



# Arthrography

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# General indications

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- Assessment of internal derangement
- Intraarticular bodies
- Aspiration for sepsis or crystals
- Steroid injections
- Diagnostic LA injection

# Safety

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- The avoidance of unnecessary risk and minimization of necessary risk

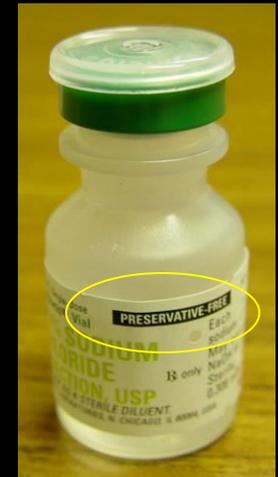
# General Arthrography Technique

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- Time out – open ended questions
- Consent – discuss, bleeding, nerve injury, deep infection
- Coagulation – any risk factors
- Medication reconciliation - Epic
- Mark skin
- Clean
- LA usually
- Enter joint
- Aspirate
- Confirm position with contrast
- Contrast flows away from needle
- Stop if blob
- Use dynamic subtraction if available esp. wrist
- Fill joint with appropriate contrast
- Take full radiographic series no matter what
- Record volume mls and name of contrast in report

# Technique - Septic arthritis

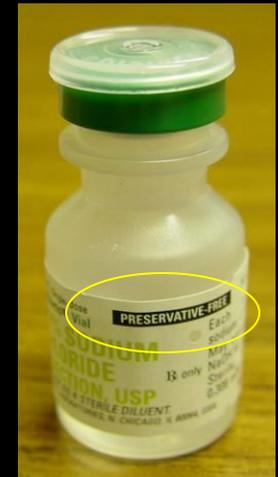
- Multi-use lidocaine is often bacteriostatic.
  - Avoid in joint
  - Aspirate through different needle



- If dry tap
  - Irrigate with - Non bacteriostatic saline.
  - Confirm needle position with contrast/air
  - Non ionic contrast probably not bacteriostatic
  - Use red bung on syringe, or transport medium.

# Technique - Septic arthritis

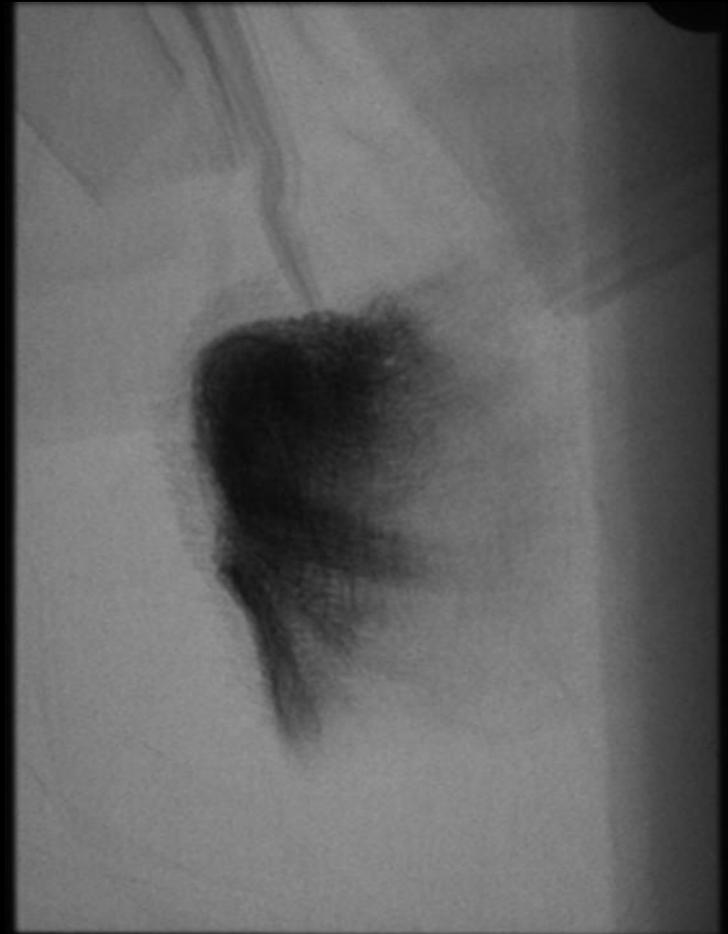
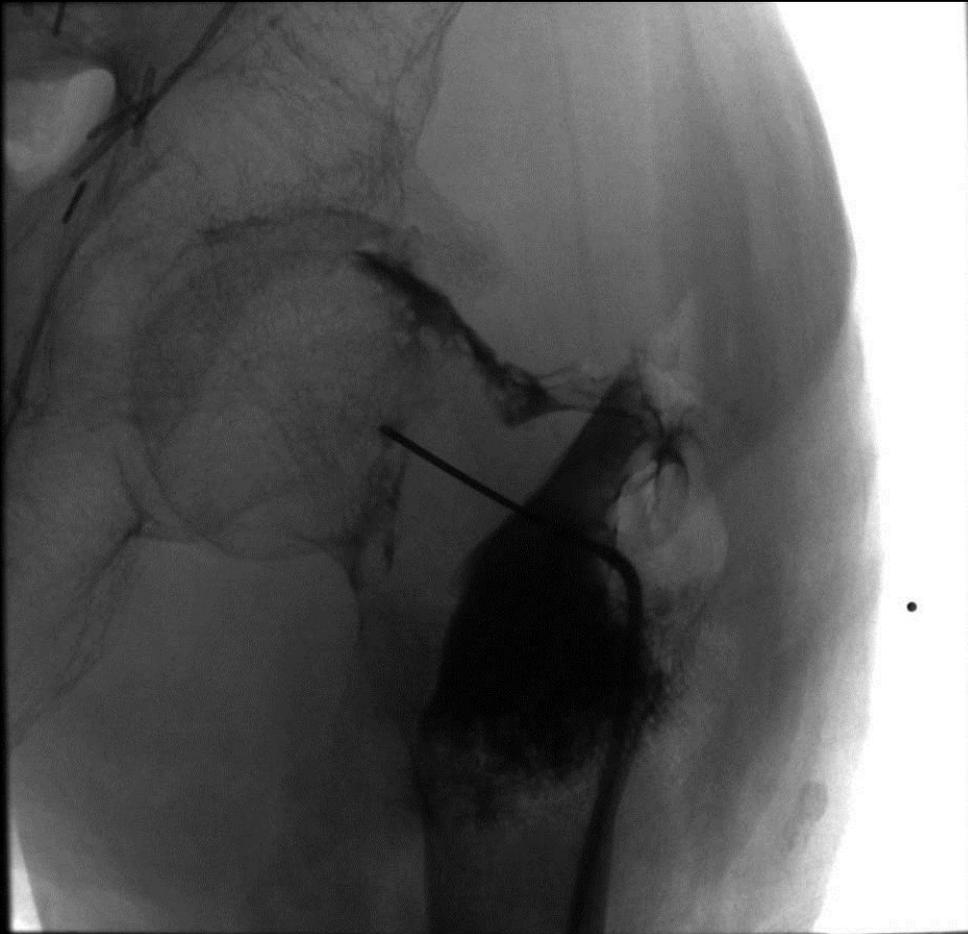
- Multi-use lidocaine is often bacteriostatic.
- Avoid in joint
- Aspirate through different needle



- If dry tap
  - Irrigate with - Non bacteriostatic saline.
  - If you irrigate state so in report and lab note, since it makes cell count irrelevant.

# Hip Arthrography – Sinus tract

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Swab

# Sterile technique

- Think ahead
- Don't touch needle shaft, especially near tip
- Don't stick needles down through plastic into non-sterile area
- Only consider inside plastic tray as sterile



# Technique - safety

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- Keep a clean work area
- Throw away unnecessary items before starting
- Don't re-sheath needles

# Technique

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- Keep finger on blunt tip of stylet when advancing needle, so that it projects beyond canula.

# Technique

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- Use Povidone iodine (Betadine) to clean skin.
  - Clean off skin afterwards as this may be irritant to some
- Alcohol removes marks
- Rubbing excessively hard removes marks

# Anesthetic Arthrography - Technique

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- 1-5mls of 1% Lidocaine sufficient
- Record where contrast / LA goes
- Pain will recur prior to steroid effect
- Keep a diary - Activity V's pain
  - Until see referring physician
- Keep it simple
  - Only use Bupivacaine / Marcaine if pain intermittent
- Give steroid first before joint fills up
  - Patient wants the steroid
  - Top up with LA
- Second dose usually more effective

# Chondrolysis and Marcaine



Rapidly progressive hip OA over 6 months 3 hip injections 66M

# Types of contrast

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- Positive
  - Iodine
  - Gd
- Negative
  - Air
  - CO<sub>2</sub>
  - Vacuum
- Mixed
  - Double contrast Air / Iodine
- Indirect
  - Gd
- Natural from joint fluid

# Single contrast - Air



# Single contrast - Air

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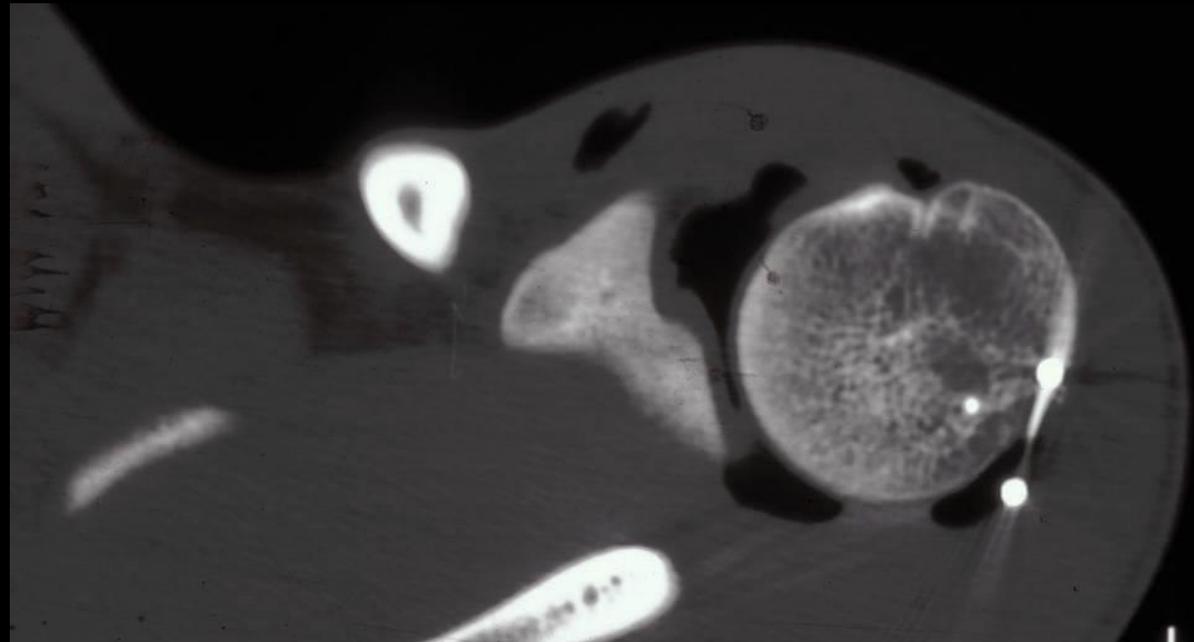
- No iodine
- Best for IA bodies inc. GSW
- Most commonly used in elbow
- Usually combined with CT.



# Single contrast - Air

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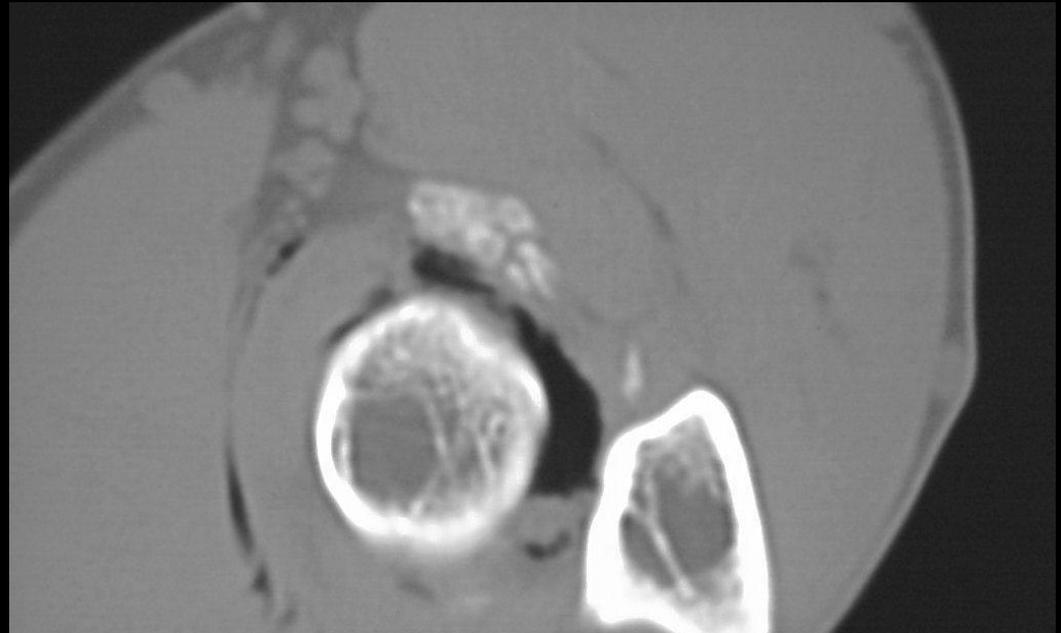


Shotgun pellets in joint

# Single contrast - Air

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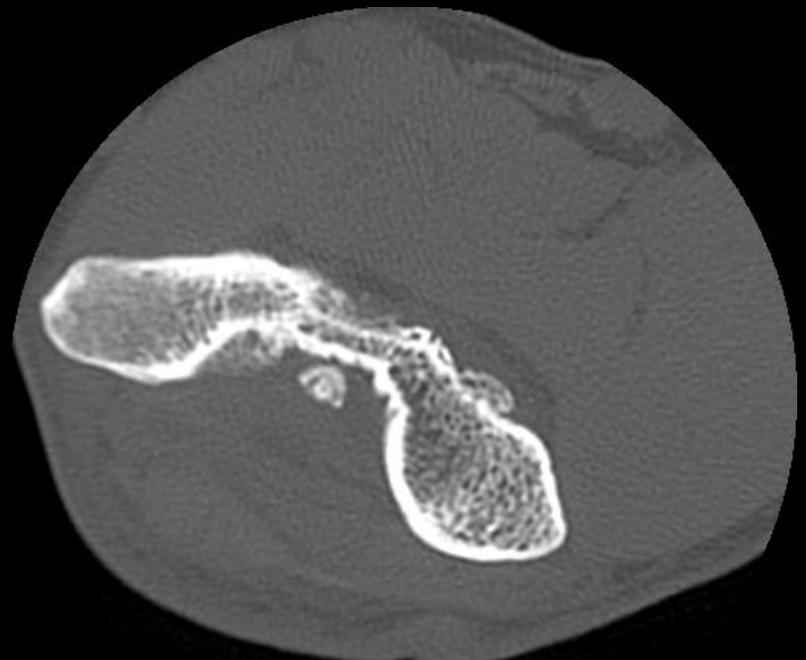
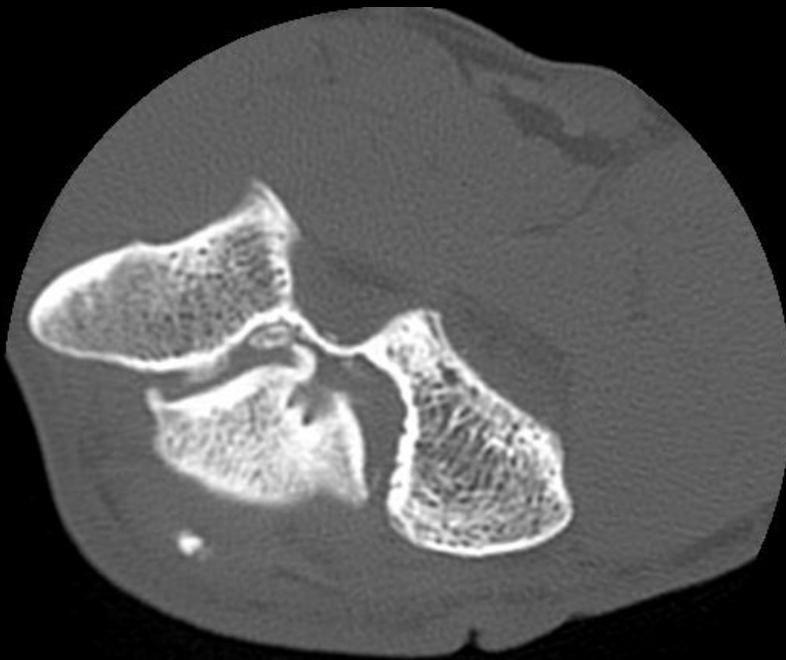
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- Best for IA bodies inc. GSW
- Most commonly used in elbow
- Usually combined with CT



# Bodies - No Iodinated contrast - Air

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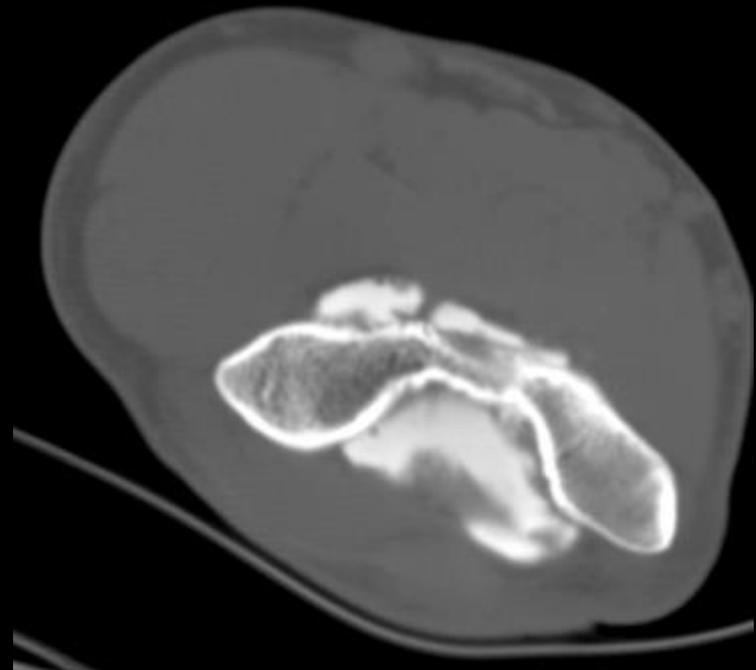
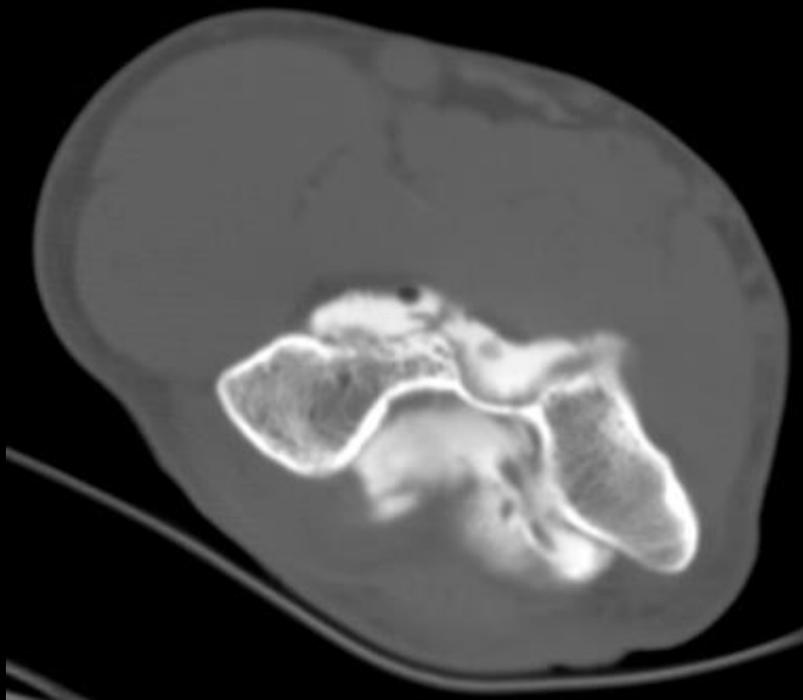
- No iodine



# Bodies - No Iodinated contrast - Air

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- No iodine



Post contrast

# Single contrast - Iodine

- Most commonly used in shoulder
- Outlines articular surface
- Combine with CT for knee menisci
- 240 mg/dl



Medial displaced bucket handle



RhA Synovitis

# Double contrast

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- Tiny amount of iodinated contrast to line joint
- Fill up with air
- CO<sub>2</sub> rapidly absorbed
- Shoulder with CT for labrum
- Shoulder for rotator cuff tear



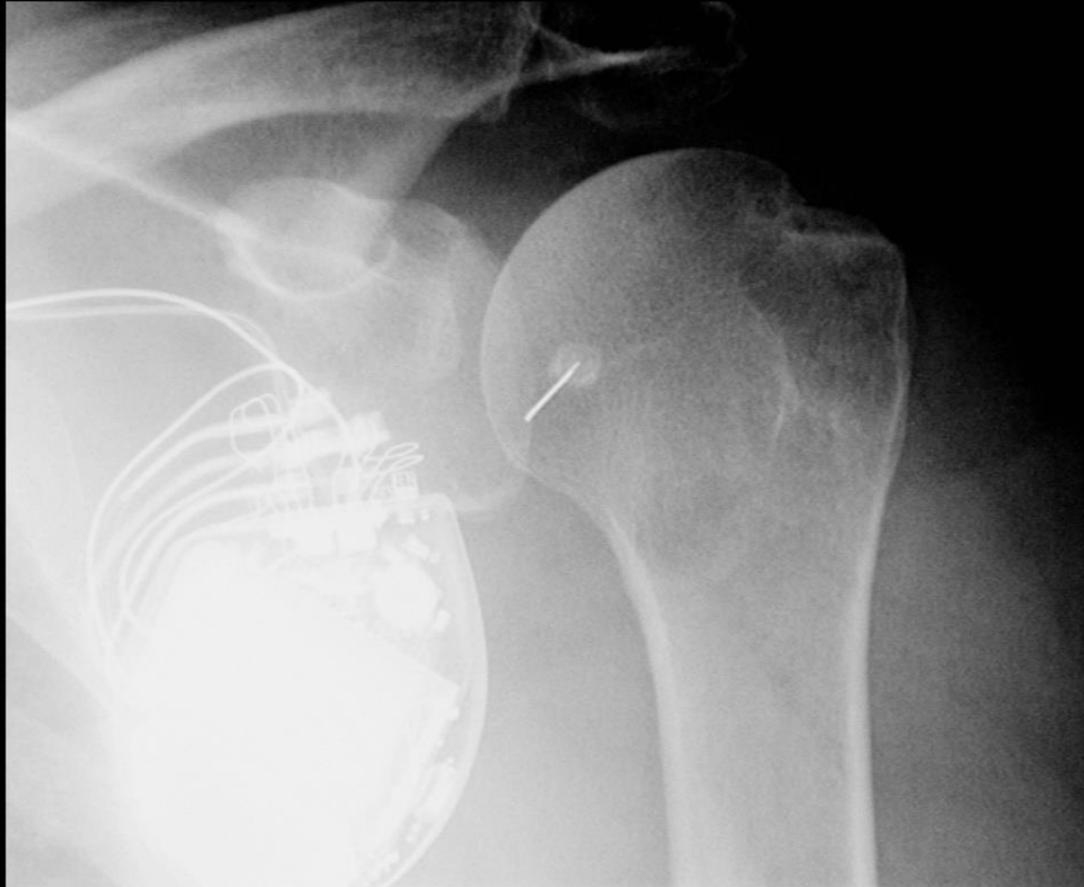
# General contraindications

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- Few
- Controversial to inject contrast if aspirate pus
- Some patients don't want iodine
  - Inject by feel/pressure
- Possible chondrolysis from long acting LA

# Gad Arthrogram CT

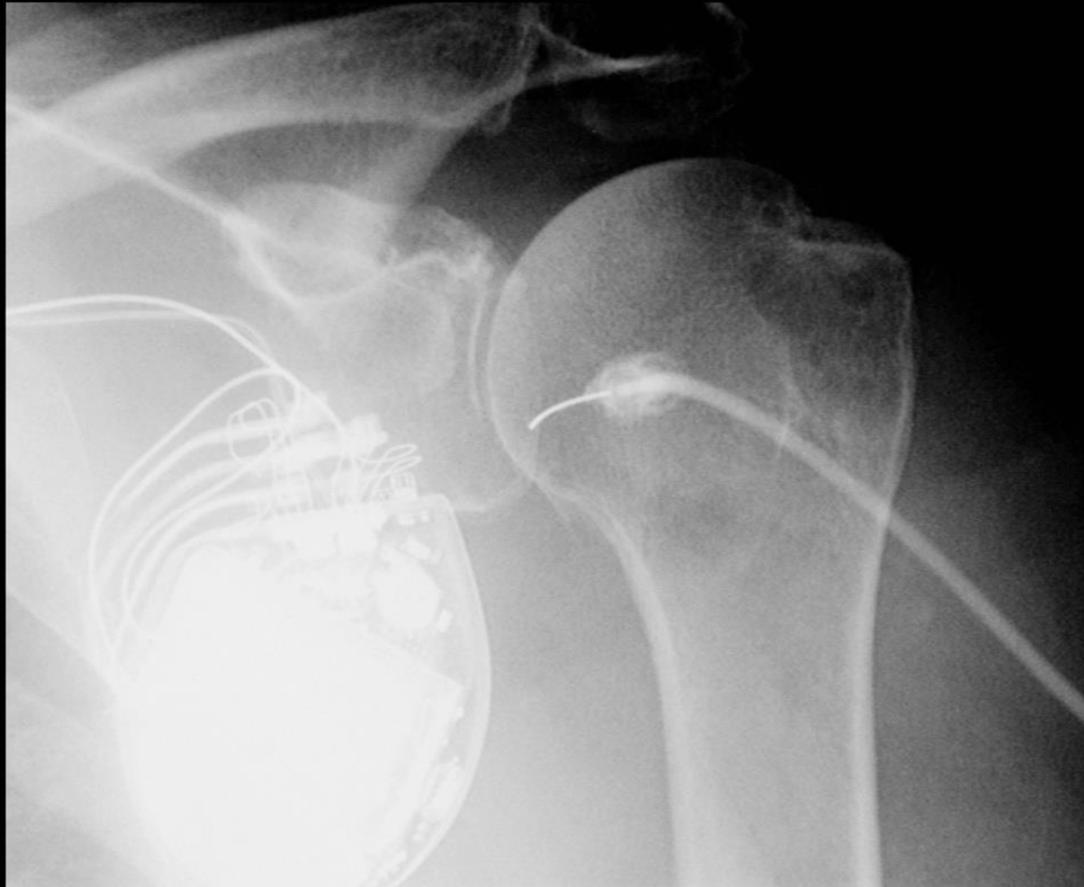
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64yo M with bilateral shoulder pain. Patient with pacemaker. Patient with allergy to iodine (coded after IV injection)

