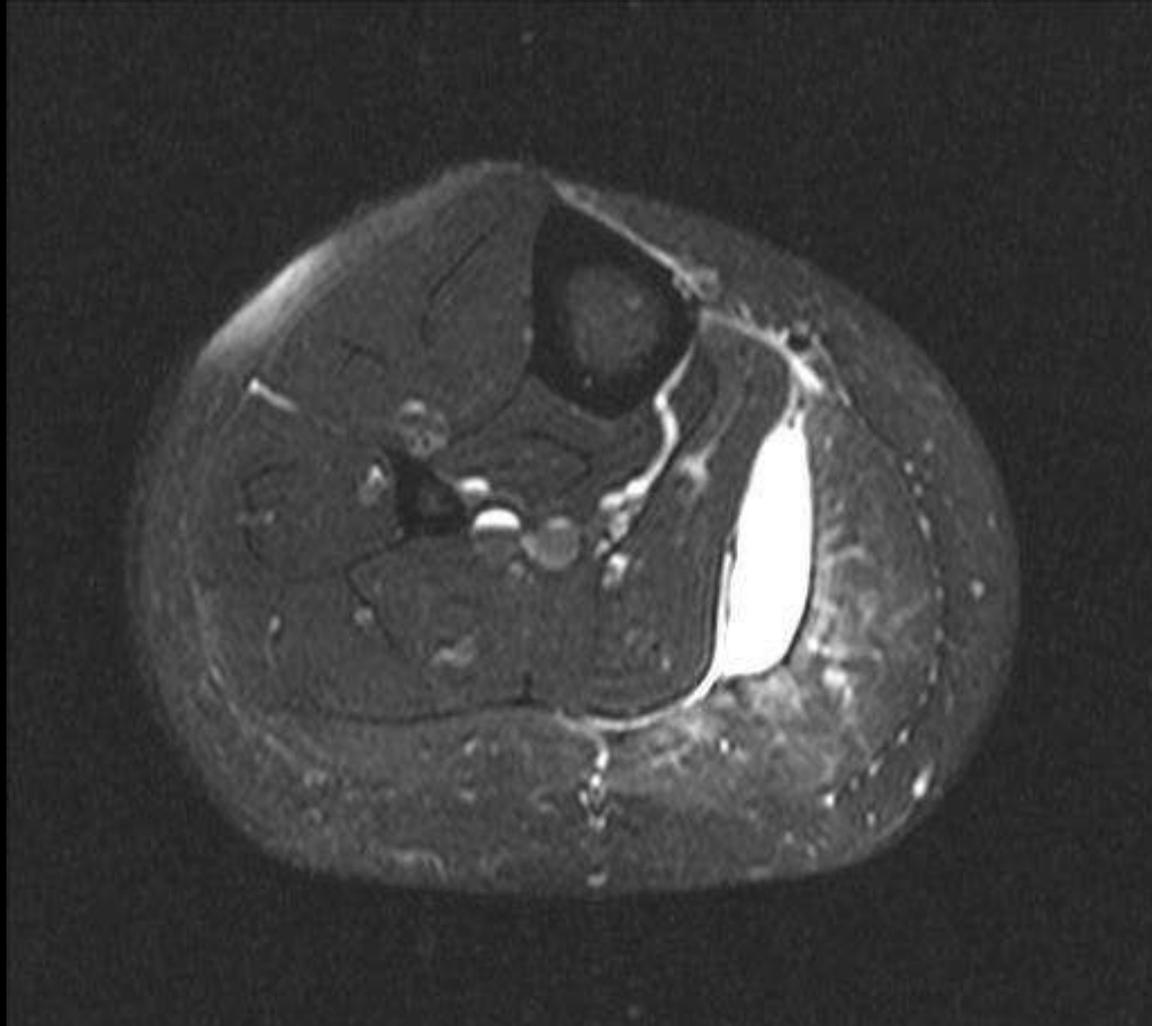


Tennis Leg



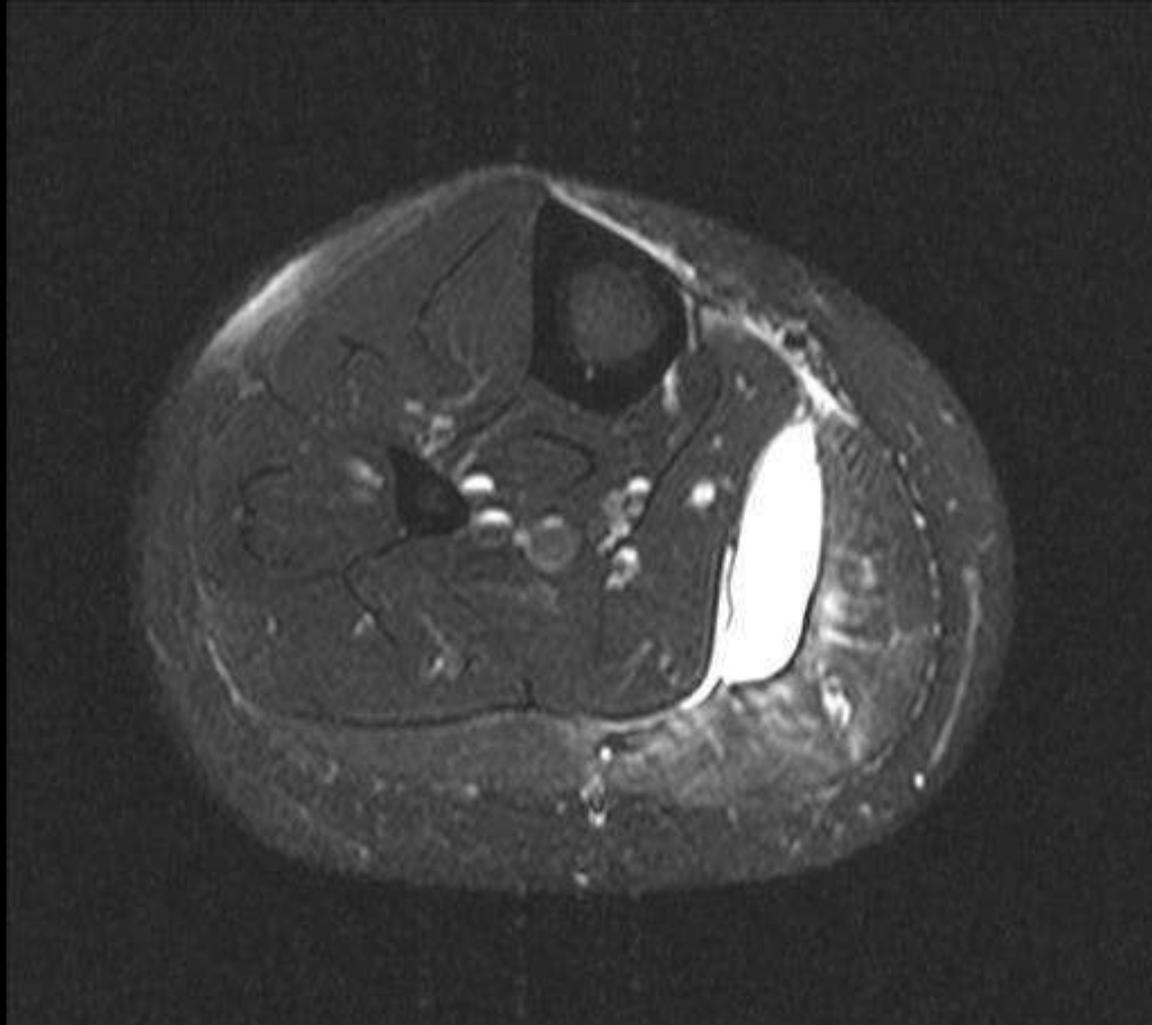
Plantaris tendon rupture

Tennis Leg



Plantaris tendon rupture

Tennis Leg



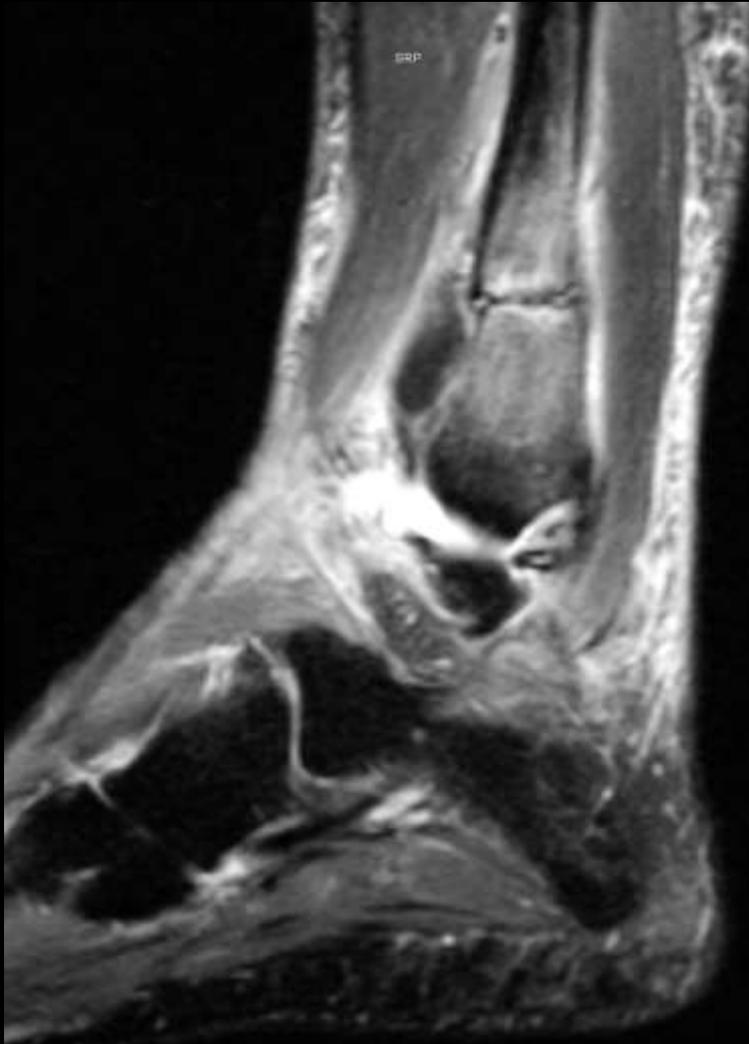
Runner Fracture

- Stress (fatigue) fracture distal 5cm of fibula
- Training on hard surfaces
- Especially ultradistance runners

