

Arthrography: What You Need To Know

Andrew Sonin, M.D.

Musculoskeletal Radiology

Radiology Imaging Associates

Arthrography: General Principles

- Find the least traumatic approach
- Lots of topical anesthesia
 - 30g skin needle
 - 1% lidocaine buffered with bicarbonate
 - Infiltrate skin, muscle, and periosteum (fat is relatively insensate)
- Document position

Arthrography: General Principles

- Aspirations for infection
 - For large joints (shoulder, hip, knee) consider using a larger needle (18g)
 - For smaller joints (wrist, ankle, elbow, etc.) use 22g
 - Try to aspirate before injecting contrast into joint

Arthrography: General Principles

- Aspirations for infection
 - Try to avoid getting lidocaine in joint
 - If no initial yield, flush with sterile NONBACTERIOSTATIC saline and re-aspirate
 - Document intraarticular placement after aspiration
 - Small amounts of contrast will NOT contaminate aspirate

Arthrography: Injected Mixtures

- Radiographic arthrography and documentation – straight contrast
- MRI – 1:100 Gadolinium in sterile saline
- CT – 25-50% CT contrast diluted in saline
- Trimix
 - 40mg Depomedrol or 12mg Celestone
 - 1% lidocaine (volume depends on joint)
 - 0.75% bupivacaine (1-2 cc's)

Arthrography: Injected Mixtures

- Air:
 - useful for XR and CT arthro of shoulder and knee (large joints)
 - BAD for MR arthrograms (susceptibility)
- Timing
 - Generally want to scan within 30 min of injection
 - Air gets reabsorbed faster than fluid
 - Exercise speeds reabsorption

Location

- **Shoulder**
 - Glenohumeral joint
 - Subacromial space
 - Acromioclavicular joint
 - Sternoclavicular joint
- **Elbow**
- **Wrist**
 - Radiocarpal joint
 - Distal radioulnar joint
 - Midcarpal compartment

Location

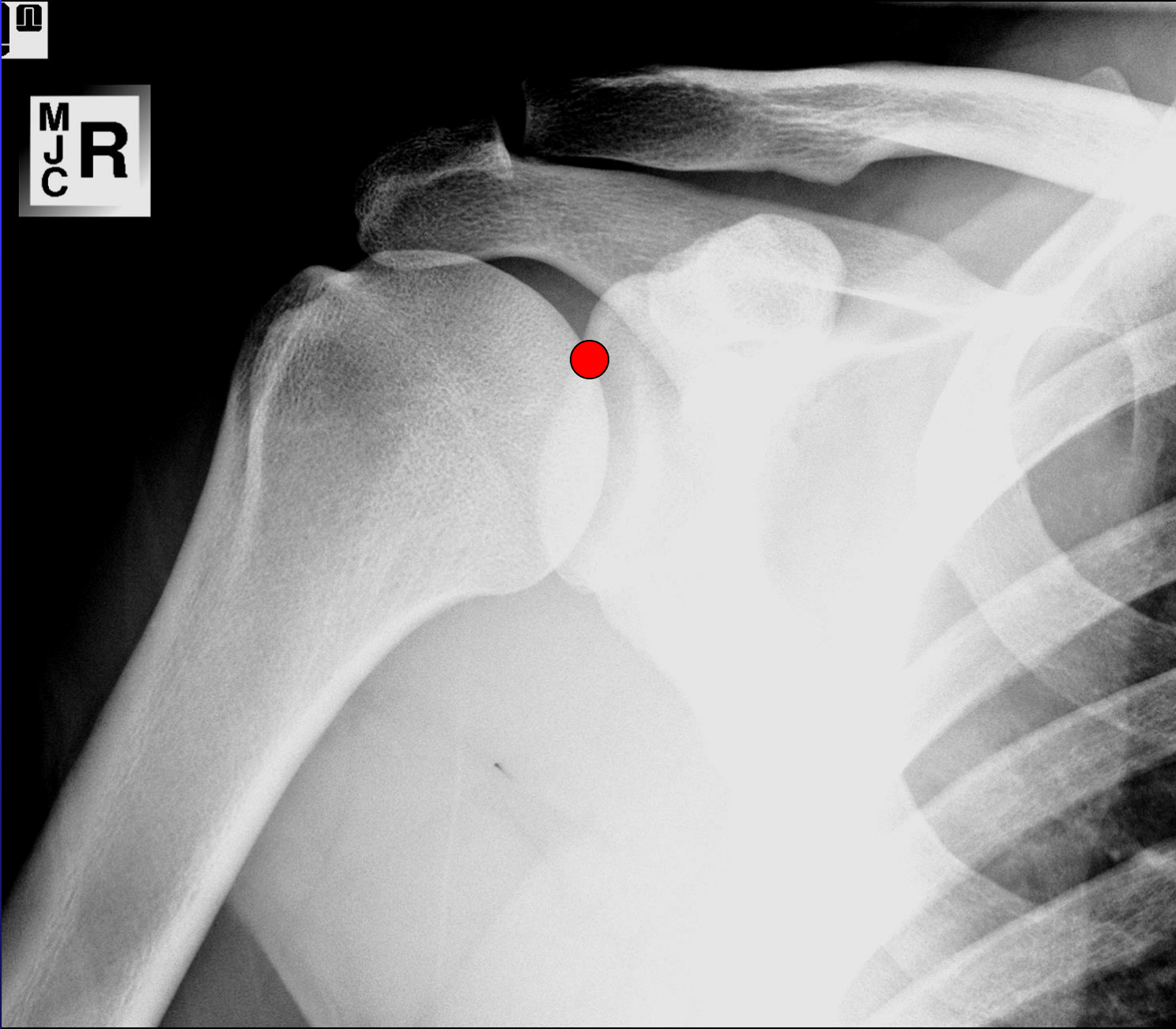
- **Hip and Pelvis**
 - Hip joint
 - SI joint
- **Knee**
- **Ankle/Foot**
 - Tibiotalar joint
 - Subtalar joint
 - Other