# Gad Arthrogram CT

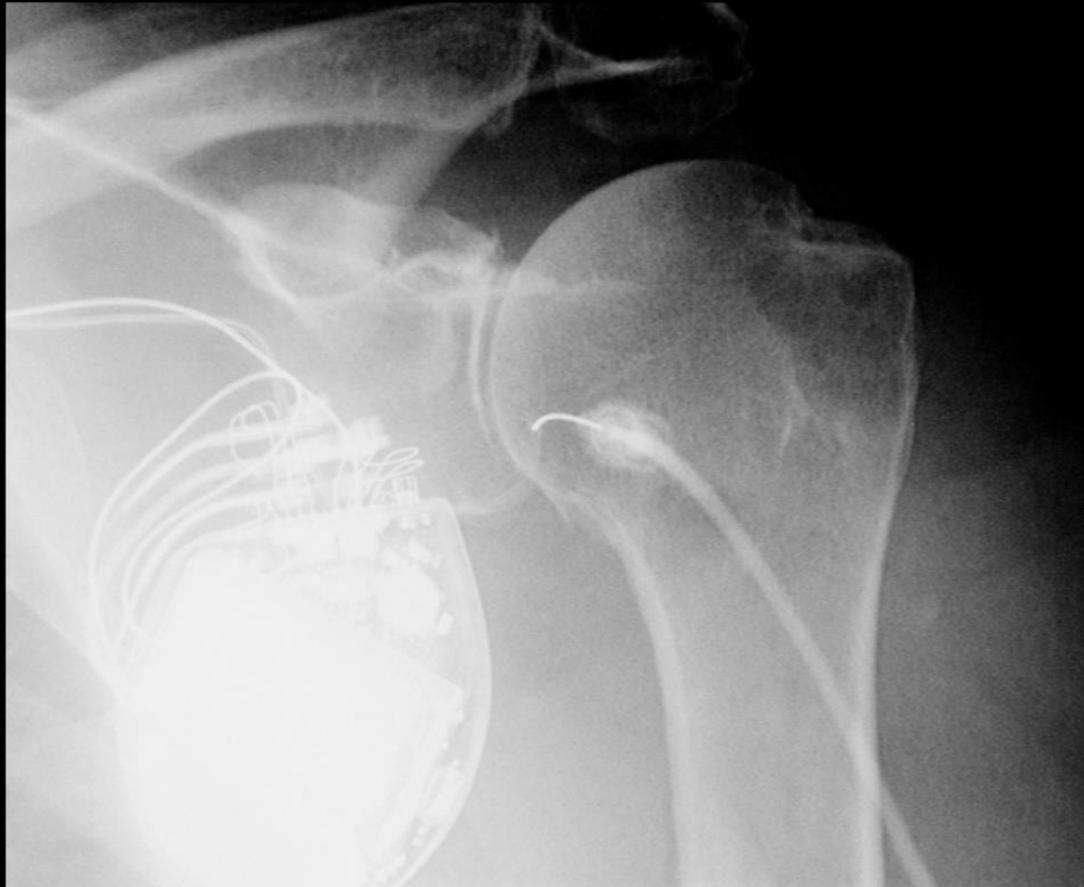
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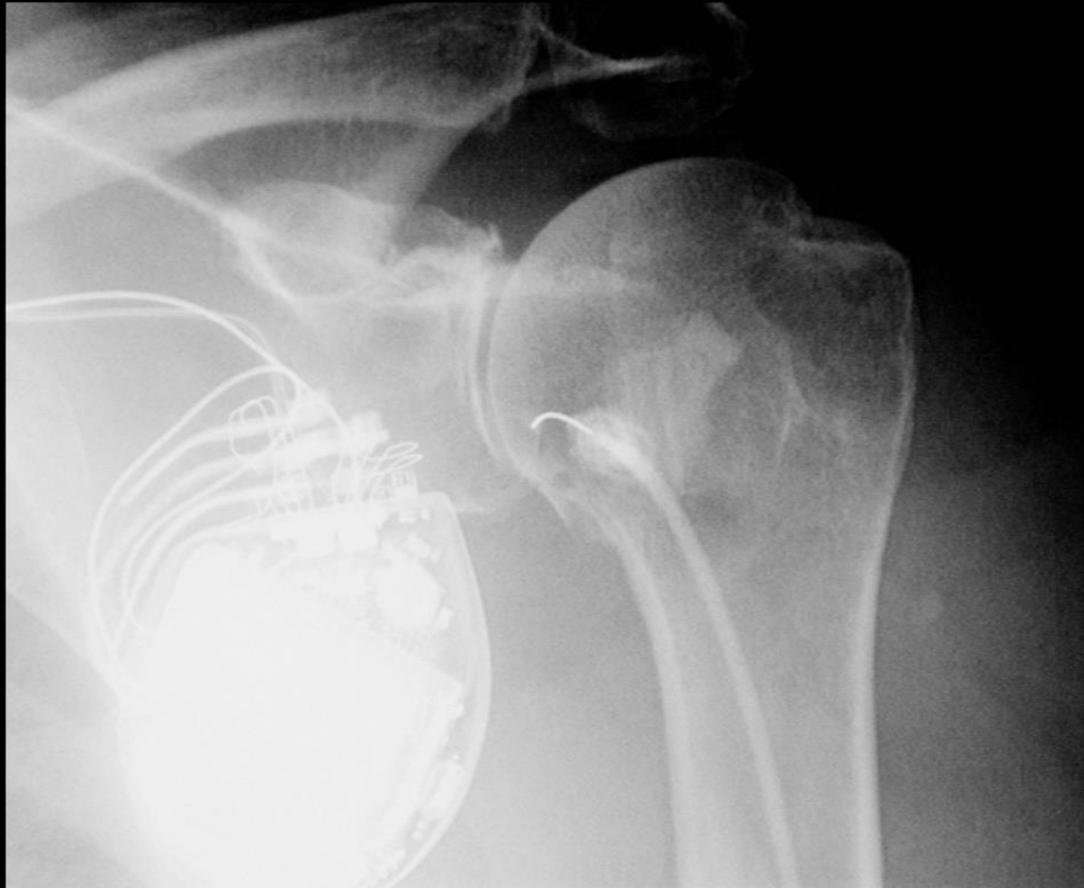
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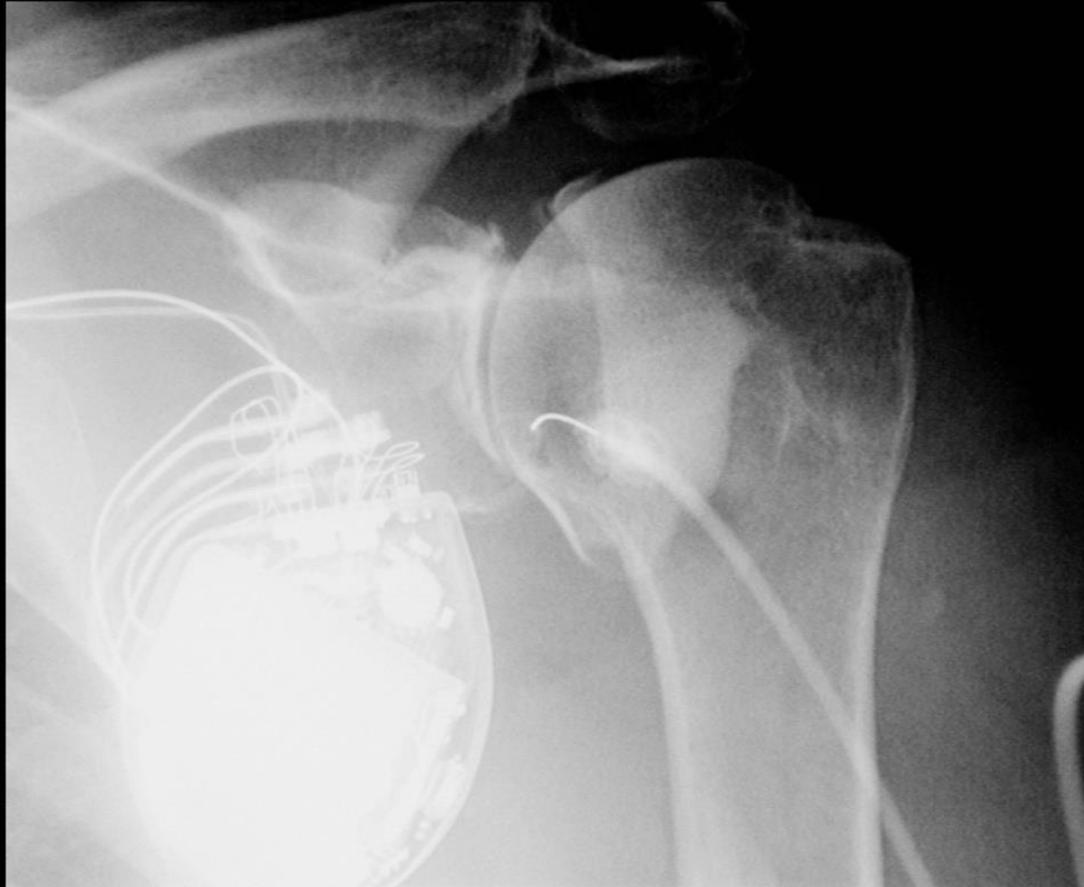
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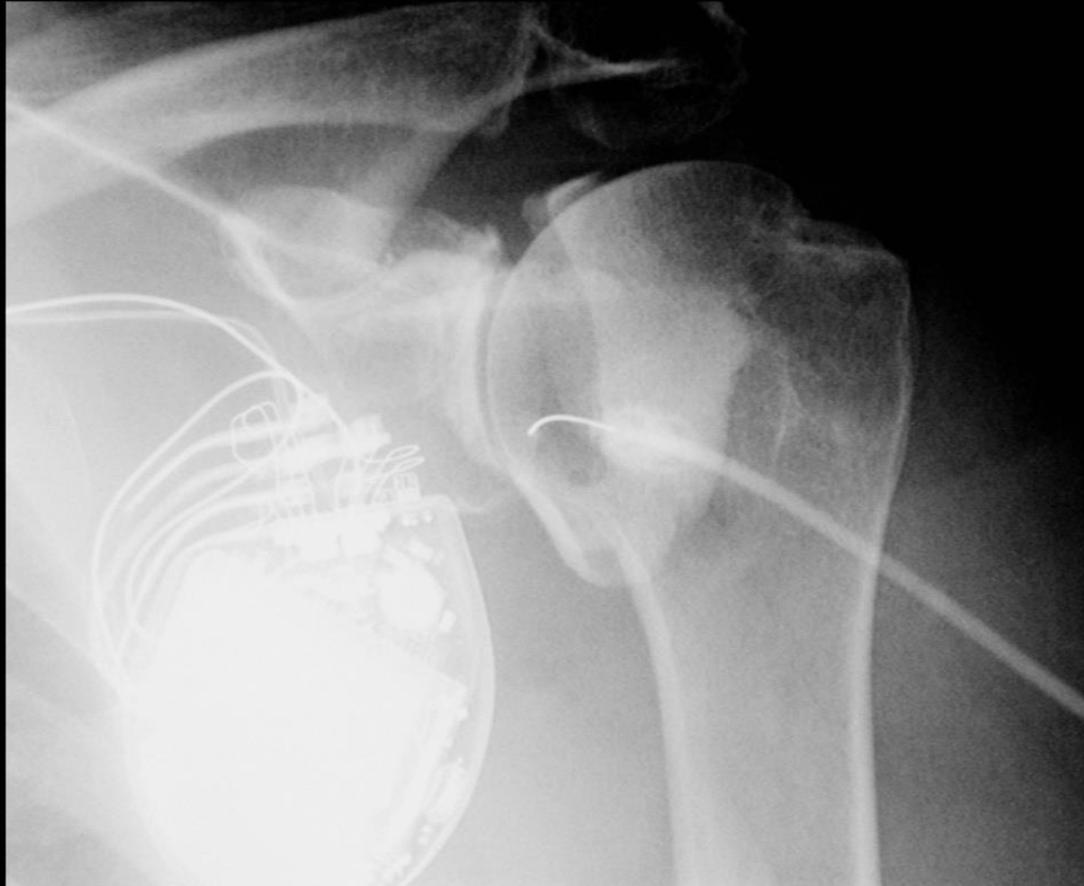
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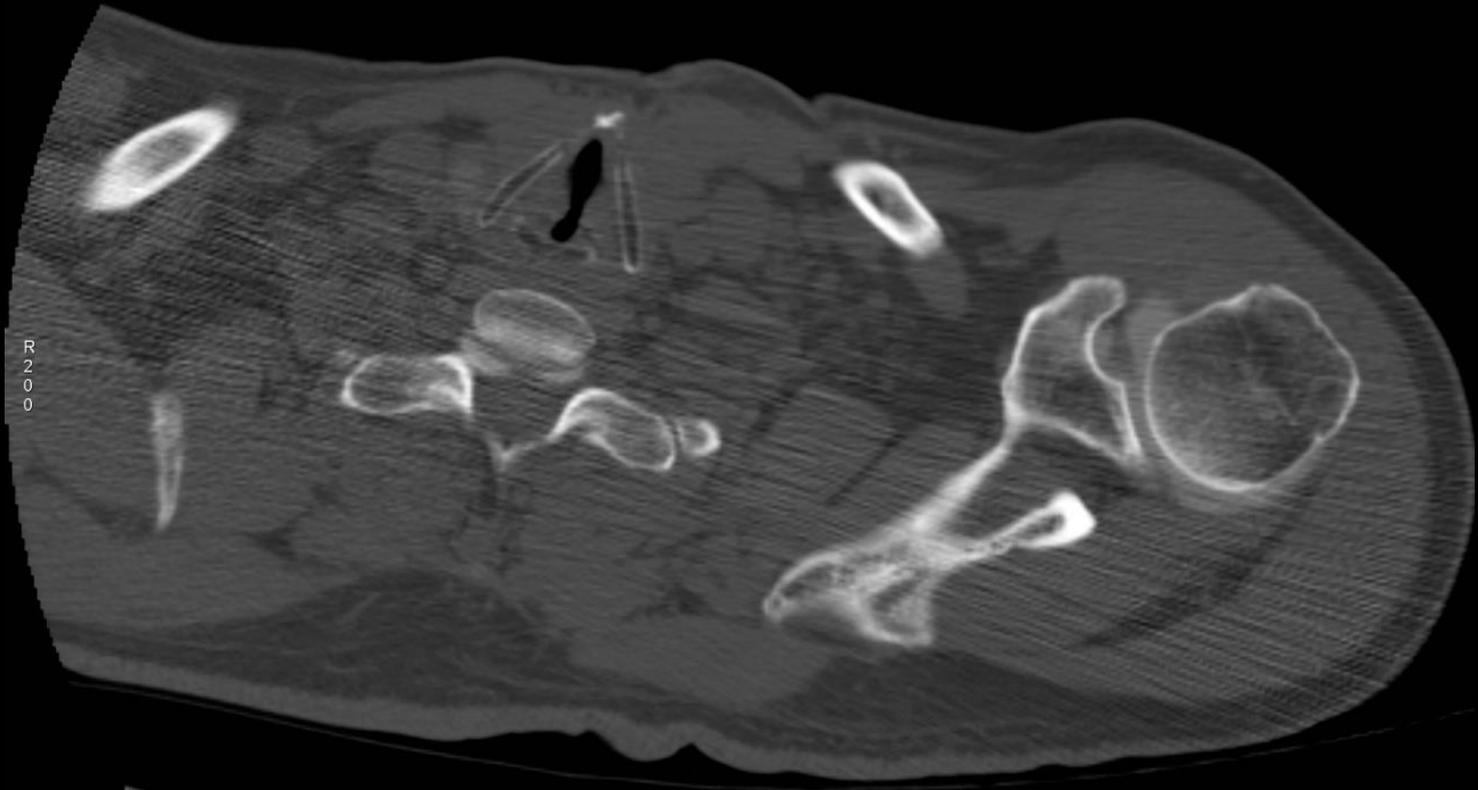
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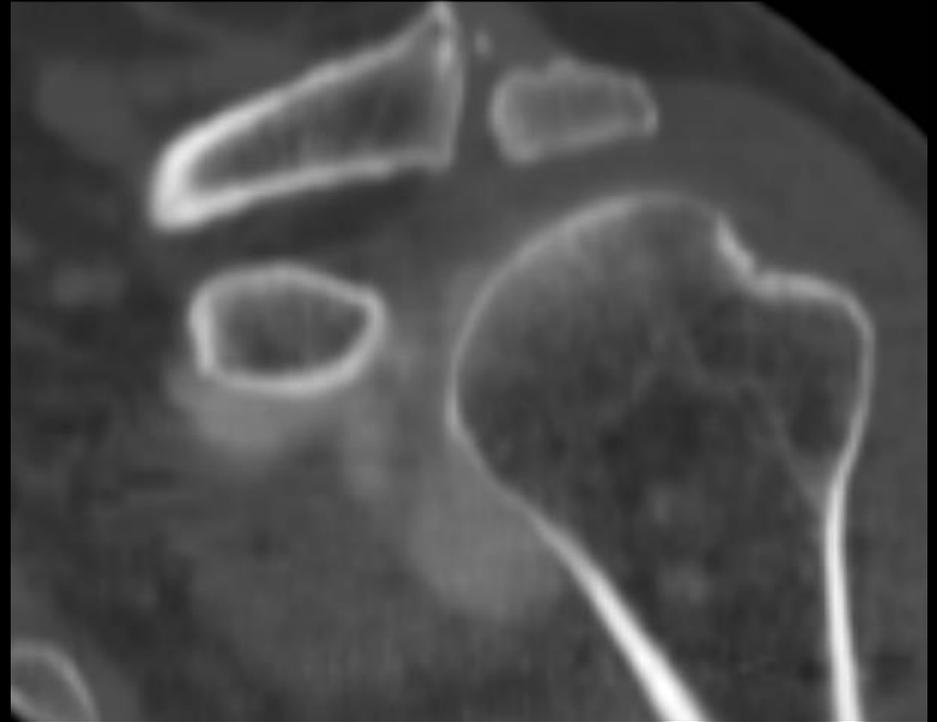
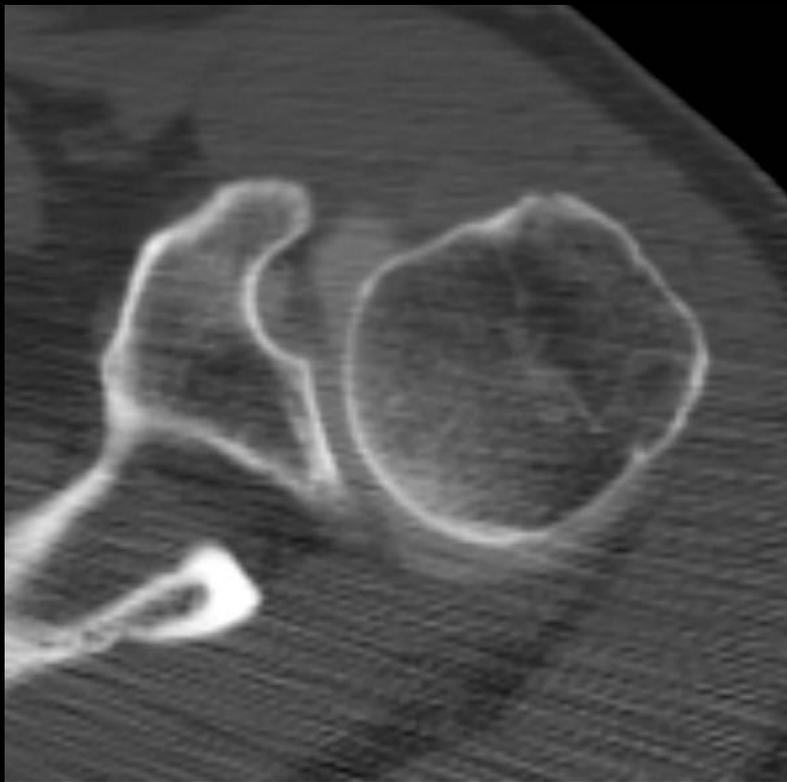
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# Gad Arthrogram CT

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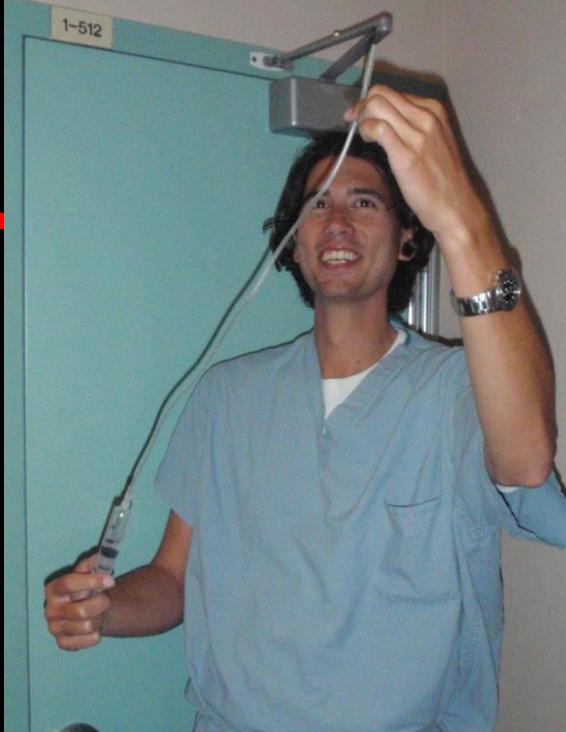
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# MRI Arthrography - Technique

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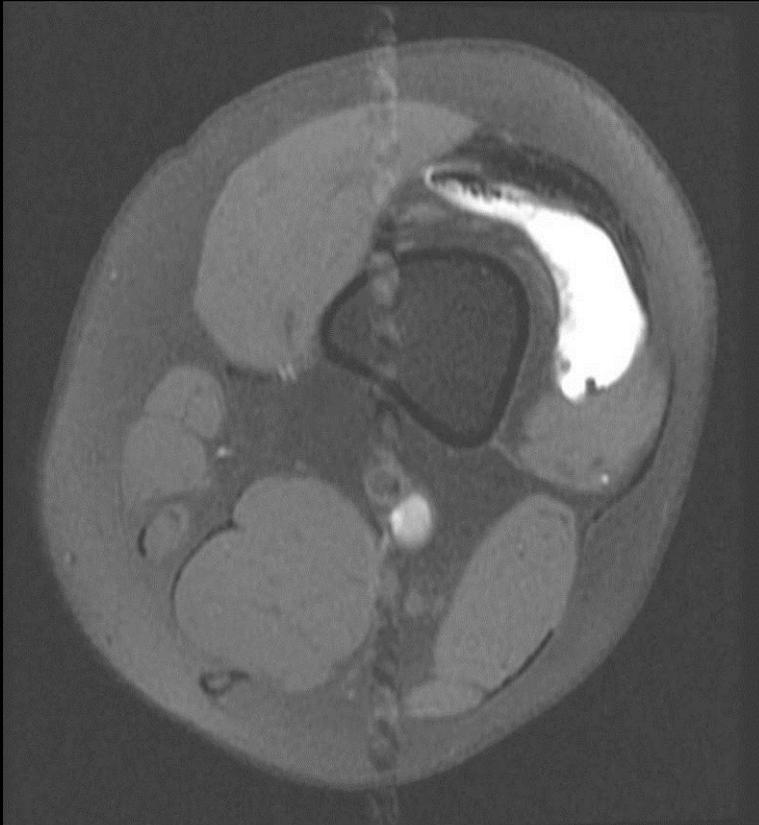
- Gd 1:200-250 dilution
- Technologist usually adds 1ml of Gd to 100ml bag of saline (or .5 to 50) = 1:100 Gd
- You draw up X mls of this and add X mls of 180-300 mg/dl iodine = 1:200 Gd
- This allows for dilution by any joint fluid
- Get rid of air.
- Don't dilly dally after injection
  - Contrast is absorbed from joint
  - Especially in synovitis
  - Check MRI is ready for patient, ½ hr max delay



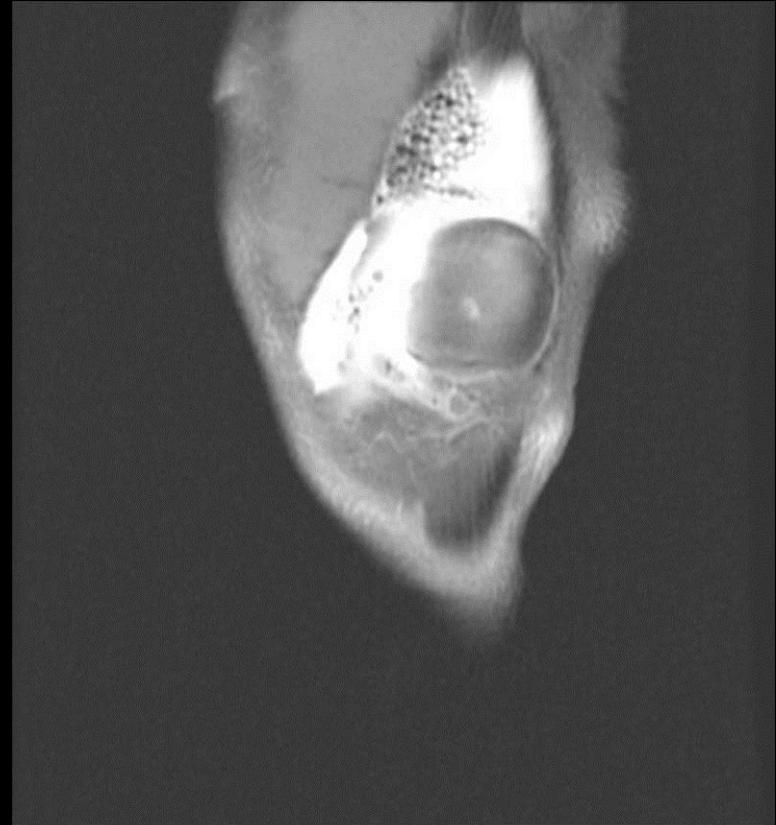


# Knee Arthrogram – Air bubbles

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Ax T1FS IAGd

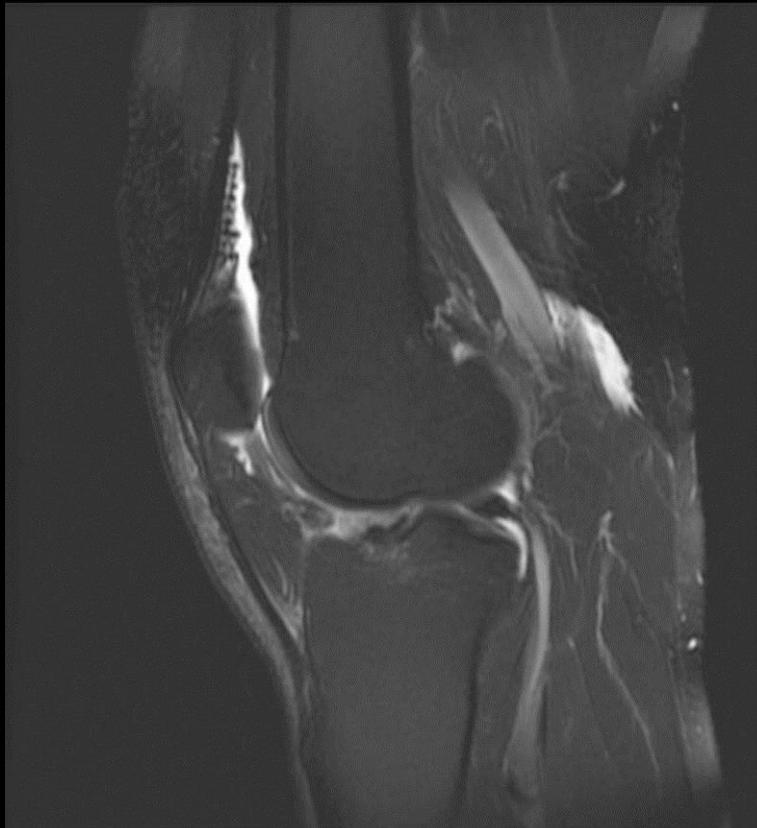


Cor T1FS IAGd

# Knee Arthrogram – Air bubbles

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12



Sag T2FS IAGd

12



Sag T1FS IAGd

# Knee Arthrogram – bubble mimics tear

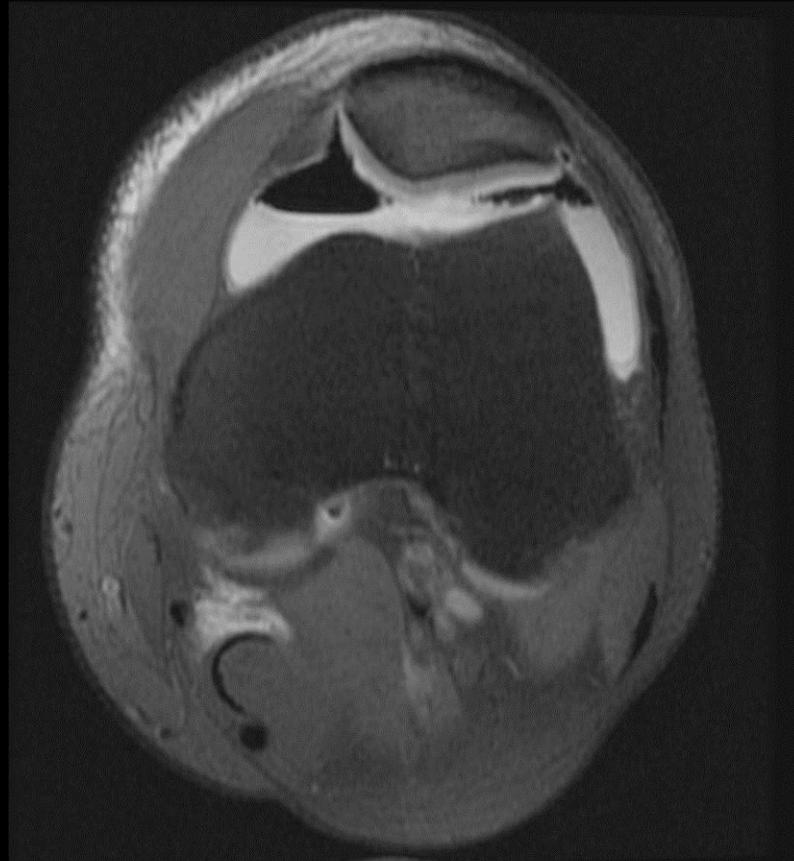
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# Knee Arthrogram – bubble mimics tear

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6



Ax T1FS IAGd

# Knee Arthrogram – bubble mimics tear

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12

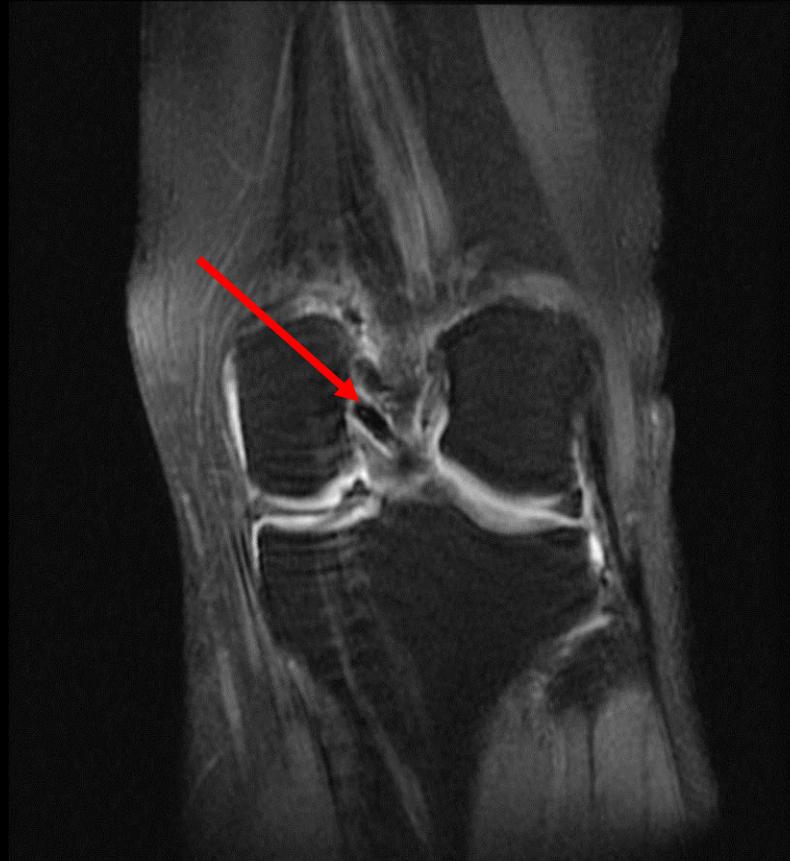


Cor T1FS IAGd

# Knee Arthrogram – bubble mimics tear

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13



Cor T1FS IAGd

# Knee Arthrogram – bubble mimics tear

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6



Sag T2FS IAGd

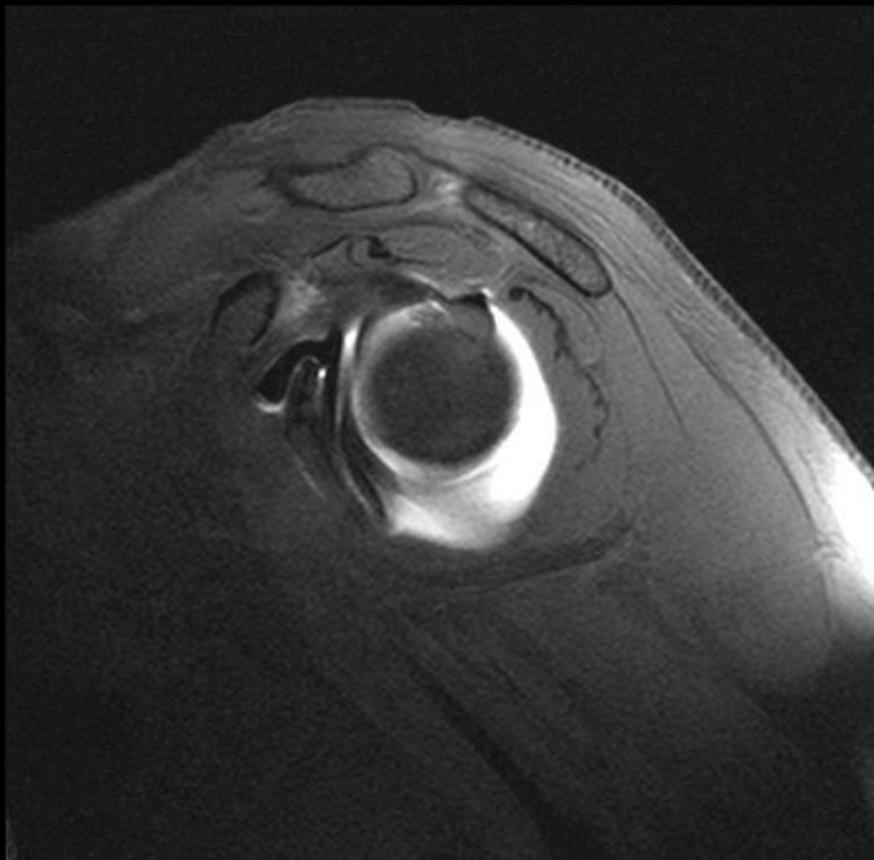
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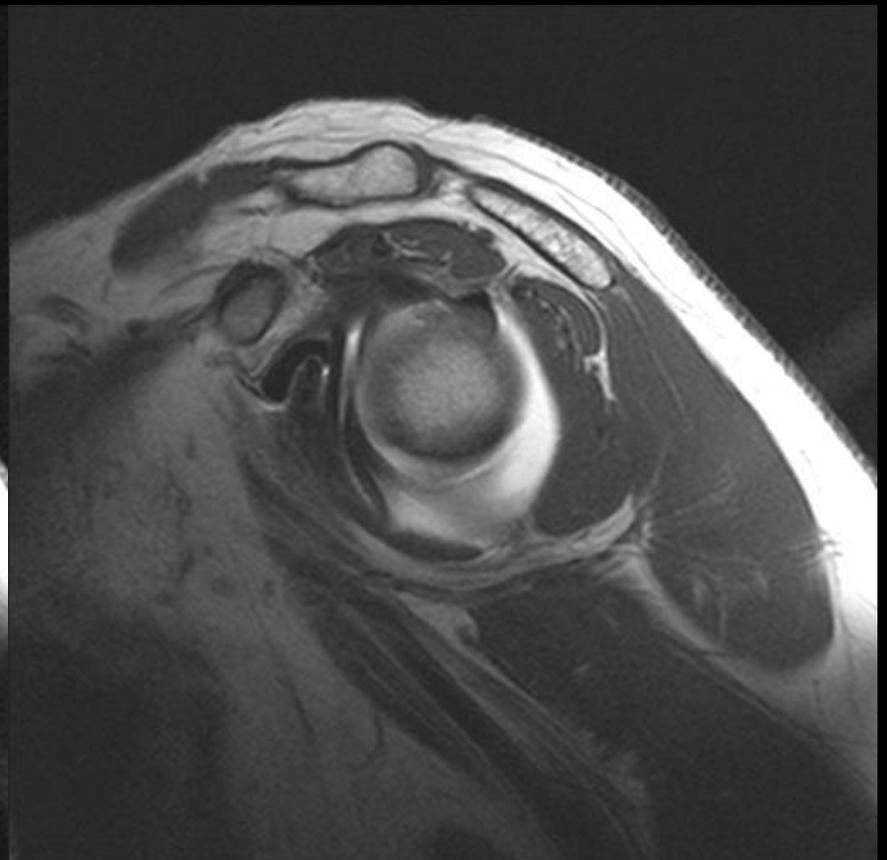
Sag T1FS IAGd