Runner Fracture



Runner Fracture



Sag STIR



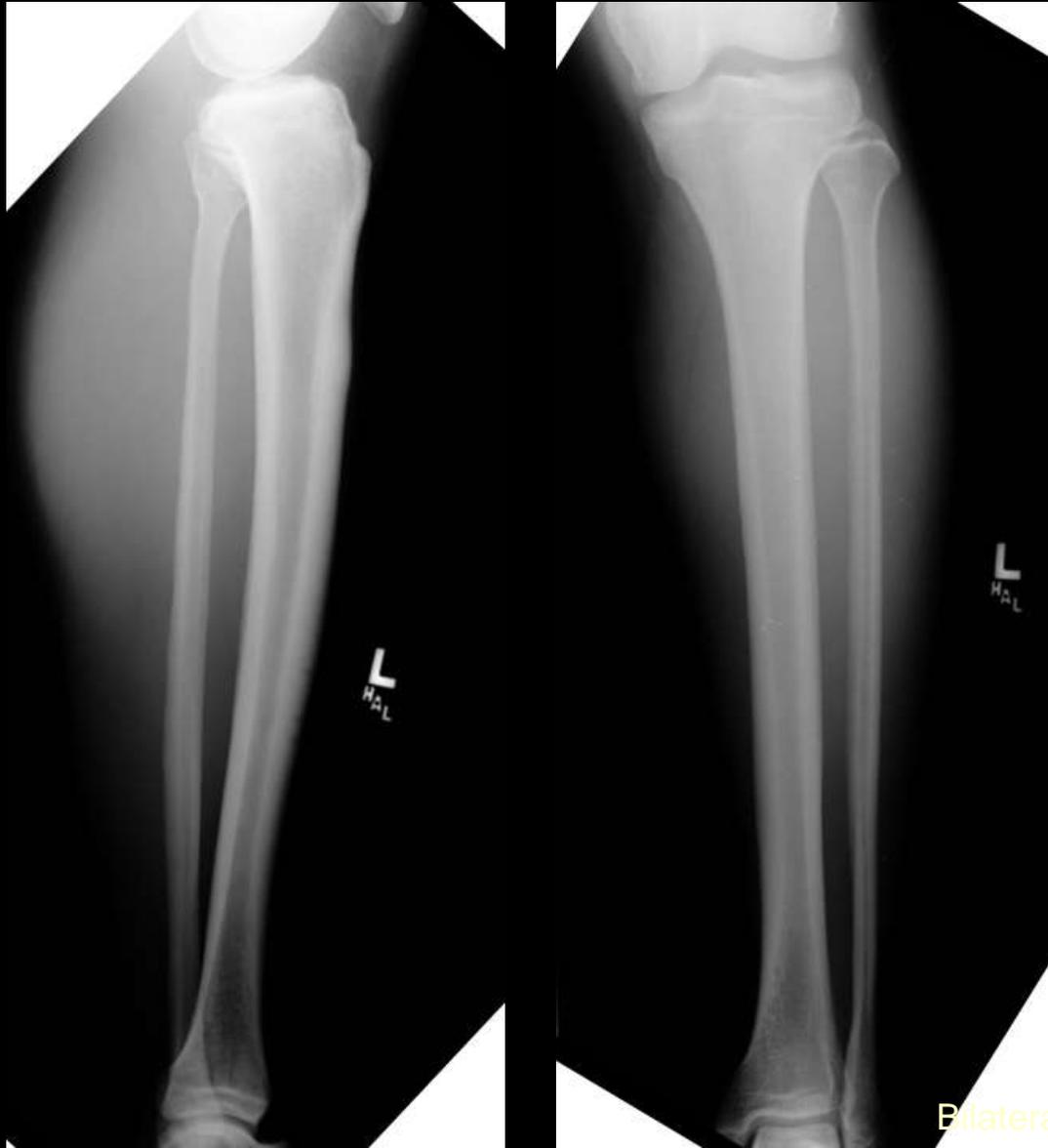
Sag T1

Runner Fracture



Bilateral tibial stress fractures 31M

Runner Fracture



Bilateral tibial stress fractures 31M

Runner Fracture



Bilateral tibial stress fractures 31M

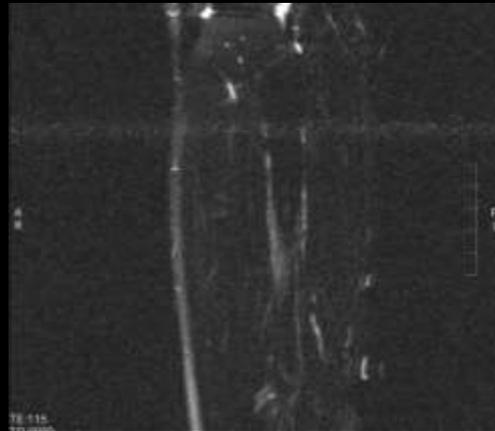
Runner Fracture



April 07

46 year old male marathon runner with right leg pain

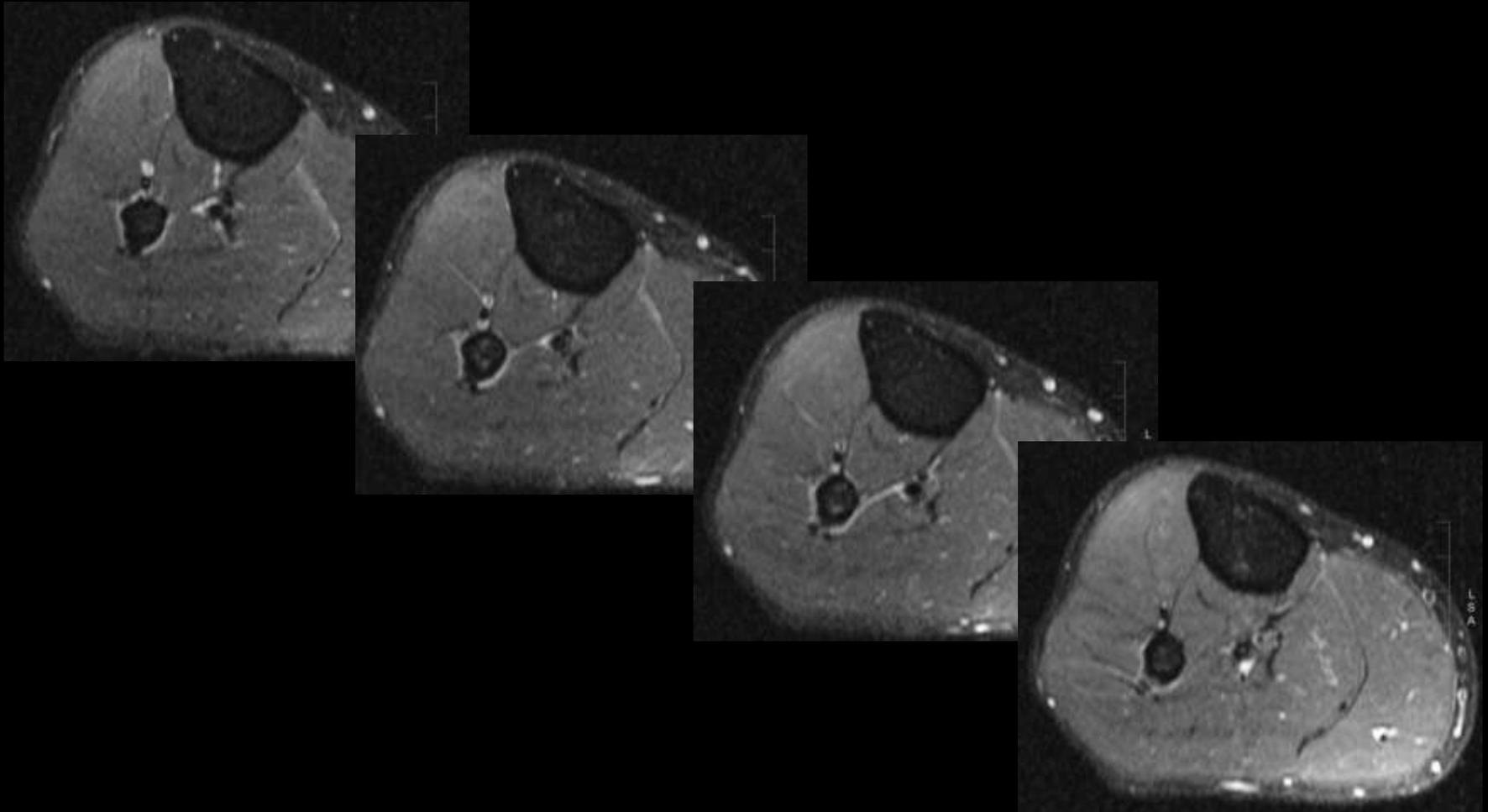
Runner Fracture



April 07

46 year old male marathon runner with right leg pain

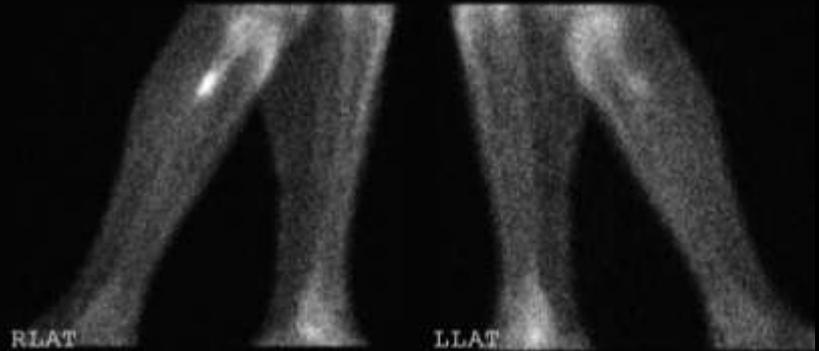
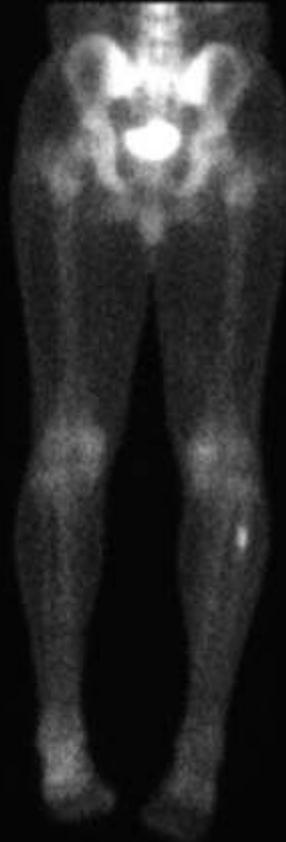
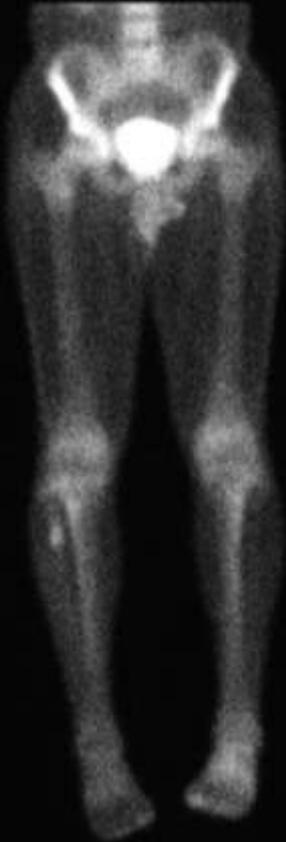
Runner Fracture



April 07

46 year old male marathon runner with right leg pain

Runner Fracture



May 07

46 year old male marathon runner with right leg pain

Runner Fracture



April 07



September 07

46 year old male marathon runner with right leg pain

MRI grading of stress injuries

- 0 Normal
- 1 Subtle periosteal edema
- 2 Periosteal edema and increased marrow signal on fat-suppressed T2, subtle on T1
- 3 More extensive periosteal edema and marrow signal on T1 and T2
- 4 Discrete fracture line on MR or plain film (true stress fracture)