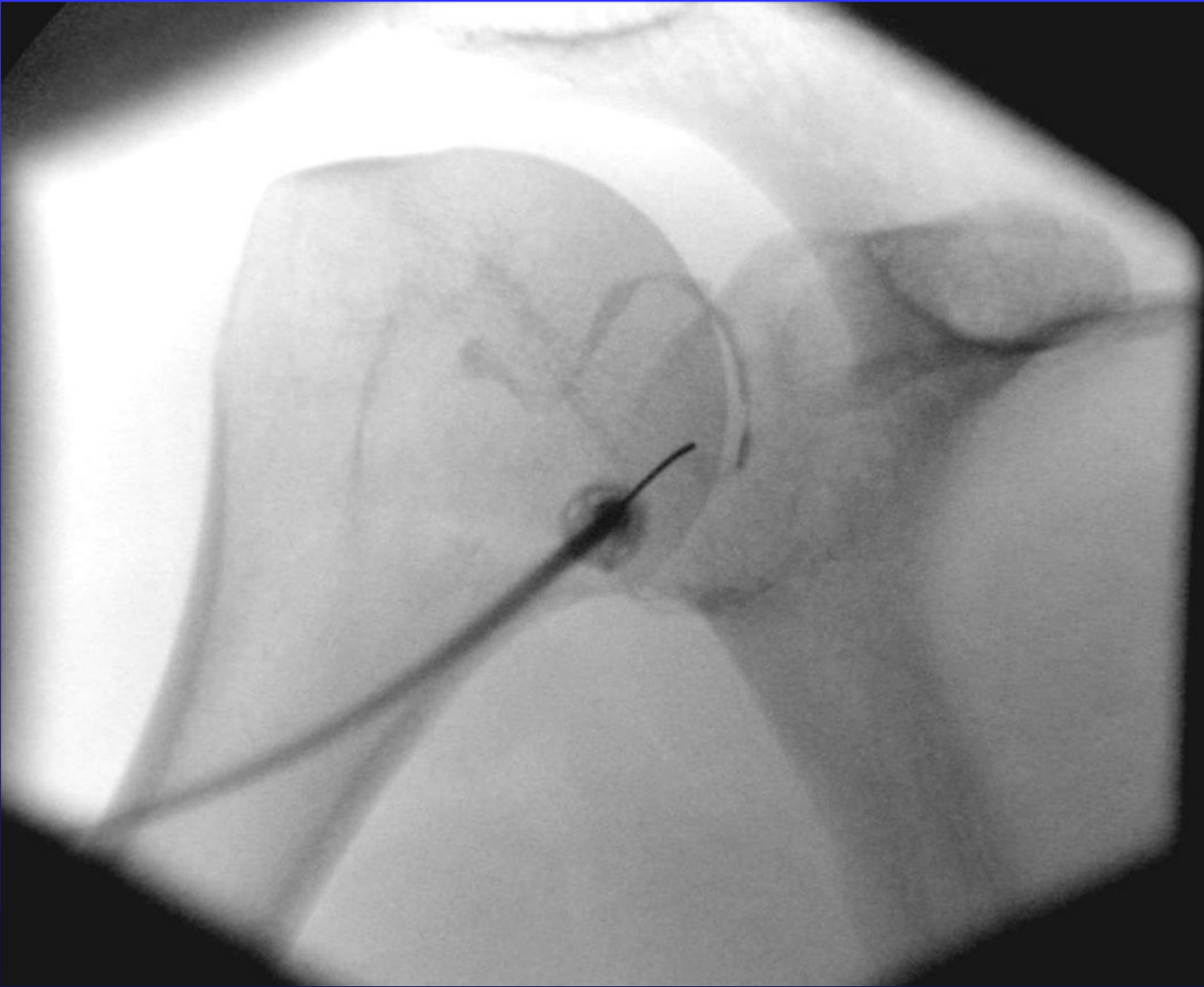
Shoulder Arthrography

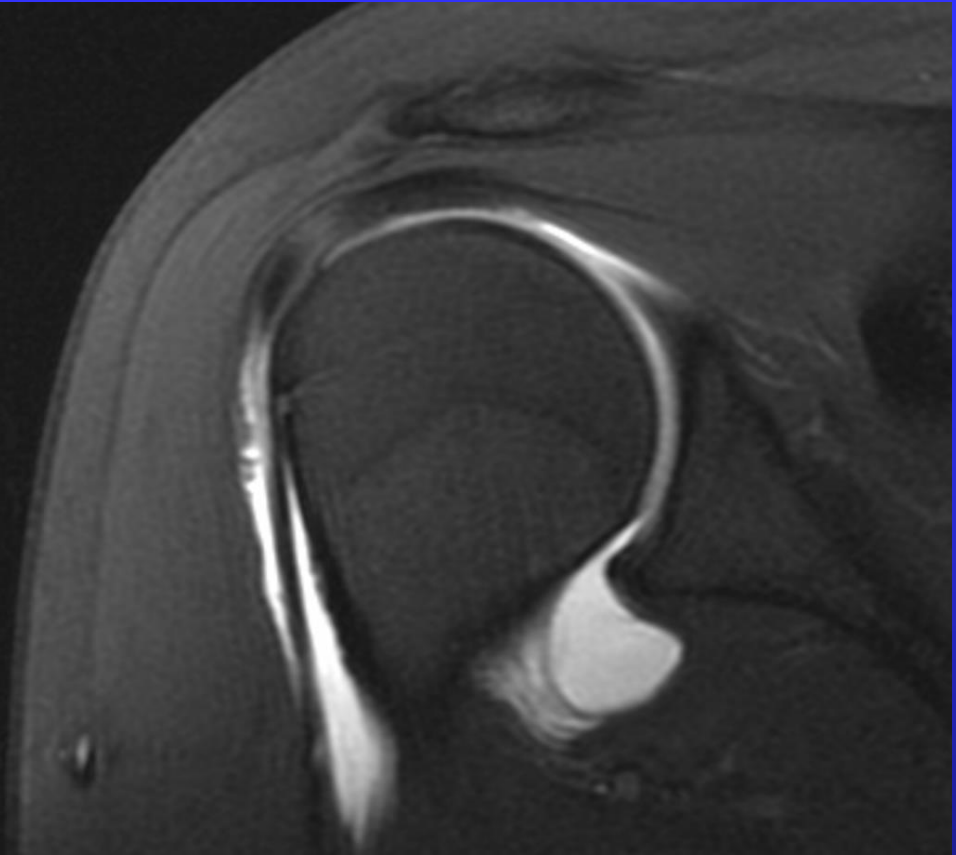
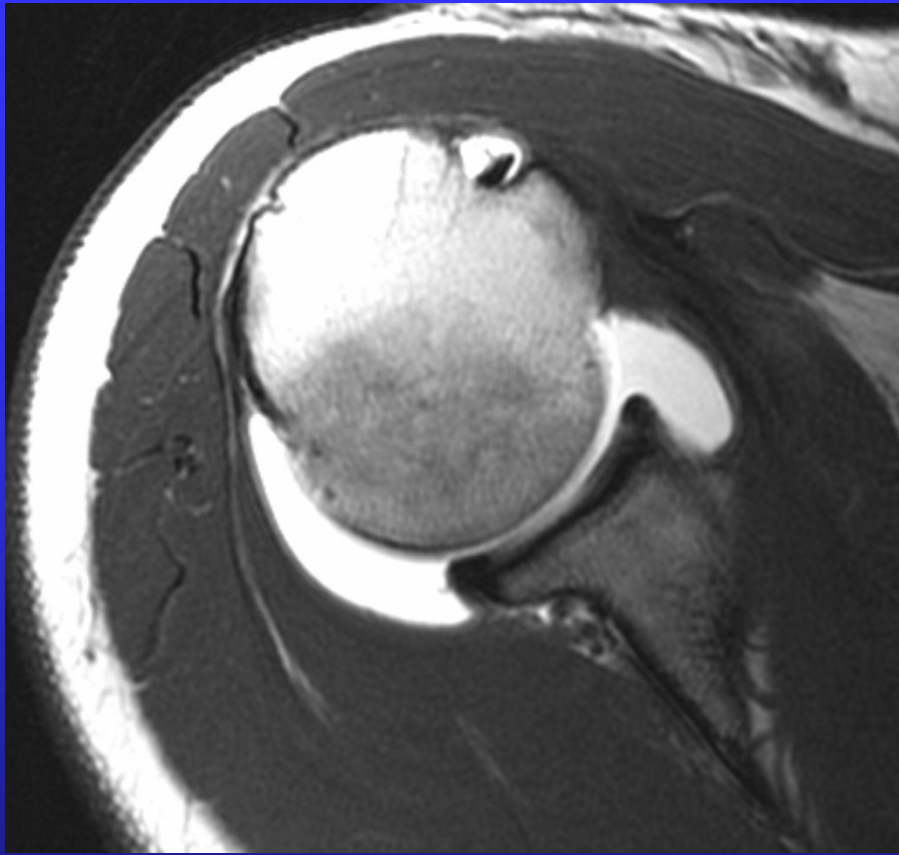
- **Shoulder rotated externally**
- **Superior medial aspect of humeral head**
- **15-20 cc's**

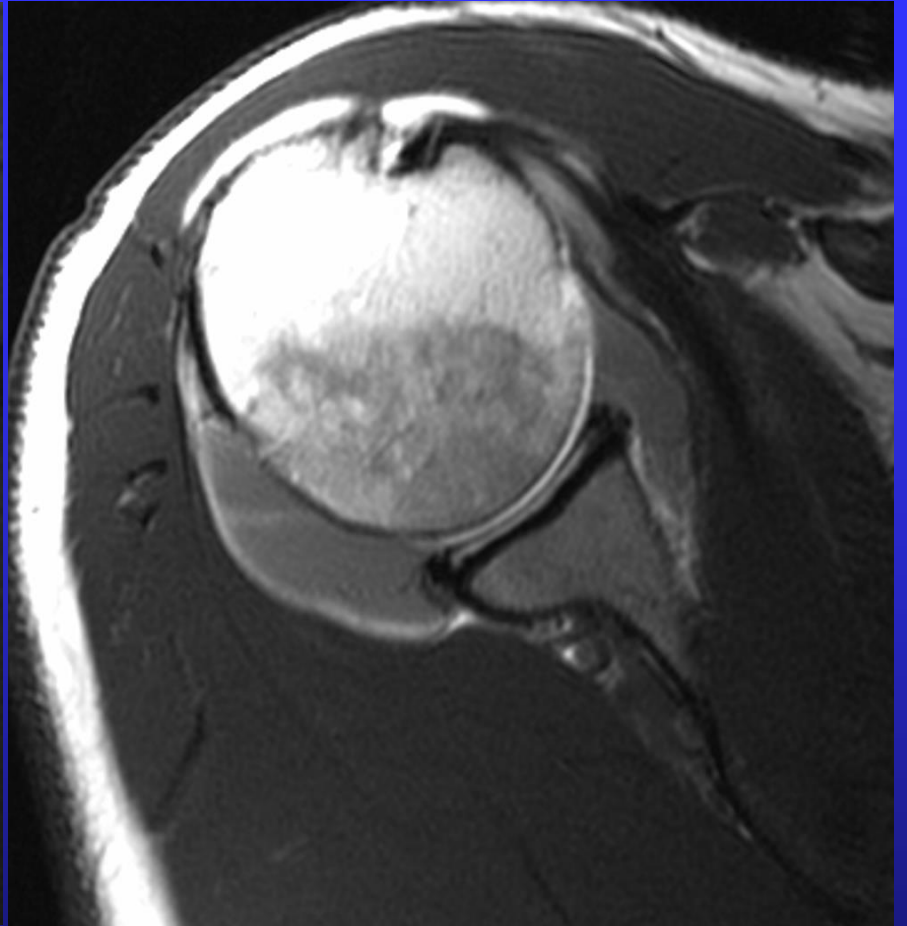
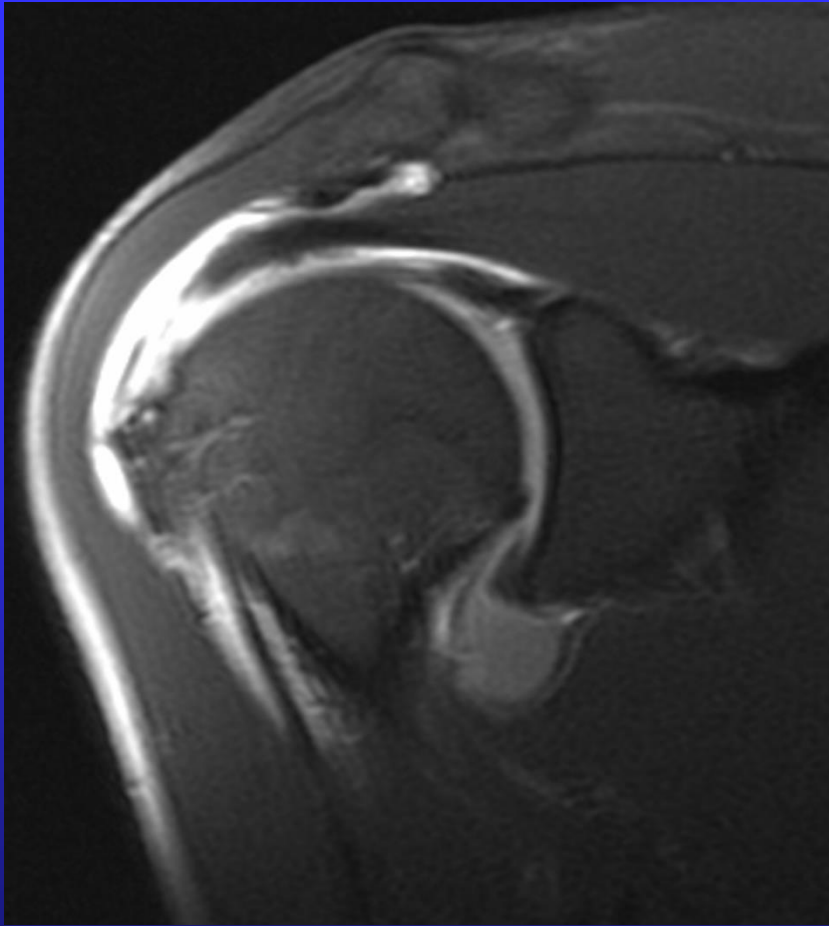