# Shoulder MR arthrography with air

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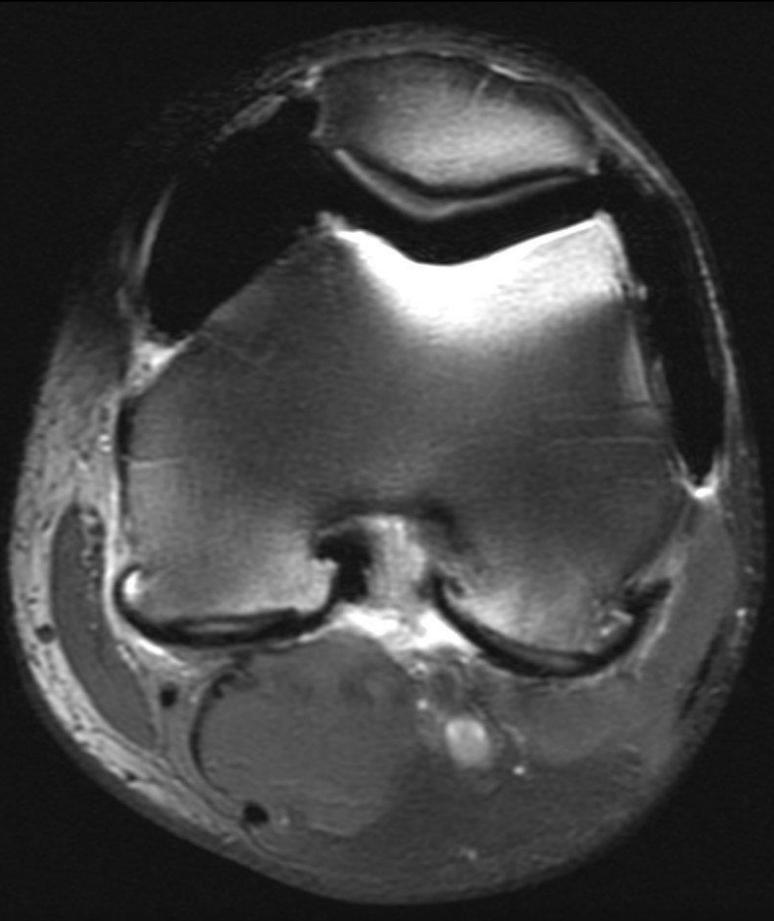
Sag T1 FS



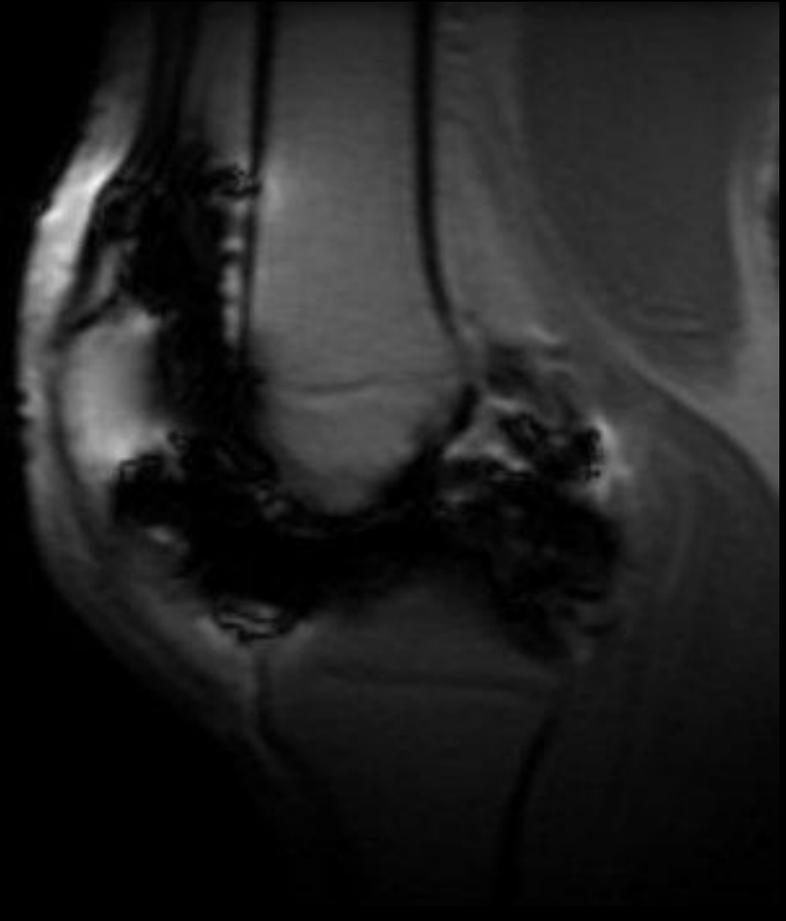
Sag T1

# MRI Arthrography - Technique

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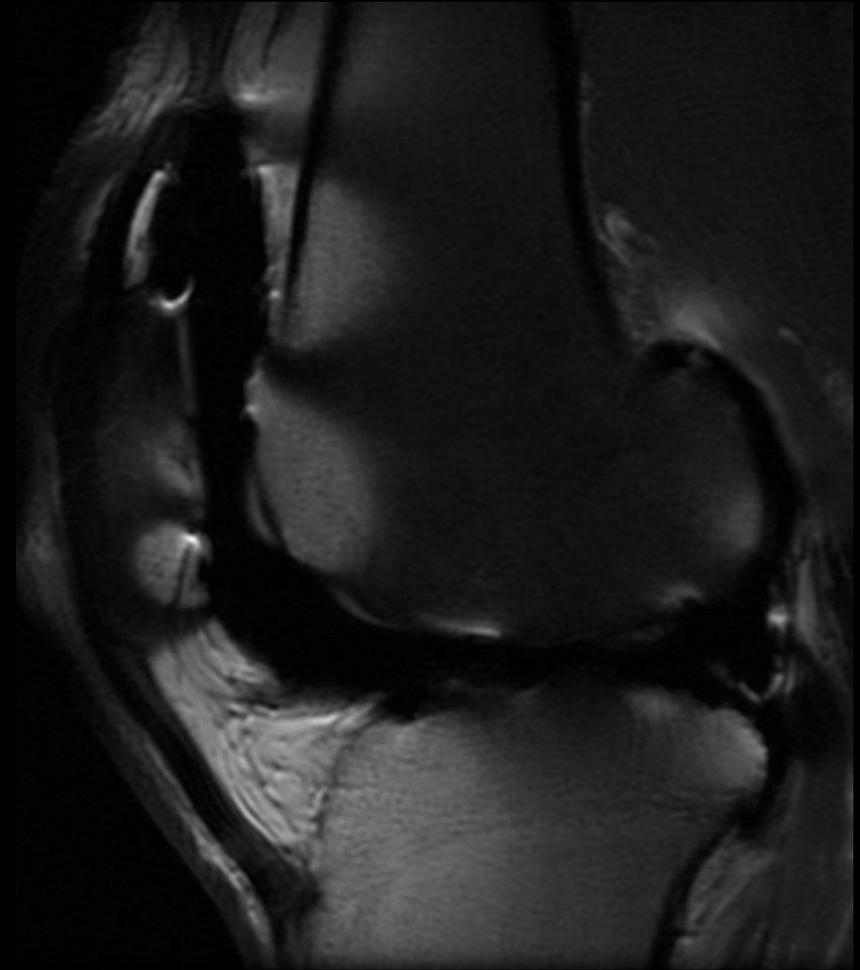
T1FS



Undiluted Gd

# MRI Arthrography - Technique

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Sag PD

Undiluted Gd

Sag T2

# Extravasation

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- No significant tissue toxicity
- No treatment necessary



# MRI Arthrography - Indirect Technique

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- 10mls of Gd IV
- Wait 15-30 mins to scan
- Best with inflamed joints

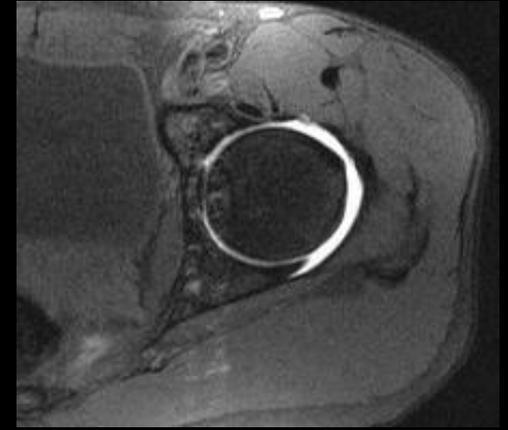
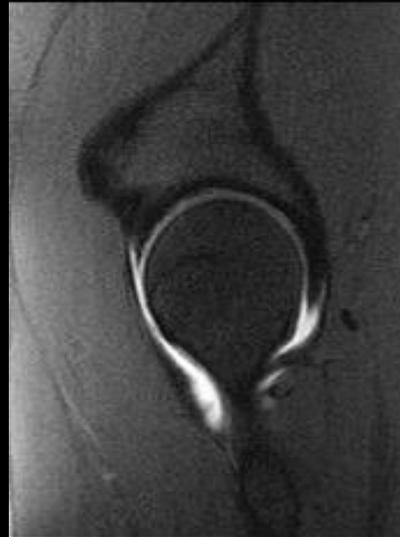


Elbow cocci

# MRI Arthrography - Sequences

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- 3 planes of imaging with T1 fat-sat
- Preferred plane IR or T2-w FSE
- And a short TE sequence for anatomy
- Add axial or radial oblique's in line of femoral neck for FAI



# Imaging for Access

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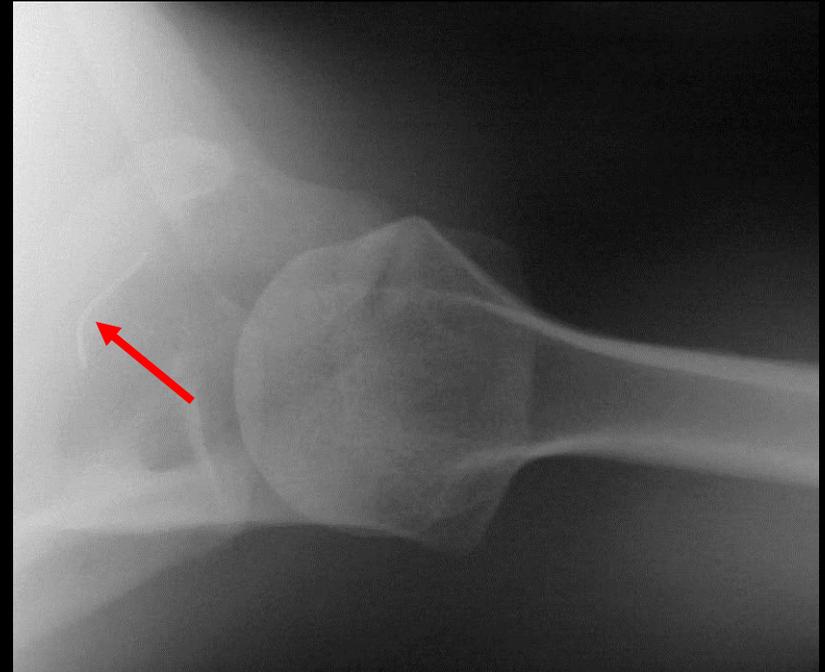
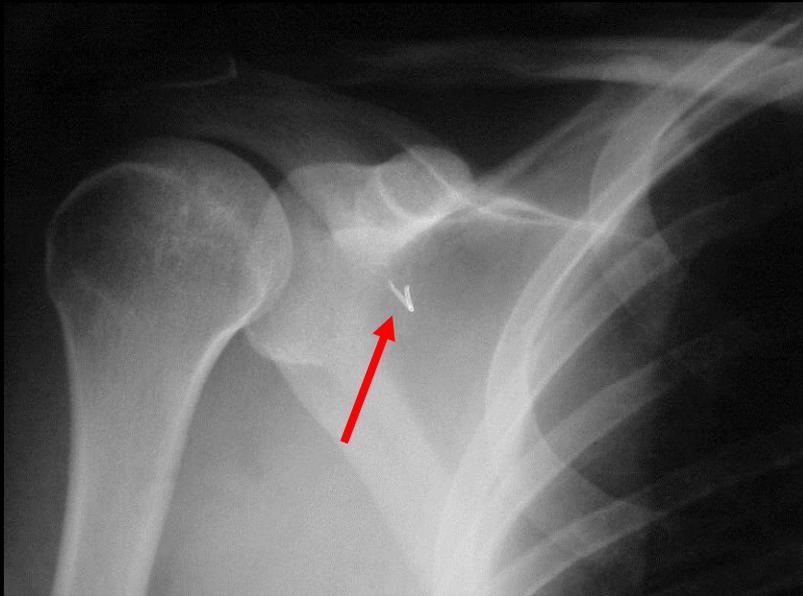
- Fluoroscopy usually sufficient
- CT may be of benefit for SIJ or foot in elderly with OA to see any osteophytes
- Ultrasound probably complicates matters
  - Great for bursa

# CT guided wrist arthrogram



# Remember to take out the needle

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# Joint volumes

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- Shoulder 10-12 mls
- Elbow 5 mls
- Wrist 2-3 mls
- Hip 10 mls
- Knee up to 50 mls
- Ankle 5mls
- Subtalar 3-5 mls
- TMJ 1 ml
  
- Ask the patient to tell you when they feel a heavy dull fullness in the limb being injected which is due to the capsule tightening up.

Joint	Approach	Technique	<a href="#">Aristospan</a>	<a href="#">Aristocort/ Kenalog</a>	<a href="#">Depo- medrol</a>	Dexa- methasone
<a href="#">Hip</a>	Anterolateral	Fluoro	20mg	40mg	80mg	4mg
<a href="#">Knee</a>	Subpatella	Fluoro	20mg	40mg	80mg	4mg
<a href="#">Ankle</a>	Anterior	Fluoro	10mg	20mg	40mg	2mg
<a href="#">Subtalar</a>	Lateral	Fluoro	5mg	10mg	20mg	1mg
<a href="#">SIJ</a>	Posterior	Fluoro/CT	10mg	20mg	40mg	2mg
<a href="#">Shoulder</a>	Anterior/Post	Fluoro	20mg	40mg	80mg	4mg
<a href="#">Elbow</a>	Lateral	Fluoro	10mg	20mg	40mg	2mg
<a href="#">Wrist</a>	Posterior	Fluoro	5mg	10mg	20mg	1mg
Sub deltoid bursa	Anterior	US	10mg	20mg	40mg	2mg
Tendon sheaths		US	5mg	10mg	20mg	1mg

Double this is maximum at one time, can be repeated after 3/12

# Check list for Biopsies

## Check list for Biopsy Requests

Please fill in or tick.

Patient name:

Patient MRN:

Patient contact:

In patient

Out patient

Referring Doctor:

Pager:

Extension:

Scheduling contact: Dept: 33045, Sheila 33372, Sarona 37497,  
Soladad 33340, Rosa 33373, Maritza 37258

Location to be biopsied:

R L

Bone Soft Tissue

Suspected pathology:

Known Primary:

Previous imaging checked:

Biopsy appropriate:

Most accessible lesion:

If possible sarcoma, access route discussed with surgeon:

Method: CT US Fluoro

Date of Biopsy:

Time:

Date of last H+P:

Less than 30/7 from biopsy: Y N

Coagulation ordered:

Anticoagulated?:

Charts ordered: (36700)

Cytology requested: (35378)

SAMA: (35610)

PACU: (36130)

Sedation Nurse requested: (32138)

NPO 6/24

Someone to drive patient home:

Coagulation checked:

H+P read:

Consent obtained:

Follow up:

TH 12.8.03



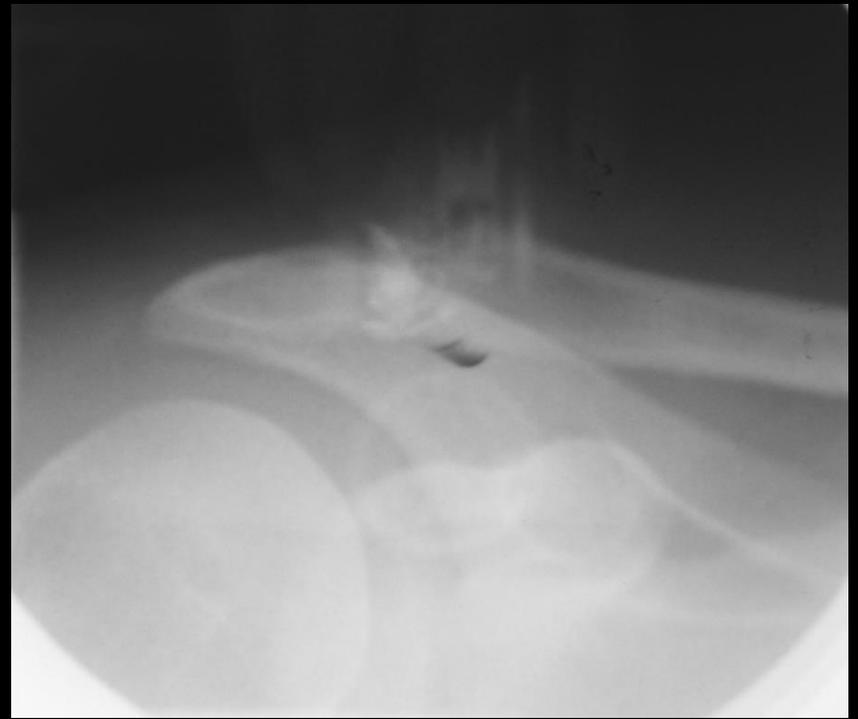
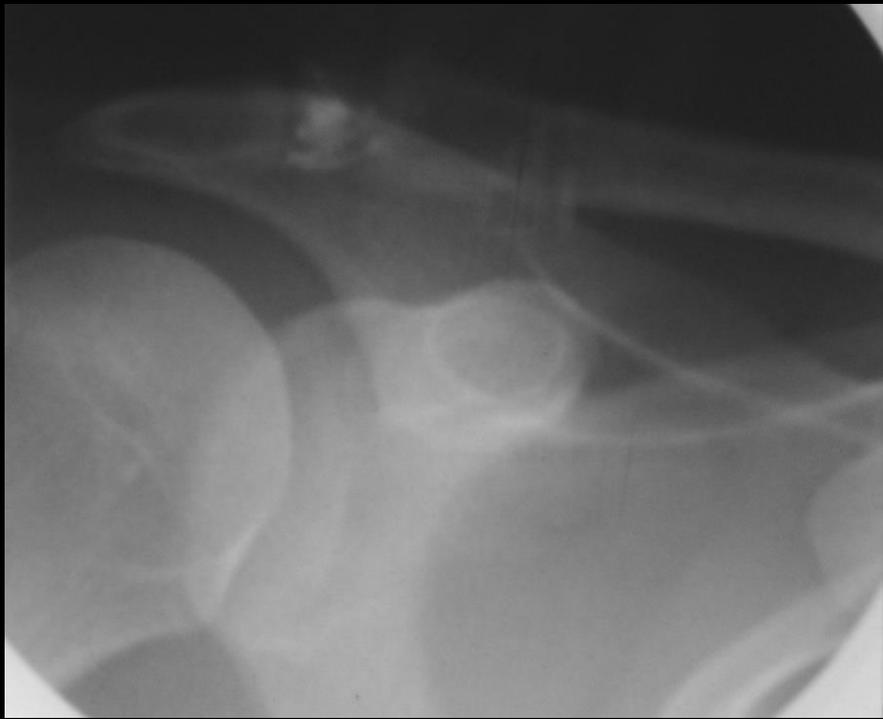
# ACJ Arthrography - Indications

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- Aspiration
- Anterior or superior
- Rotate patient



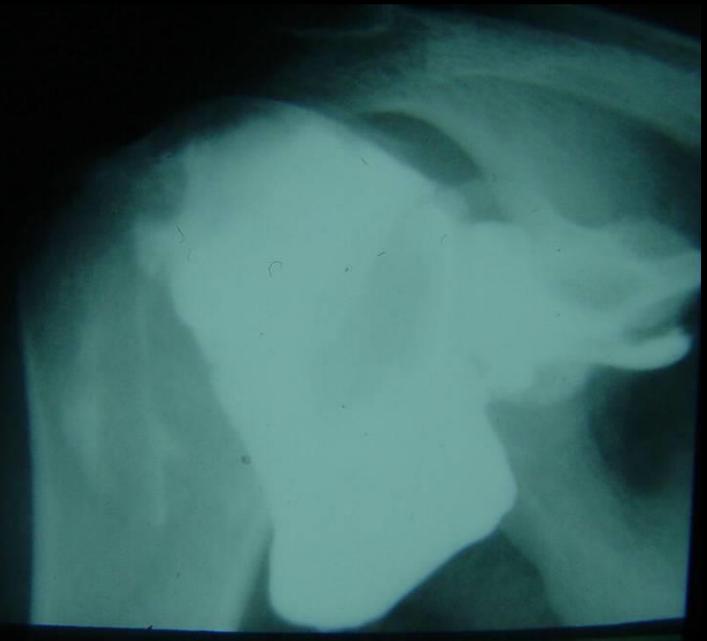
# ACJ Arthrography



# Shoulder Arthrography - Indications

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- RCT
- Labral pathology
- Synovitis
- Adhesive capsulitis



# Standard Anterior Approach

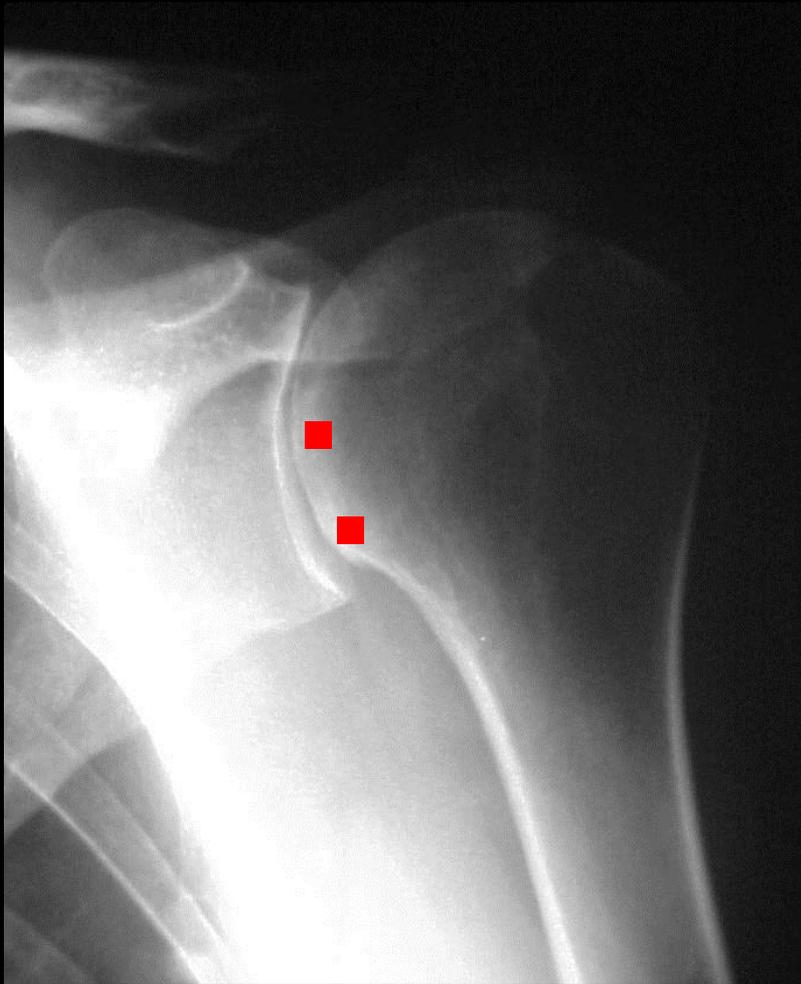
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- Patient supine
- Arm external rotation
- Weight



# Shoulder Arthrography Technique

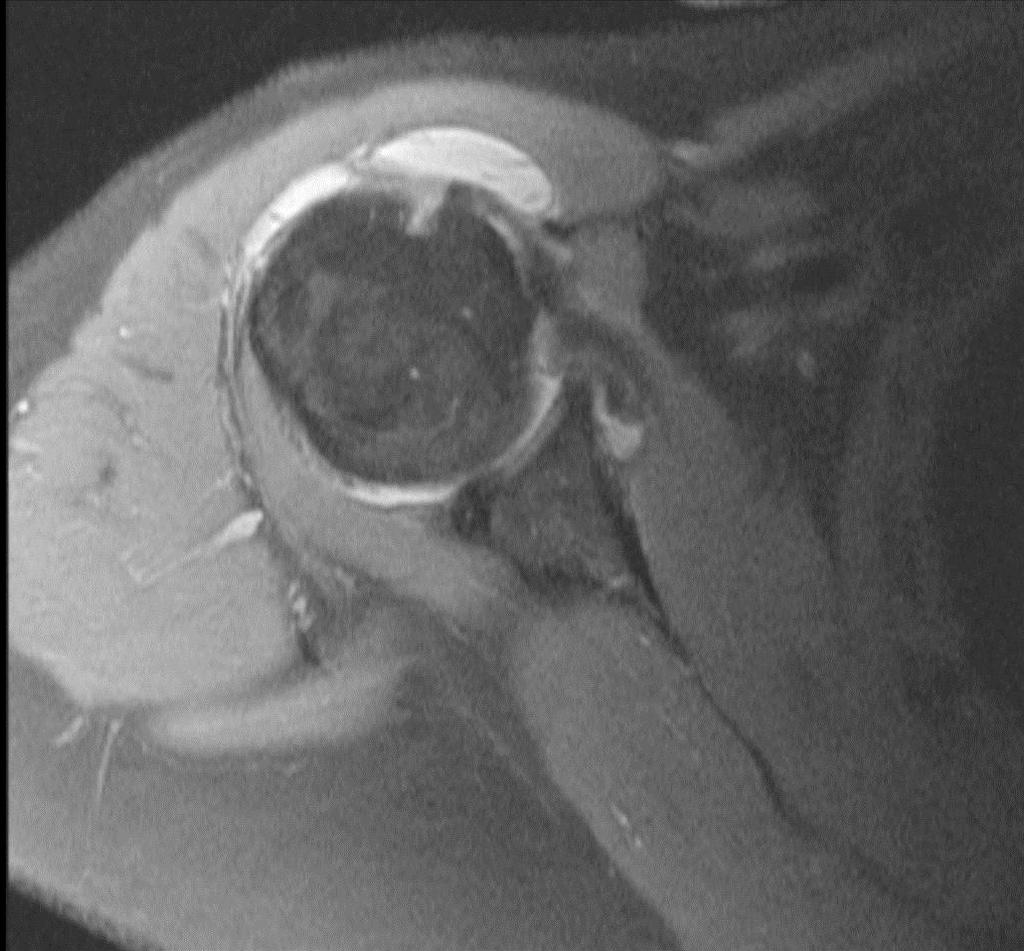
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- Anterior approach
  - External rotation
  - Keep below subdeltoid bursa
- Posterior approach
  - Internal rotation
- Rotator interval approach
  - External rotation
  - Stay medial to biceps