Fatigue fx distal tibia



Fatigue fx distal tibia

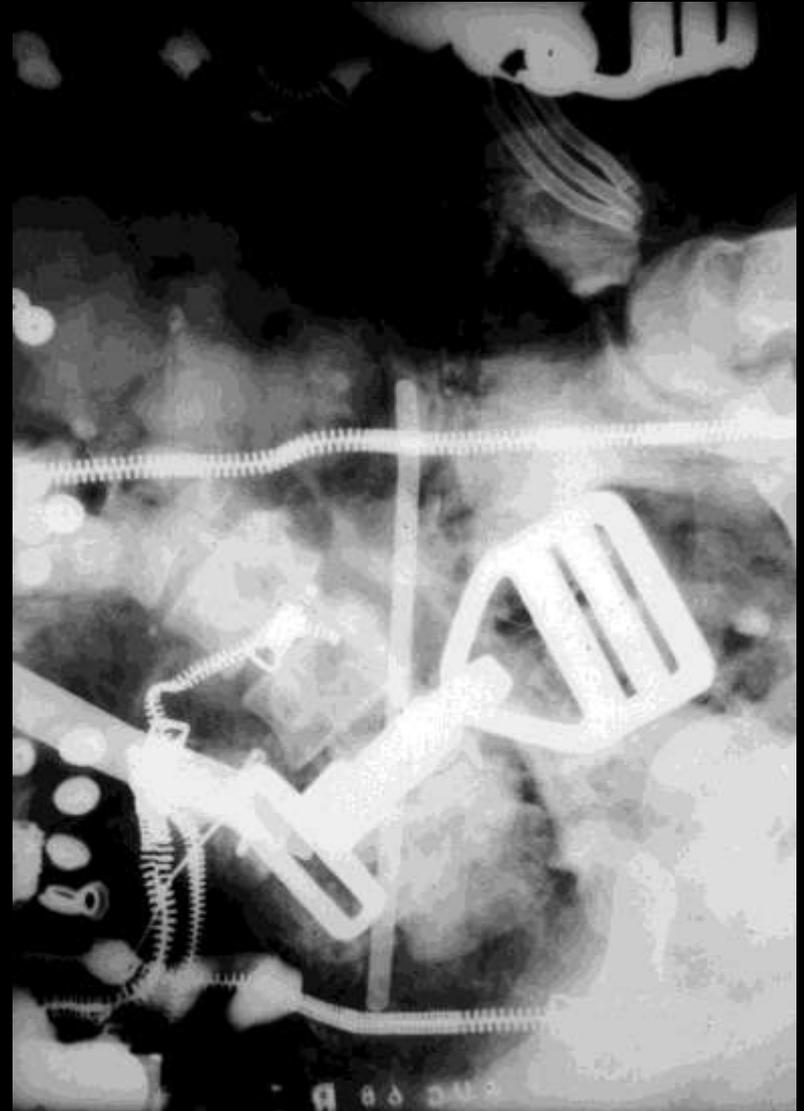


Fatigue fx distal tibia



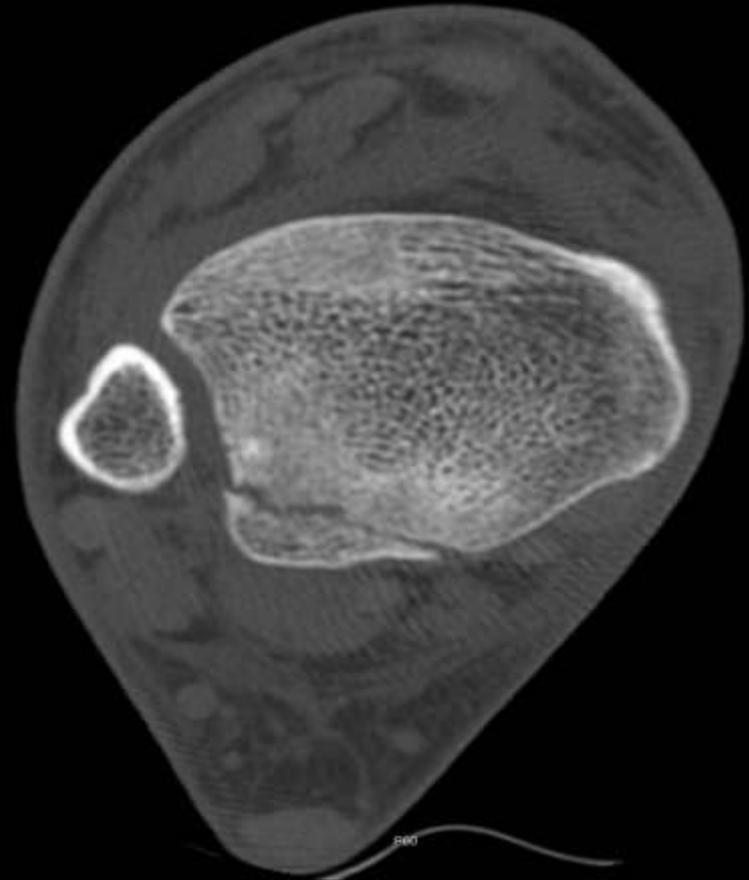
Paratrooper Fracture

- Fracture of the posterior articular margin of the tibia and/or of the internal or external malleolus.



Paratrooper Fracture

- Fracture of the posterior articular margin of the tibia and / or of the internal or external malleolus.



Snowboarder's Ankle Snowboarder's Fracture

- Lateral process of talus Fx
- Dorsiflexion and hindfoot inversion on landing
- Difficult to see on radiographs, may need CT
- Unrecognized causes subtalar OA
- CT may be required to see and classify
 - Type 1. Chip off anterior inferior
 - Type 2a. Involves talofibular joint
 - Type 2b. Involves talocalcaneal joint
 - Type 3. Comminuted Fx



Snowboarder's Ankle

Snowboarder's Fracture



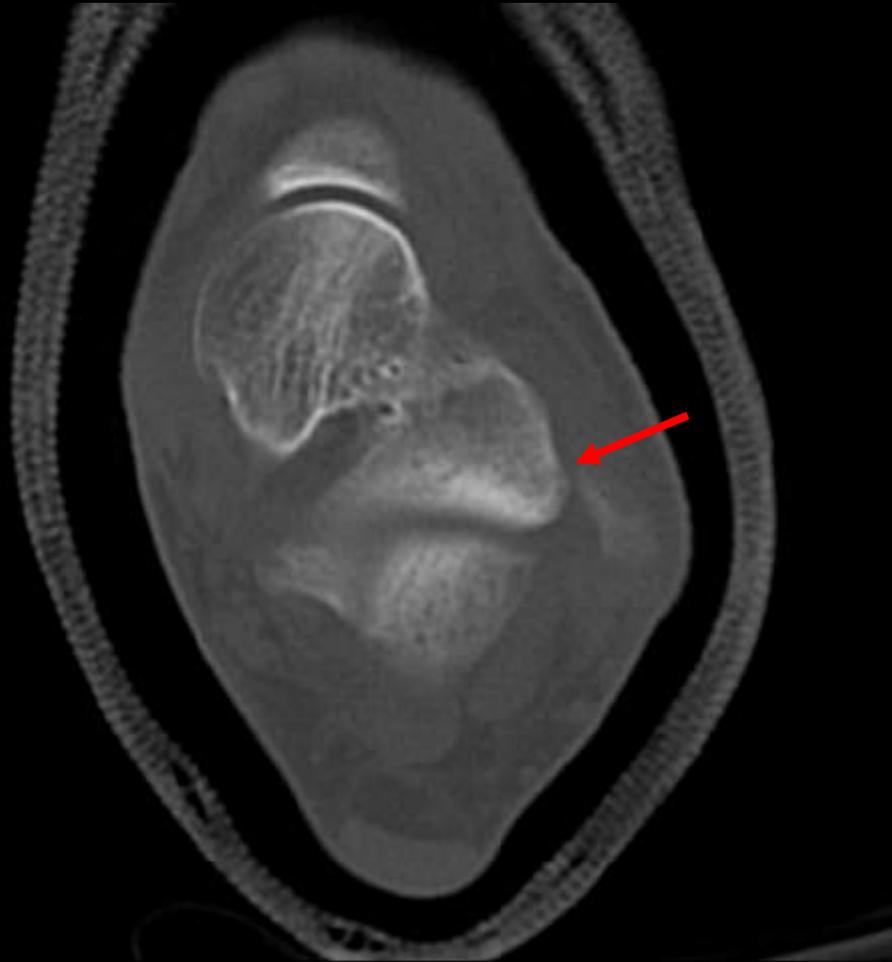
Type 2b lateral process Talus Fx

Nicholas R. "Snowboarder's fracture": fracture of the lateral process of the talus. J Am Board Fam Pract 1994; 7:130-133.

Kirkpatrick DP. The snowboarder's foot. Am J Sports Med 1998; 26:271-277.