M
C
R

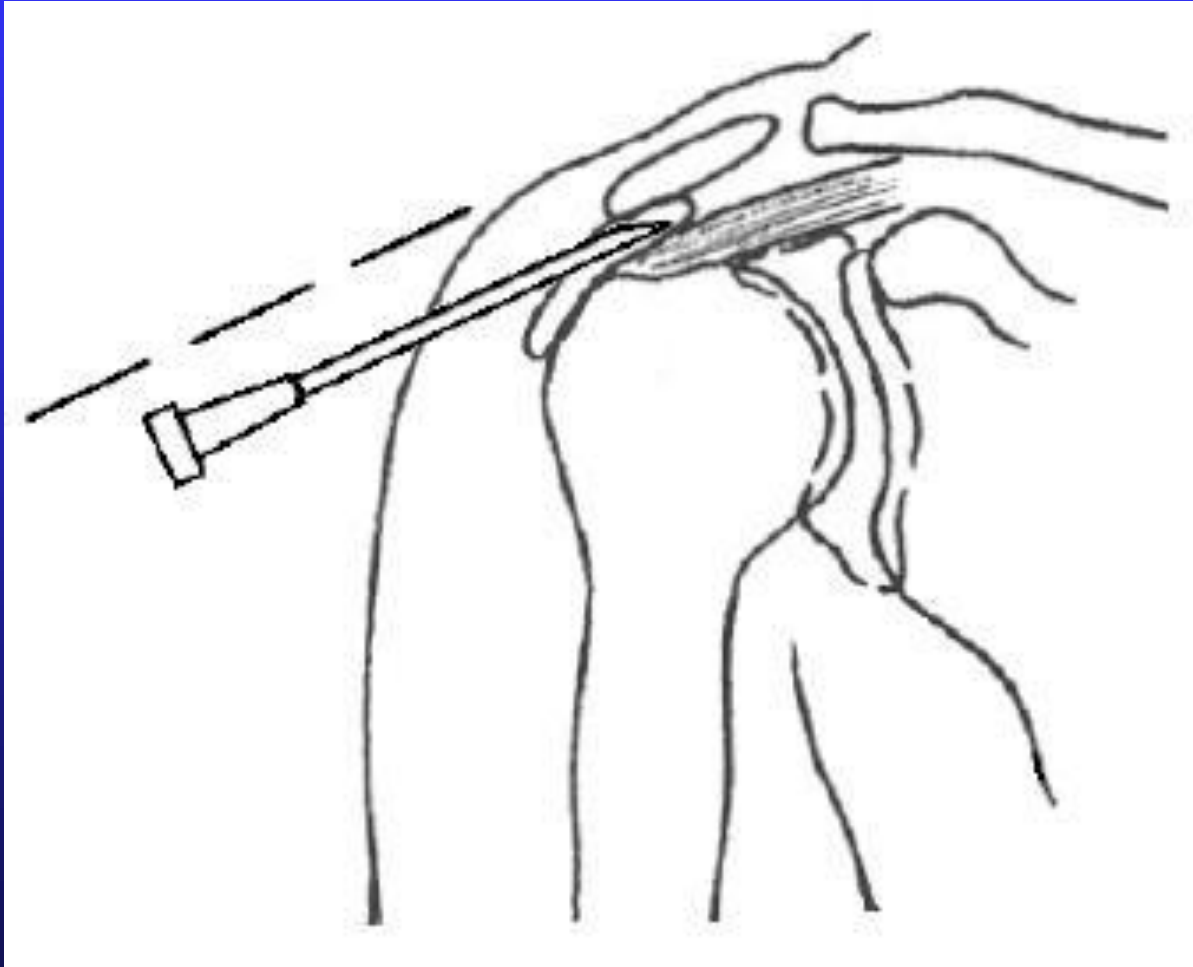






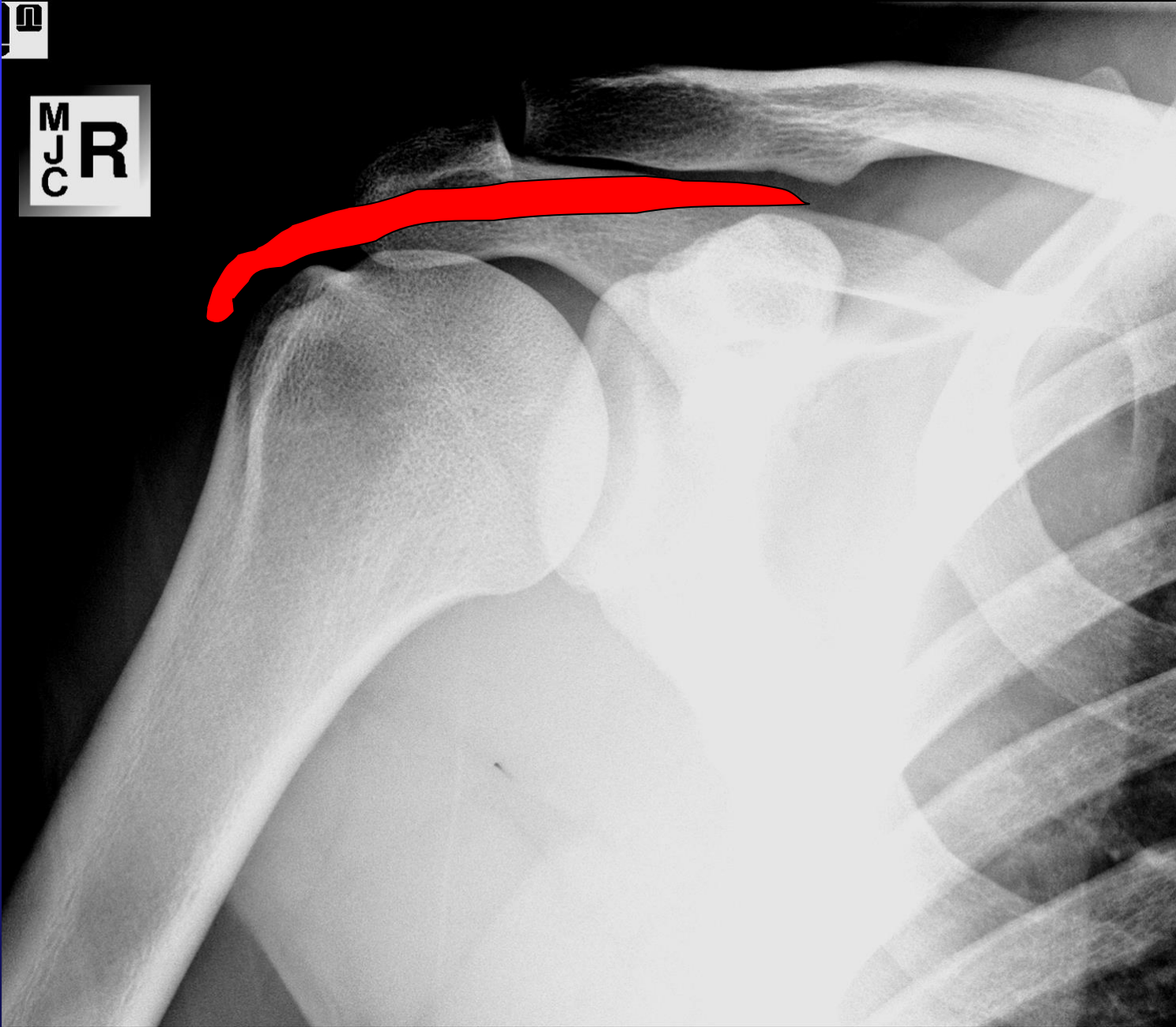


Subacromial Injection