# Subdeltoid effusion to explain reason for low approach to joint

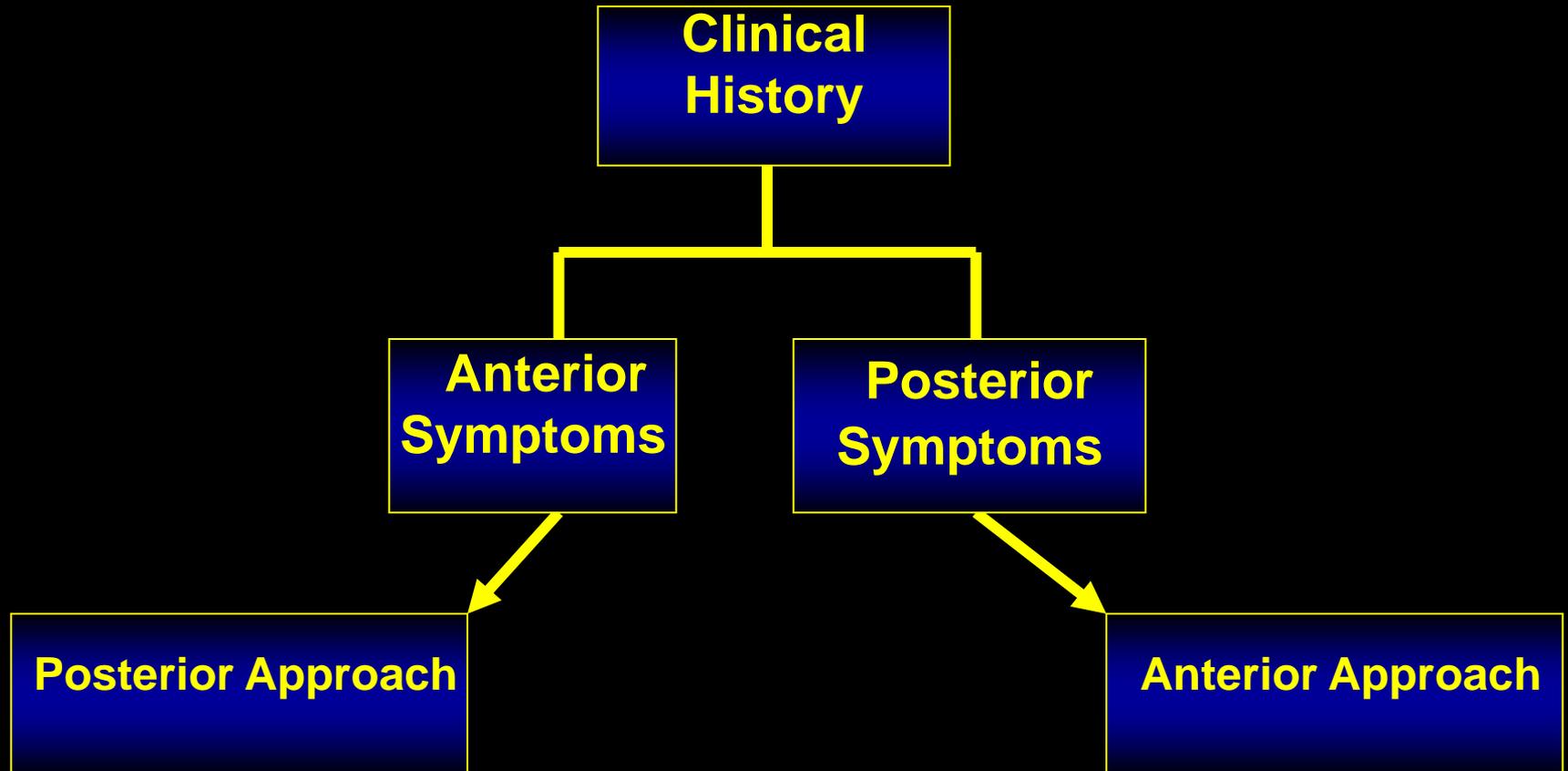
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Ax PDFS

# Tailored Approach to MR Arthrography

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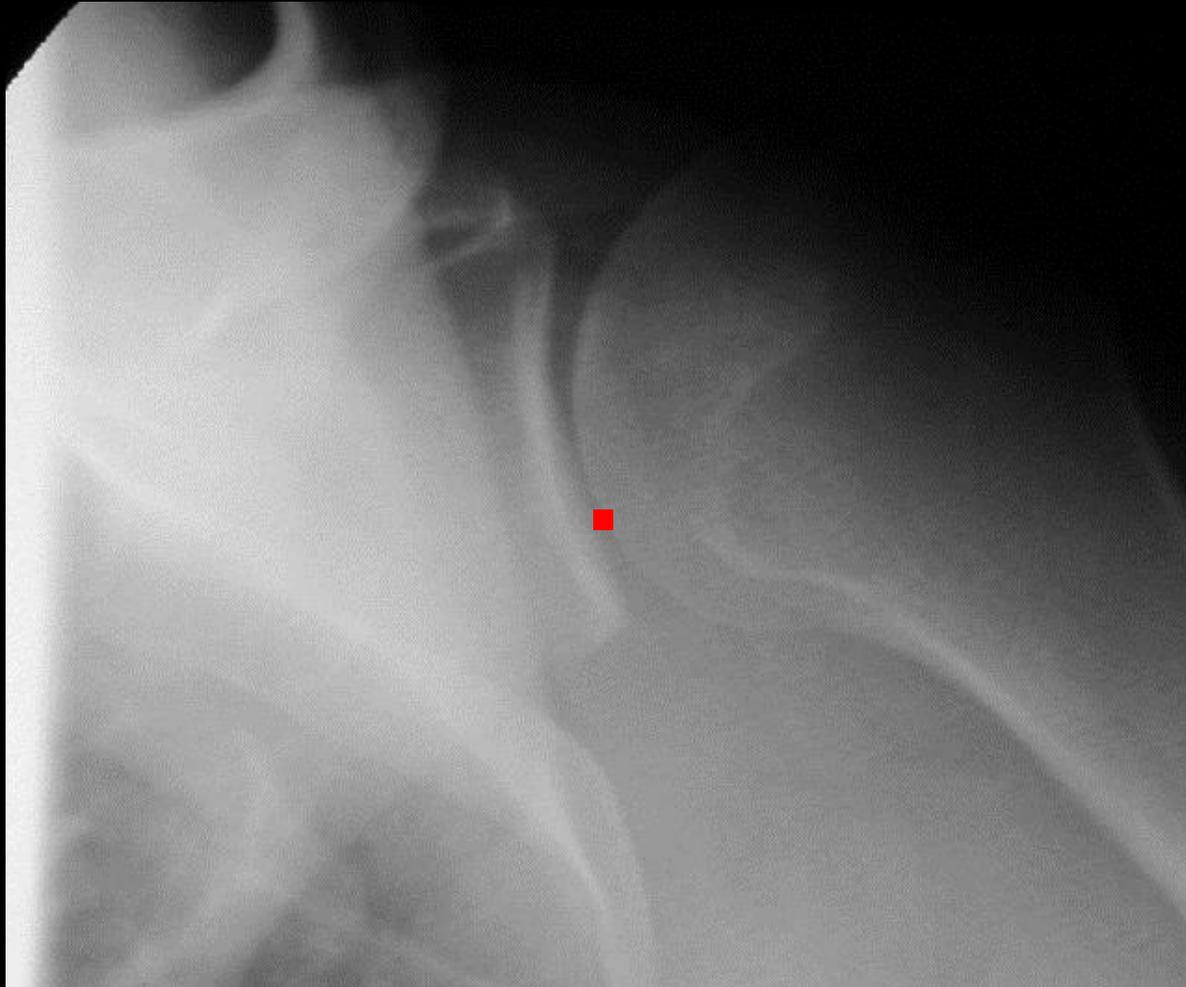
# Posterior Approach

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# Posterior Approach

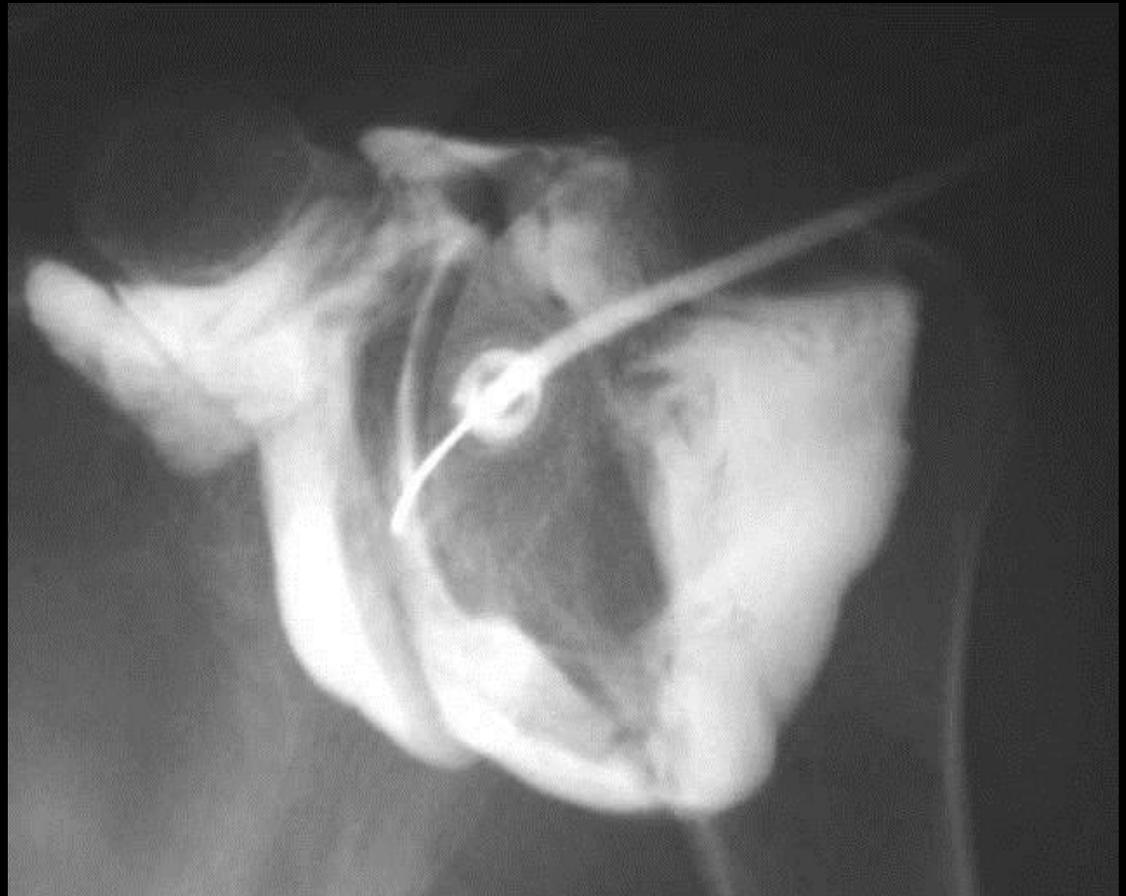
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# Posterior Approach Arthrography

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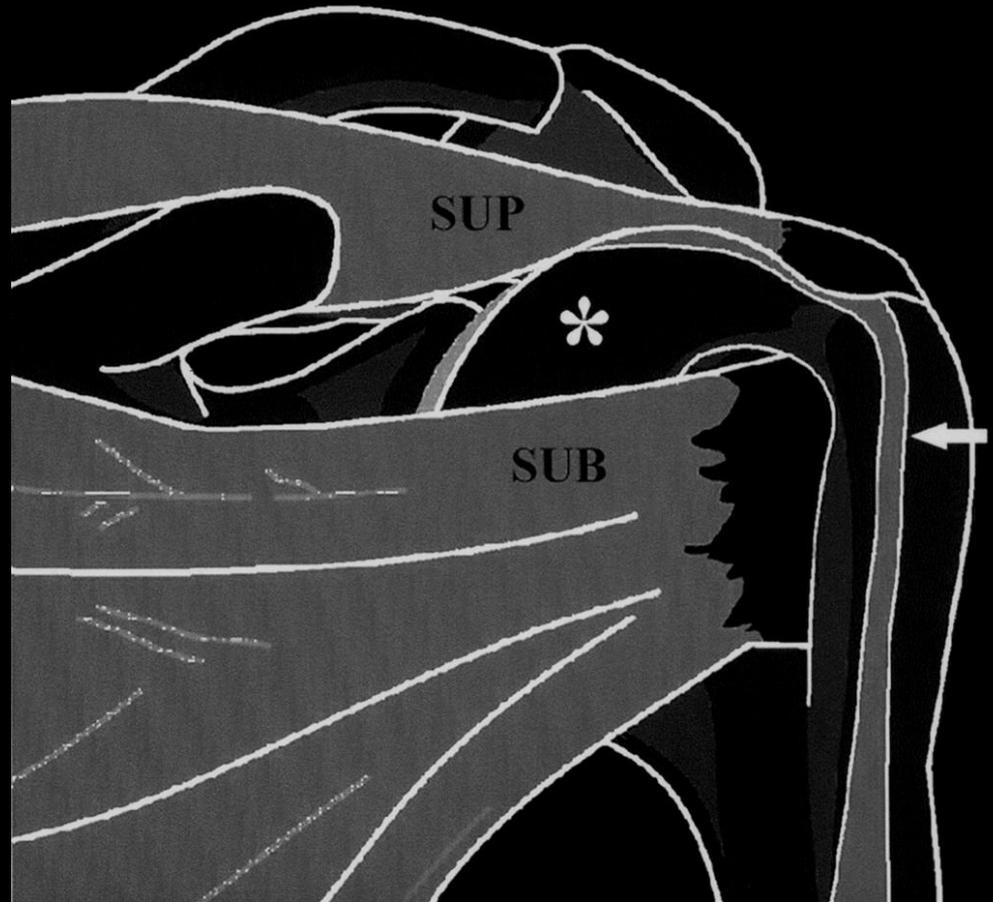
- Posterior approach right shoulder



# Rotator Interval Approach

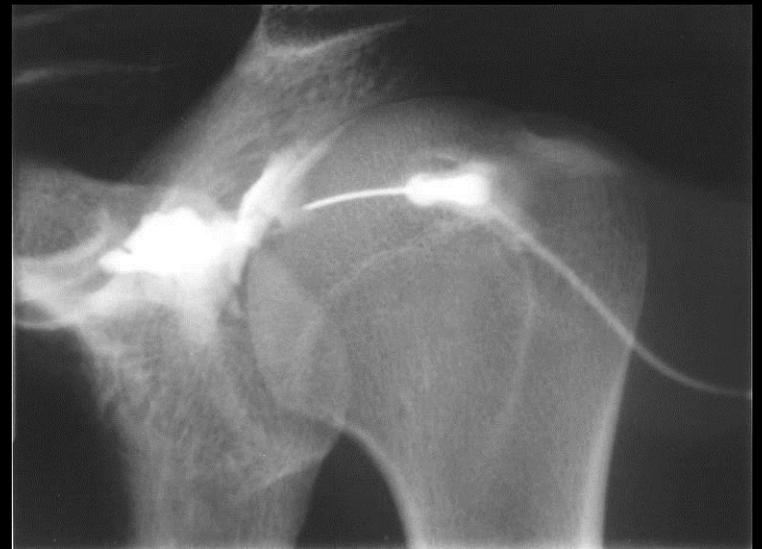
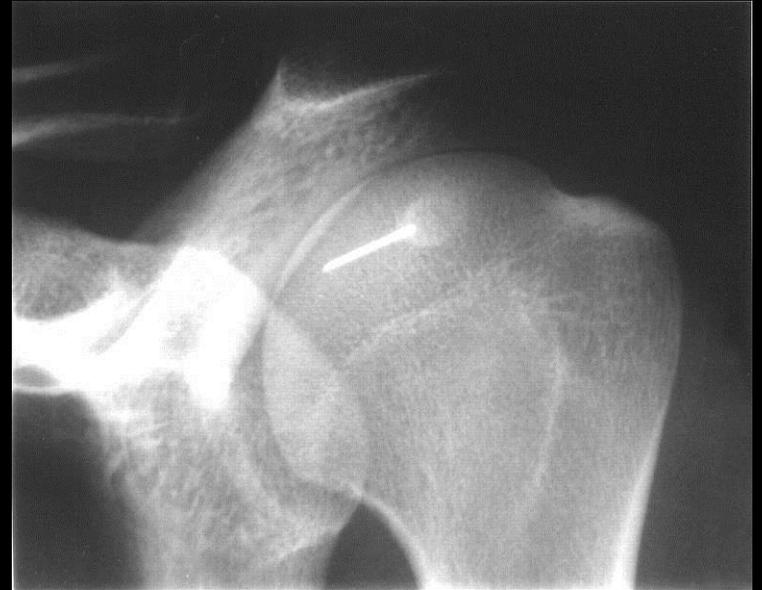
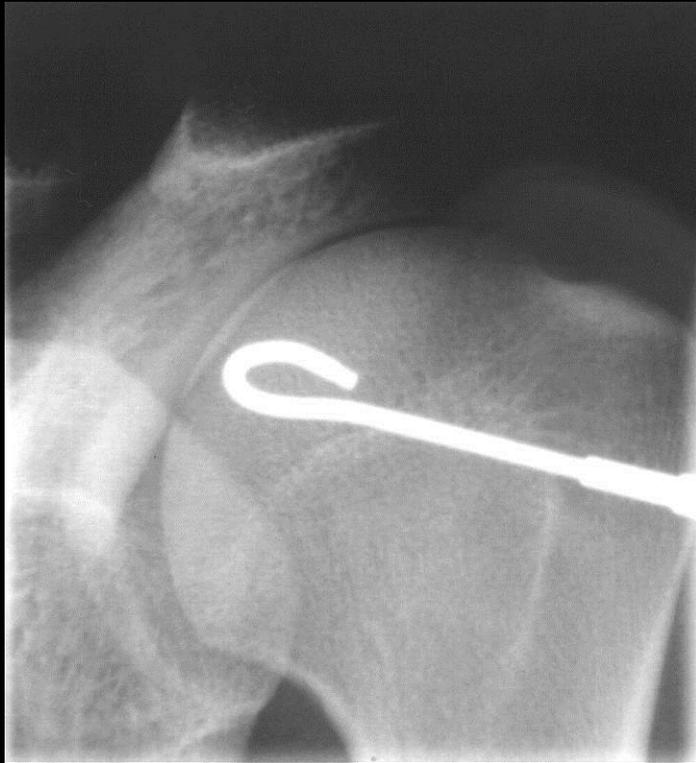
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- Easy
- 38mm needle
- Less pain



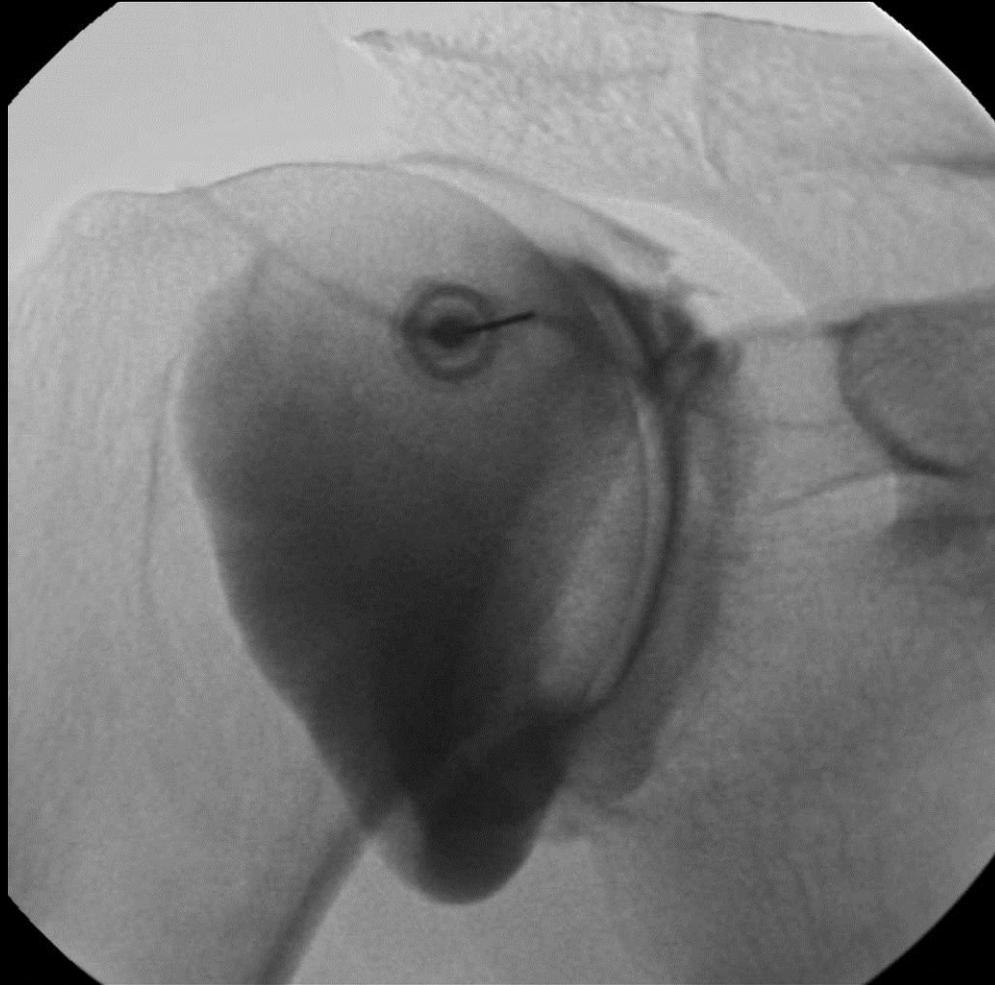
# Rotator Interval Approach

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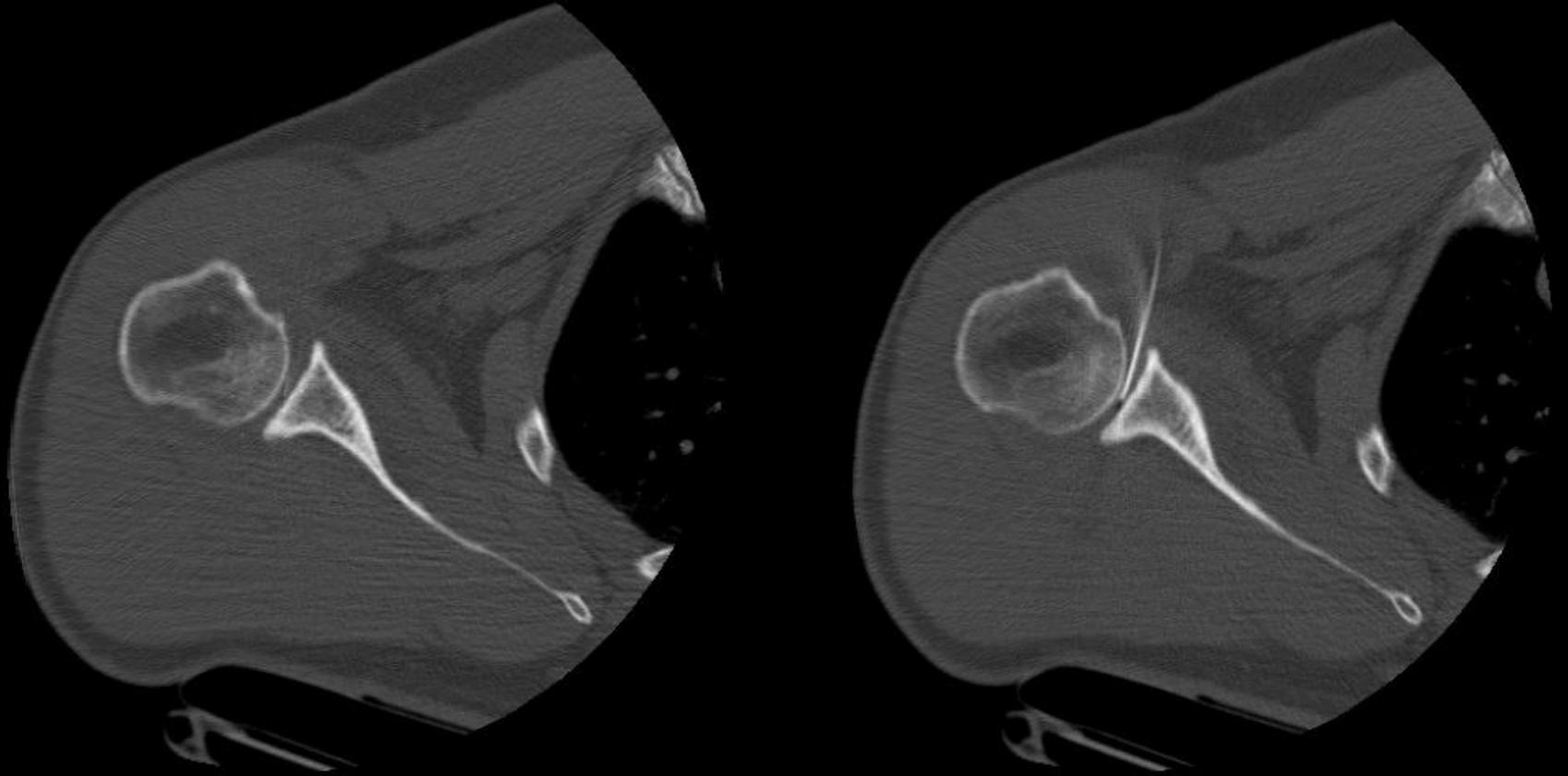
# Rotator Interval Approach

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# CT Method

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# Shoulder Arthrography Radiography

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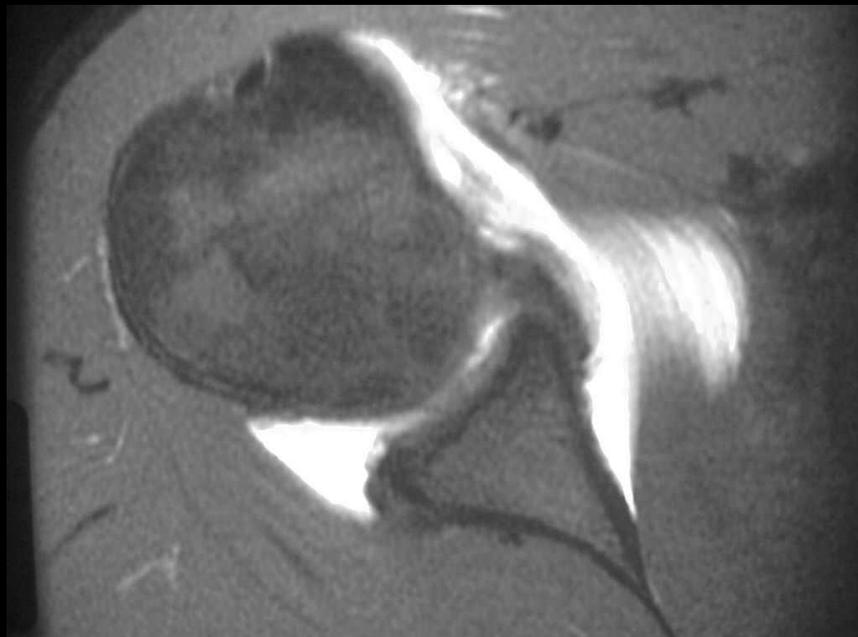
- AP + caudal
  - Internal Rotation
  - External Rotation
  - Traction
  - Abduction
- Lateral Y

# Shoulder air arthrogram

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# MRI Arthrography - ABER



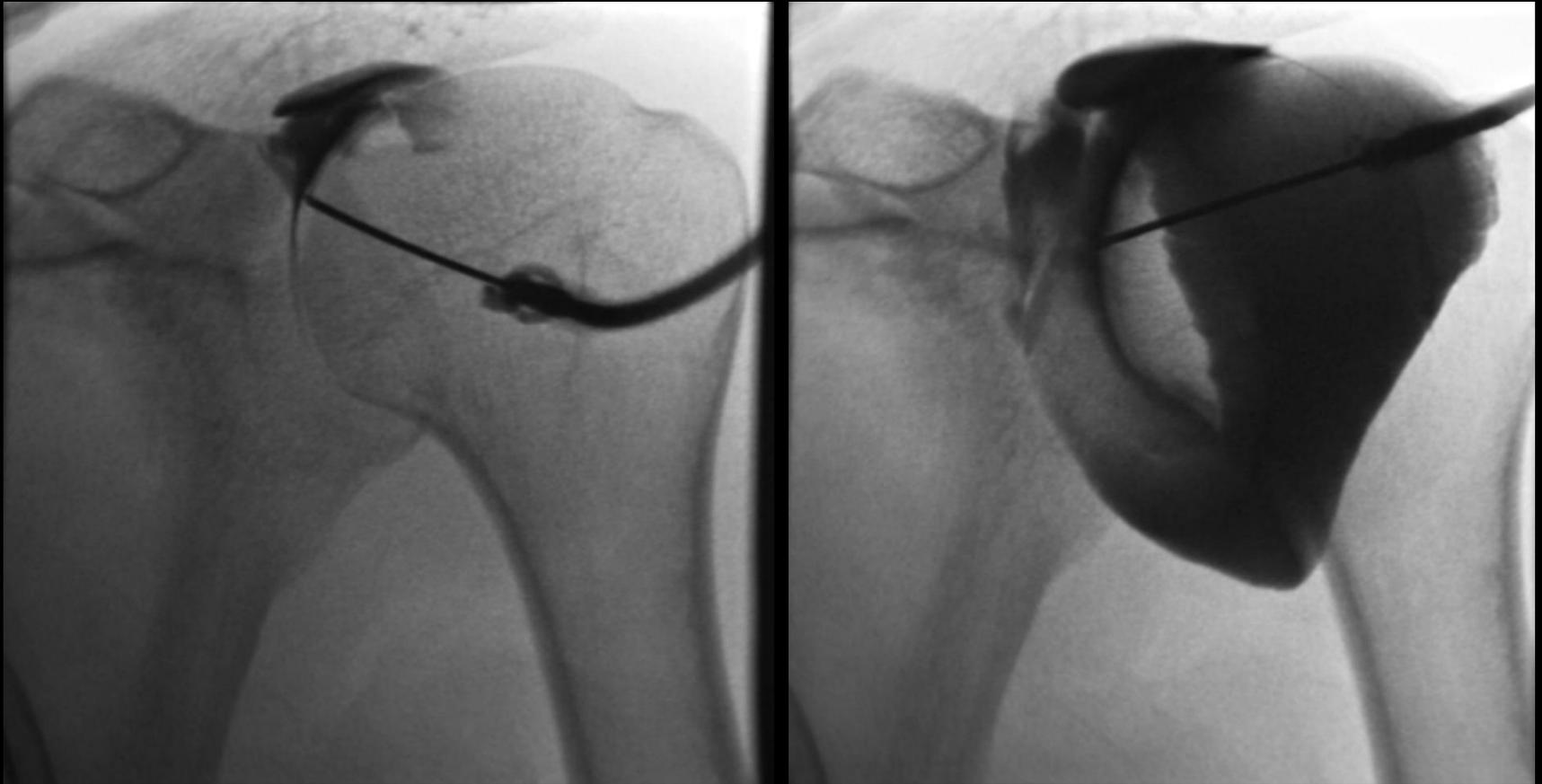
# Briesment

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- Treatment for adhesive capsulitis
- “Time out”
- Check for either F/U or physiotherapy appointment
- Inject 2-3mls LA (wait)
- Inject 40mg Kenalog or equivalent
- Inject dilute contrast 50% 240 slowly and intermittently
- Record comfortable volume
- Carry on distending joint until it ruptures/leaks