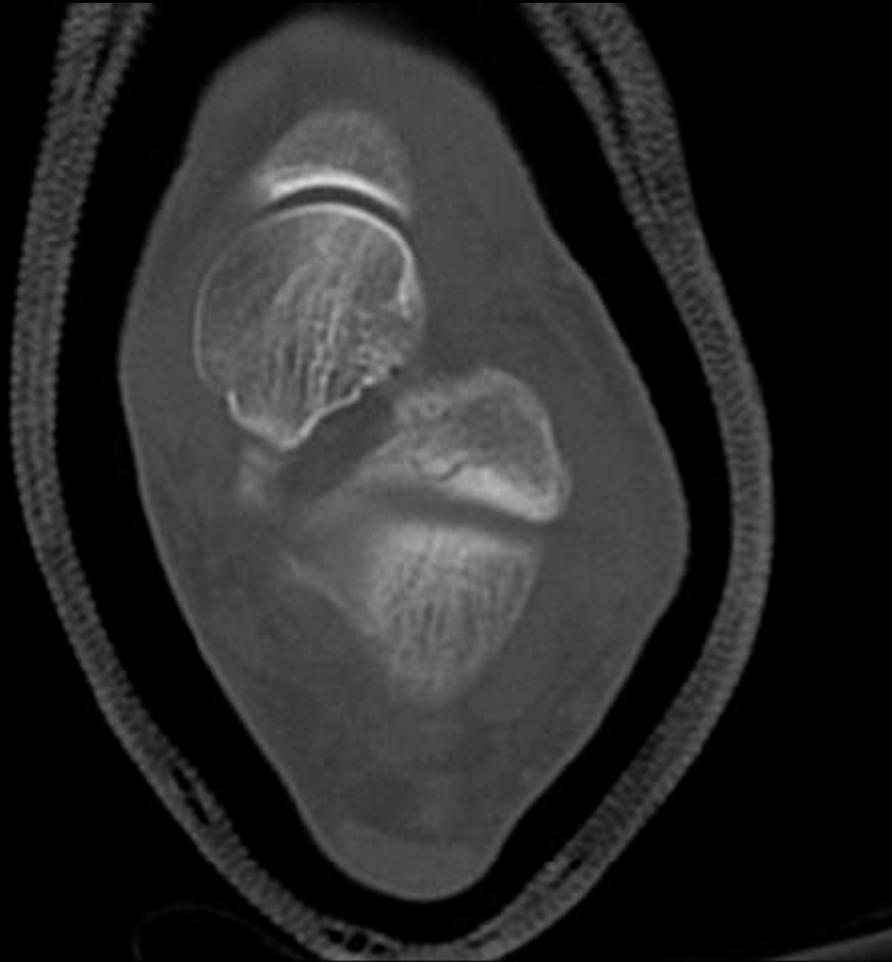
Snowboarder's Fracture

Type 2b lateral process Talus Fx



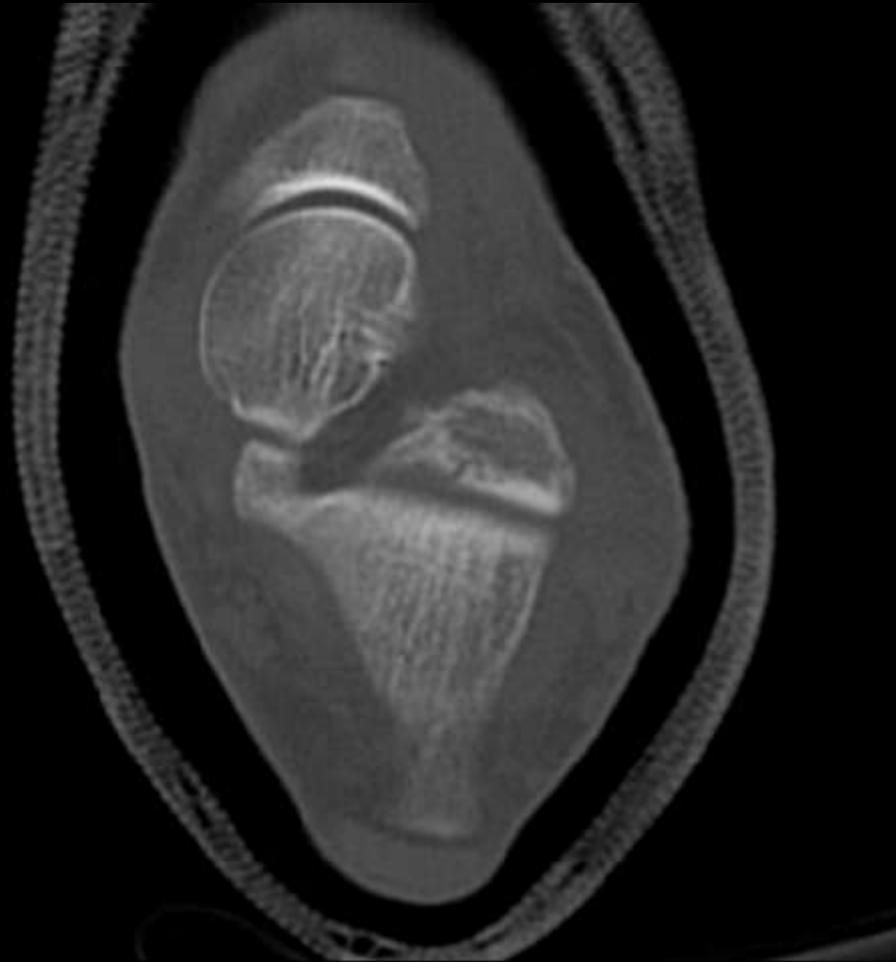
Snowboarder's Fracture

Type 2b lateral process Talus Fx



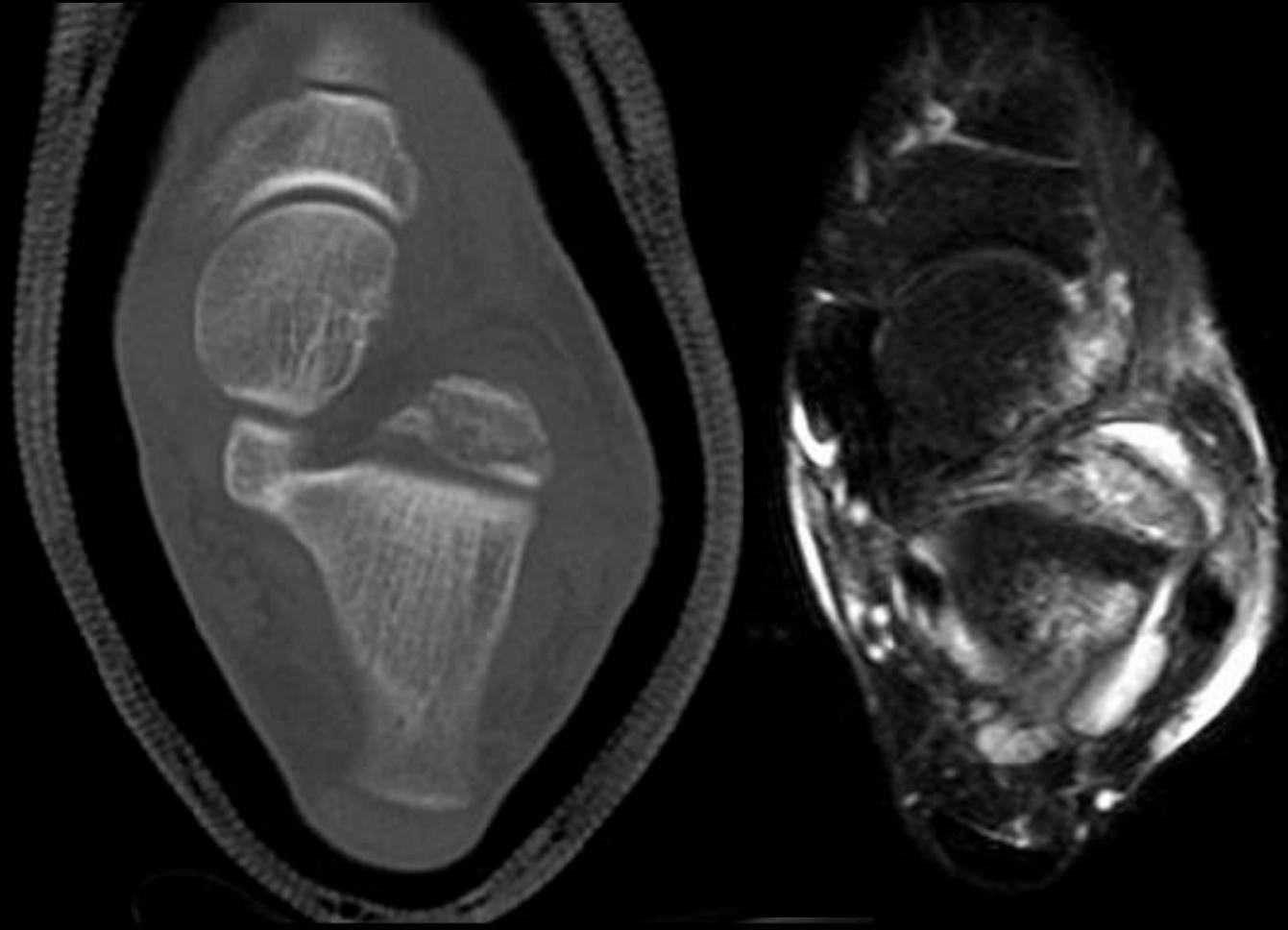
Snowboarder's Fracture

Type 2b lateral process Talus Fx



Snowboarder's Fracture

Type 2b lateral process Talus Fx



Snowboarder's Fracture

Type 2b lateral process Talus Fx



Snowboarder's Fracture

Type 2b lateral process Talus Fx



Snowboarder's Fracture

Type 2b lateral process Talus Fx



Snowboarder's Fracture

Type 2b lateral process Talus Fx



Cor T1



Cor PDFS

Snowboarder's Fracture

Type 2b lateral process Talus Fx



Cor T1



Cor PDFS

Snowboarder's Fracture

Type 2b lateral process Talus Fx



Cor T1



Cor PDFS

Snowboarder's Fracture

Type 2b lateral process Talus Fx



Cor T1

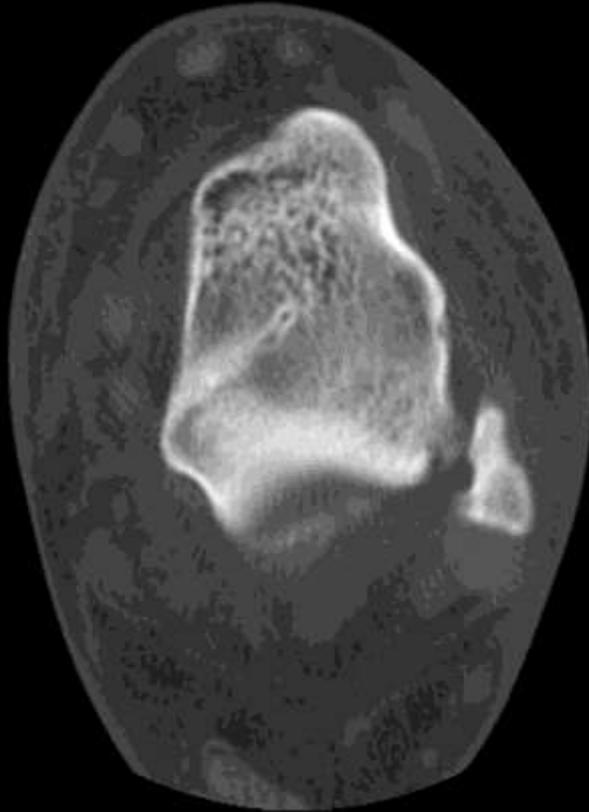


Cor PDFS

Snowboarder's Fracture

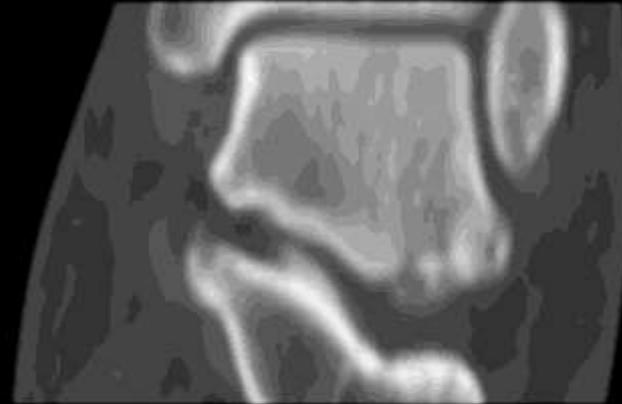
Type 3 lateral process Talus Fx

22



W 2000 : L 500

42



W 2000 : L 500

Snowboarder's Fracture

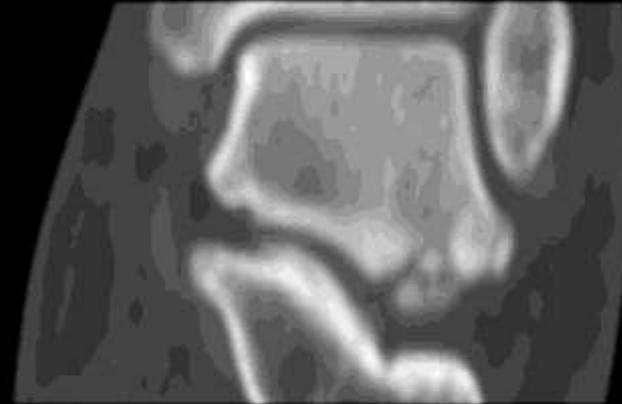
Type 3 lateral process Talus Fx

23



W 2000 : L 500

43



W 2000 : L 500

Snowboarder's Fracture