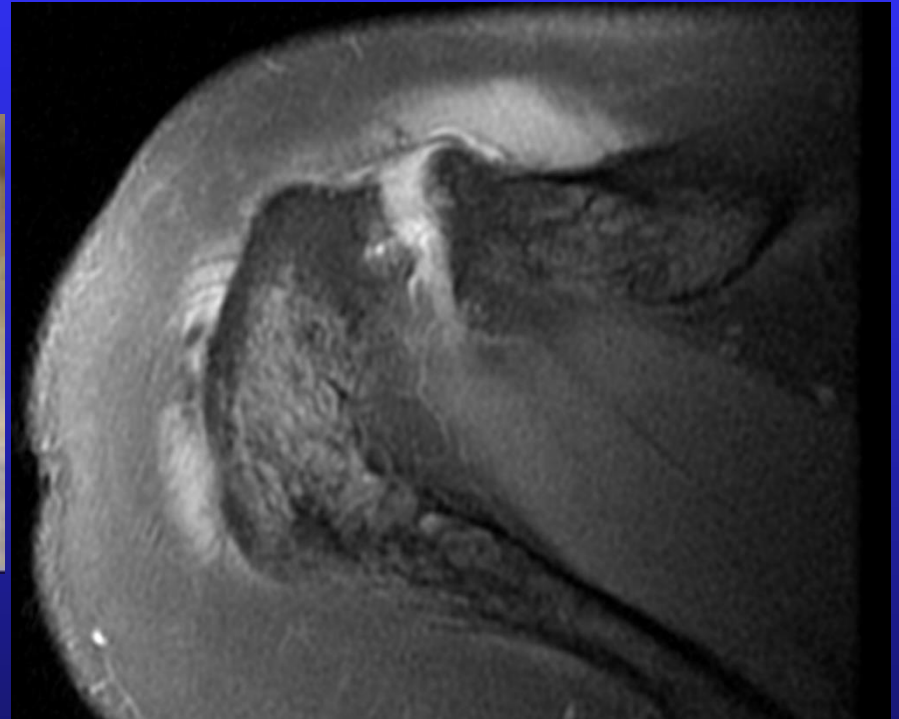




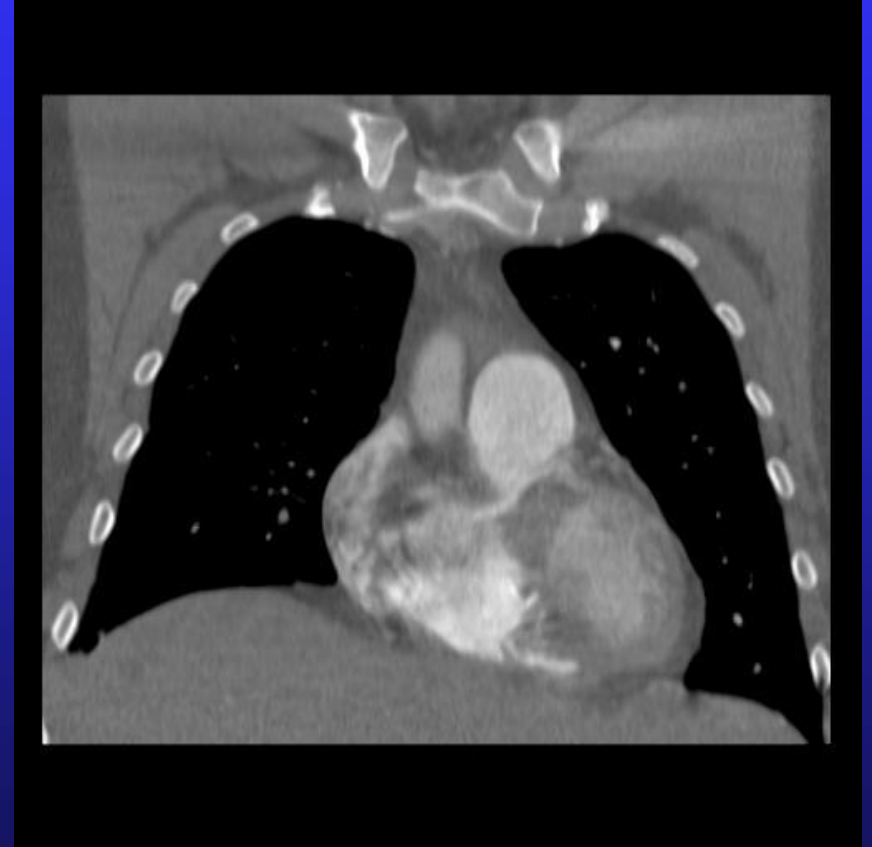
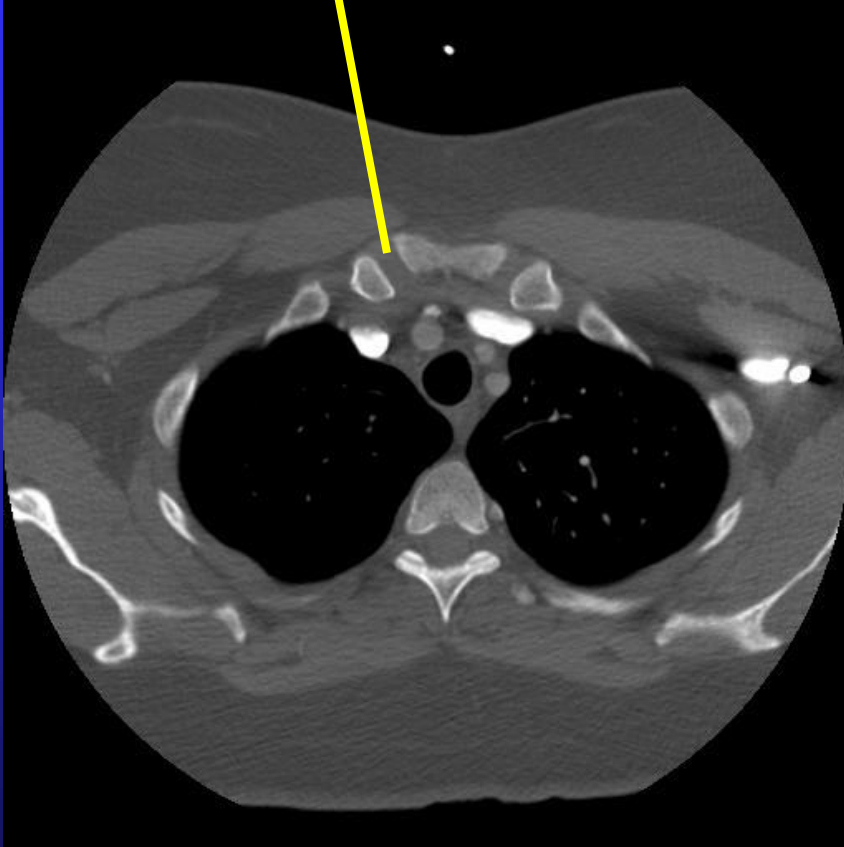
M
C
R