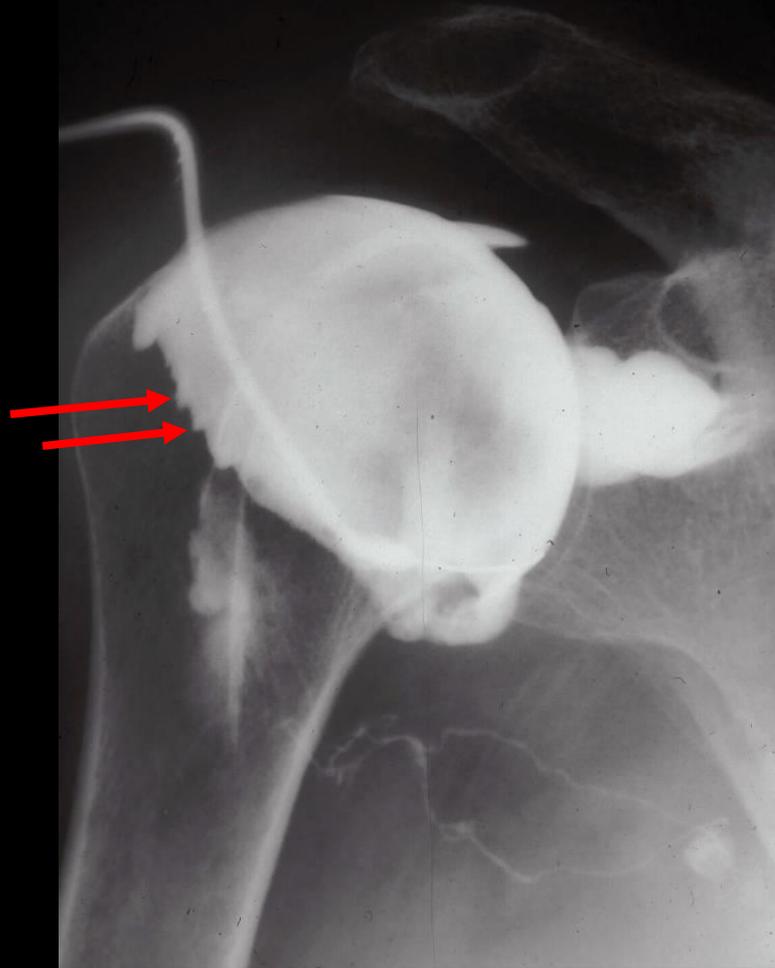
# Briesment

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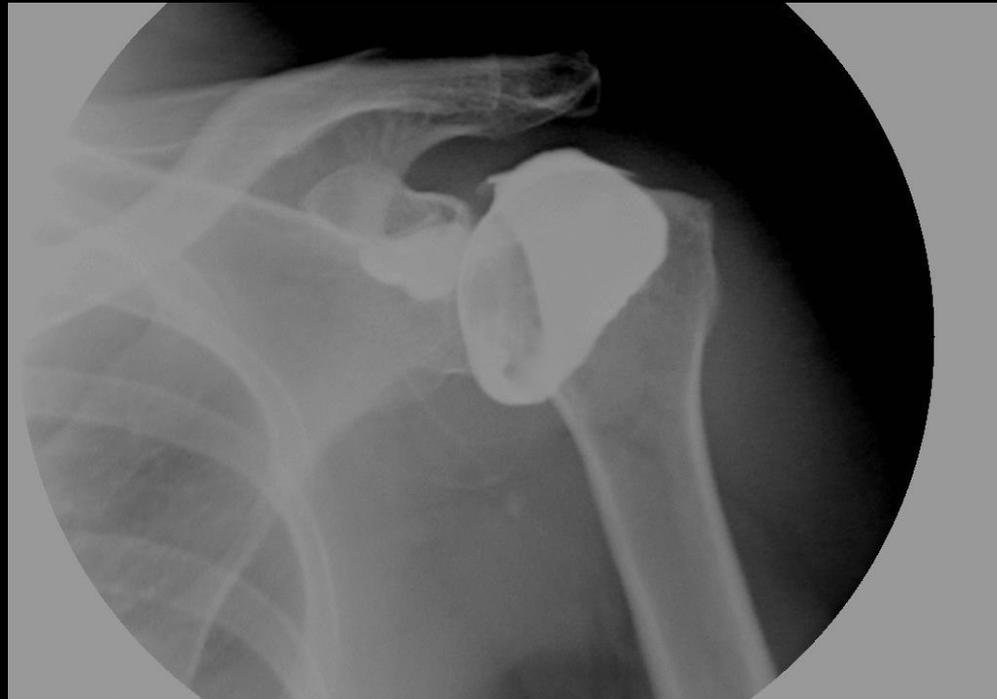
# Shoulder Arthrography - Pathology

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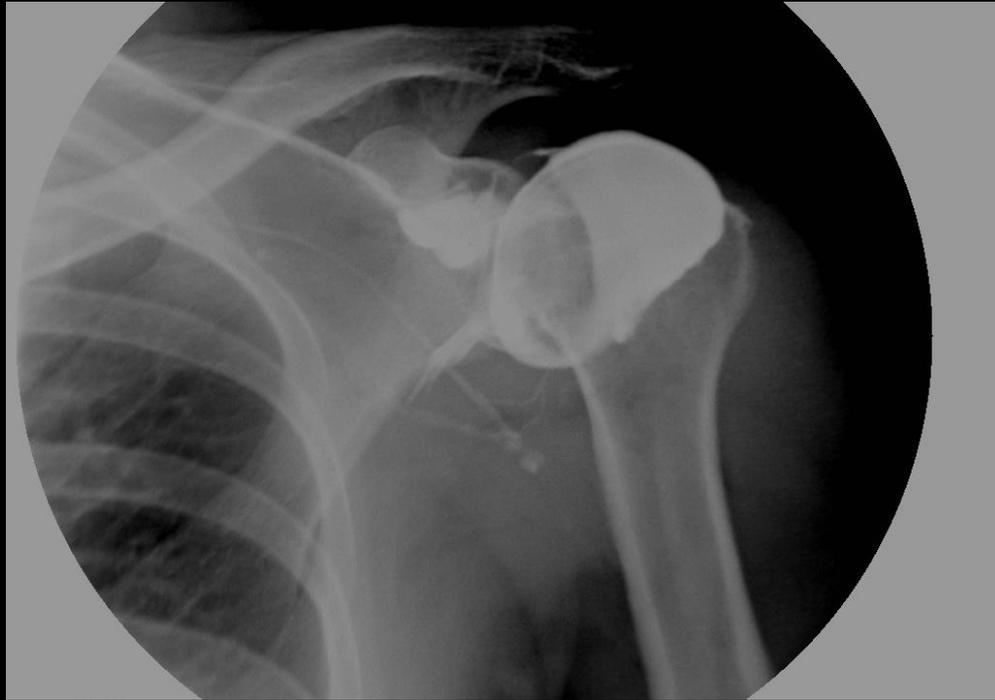
# Shoulder Arthrography - Pathology

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# Shoulder Arthrography - Pathology

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# Elbow Arthrography - Indications

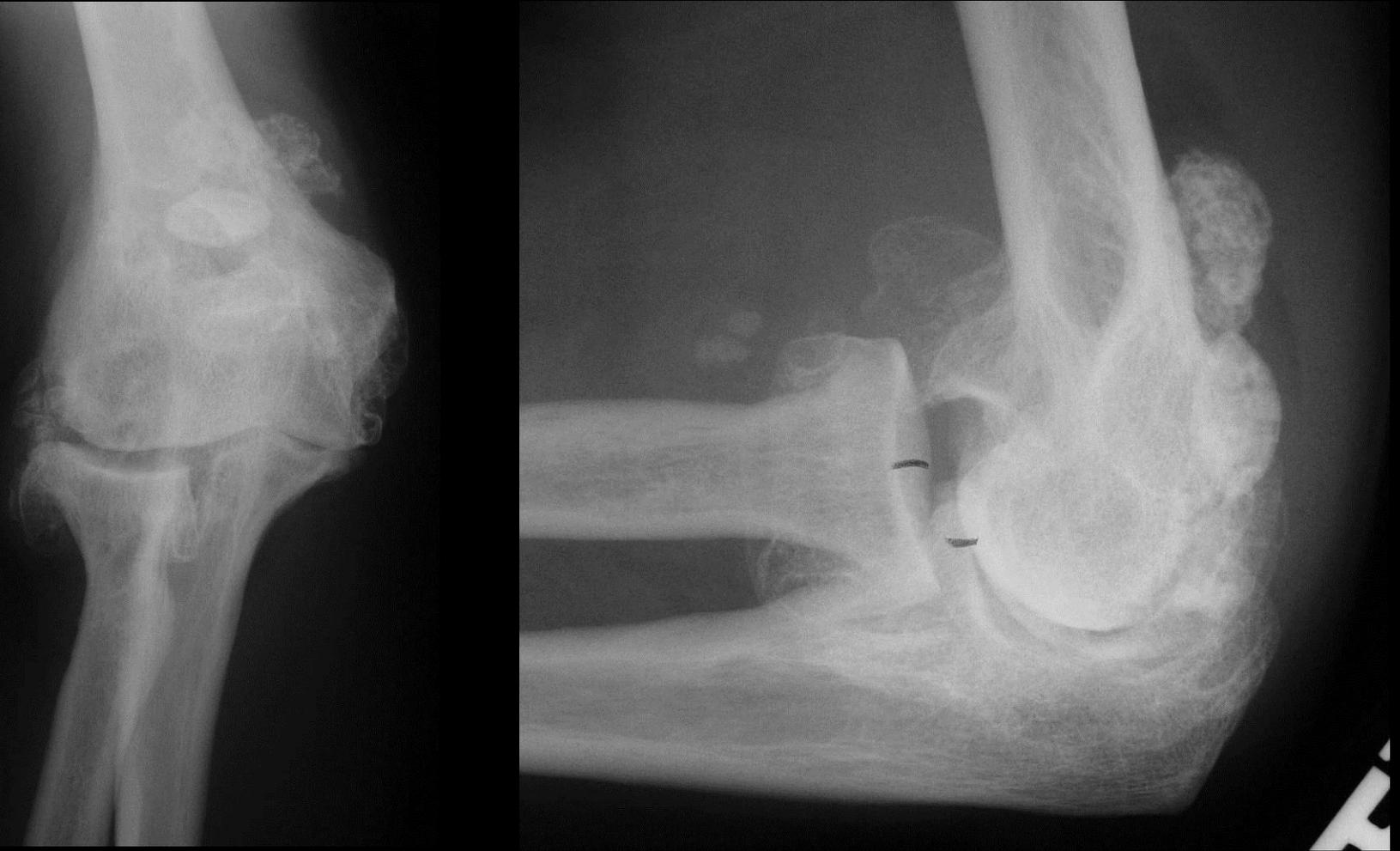
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- IA bodies
- Internal derangement



# Elbow Arthrography - Indications

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# Elbow Arthrography - Technique

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- Hand on tummy
- Neutral rotation
- Pad under elbow
- 38mm 21-23G



# Elbow Arthrography - Technique

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- Prone
- Arm above head



# Elbow Arthrography - Technique

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- Sitting on chair
- Arm on table



# Elbow Arthrography - Technique

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# Elbow Arthrography - Technique

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# Elbow Arthrography - Technique

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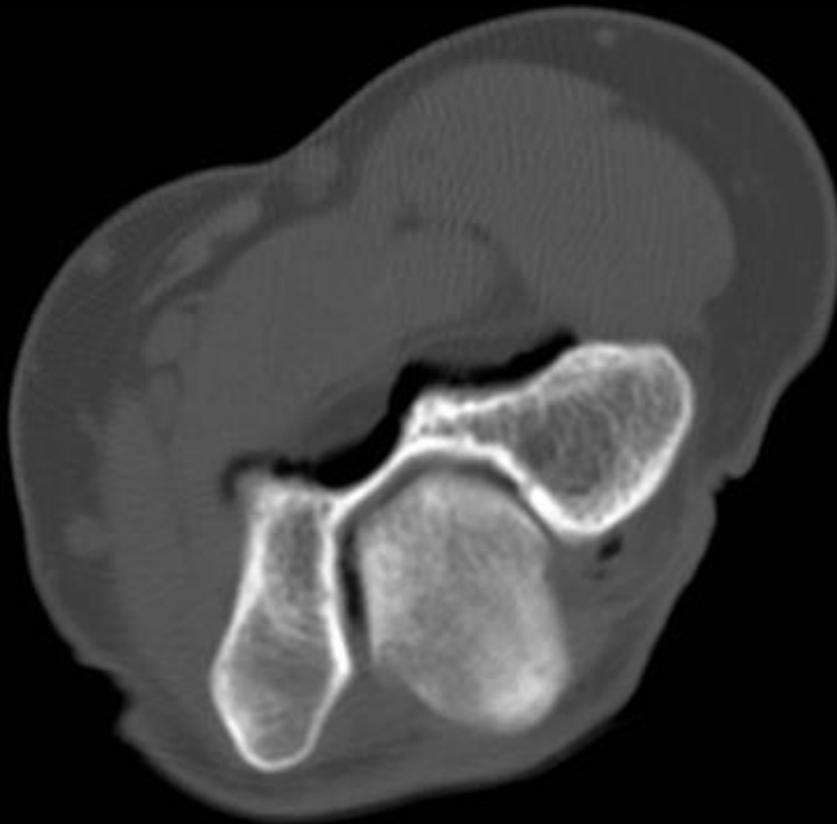
# Elbow Arthrography - Technique

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# Elbow Arthrography - Technique

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# Elbow Arthrography - Technique

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# Elbow Arthrography - Pathology

- AP
- Lateral



IA bodies



RhA synovial cyst

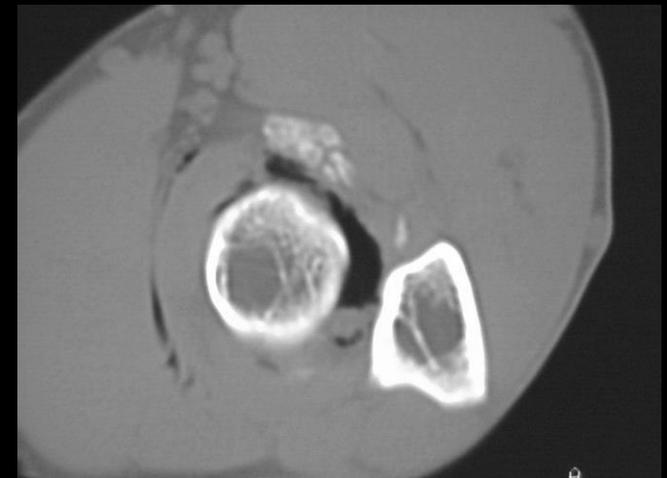
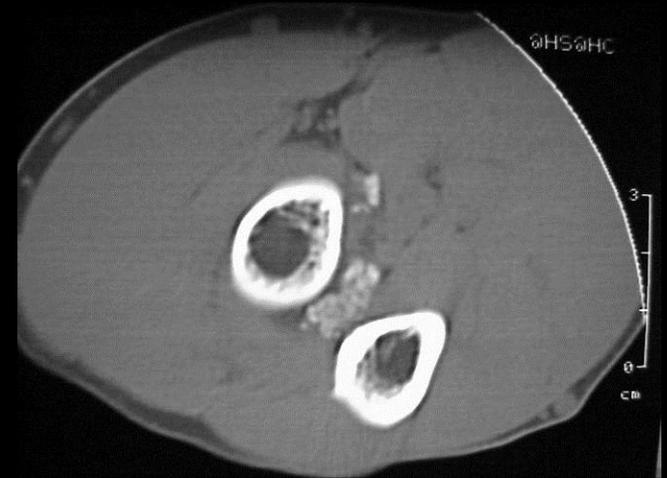
# Elbow Arthrography - CT

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- Arm above head
- Avoid scanning in plane of radius and ulna
- Scan all injected contrast + or –
- <1 mm
- Recon all 3 orthogonal planes of elbow
- Less good – arm by side

# Elbow Arthrography - Pathology

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Synovial osteochondromatosis

# Wrist Arthrography - Indications

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- Intercarpal ligaments.
- Triangular fibrocartilage
- Scaphoid nonunion
- Soft tissue ganglia
- Wrist prosthesis



# Wrist Arthrography - Indications

---

- Intercarpal ligaments
- Triangular fibrocartilage
- Scaphoid nonunion
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# Wrist Arthrography - Indications

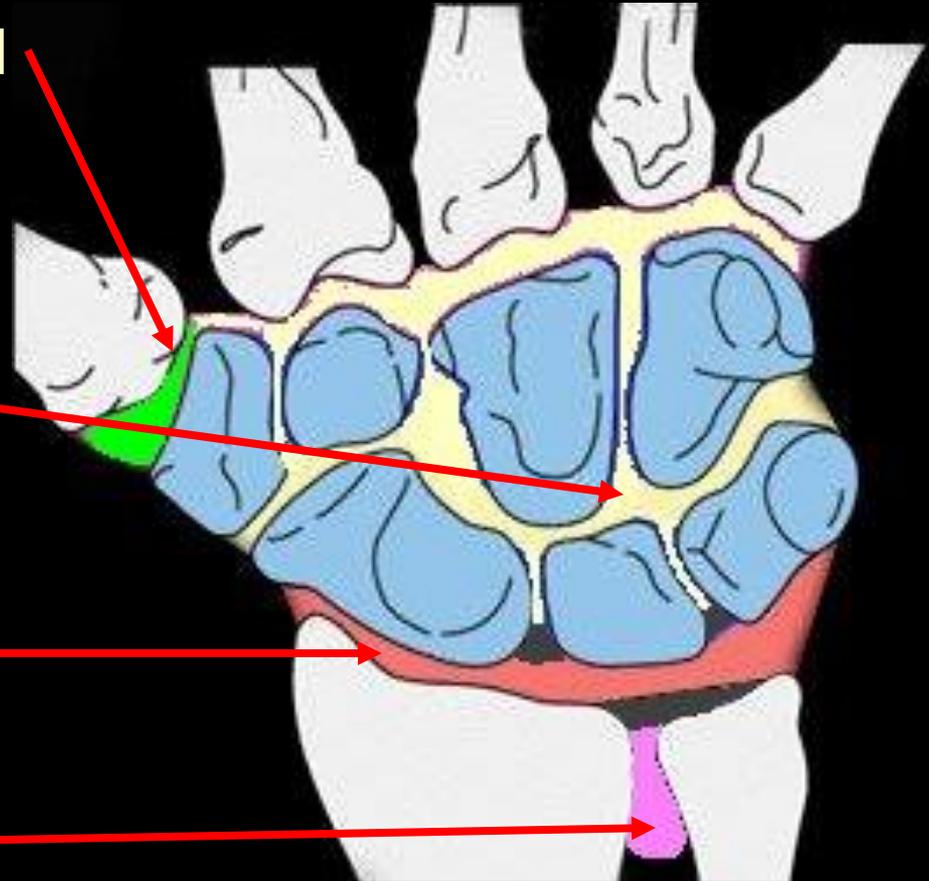
---

- Intercarpal ligaments
- Triangular fibrocartilage
- Scaphoid nonunion
- Soft tissue ganglia
- Wrist prosthesis



# Wrist compartments

- First carpometacarpal
- Midcarpal, which communicates with common carpometacarpal
- Distal radioulnar
- Radiocarpal



Target sites

# Wrist compartments

---



# Wrist compartments

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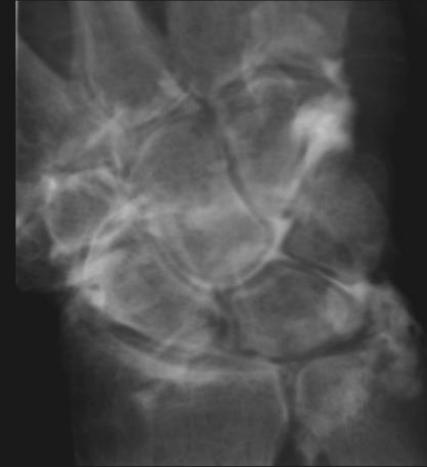
# Wrist compartments

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# Wrist compartments

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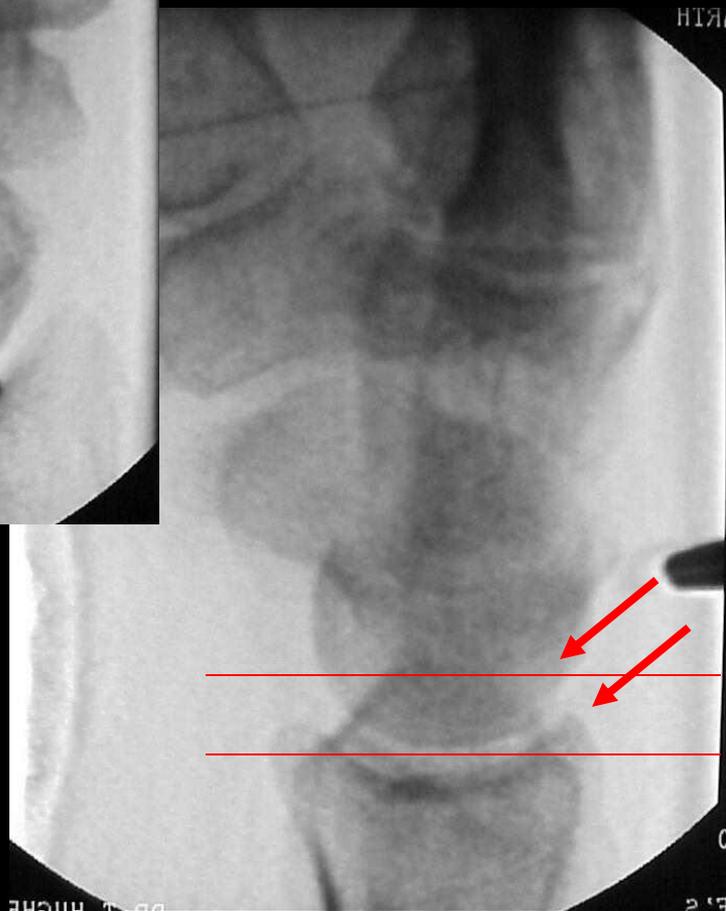
# Wrist arthrography

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- Controversy about which compartments and how many compartments need to be injected
- Most common single injection is radiocarpal



# Wrist arthrography - Technique 1



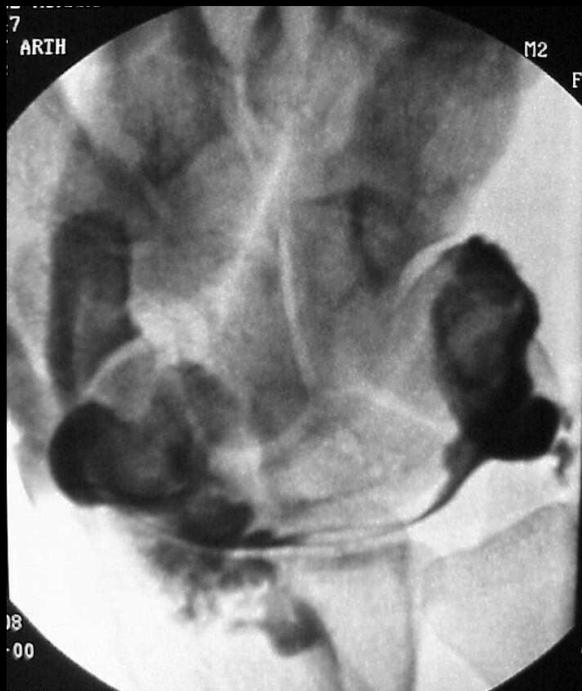
# Wrist arthrography - Technique 2

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# Wrist arthrography - Technique 3

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Palmar flexion



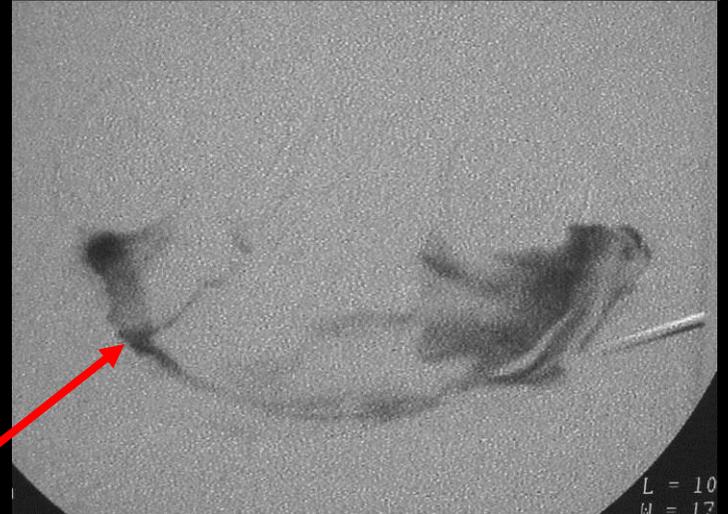
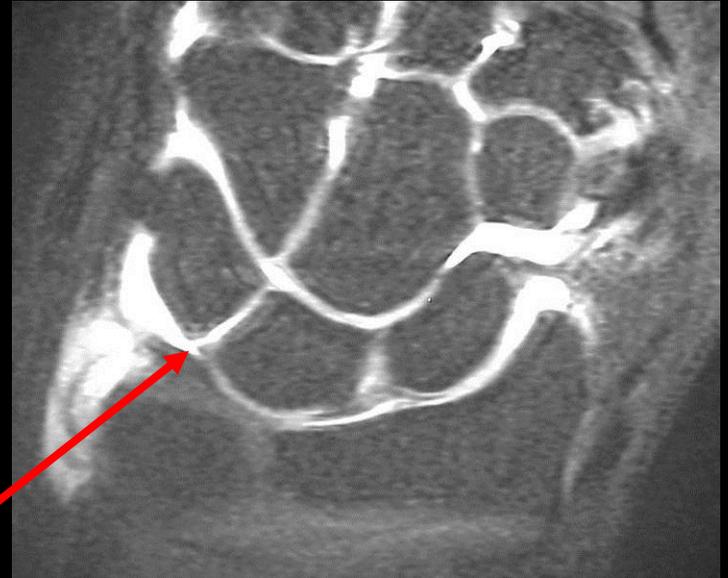
Radial deviation



Ulna deviation

# Arthrographic technique

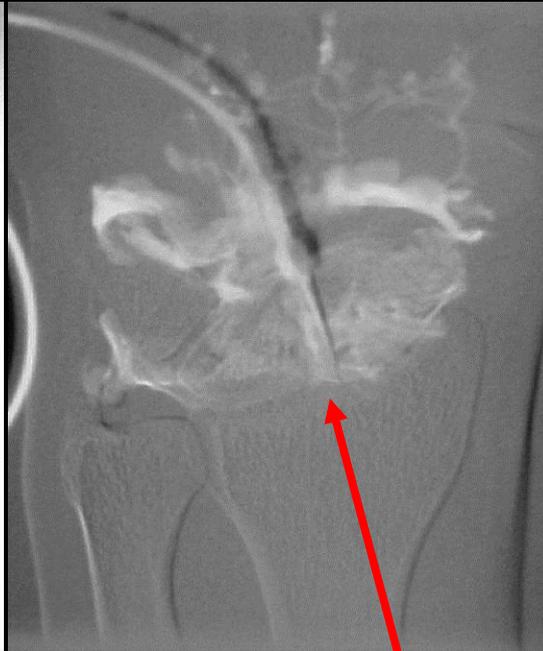
- Radioscaphoid
- Always obtain plain film series
- DSA 1 frame/sec preferred



Lunotriquetral ligament perforation

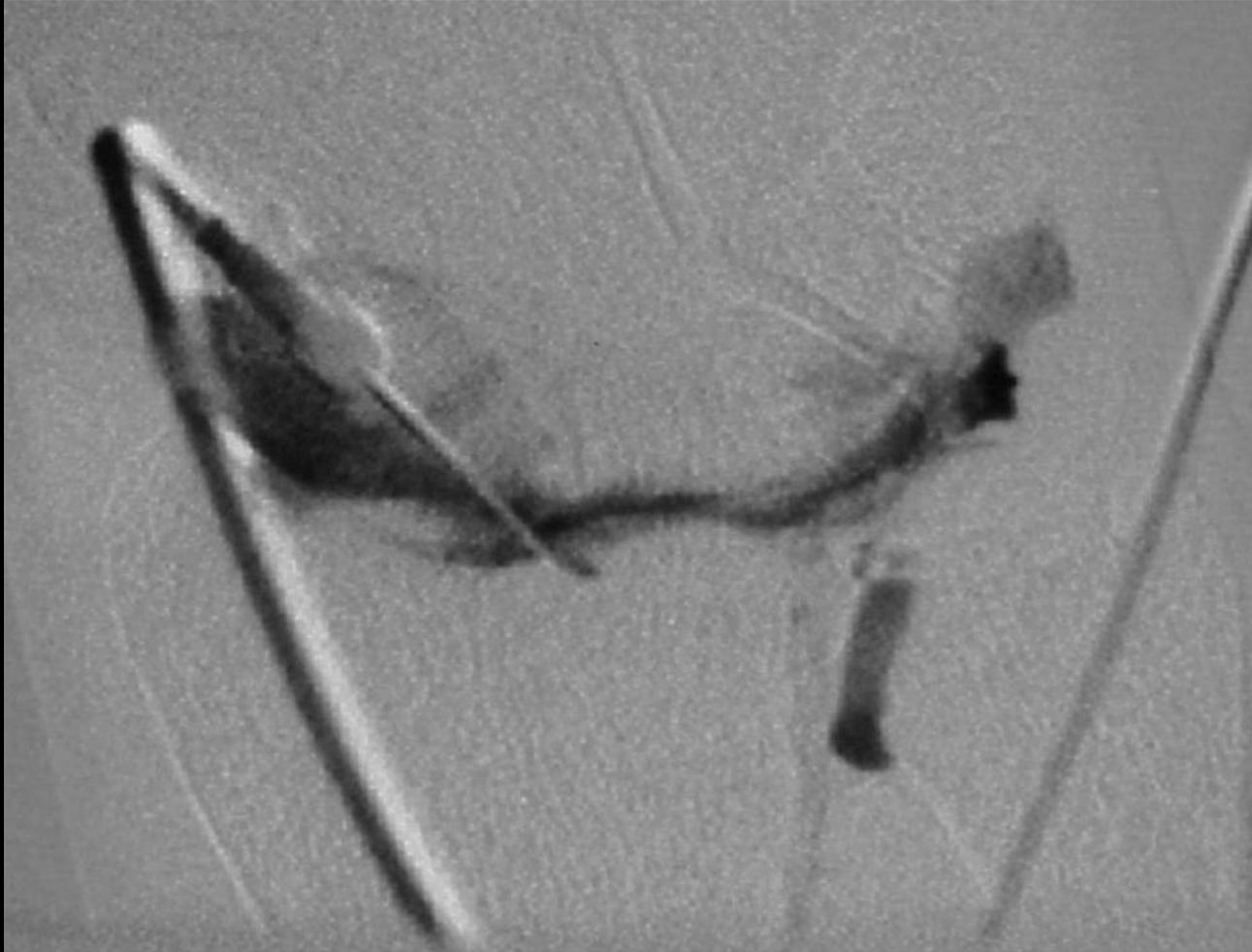
# Wrist Arthrography - DSA

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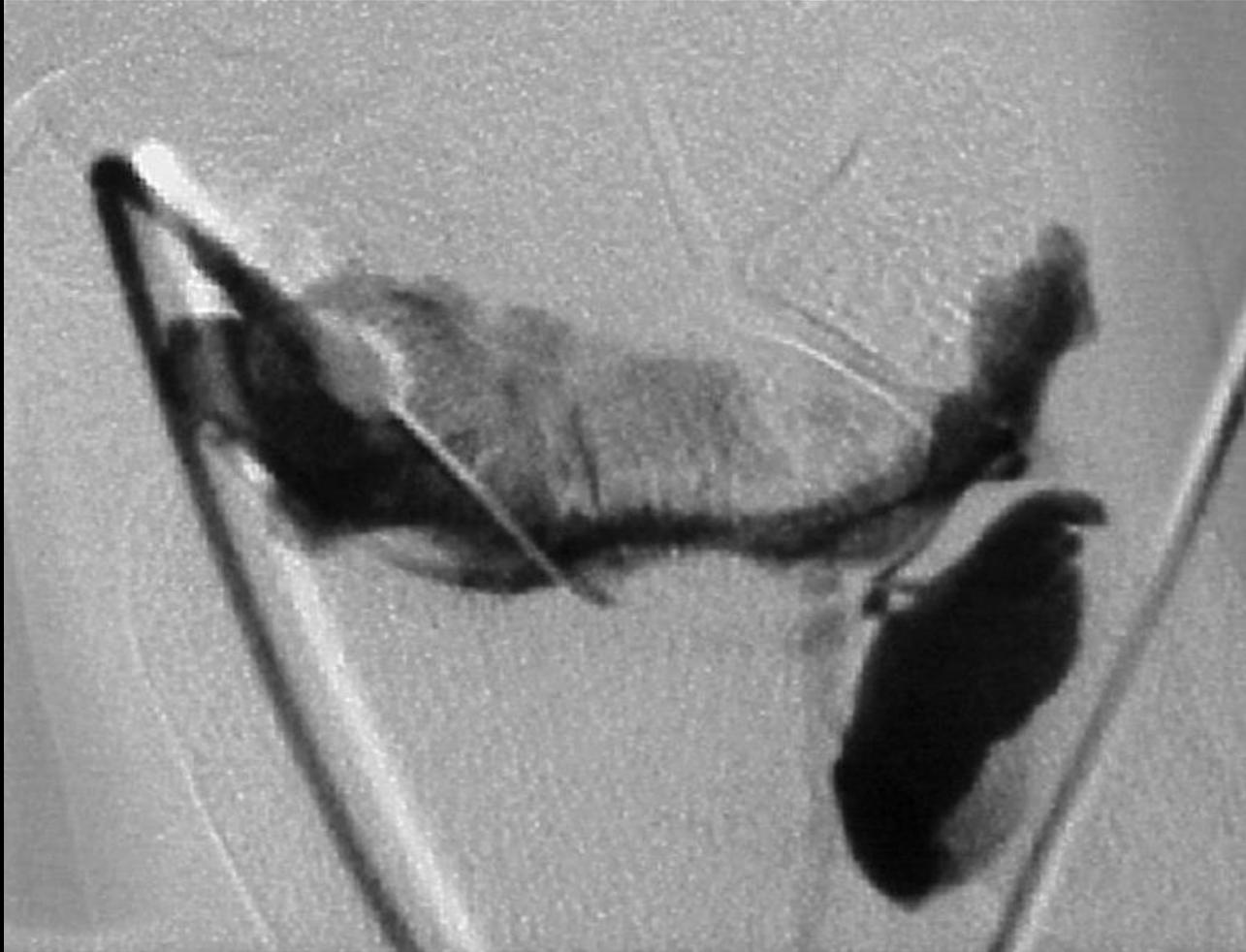
# Wrist Arthrography - DSA