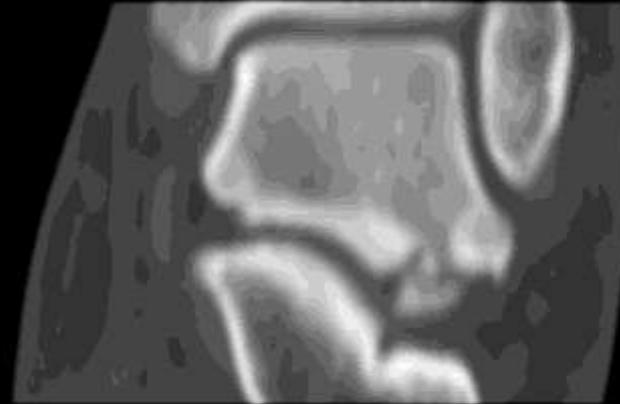
Type 3 lateral process Talus Fx

24



W 2000 : L 500

44

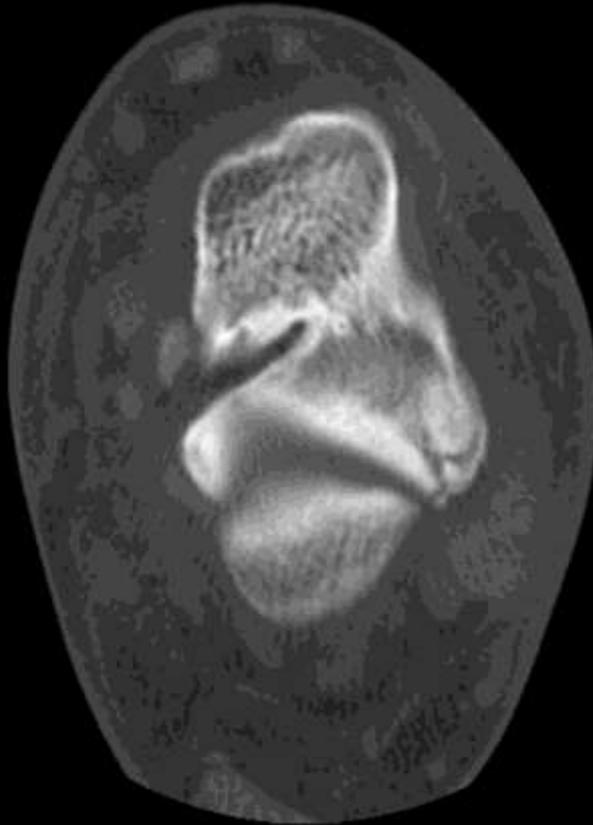


W 2000 : L 500

Snowboarder's Fracture

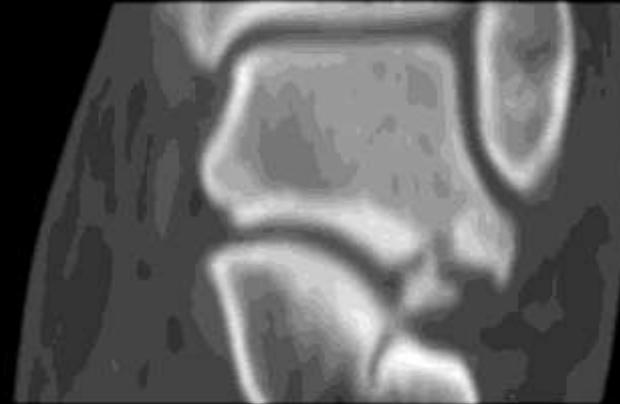
Type 3 lateral process Talus Fx

25



W 2000 : L 500

45

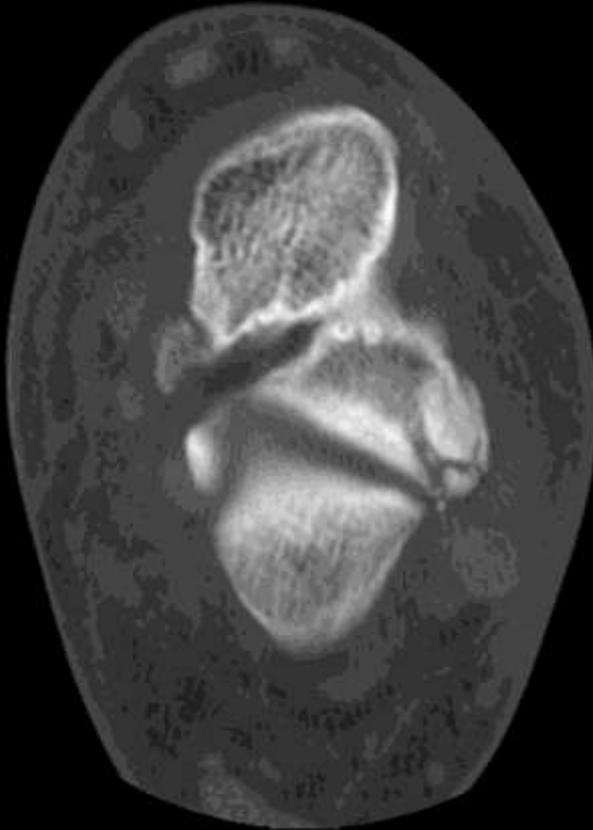


W 2000 : L 500

Snowboarder's Fracture

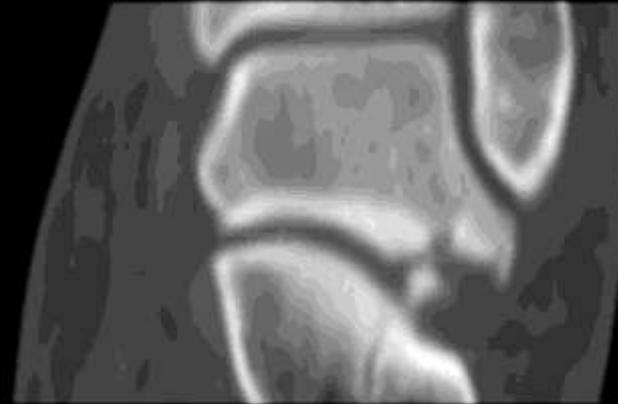
Type 3 lateral process Talus Fx

26



W 2000 : L 500

46



W 2000 : L 500

Snowboarder's Fracture

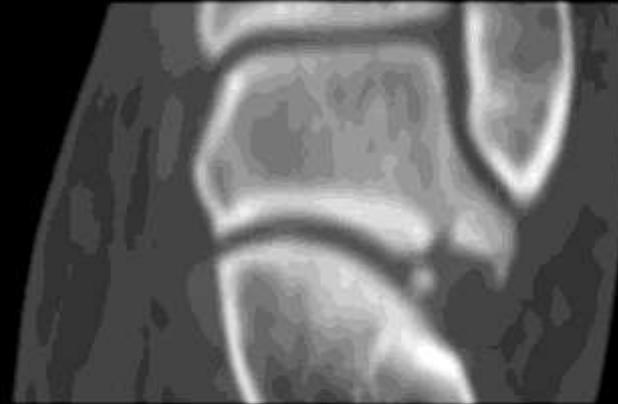
Type 3 lateral process Talus Fx

27



W 2000 : L 500

47

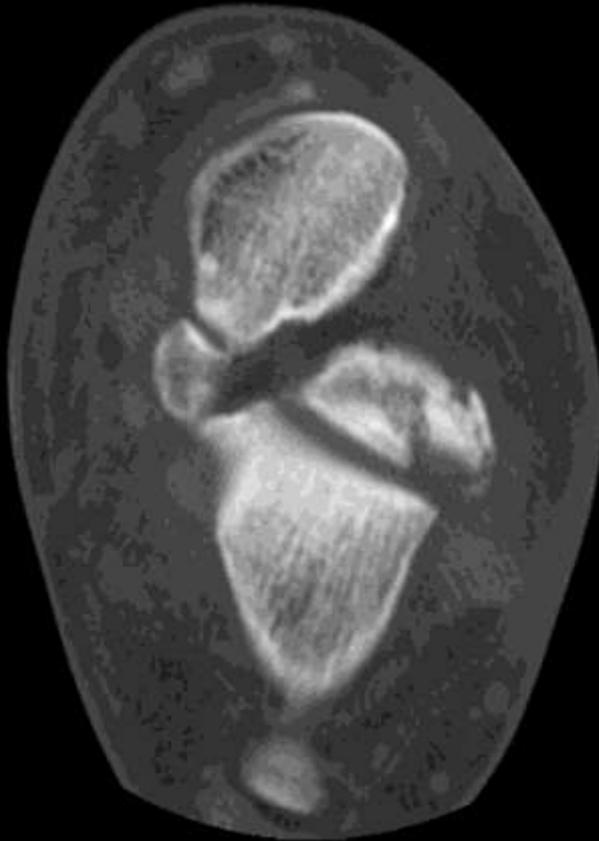


W 2000 : L 500

Snowboarder's Fracture

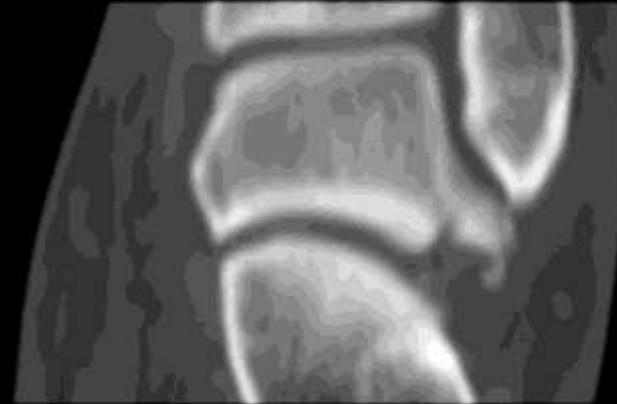
Type 3 lateral process Talus Fx

28



W 2000 : L 500

48



W 2000 : L 500

Snowboarder's Fracture

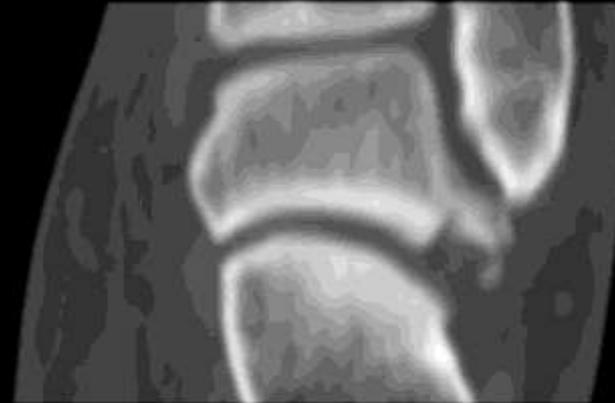
Type 3 lateral process Talus Fx

29



W 2000 : L 500

49



W 2000 : L 500

Snowboarder's Fracture

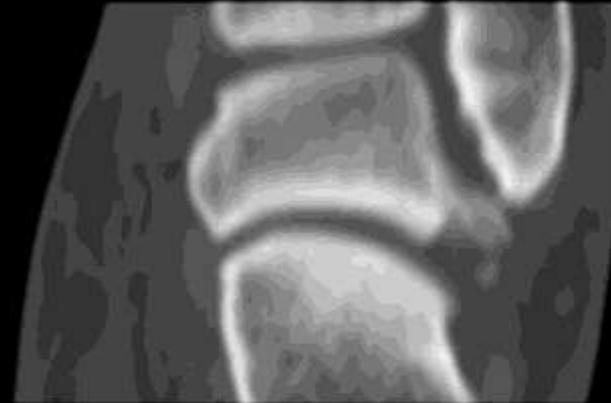
Type 3 lateral process Talus Fx

30°



W 2000 : L 500

50°



W 2000 : L 500

Snowboarder's Fracture

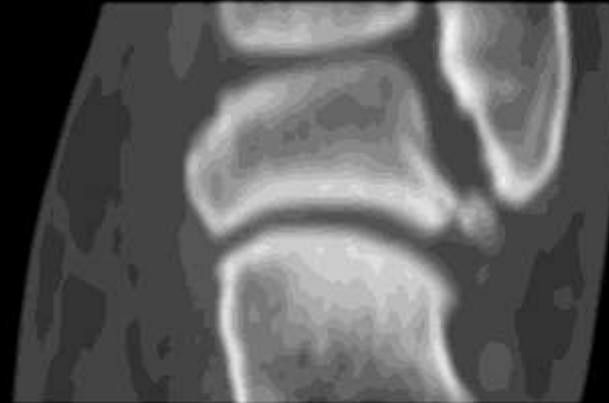
Type 3 lateral process Talus Fx

31



W 2000 : L 500

51



W 2000 : L 500