Acromioclavicular Joint Injection

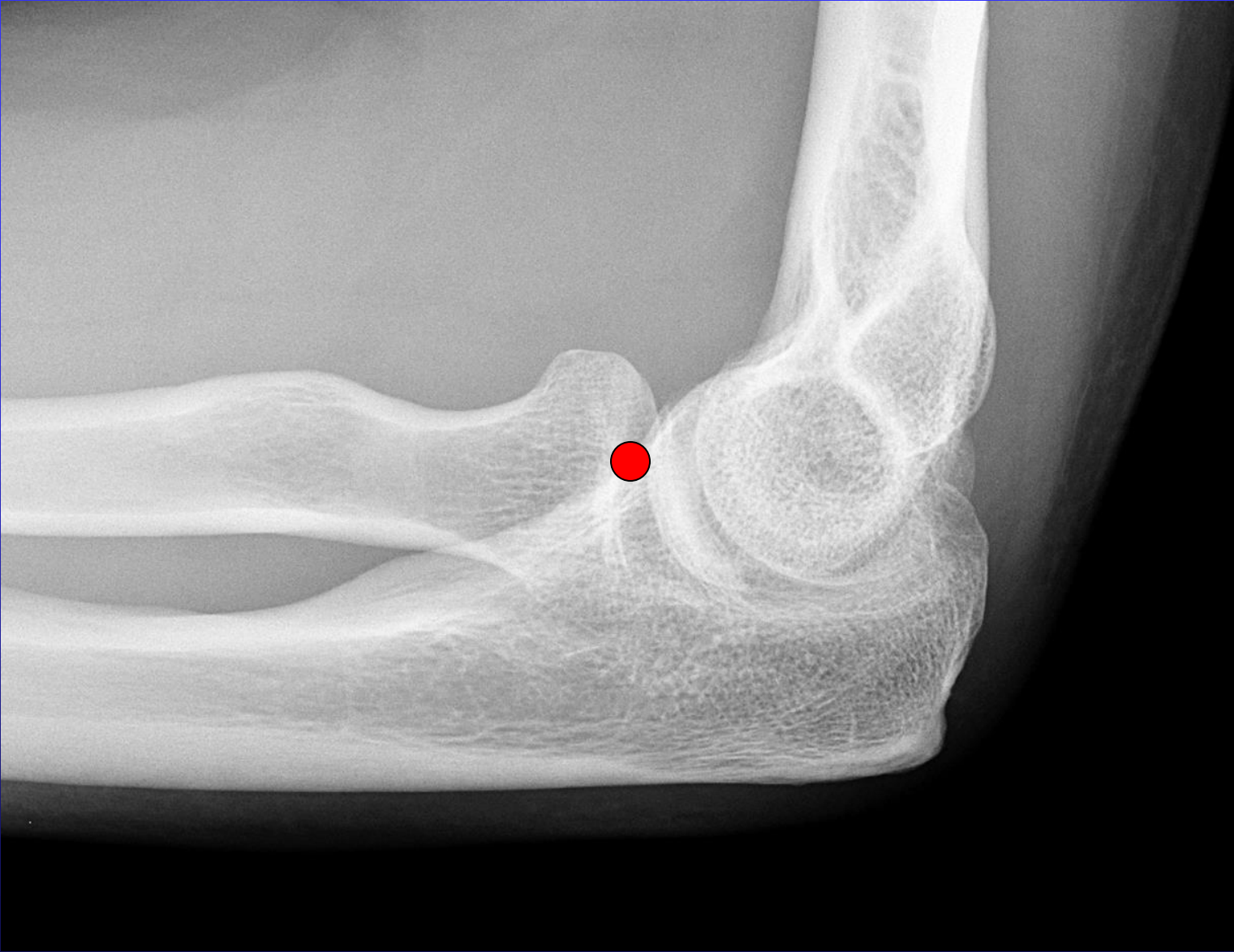


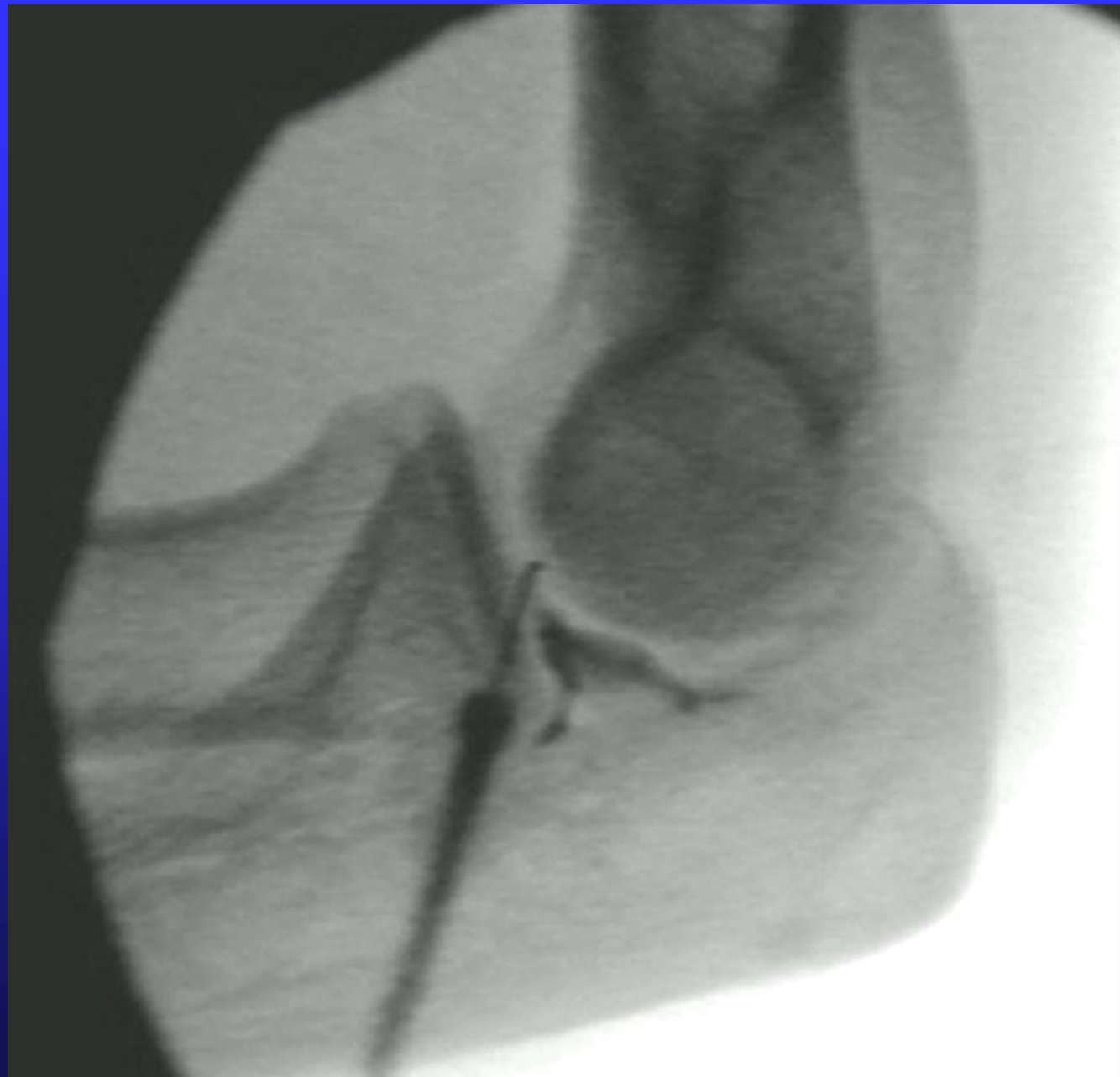
Sternoclavicular Joint

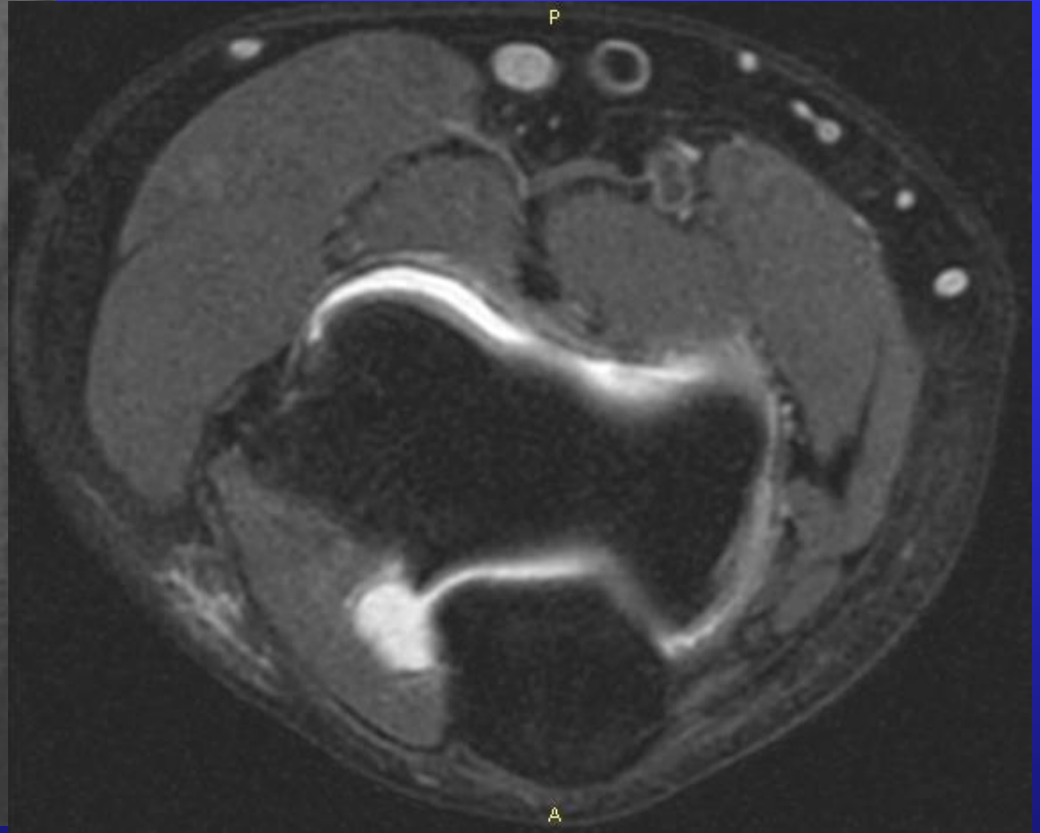
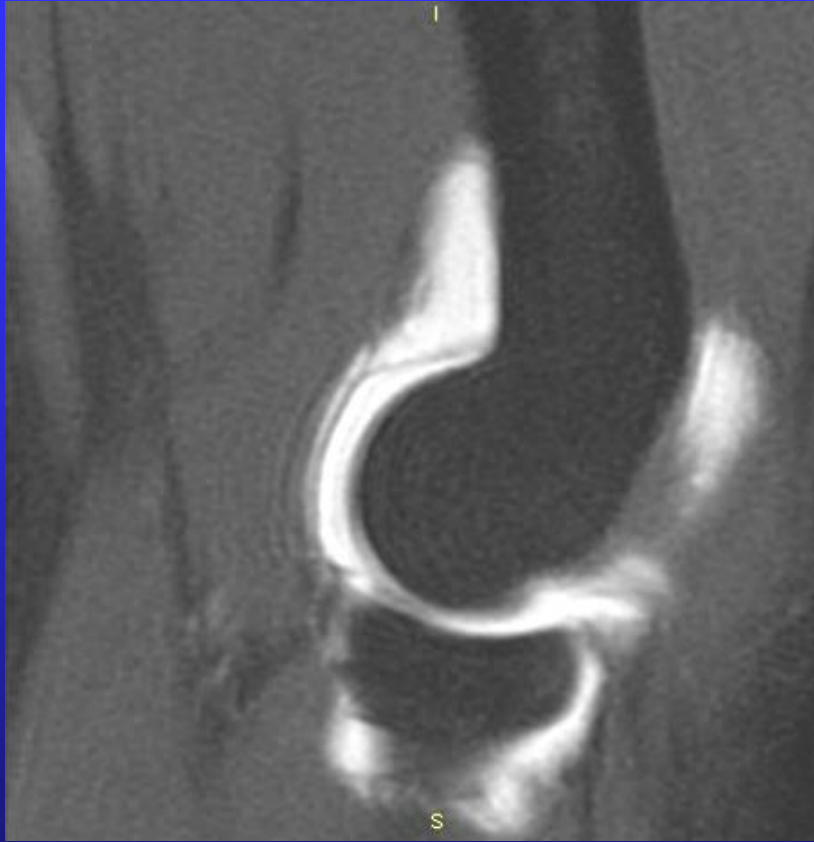