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# Wrist Arthrography - DSA

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# Wrist Arthrography - DSA

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# Wrist Arthrography - DSA

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# Wrist Arthrography - Distension

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# Wrist Arthrography - Distension

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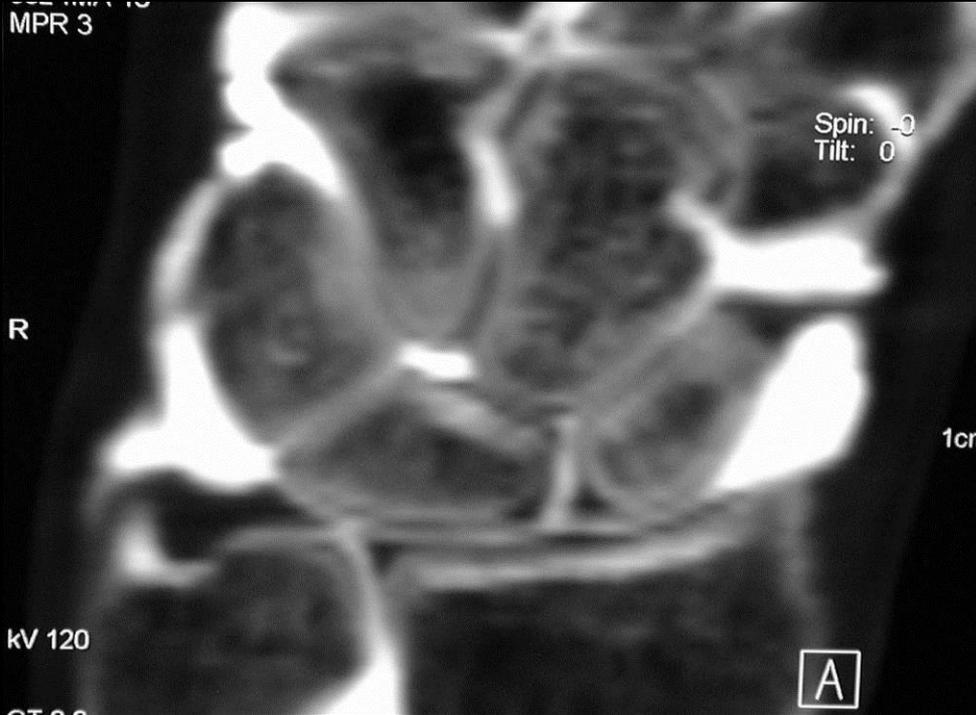
# Wrist Arthrography - Distension

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# Wrist Arthrography

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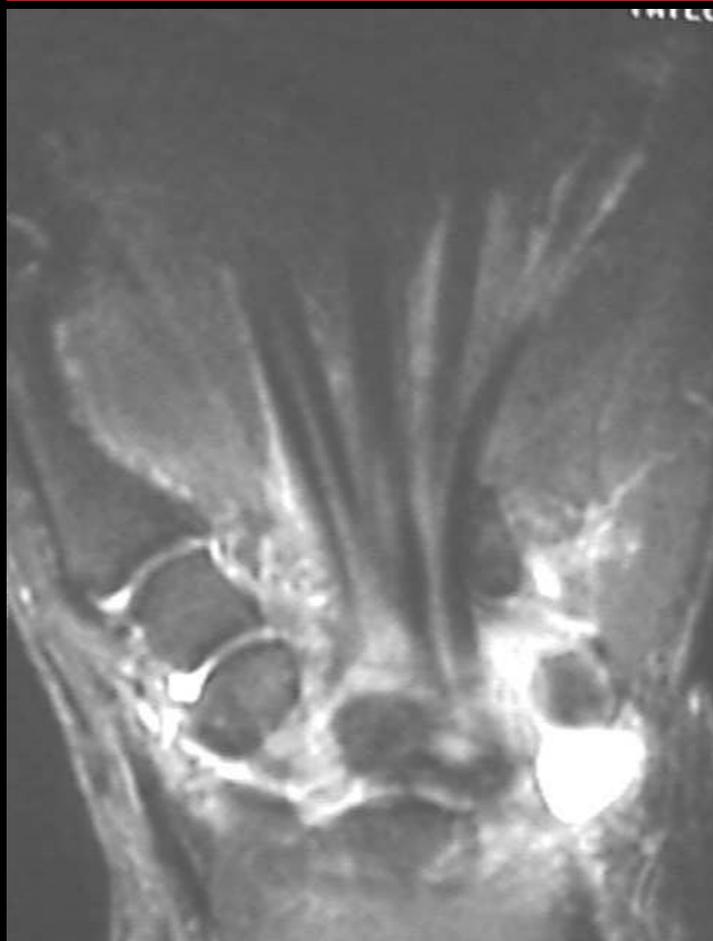


CT arthrography



MR arthrography

# Wrist Indirect Arthrography



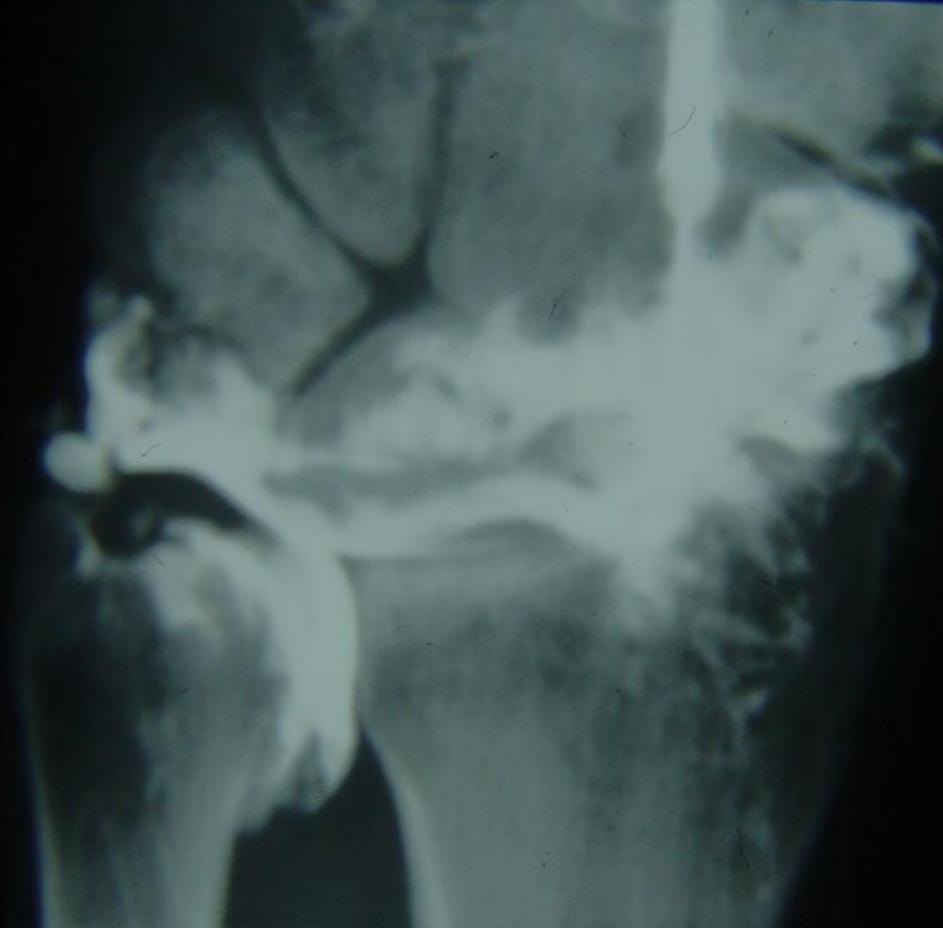
Cor T2FS



Cor T1FS IV Gd

# Wrist Arthrography - Pathology

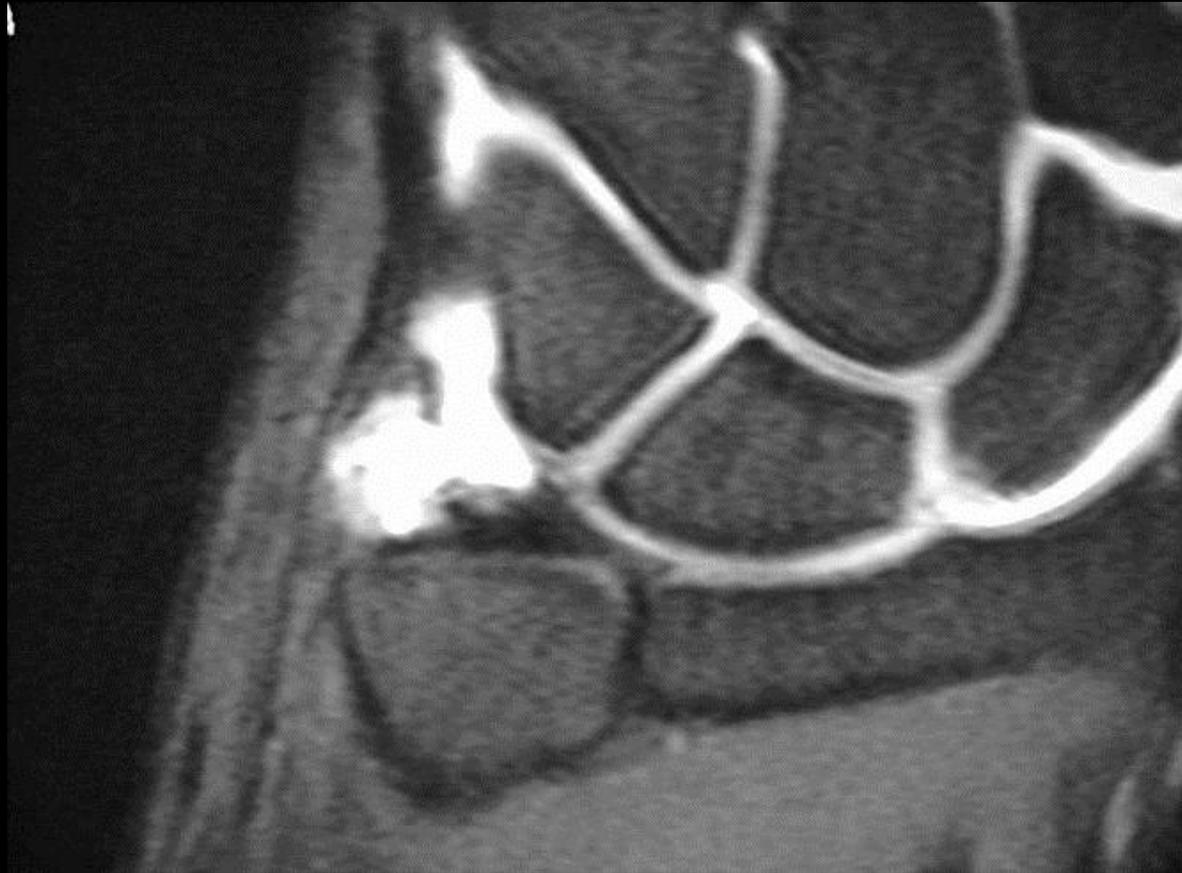
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Gout synovitis

# Wrist Arthrography - Pathology

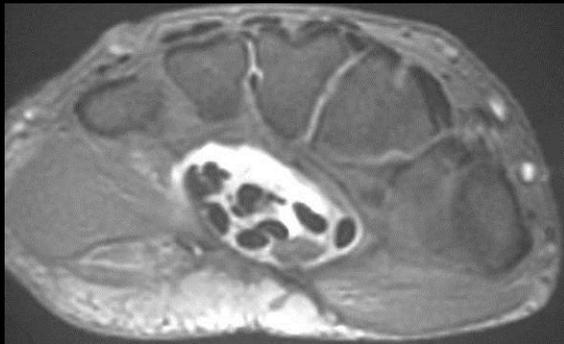
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TFCC ulna disruption T1FSGd

# Wrist Arthrography - Pathology

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# STTJ

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# 3<sup>rd</sup> CMCJ

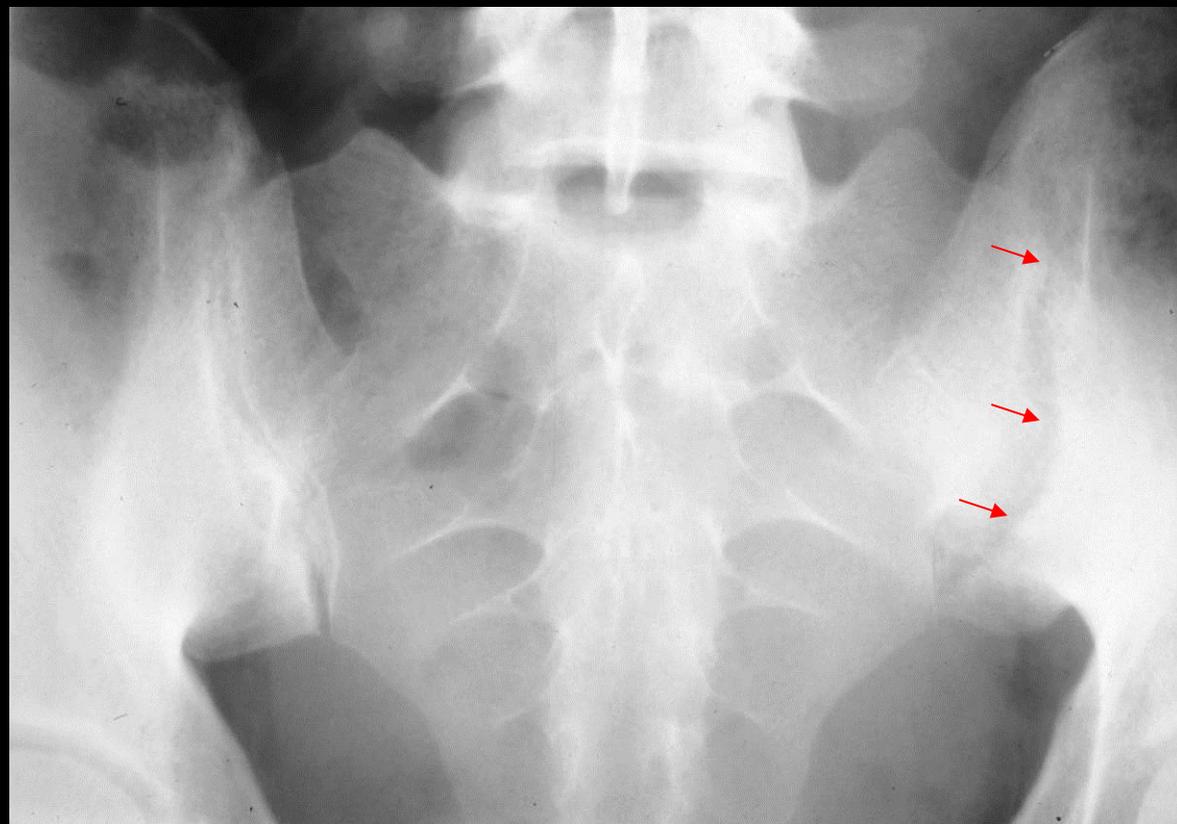
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# SIJ Arthrography - Indications

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- Usually steroid injection, or aspirate for infection



# SIJ Arthrography - Technique

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- Remember anatomy
- Joints close together posterior
- Wide apart anterior
- Patient prone
- Fluoro - Roll onto side of interest to line up joint
- Aim for inferior joint

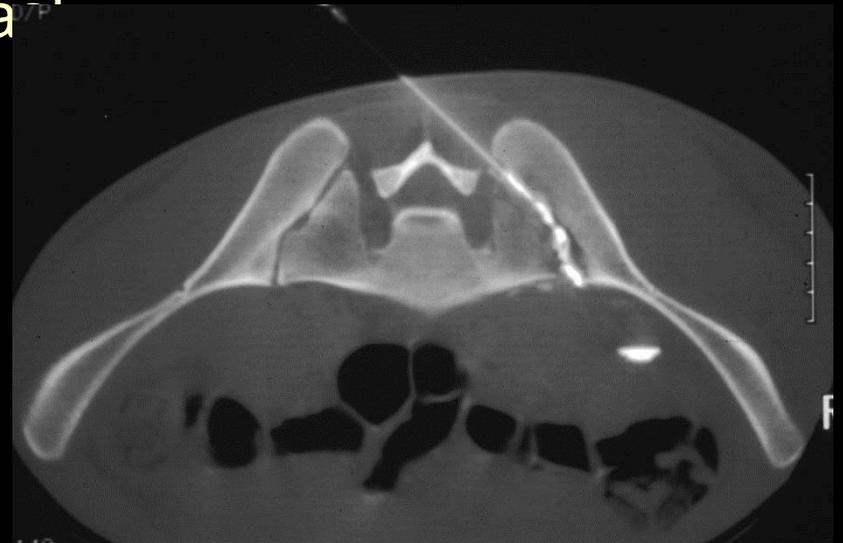


SIJ septic arthritis with psoas abscess

# SIJ Radiography

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- Radiography
  - Show distribution of contrast
- CT
  - Scan - Joint top to bottom
  - + any extravasated contrast

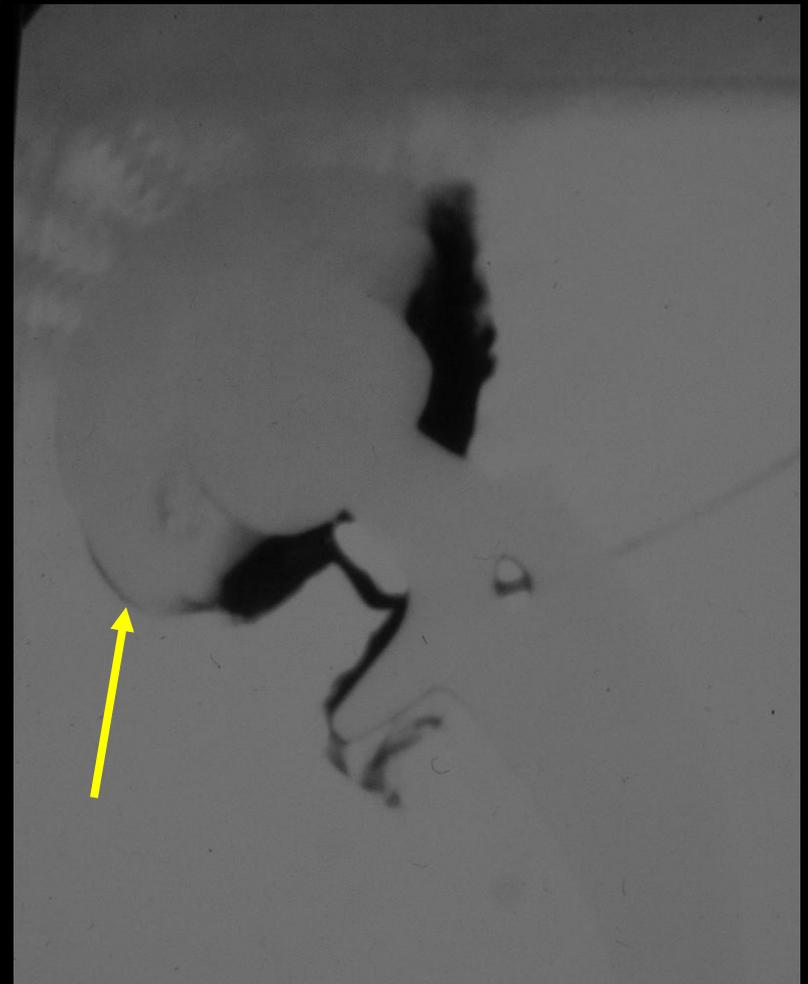


SIJ septic arthritis with psoas abscess

# Hip Arthrography - Indications

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- Labral pathology with MRI
  - Tear
  - Paralabral cyst
  - DDH
- Steroid injection
- Post THR for loosening/infection
- Fistula confirmation
- Intraarticular bodies



Early loosening of acetabular component

# Hip Arthrography - Positioning

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- Patient supine
- 15 degrees internal rotation of the hips
  - Toes taped together
- Knees slightly bent
  - Pillow under the knees



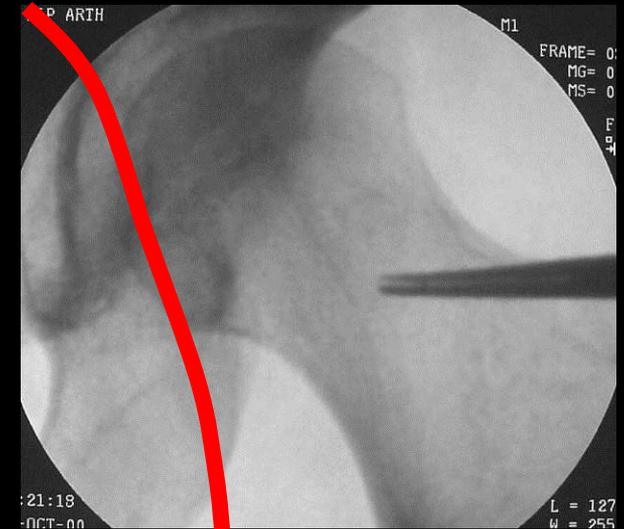
# Hip Arthrography - Technique

- Feel artery
- Draw artery on skin
- Nerve lateral to artery
- Mark mid neck
- Mark intertrochanteric
- Aim in line of femoral neck



# Hip Arthrography - Technique

- Feel artery
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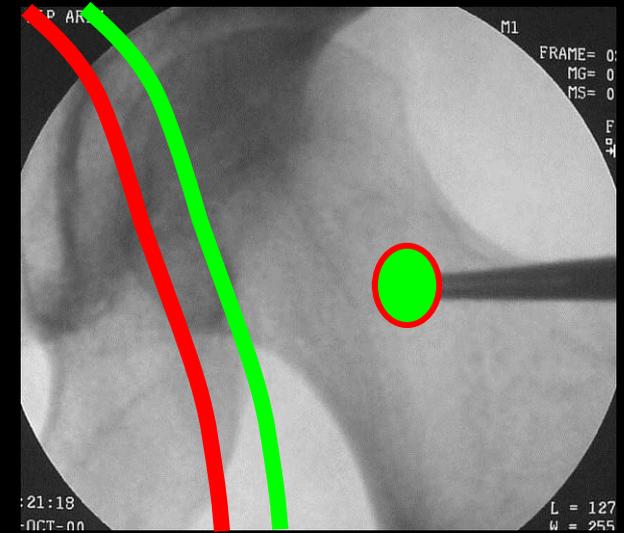
# Hip Arthrography - Technique

- Feel artery
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- Mark mid neck
- Mark intertrochanteric
- Aim in line of femoral neck



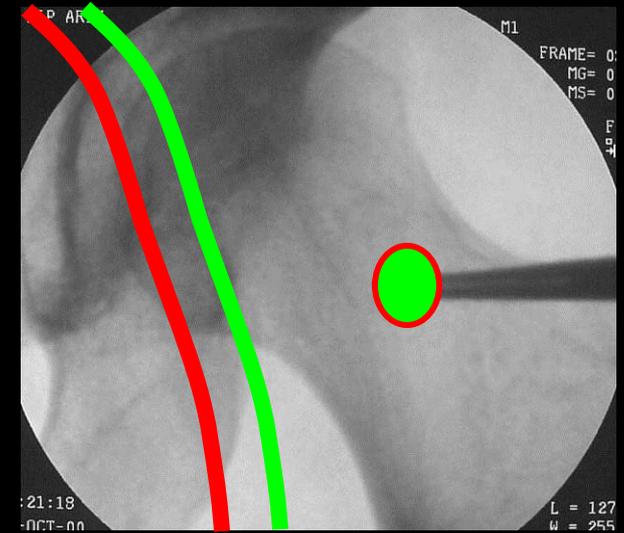
# Hip Arthrography - Technique

- Feel artery
- Draw artery on skin
- Nerve lateral to artery
- **Mark mid neck**
- Mark intertrochanteric
- Aim in line of femoral neck



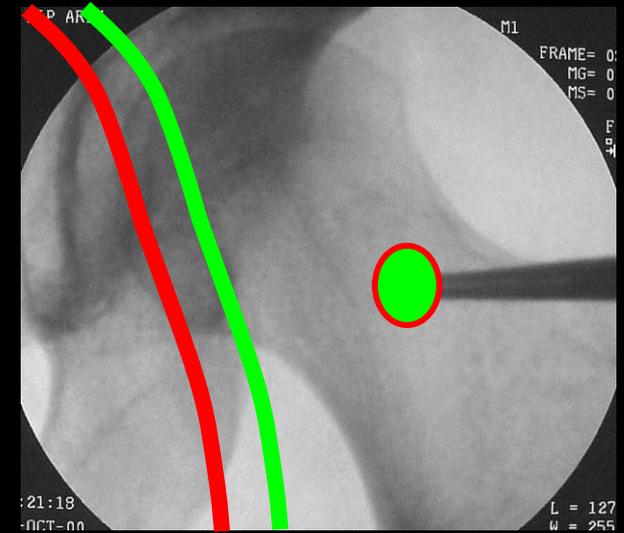
# Hip Arthrography - Technique

- Feel artery
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# Hip Arthrography - Technique

- Feel artery
- Draw artery on skin
- Nerve lateral to artery
- Mark mid neck
- Mark intertrochanteric
- Aim in line of femoral neck



# Needle

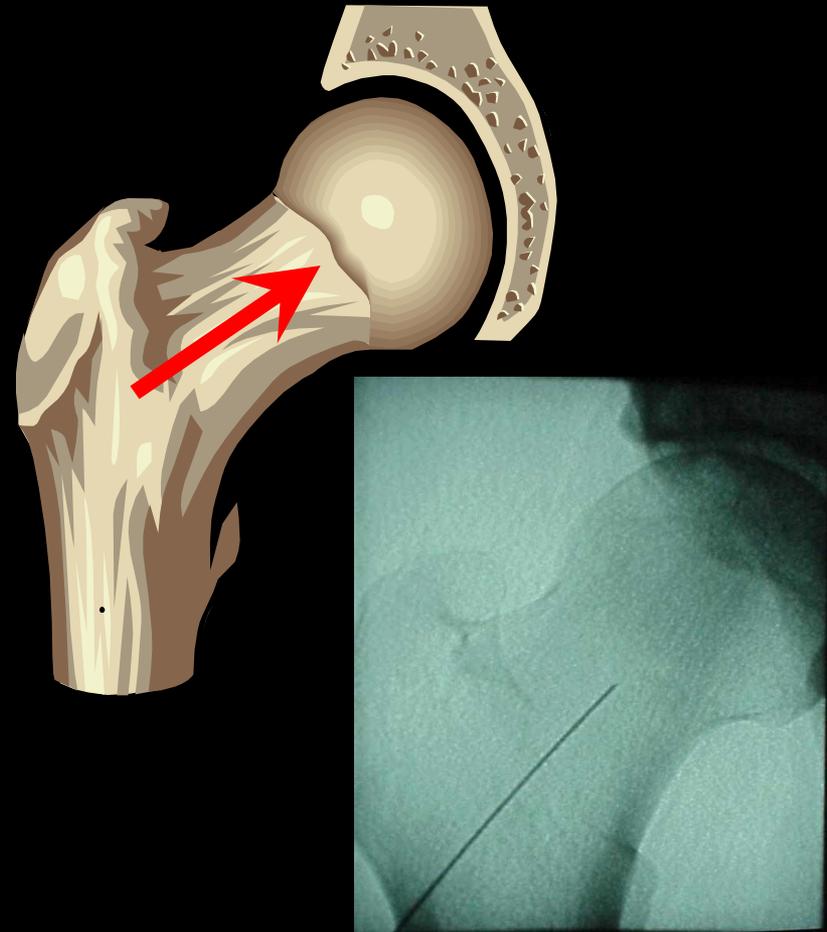
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- Injection
  - 22G or 20G
- Aspiration
  - 20G or 18G
- Keep your finger on the tip of the stylet

# Hip Arthrography - Technique

---

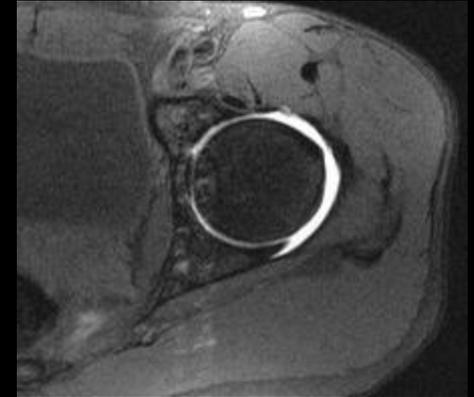
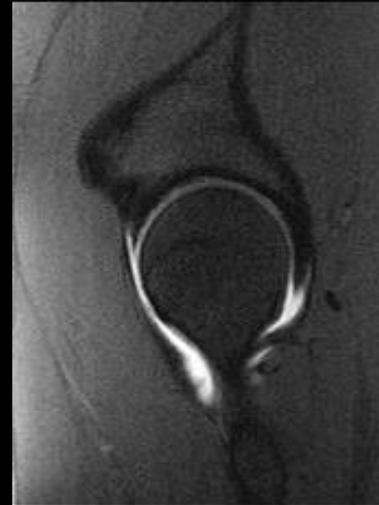
- Local anesthesia
- Anterolateral approach to femoral head-neck junction
- Confirm needle position with  $<1$  cc contrast
- Inject 12 cc of diluted Gd-DTPA



# MR Hip Arthrography - Sequences

---

- Inject 12-15 cc of 1:200 Gd-DTPA
- 3 planes of imaging with T1 fat-sat
- Coronal IR or T2-w FSE
- Axial T1

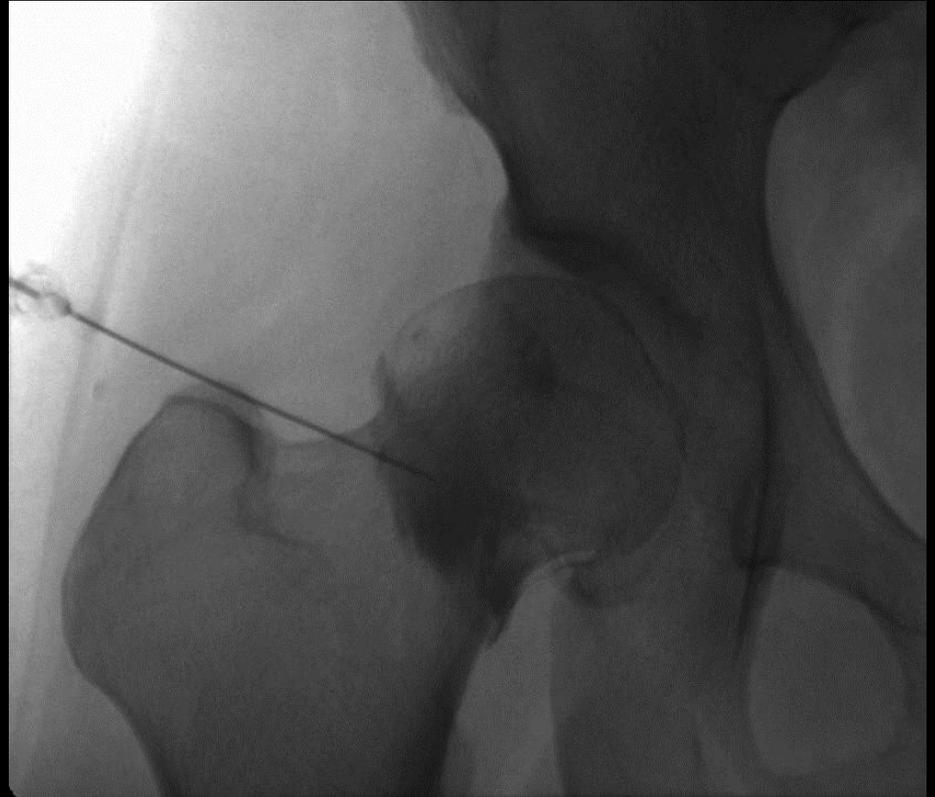


# Hip Arthrography

## Lateral Oblique Approach

---

- Lateral Oblique
- Inferior Oblique
- Medial
- Lateral



Is the needle anterior or posterior to femoral neck?