Snowboarder's Fracture

Type 3 lateral process Talus Fx

32



W 2000 : L 500

52



W 2000 : L 500

Snowboarder's Fracture

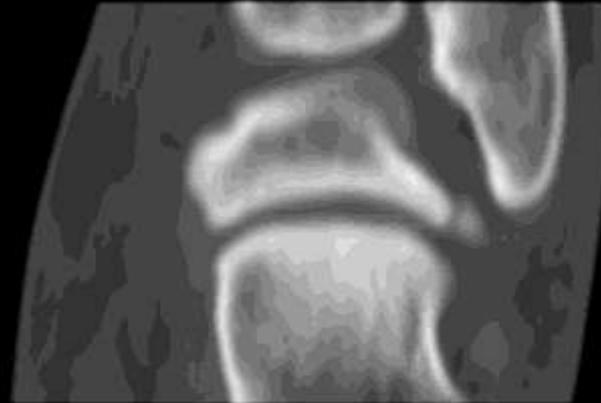
Type 3 lateral process Talus Fx

33



W 2000 : L 500

53



W 2000 : L 500

Snowboarder's Fracture

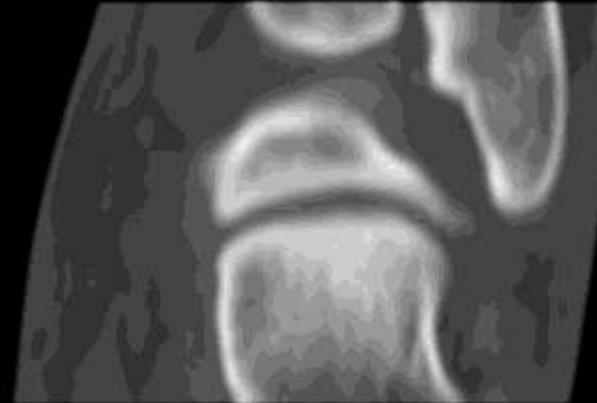
Type 3 lateral process Talus Fx

34



W 2000 : L 500

54



W 2000 : L 500

Snowboarder's Fracture

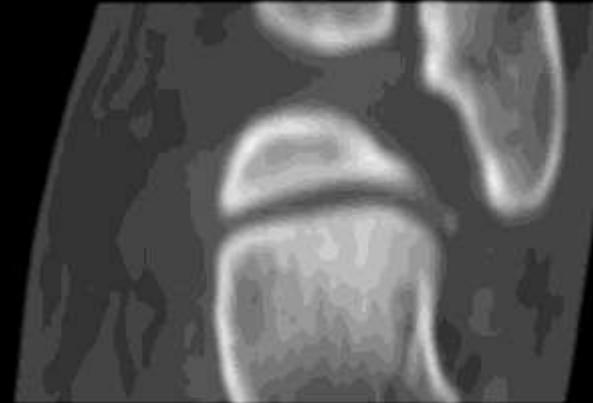
Type 3 lateral process Talus Fx

35



W 2000 : L 500

55



W 2000 : L 500

Snowboarder's Fracture

Type 3 lateral process Talus Fx



Aviator's Astragalus

- Forefoot hyperextension
- Rudder bar into instep
- Tight achilles
- Fracture of talar neck
- +/-
 - Anterior tibia injury
 - Subtalar dislocation
 - Posterior talar body dislocation



Aviator's Astragalus

- Forefoot hyperextension
- Rudder bar into instep
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- Fracture of talar neck
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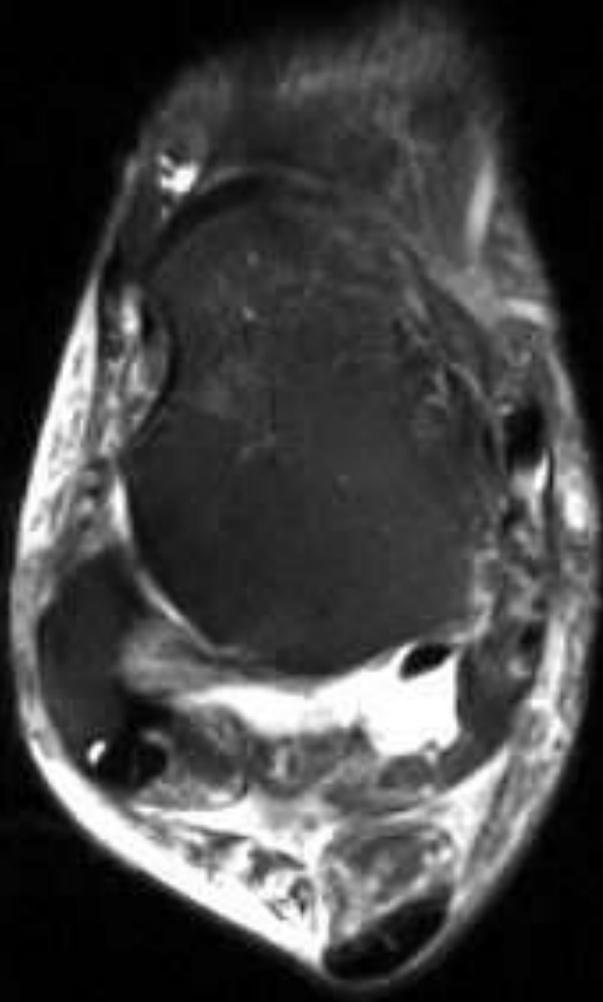


Dancer's Tendinitis

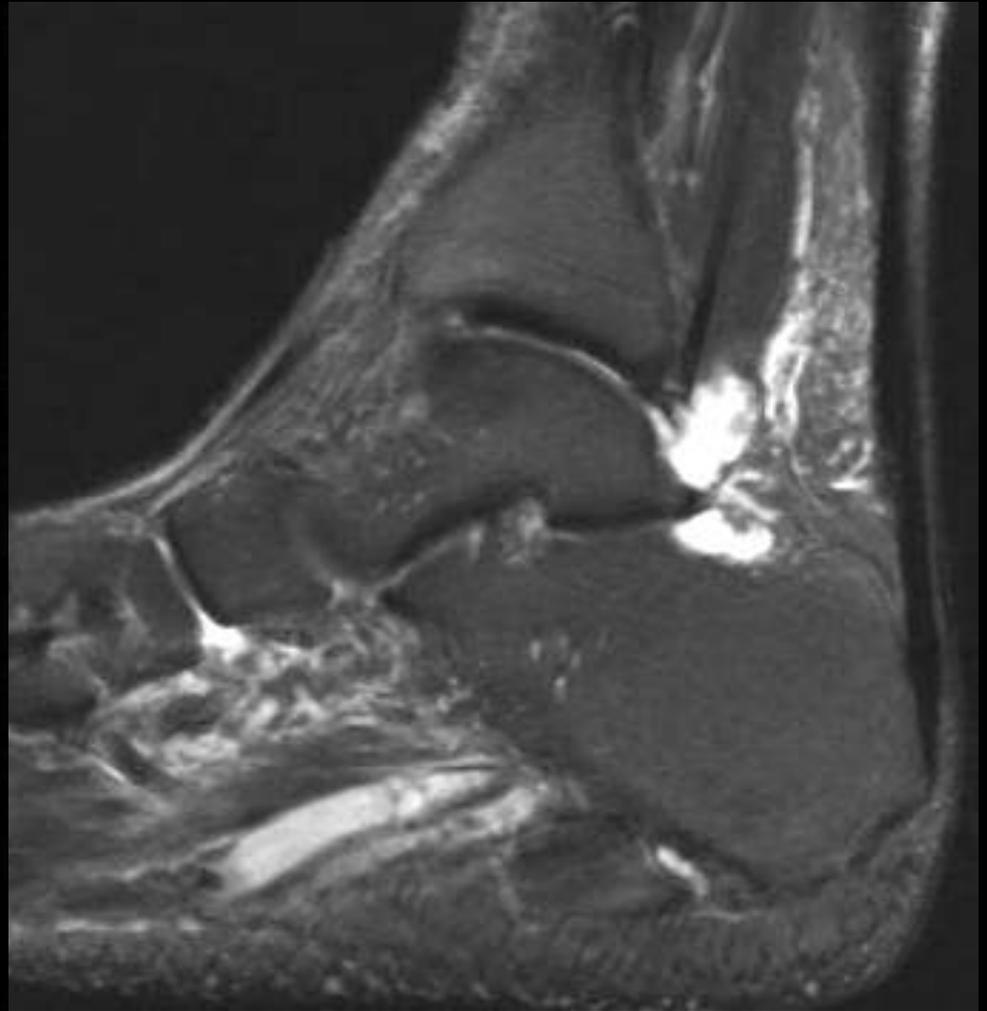
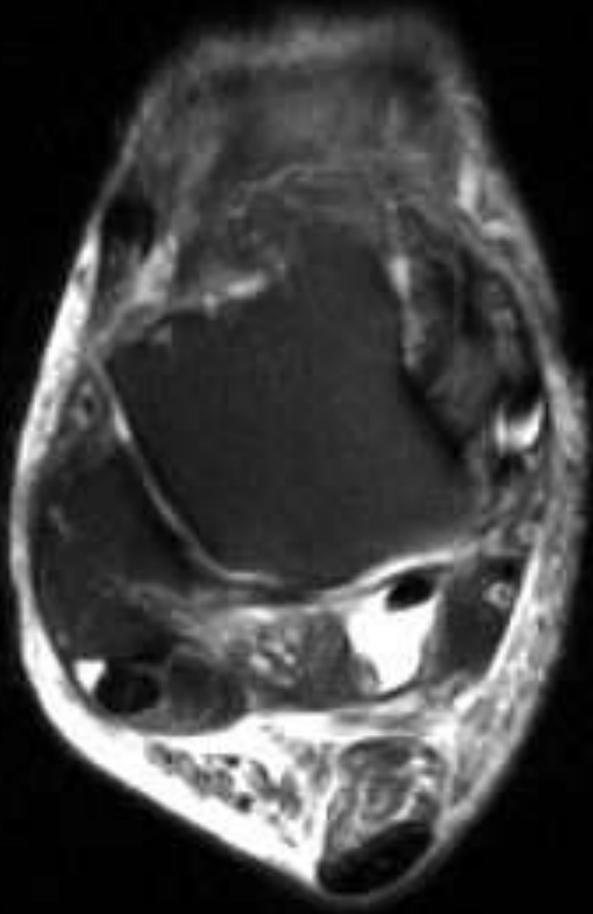
- FHL
- Within fibro-osseous tunnel
- Ass. Trigger toe
- Can go on to rupture