Elbow Arthrography

- Lateral approach into radiocapitellar joint
- 5-15 cc's

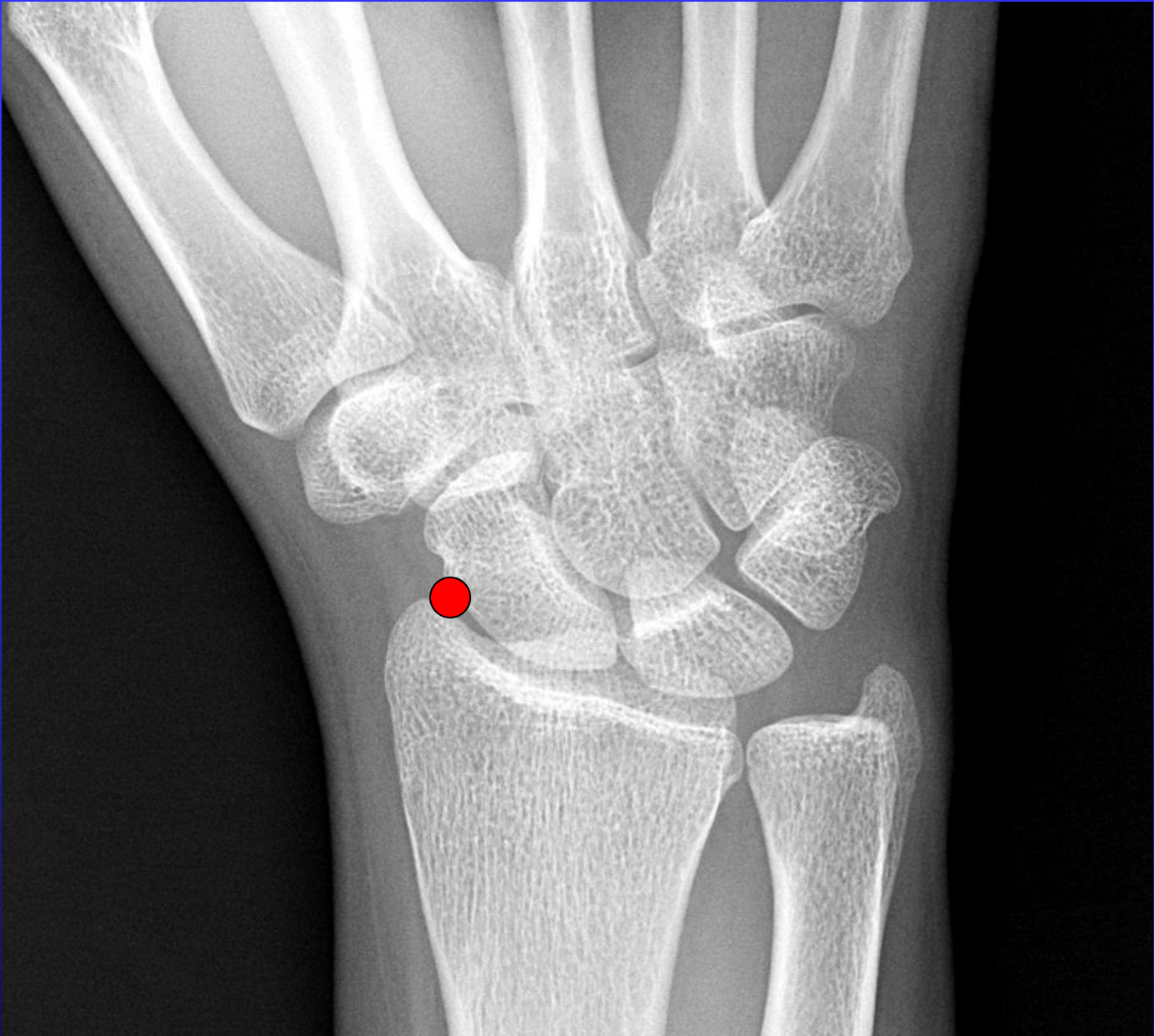


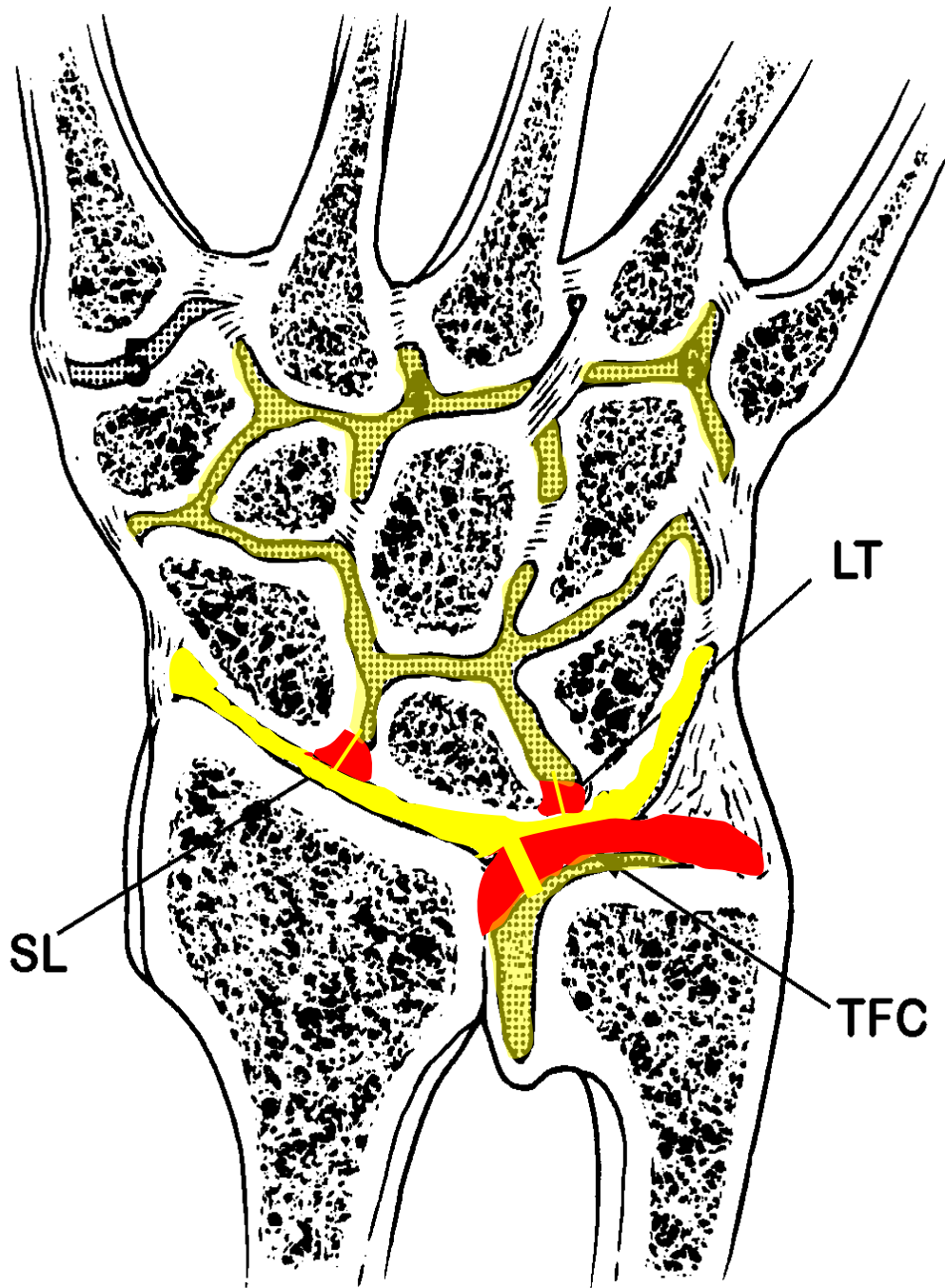


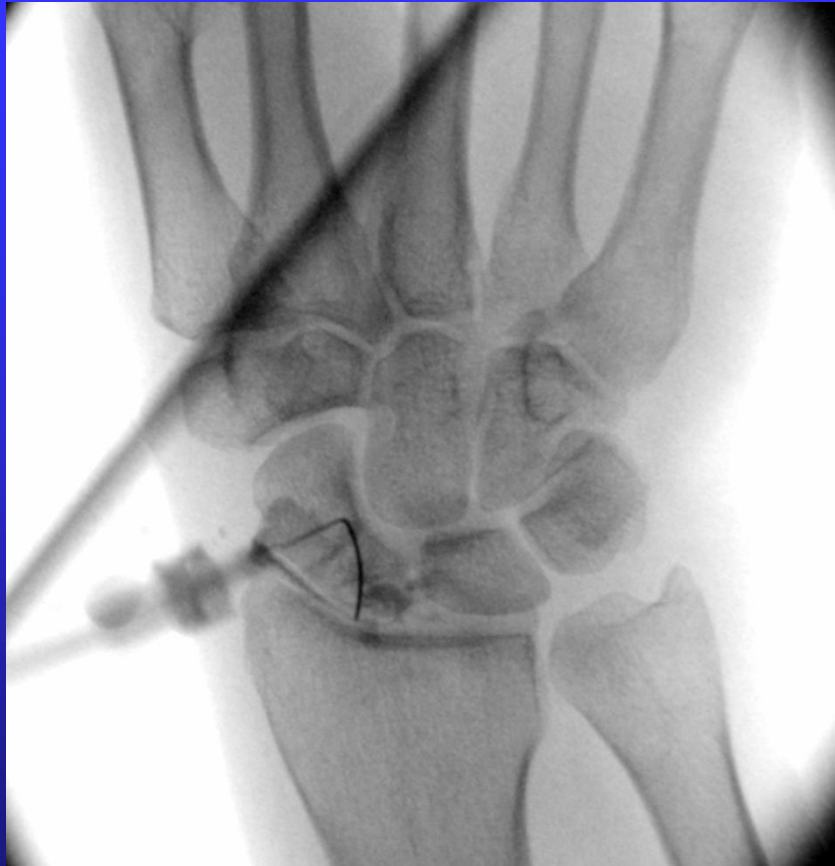


Wrist Arthrography

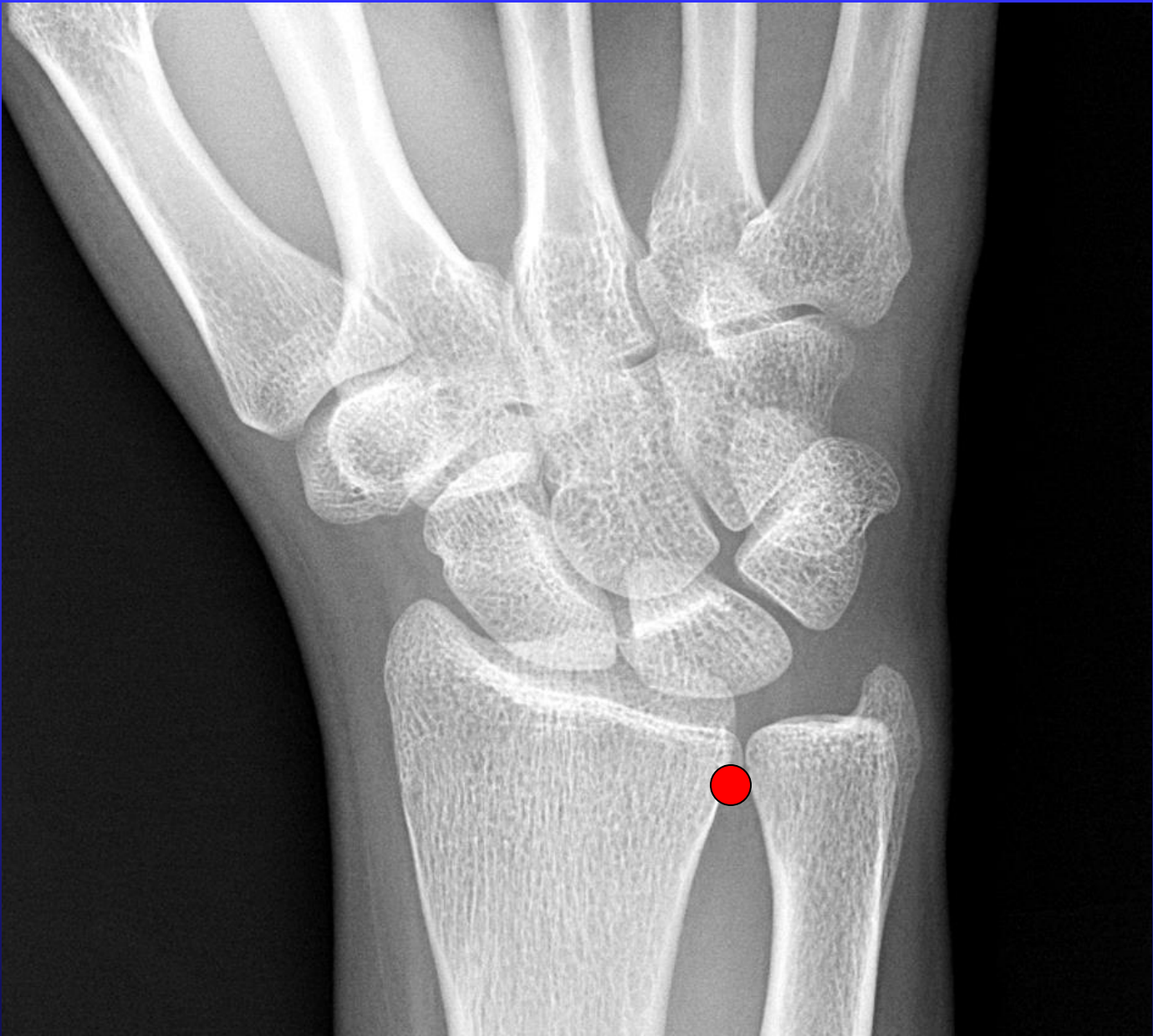
- Unicompartmental
 - Radiocarpal joint
 - 2-3 cc's
- Three compartment
 - Inject radiocarpal first
 - Wait 2 hours
 - Inject midcarpal and then DRUJ