# Hip Arthrography

## Inferior Oblique Approach

---

- Lateral Oblique
- Inferior Oblique
- Medial
- Lateral

Stay over bone, can't miss bone



# Hip Arthrography Medial Approach

---

- Lateral Oblique
- Inferior Oblique
- Medial
- Lateral

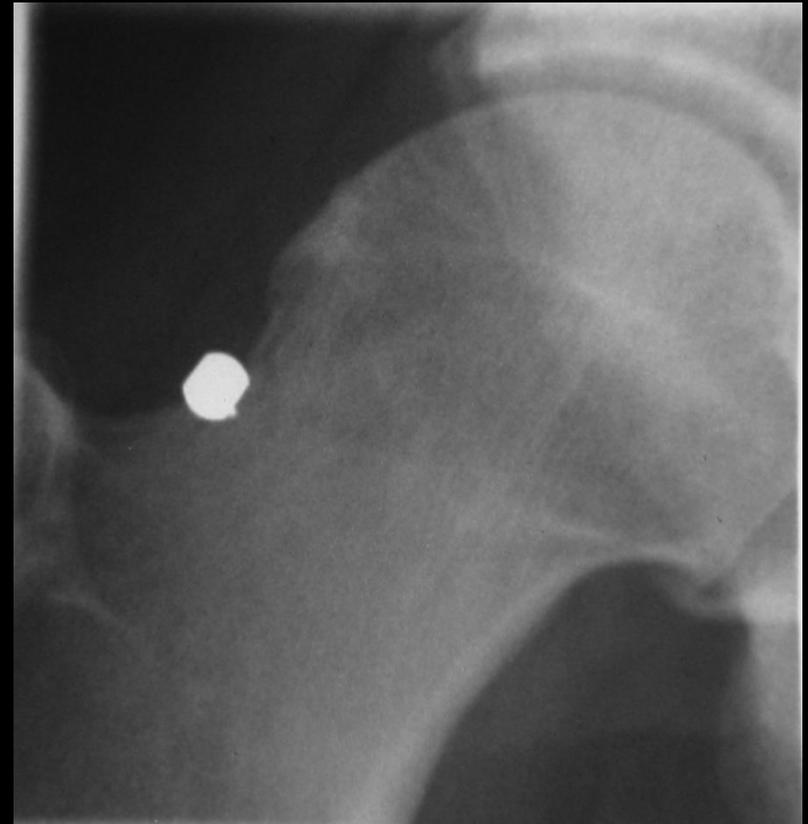
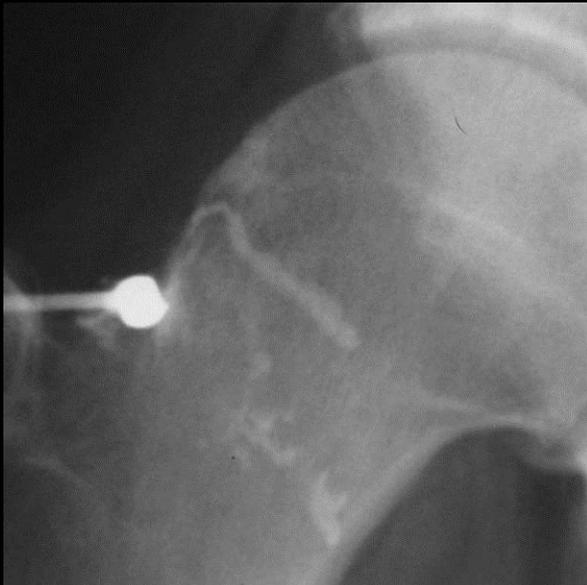


Very close to femoral artery/nerve

# Hip Arthrography Lateral Approach

---

- Lateral Oblique
- Inferior Oblique
- Medial
- Lateral

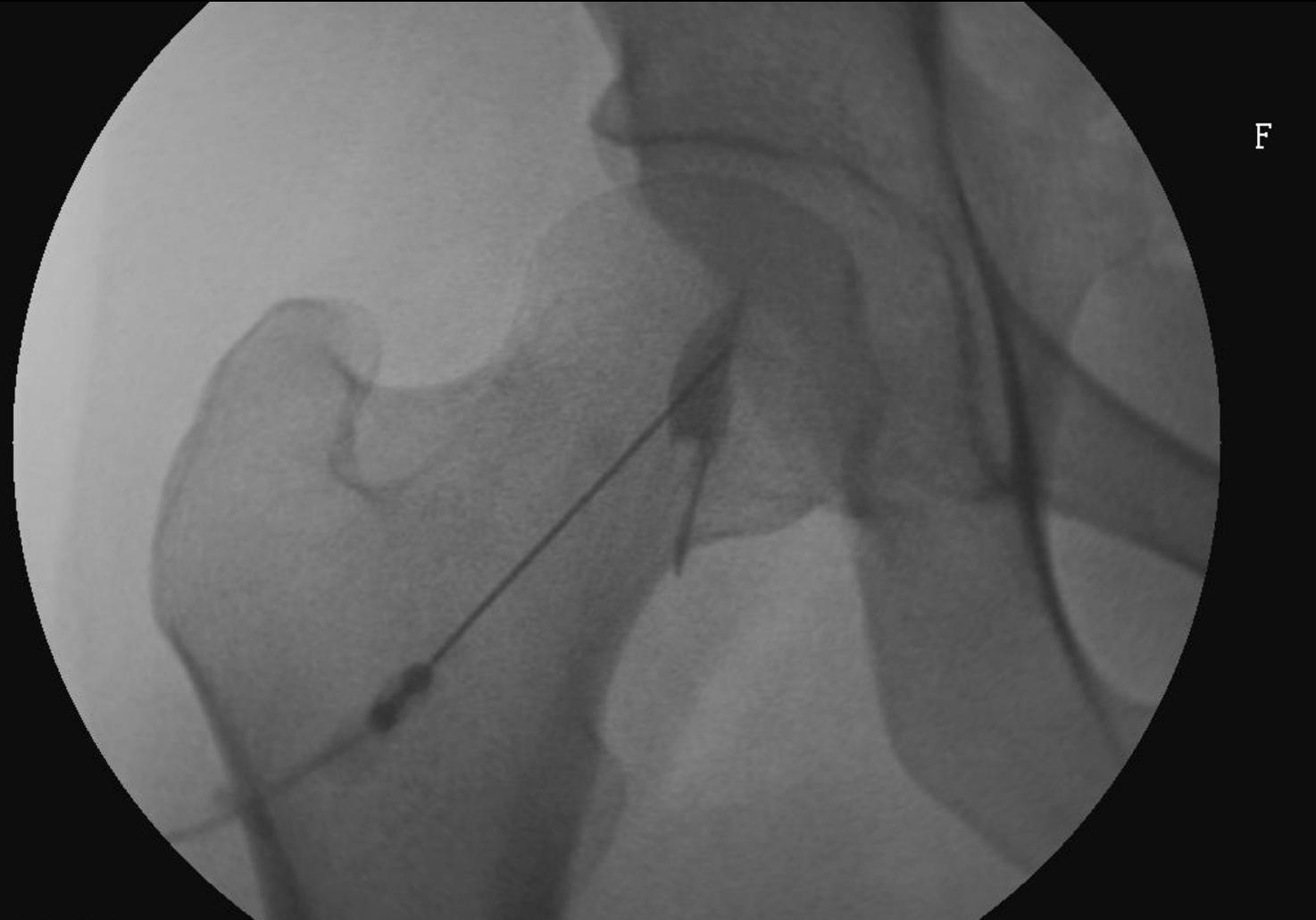


Less worry about femoral nerve and artery, but miss bone could hit Sciatic nerve

# Hip Arthrography

## Where is this contrast?

---



# Hip Arthrography - Approach

---

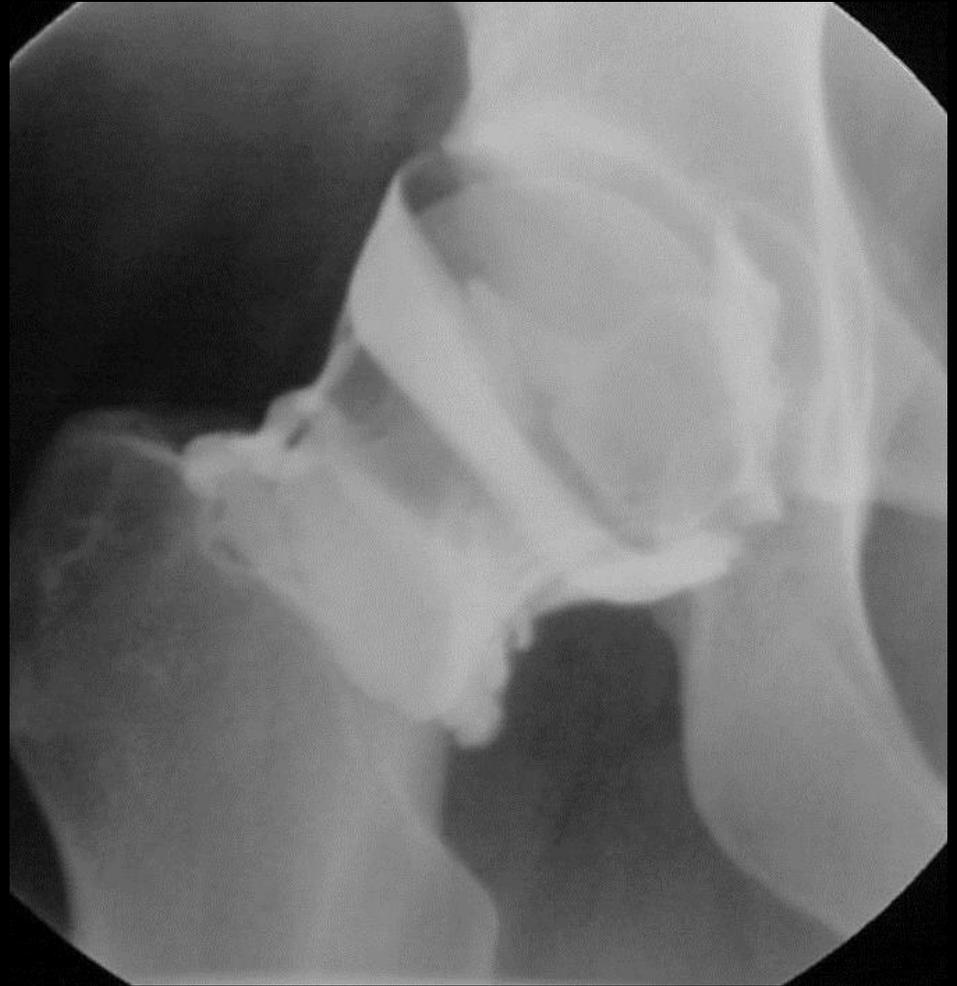
- CT guided



# Hip Arthrography - Radiography

---

- AP
- 20deg side PO
  - AP
  - Cranial
  - Caudal
- Abduction



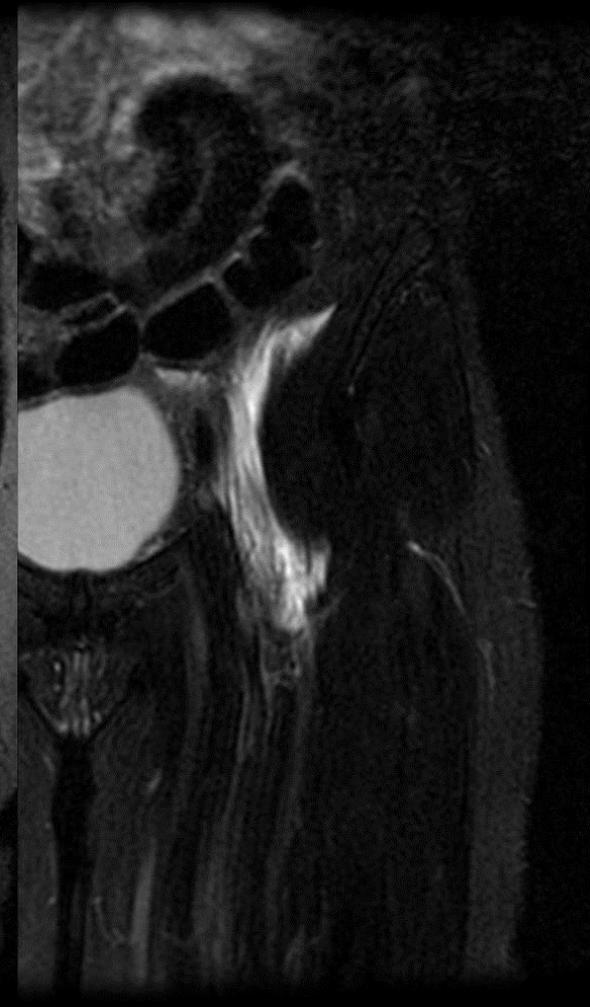
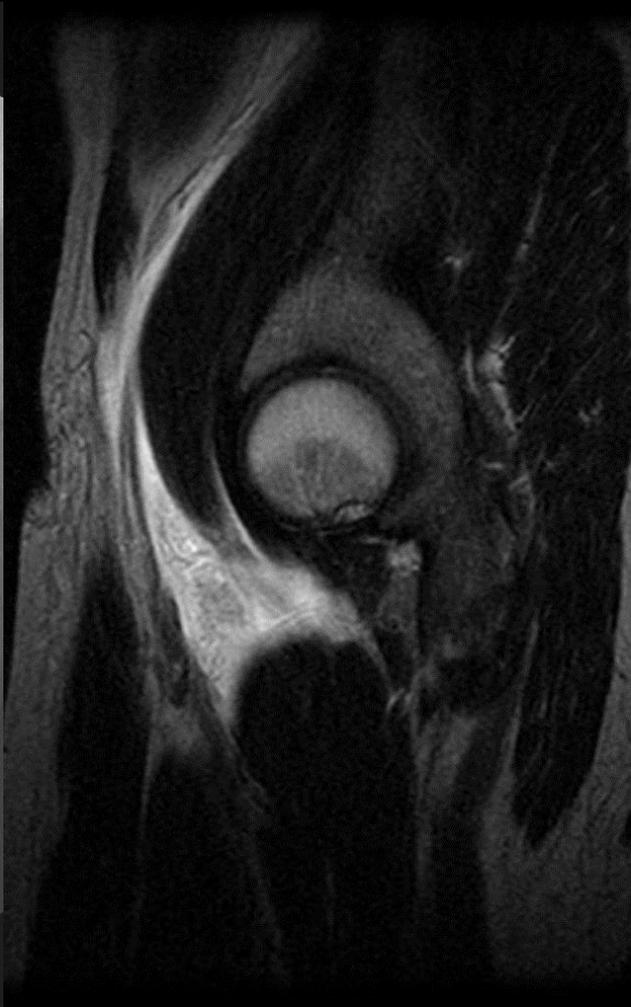
# Joint + Iliopsoas

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# Iliopsoas only, no contrast in joint

---



# Snapping Hip Syndrome

---

- Pain and snapping sensation (sometimes audible) with movement of hip



# Snapping Hip Syndrome

---

- Etiologies
  - Intra-articular bodies
  - Slipping of iliopsoas tendon over iliopectineal eminence
  - Slipping of fascia lata or gluteus maximus over greater trochanter
  - Slipping of tendon of long head of biceps femoris over ischial tuberosity
  - Slipping Iliofemoral ligaments over the anterior portion of the hip capsule

# Iliopsoas Bursography

---

- Indication
  - Snapping hip syndrome
  - Infection
- Stick lateral to palpated femoral artery
- Target medial aspect acetabular roof
- Place 20 gauge vertically down to bone
- Withdrawal 1mm and inject contrast

# Iliopsoas Bursography

---

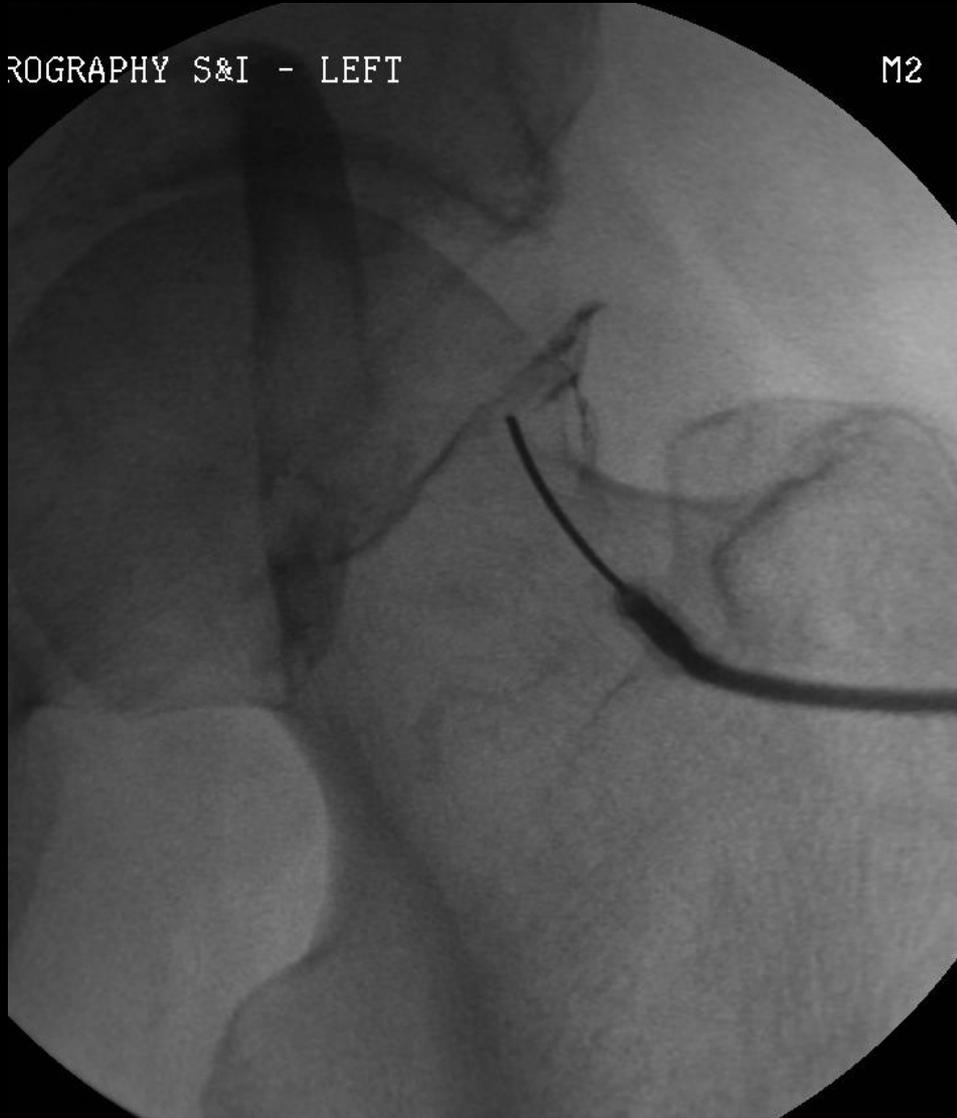


# Iliopsoas Bursography

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ROGRAPHY S&I - LEFT

M2



Iliopsoas bursa 74M

# Snapping Hip Syndrome

---



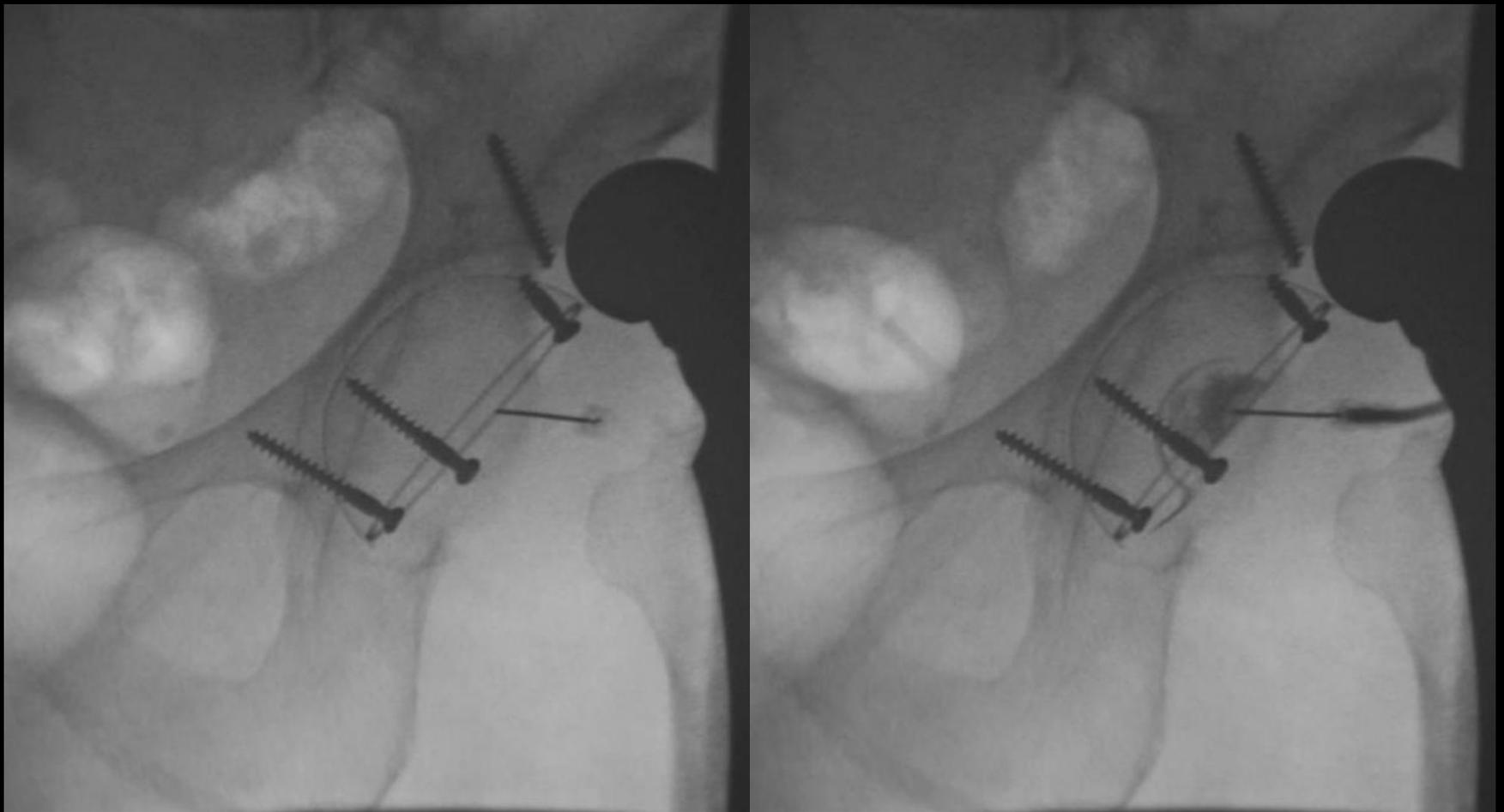
# Iliopsoas Bursography Ultrasound technique



# THA Arthrogram

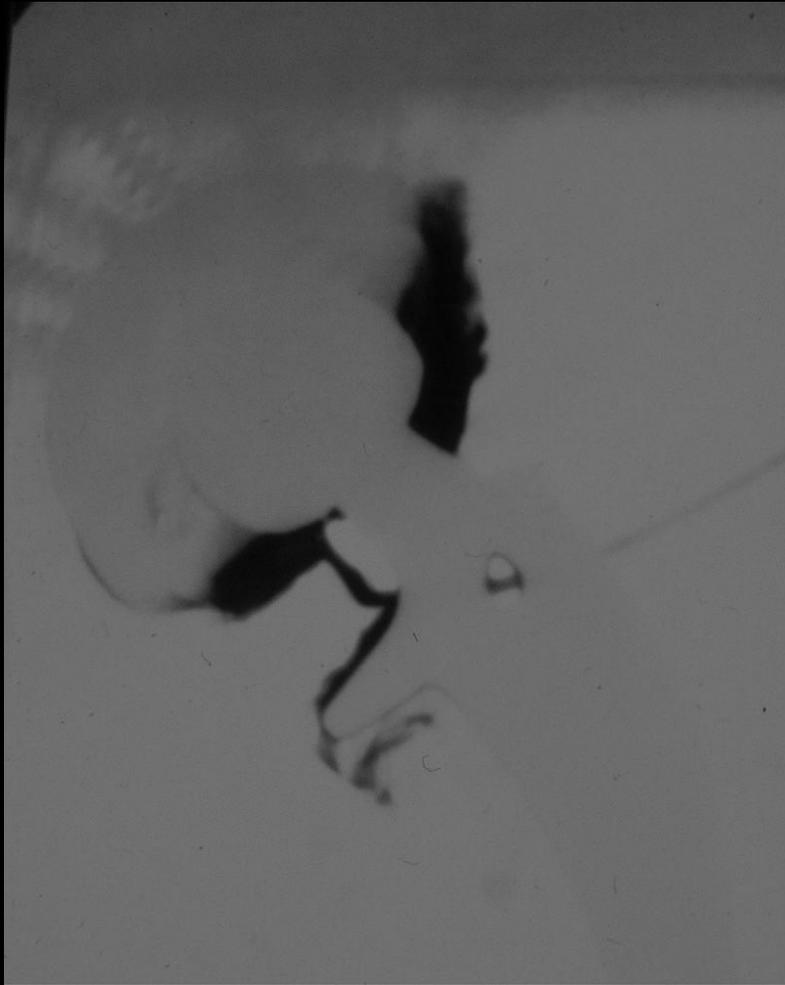


# THA Arthrogram



# Hip Arthrography – Loose

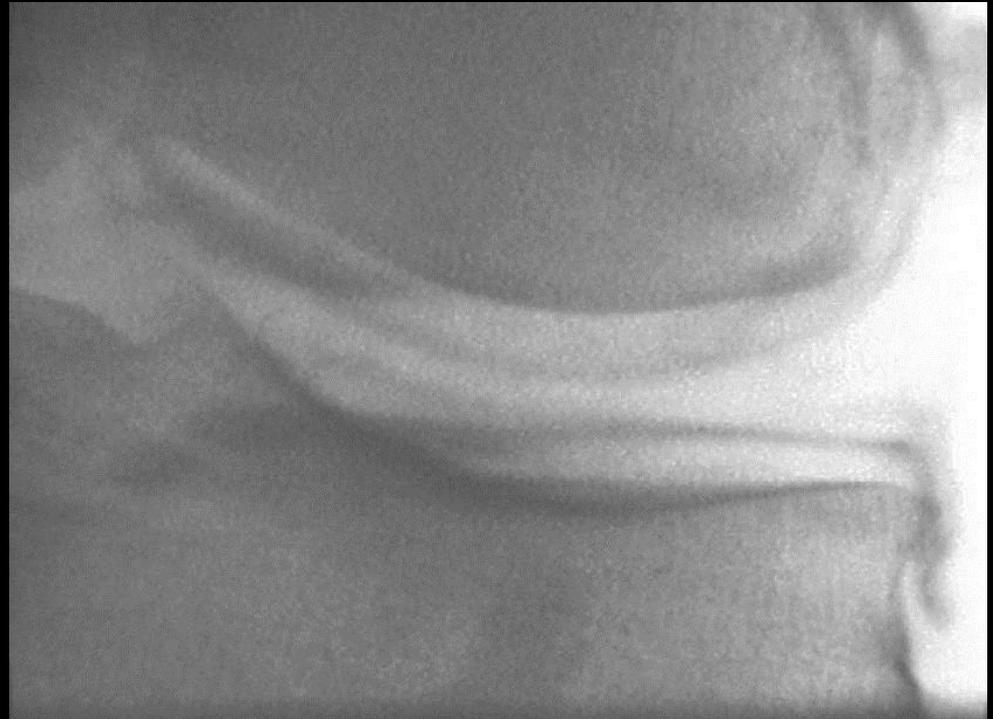
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# Knee Arthrography - Indications