Dancer's Tendinitis - FHL Synovitis



Dancer's Tendinitis - FHL Synovitis



Dancer's Tendinitis FHL Tenosynovitis



Dancer's Heel

- Posterior ankle impingement
- Medial and lateral tubercles on posterior talus
- FHL between them
- Lateral tubercle non-union = os trigonum 10%
- Bilateral 50%
- Plantar-flexion or en point
- Large posterior (Stieda) process or os trigonum
- Causes fibrosis
- Posterolateral pain

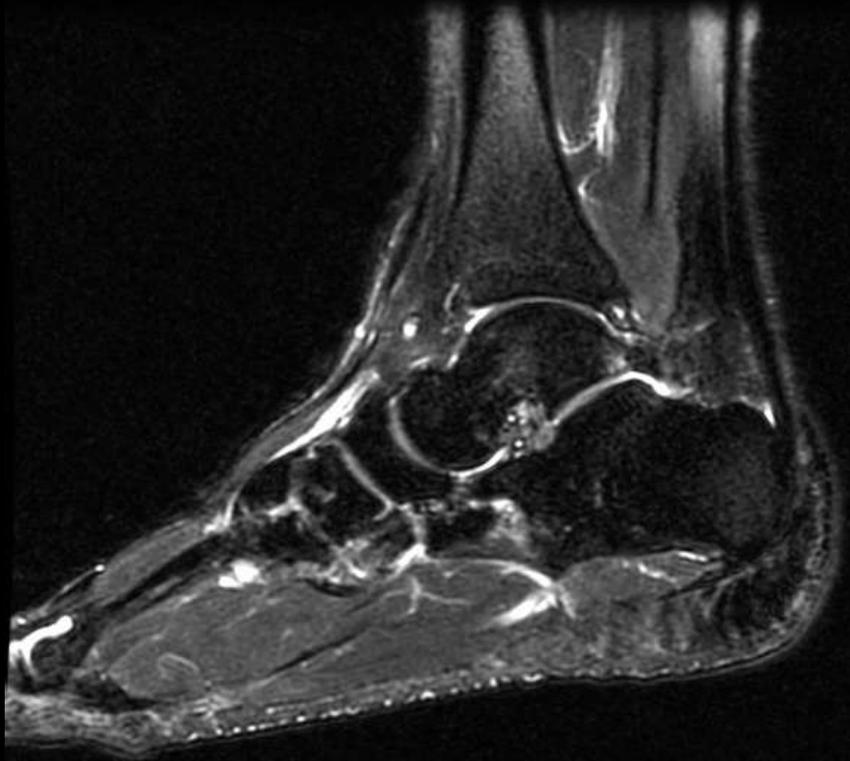


Dancer's Heel - Os Trigonum



Dancer's Heel Os Trigonum Syndrome

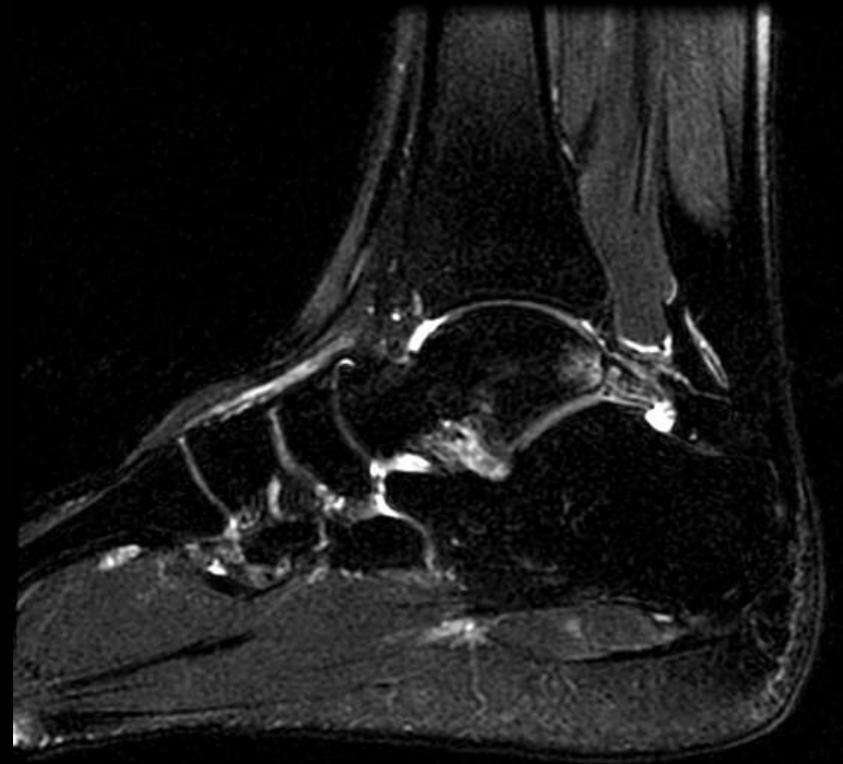
12. Ratio: 8.0



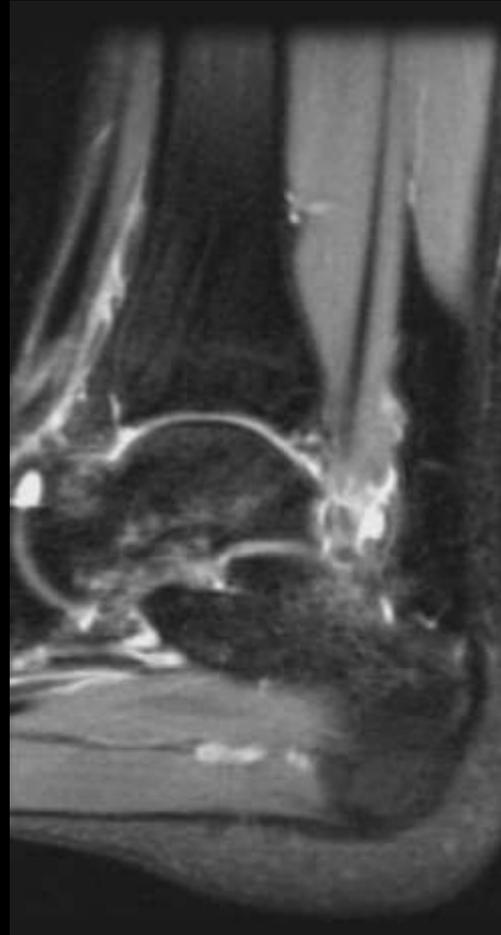
12. Ratio: 8.0



Dancer's Heel Os Trigonum Syndrome



Dancer's Heel Os Trigonum Syndrome



Basketball Foot

- Inversion and varus stress on landing
- Medial subtalar dislocation
- Talocalcaneal and talonavicular