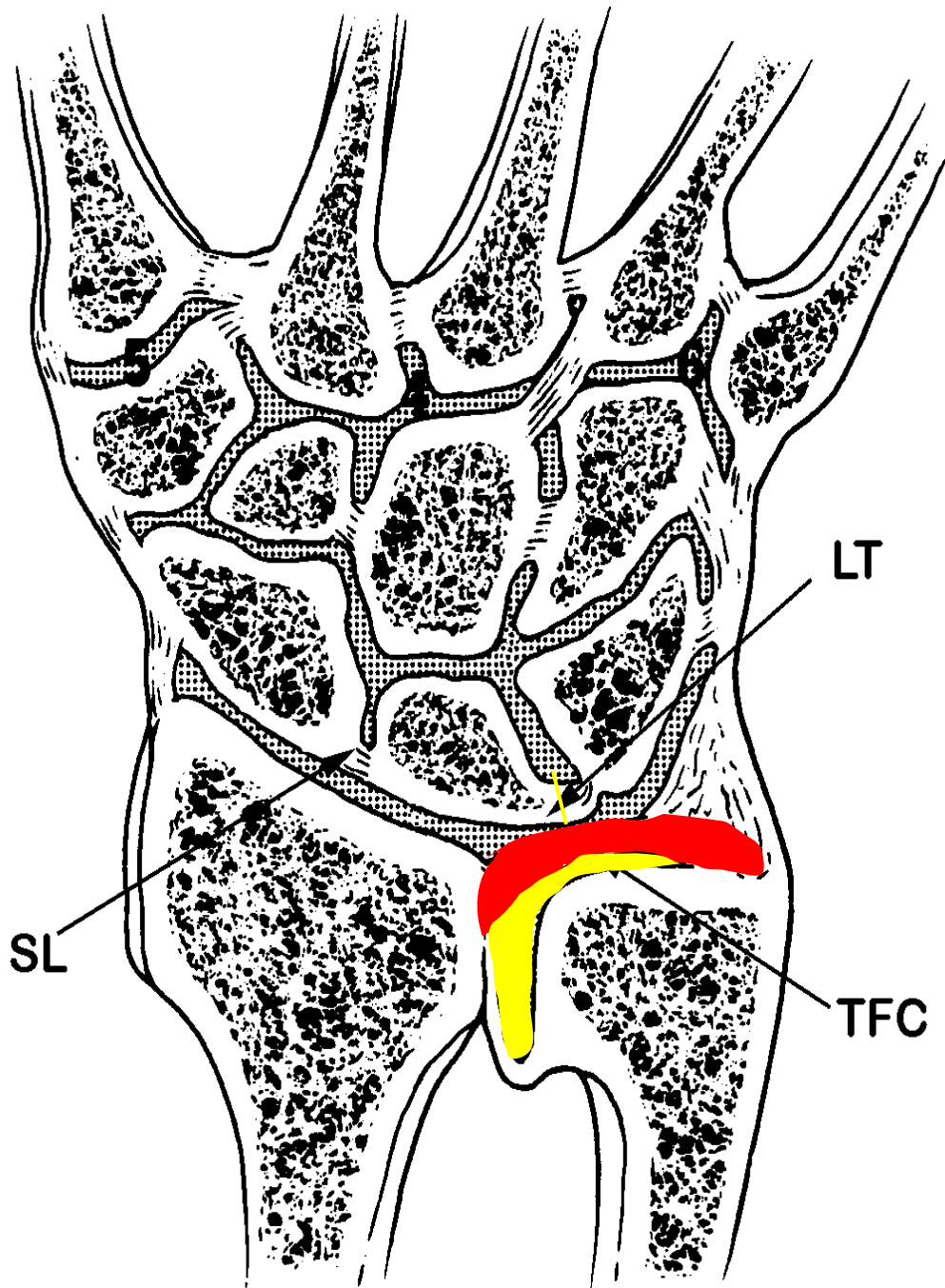


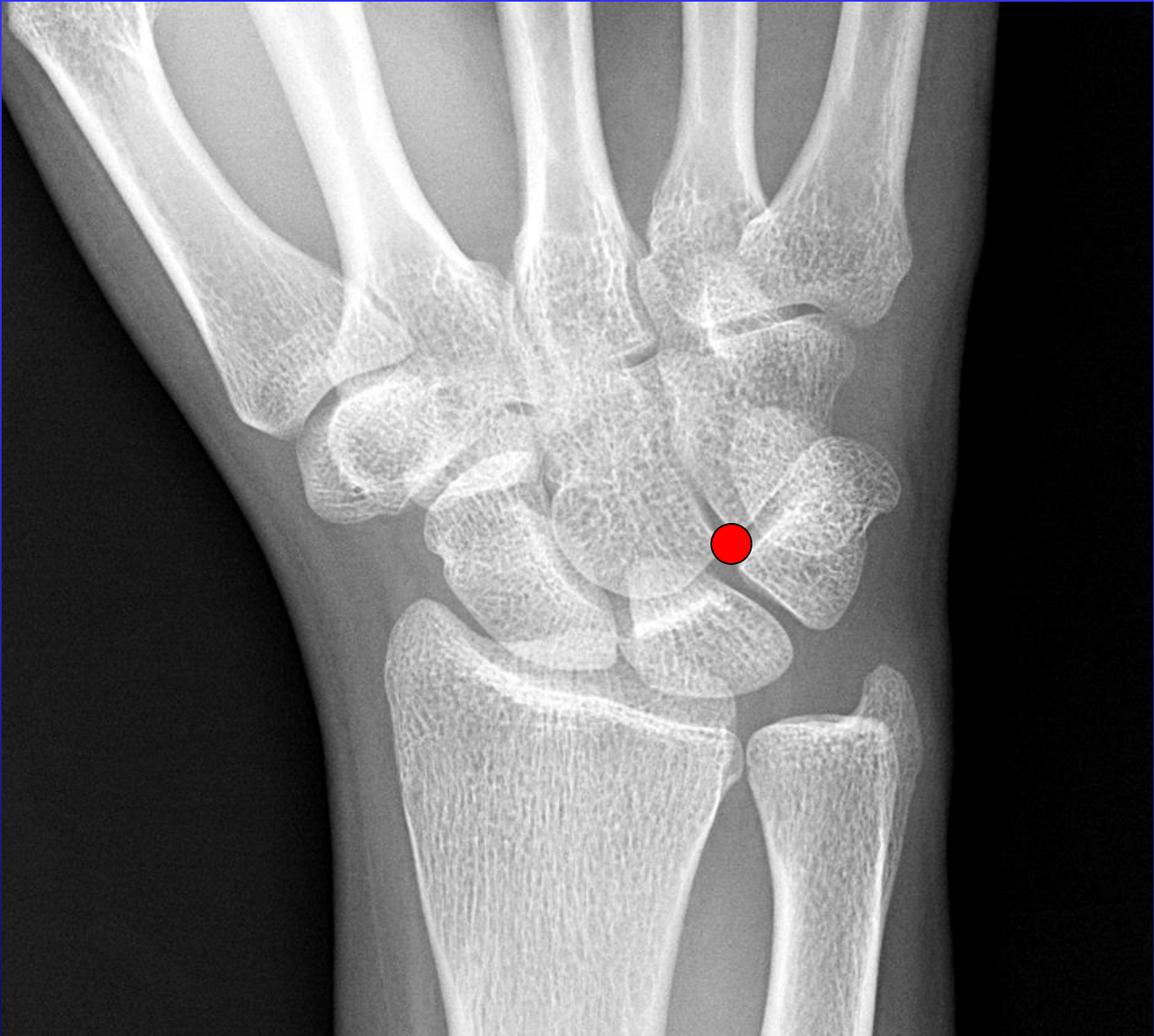