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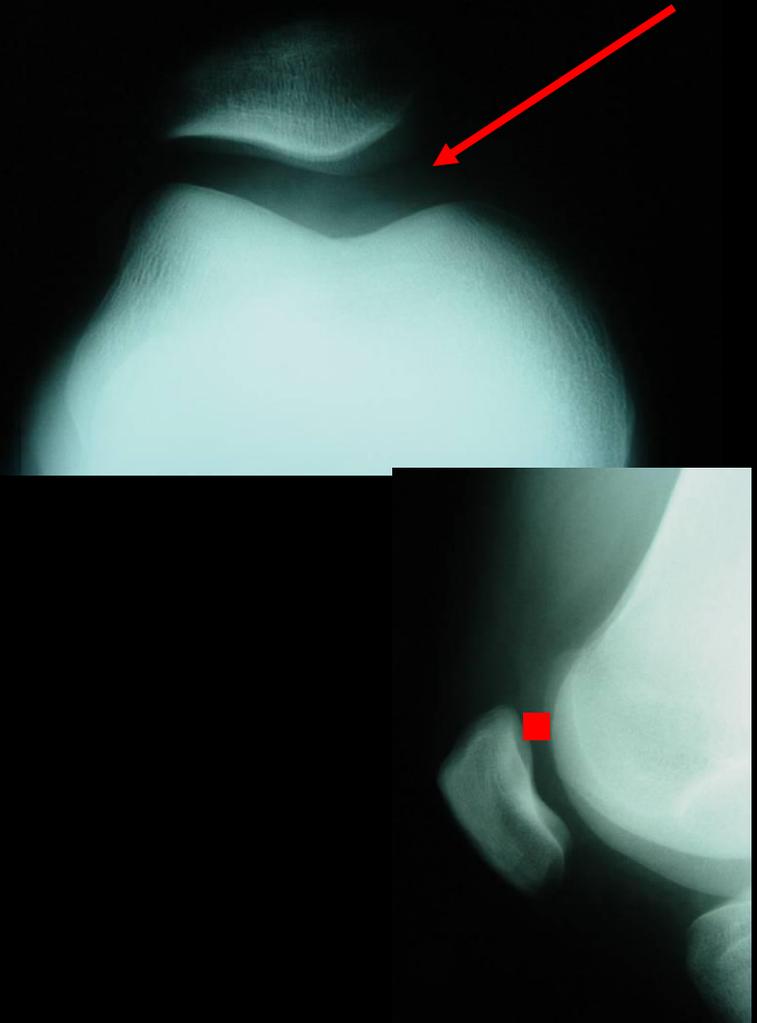
- Conventional arthrogram for meniscal injury
- Recurrent meniscal tear post surgery
- OCD stability



# Knee Arthrography - Technique

---

- Lateral V's medial
- 38mm 21G
- Prime needle and connecting tube
- Feel PF groove.
- Imagine angle
- Single stab.
- Finger on patella
- Alternative
  - Infrapatellar
  - Medial or lateral
  - Aim upwards



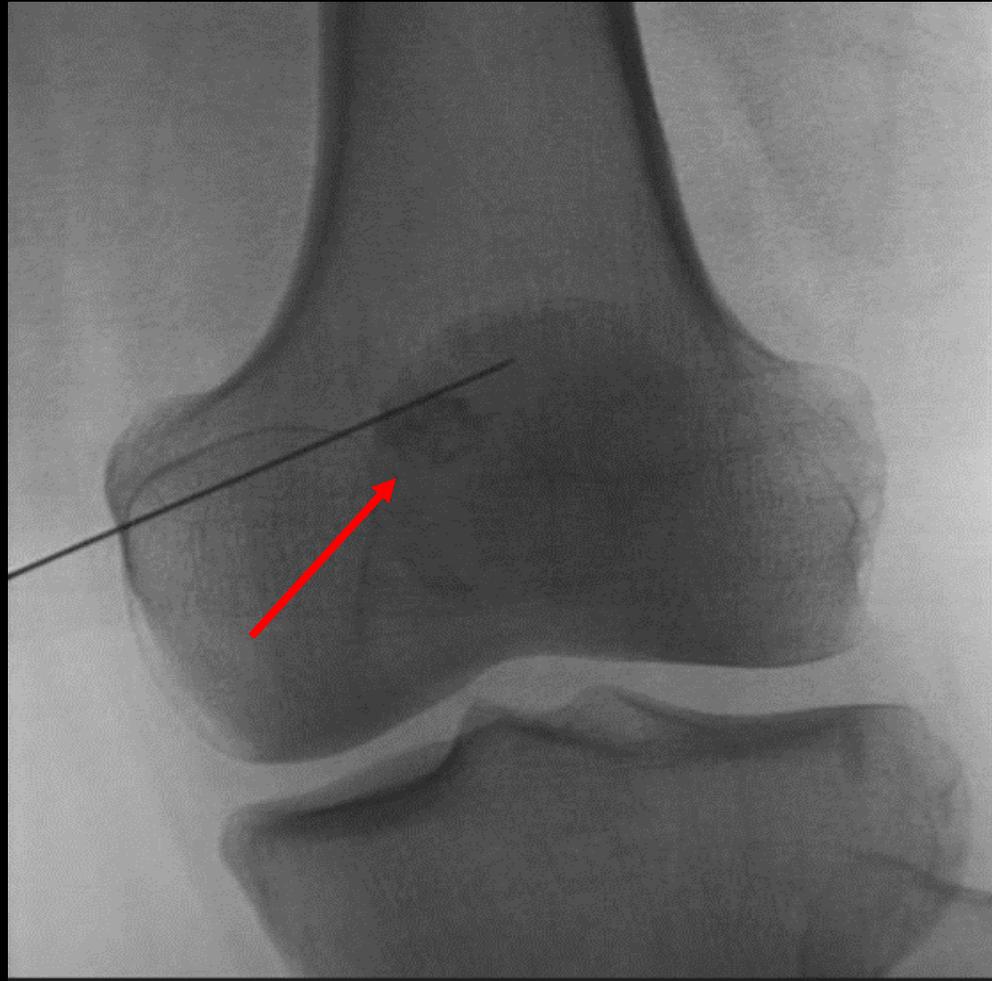
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  - Infrapatellar
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  - Aim upwards



# Knee Arthrography - Technique

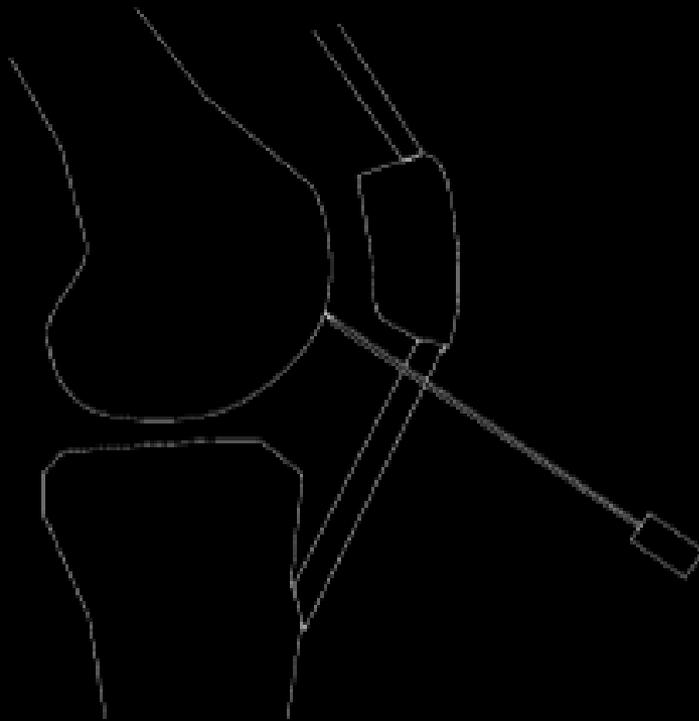
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Blobs are not good

# Knee Arthrography Infrapatellar Technique

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# Knee Arthrography Infrapatellar Technique

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# Knee Arthrography Infrapatellar Technique

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Anterior approach for knee arthrography

Skeletal Radiol (2001) 30:354–356 John V. Zurlo Jeffrey D. Towers Saraswathi Golla

# Knee Arthrography Infrapatellar Technique

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# Knee Arthrography - Radiography

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# Knee Arthrography - Radiography

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# Knee Arthrography - Radiography

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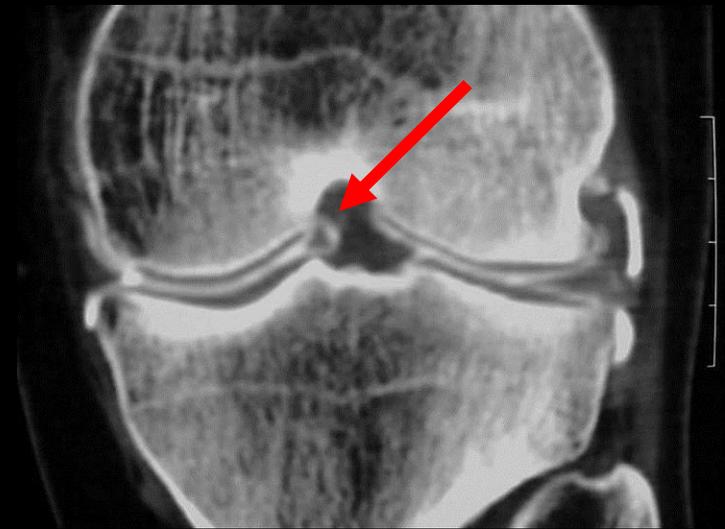
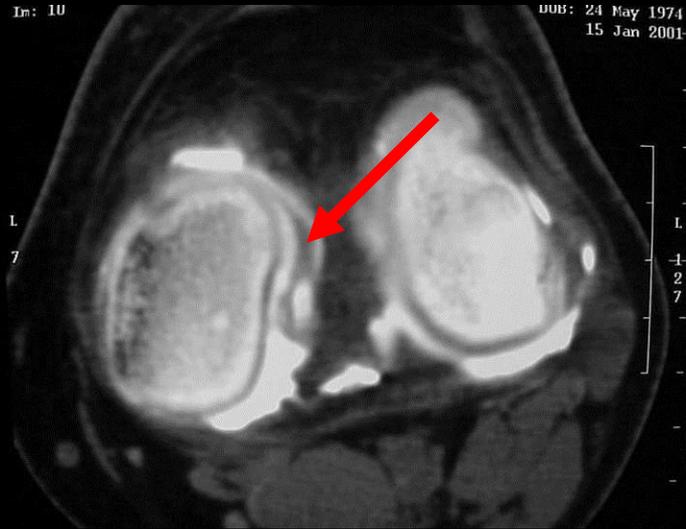


# Knee Arthrography CT – 0.625 reformats

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# Knee Arthrography CTA



26M Displaced bucket handle tear

# Ankle Arthrography - Indications

---

- OCD
- Steroid



# Ankle Arthrography - Technique

---

- Feel dorsalis pedis
- Mark on skin.
- Fluoro AP
  - Mark middle of joint
- Turn lateral
  - 38mm needle
  - 21 gauge
  - Either side of artery
  - Aim for joint



# Ankle Arthrography - Technique

---

- Feel dorsalis pedis
- Mark on skin
- Fluoro AP
  - Mark middle of joint
- Turn lateral
  - 38mm needle
  - 21 gauge
  - Either side of artery
  - Aim for joint



# Ankle Arthrography - Technique

- Feel dorsalis pedis
- Mark on skin
- Fluoro AP
  - Mark middle of joint
- Turn lateral.
  - 38mm needle
  - 21 gauge
  - Either side of artery
  - Aim for joint



# Ankle Arthrography - Technique

---



# Ankle Arthrography - Radiography

---

- AP
  - With dorsiflexion and plantarflexion
- Lateral

# Ankle air CT arthrogram

---



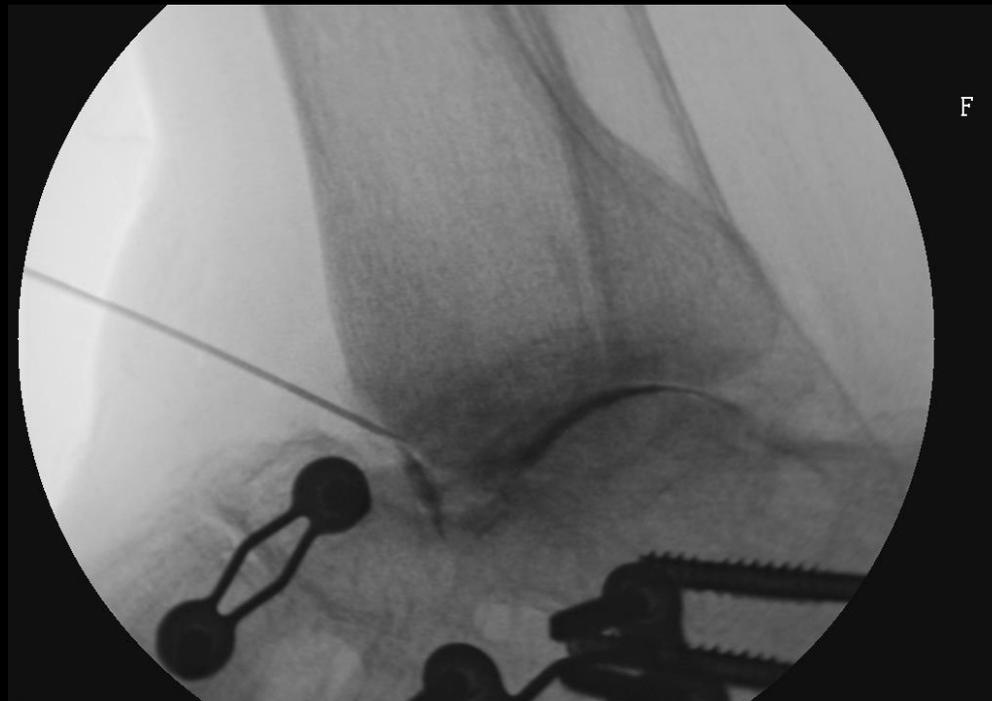
# Ankle Arthrography - Technique

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# Ankle Arthrography - Technique

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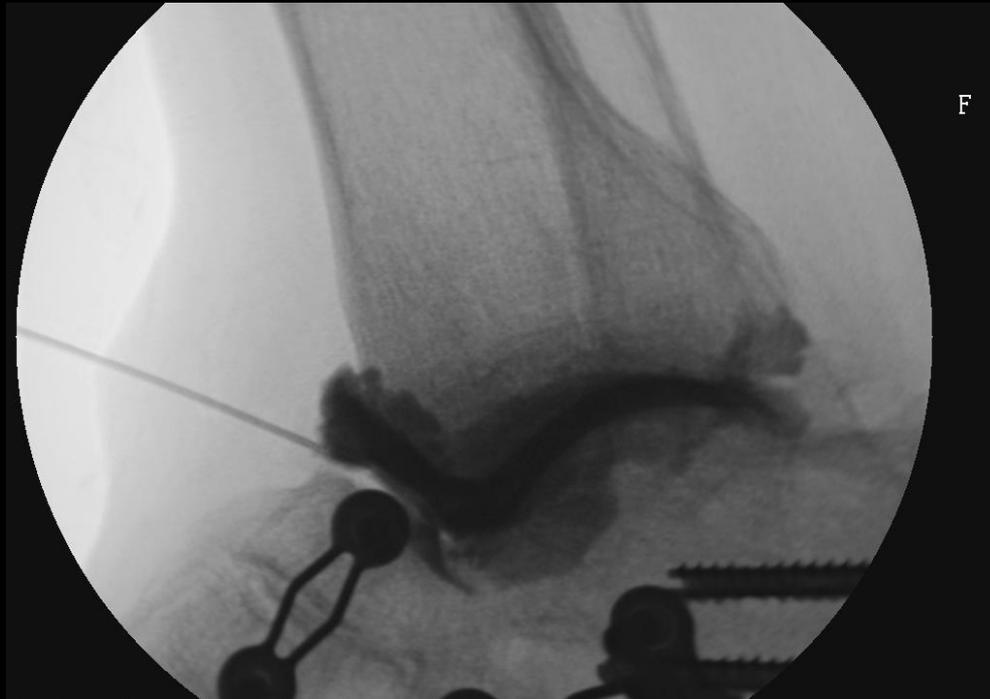
# Ankle Arthrography - Technique

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# Ankle Arthrography - Technique

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# Subtalar Arthrography - Indications

---

- Usually anesthetic arthrogram to determine source of pain



# Subtalar Arthrography - Technique

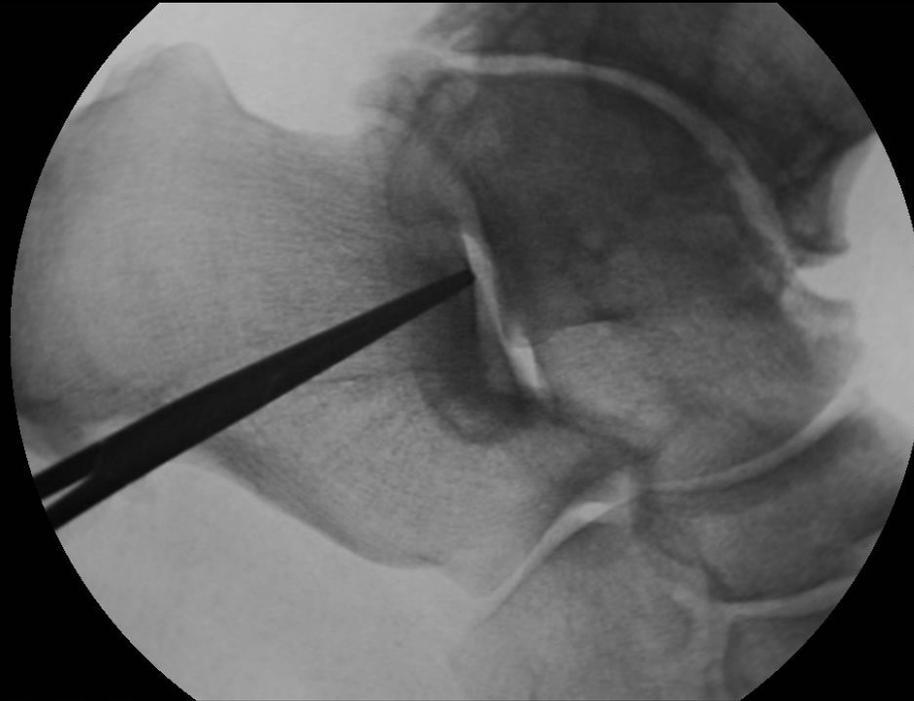
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- Lateral approach
- Roll foot to work out which is lateral
- Fluoro mark anterior aspect of posterior joint
- Must record communications of joint
- CT may be helpful



# Subtalar Arthrography

---



F

# Subtalar Arthrography

---



F

# Subtalar Arthrography - Radiography

---

- AP, Lateral and Axial (Harris Beath) to show communications



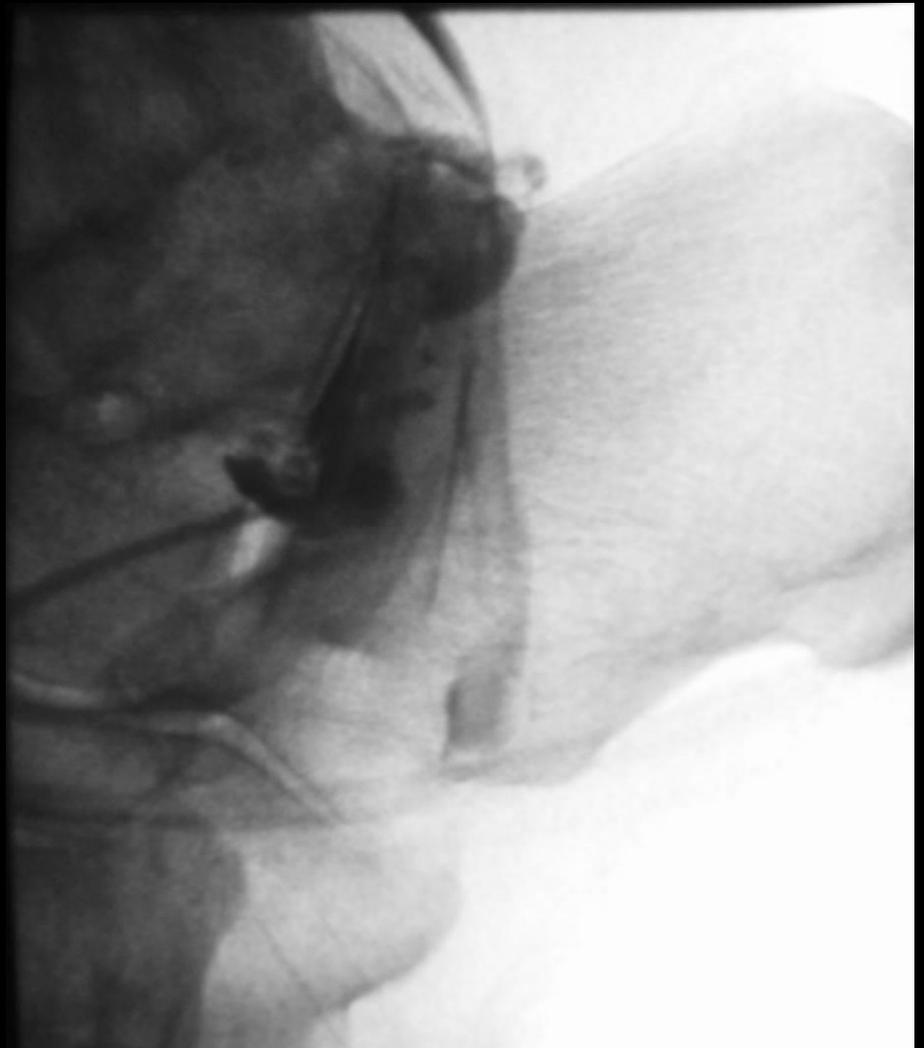
# Subtalar Arthrography - Radiography

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# Subtalar Arthrography - Radiography

---



# Subtalar Arthrography - Radiography

---



# TMTJ

---



# TMTJ

---



# TMTJ

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# TMTJ

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# TMTJ

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# Tarsometatarsal injection

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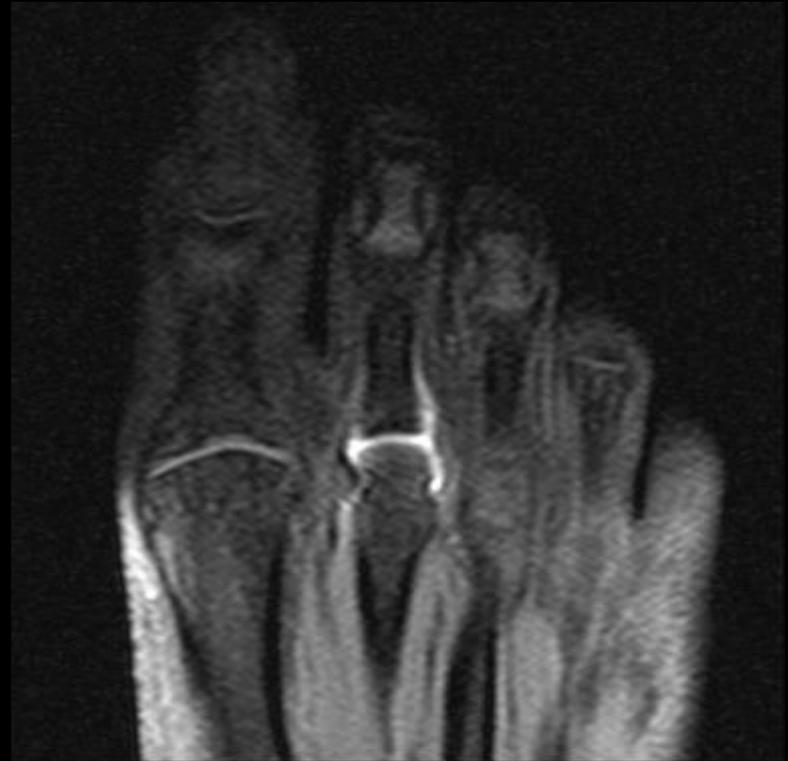
# MTPJ Arthrogram

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# MTPJ Arthrogram

---



# MTPJ Arthrogram

---

□



steroid injection first mtp joint

# MTPJ Arthrogram

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F

# MTPJ Arthrogram

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F

# TMJ Arthrography - Indications

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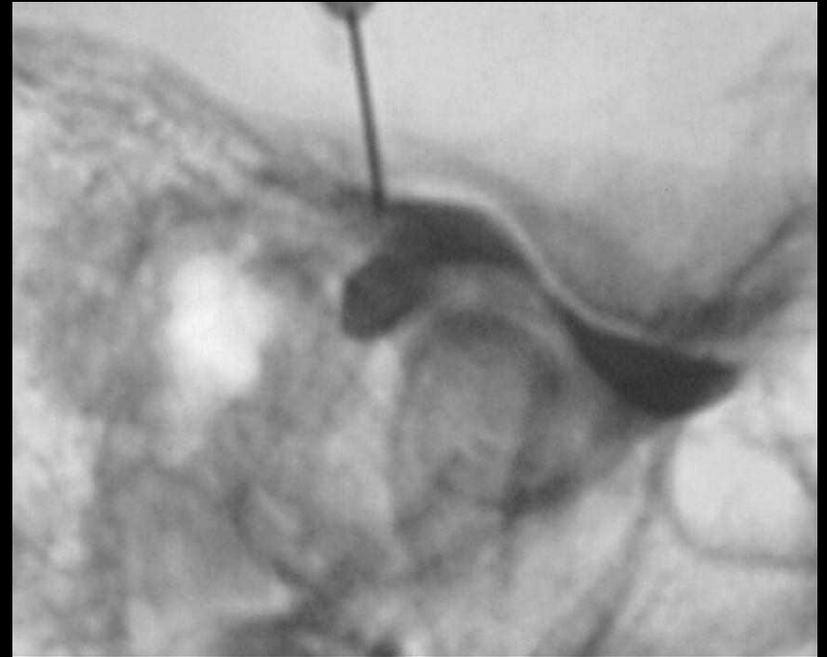
- Clicking
- Pain
- Instability
- Negative conventional MRI



# TMJ Arthrography - Technique

---

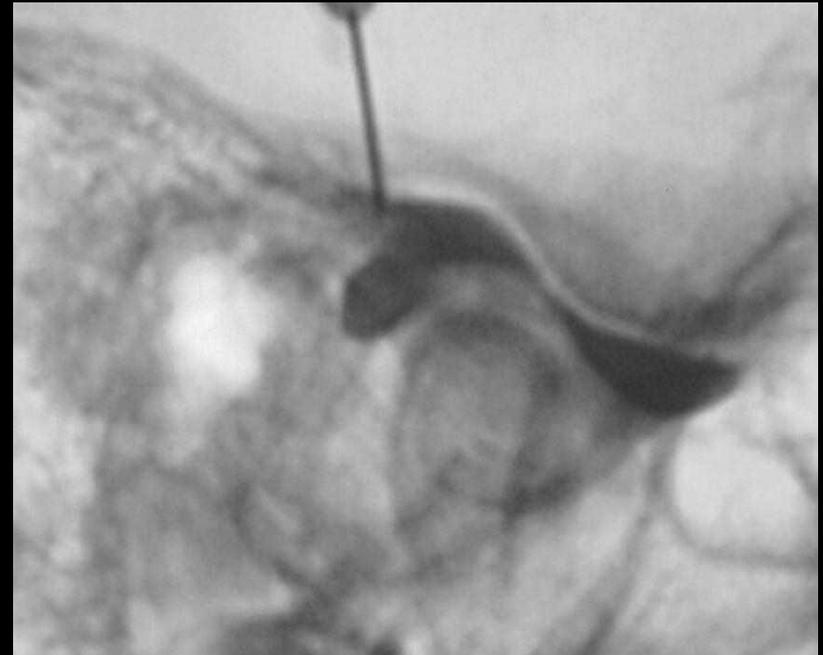
- Palpate joint
- Mark
- Pray
  - Screening difficult



# TMJ Arthrography - Technique

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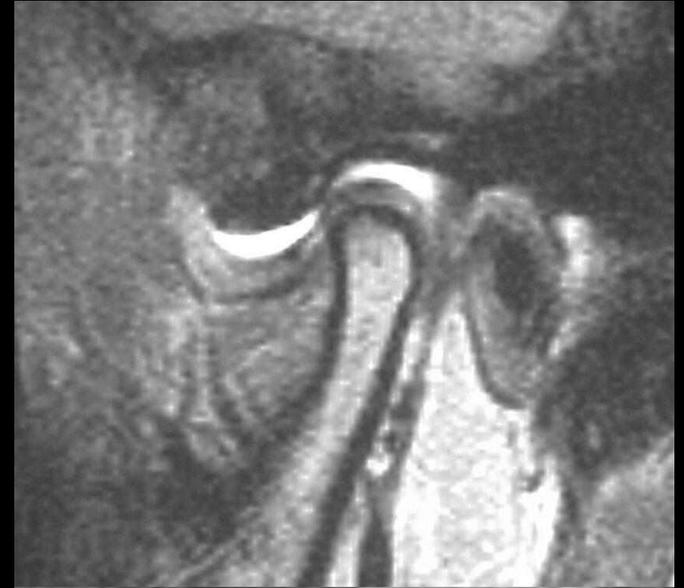
- Open the mouth with the needle on the condyle, then advance



# TMJ Arthrography - MRI

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- Open and closed
- Sag T1FS and T2
- Cor T1FS



# Arthrography - Summary

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- Various approaches
- Reasons for various recipes
- [Bonepit.com](http://Bonepit.com)

UCSD  
Medical  
Center

A photograph of the UCSD Medical Center. In the foreground, a large, textured stone pillar features the name 'UCSD Medical Center' in raised, white, serif lettering. The pillar is part of a modern architectural structure with a wide, overhanging roof supported by columns. In the background, a tall, multi-story building with a curved glass facade and a grid of windows rises against a clear blue sky. The scene is brightly lit, suggesting a sunny day.