Basketball Foot Medial Subtalar Dislocation



Lovers Fracture

- Don Juan



Jogger's Foot

30

Master knot of Henry

AbH

QP

Jogger's Foot

Baxter's neuropathy

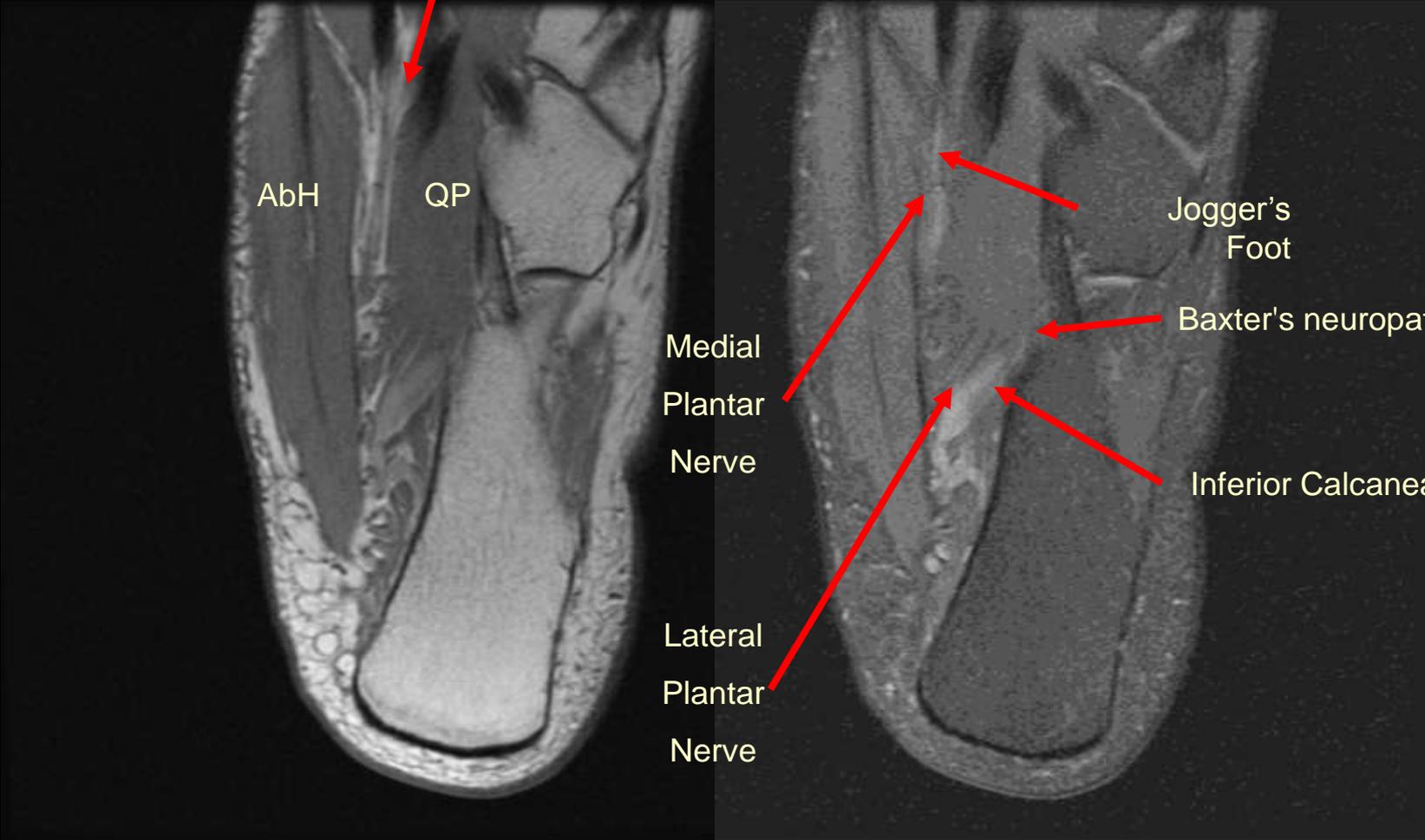
Medial Plantar Nerve

Inferior Calcaneal nerve

Lateral Plantar Nerve

Axial T1

Axial PFS



Jogger's Heel



Rt Cor T1



Lt Cor T1

FDB

AbDQ

Abd digiti quinti atrophy

Kickboxer's feet

- Tarsal bone fatigue fractures
- Tarsal contusions
- Often bilateral

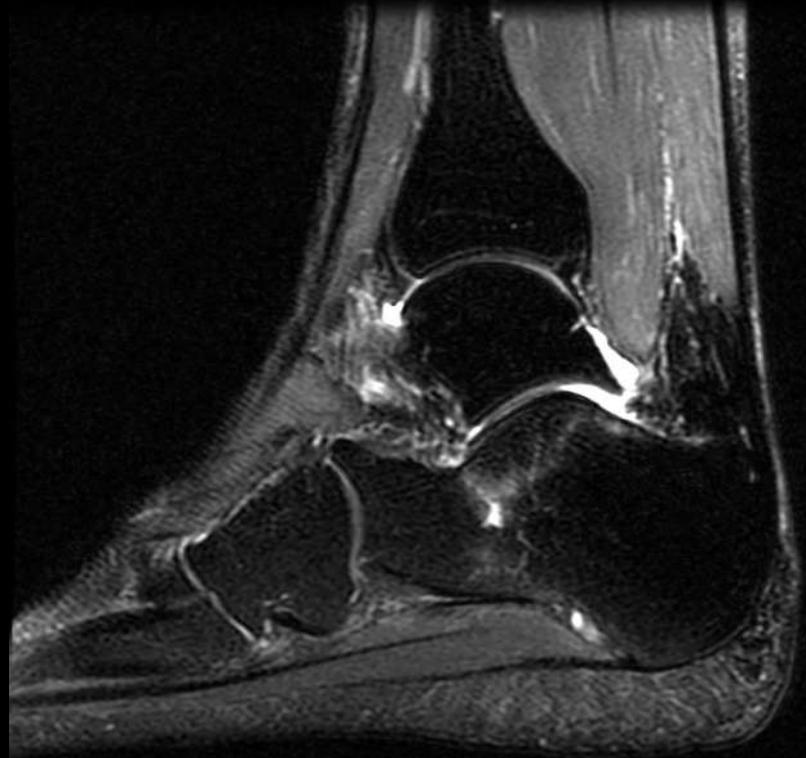
Kickboxer's feet

12. Ratio: 8.0



Sag PD

12. Ratio: 8.0



Sag PDFS

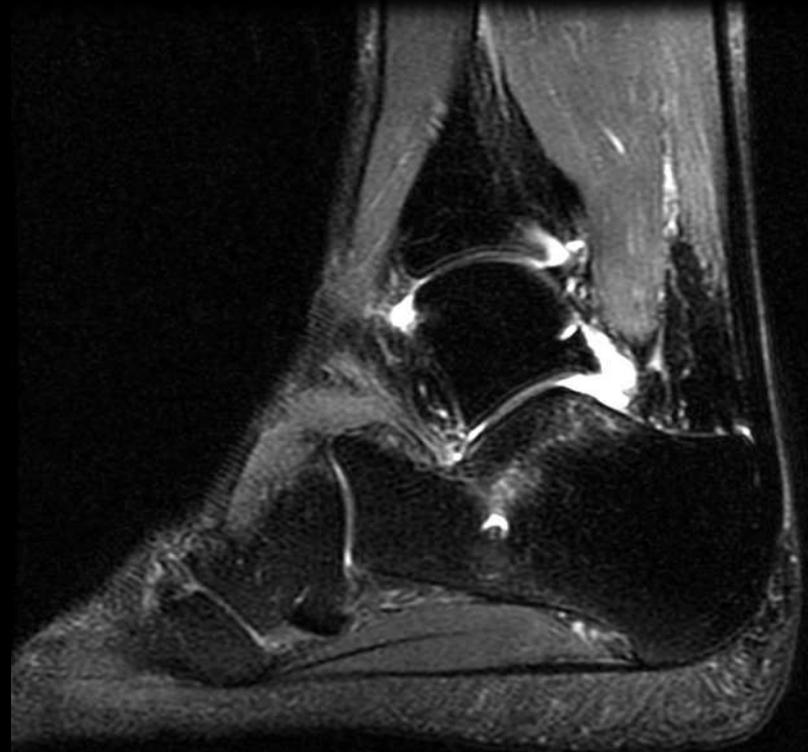
Kickboxer's feet

13. Ratio: 8.0



Sag PD

13. Ratio: 8.0



Sag PDFS

55F Calcaneal stress fracture

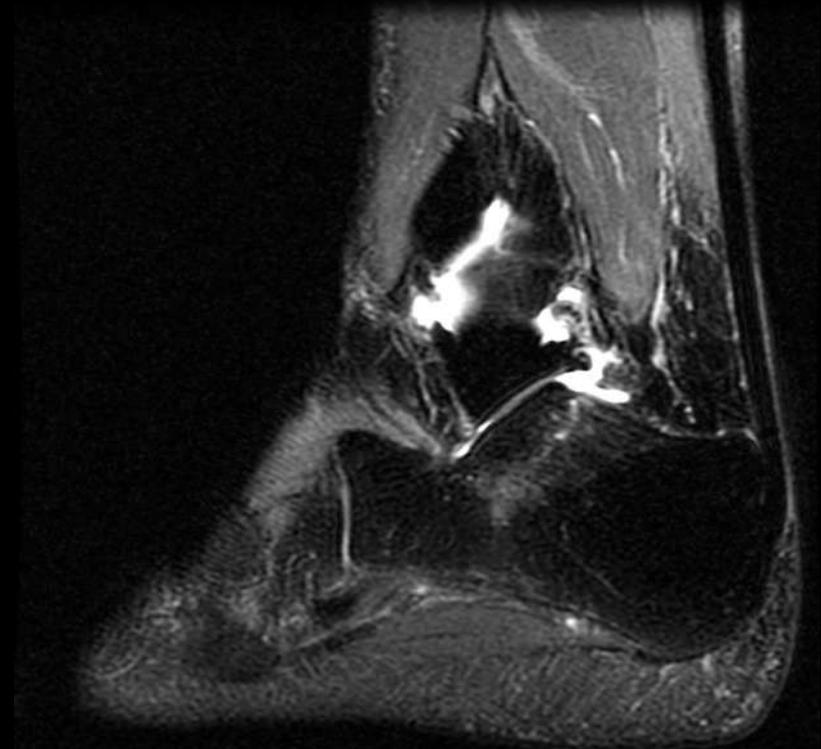
Kickboxer's feet

14. Ratio: 8.0



Sag PD

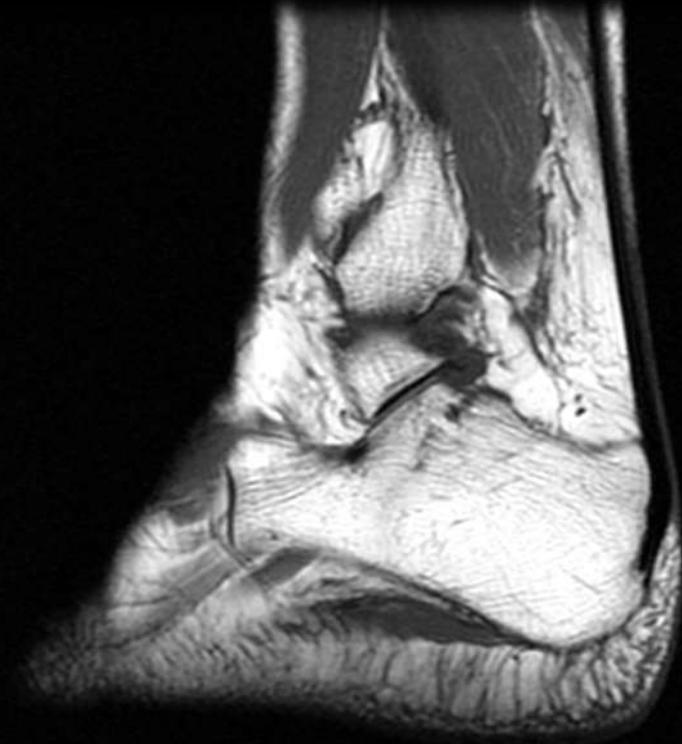
14. Ratio: 8.0



Sag PDFS

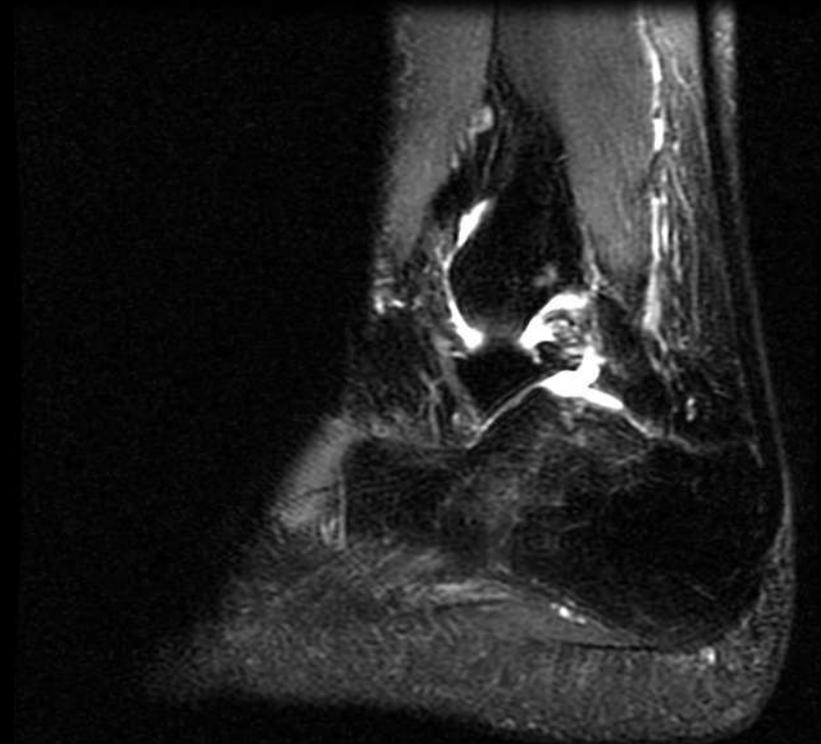
Kickboxer's feet

15. Ratio: 8.0



Sag PD

15. Ratio: 8.0



Sag PDFS

55F Calcaneal stress fracture

Dancer's fracture



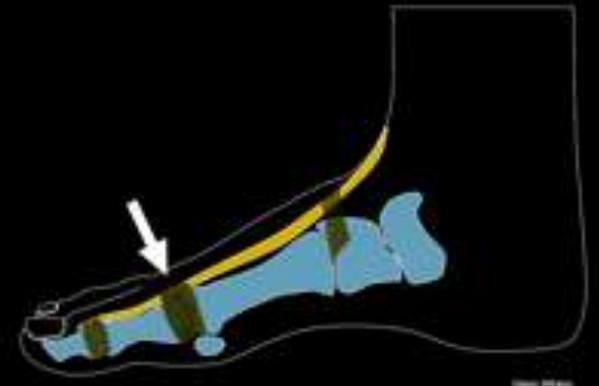
March Fracture

- Metatarsal stress fracture
- Also seen in Ballet
- Middle and distal shafts 2nd and 3rd
- Periostitis
- 1st base, less periostitis



Skimboarders toe

- Hyperdorsiflexion



Skimboarder's Toe 1st IPJ



Sag T1



Sagq T2FS

Turf Toe - Clinical

- Football players
- Playing on hard artificial surfaces
- Wearing light flexible shoes
- Hyperextension injury MTP joint

Turf Toe - Plantar Plate

- Fibrocartilaginous structure extending from the volar aspect of the metatarsal necks to the proximal phalanges of the toes
- Reinforces the MTP joint capsule

Turf Toe



Disruption of volar plate

Normal recess

Male wrestler jammed toe into mat



San Diego March 2006



Lake Wanaka