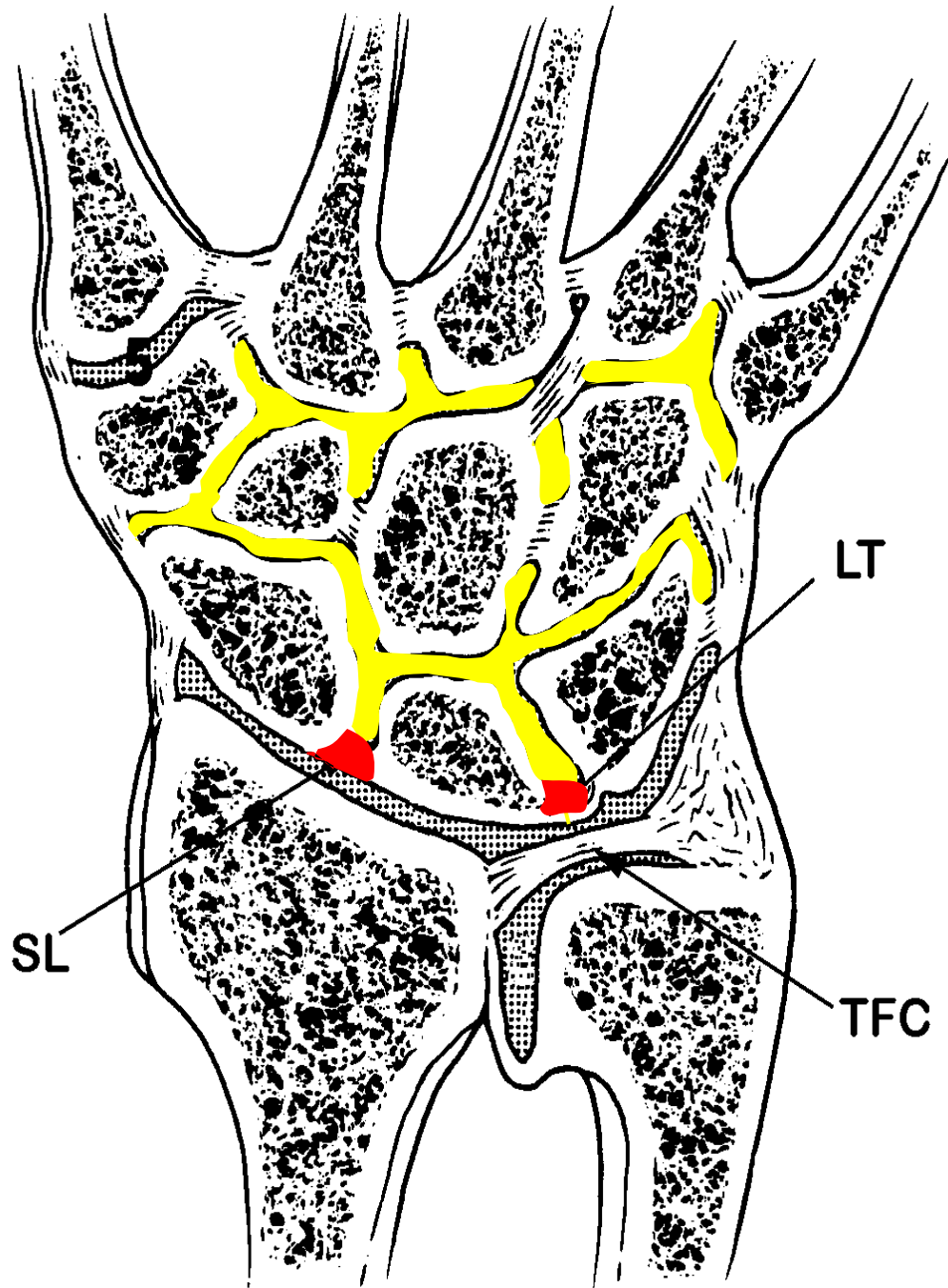






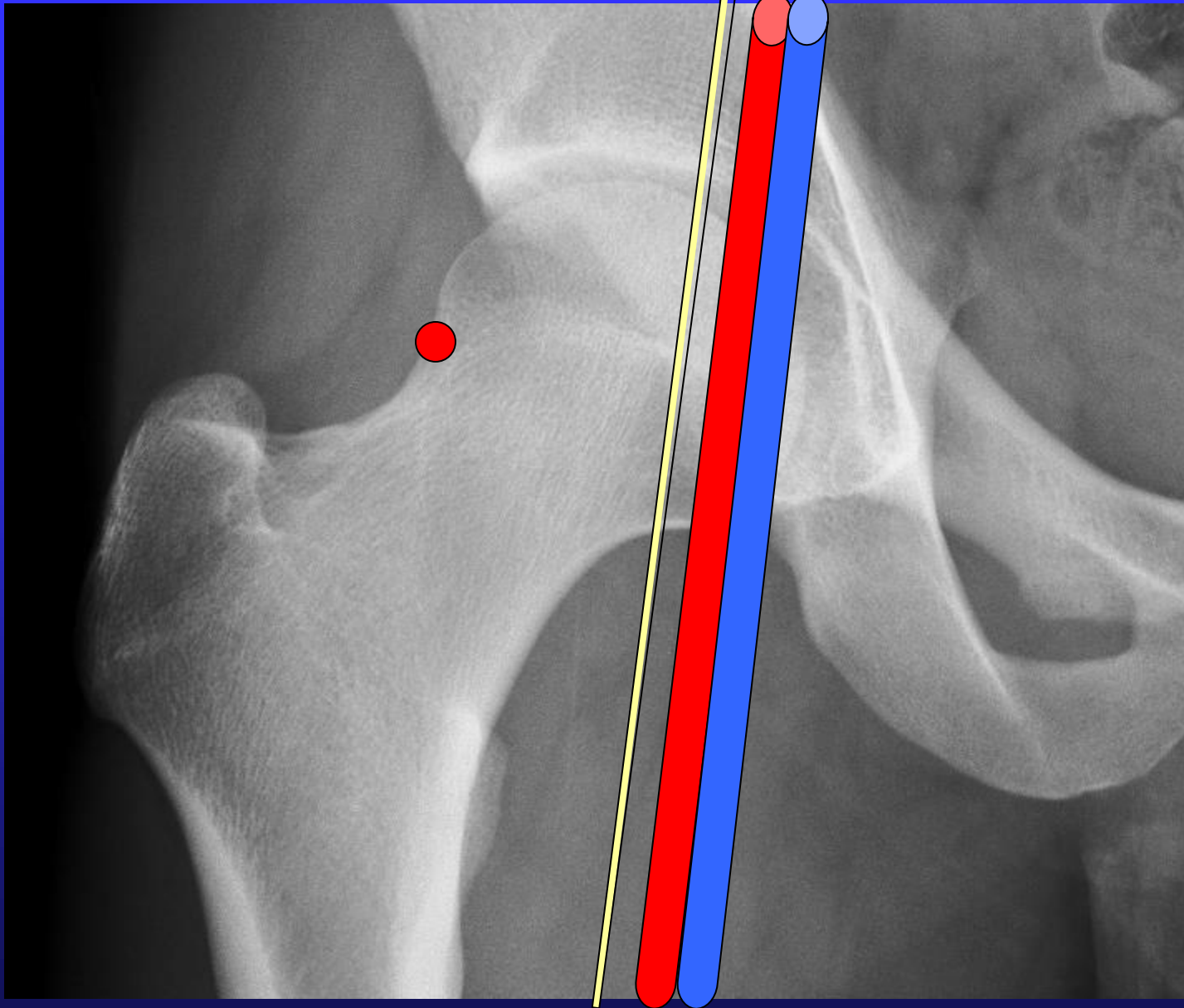


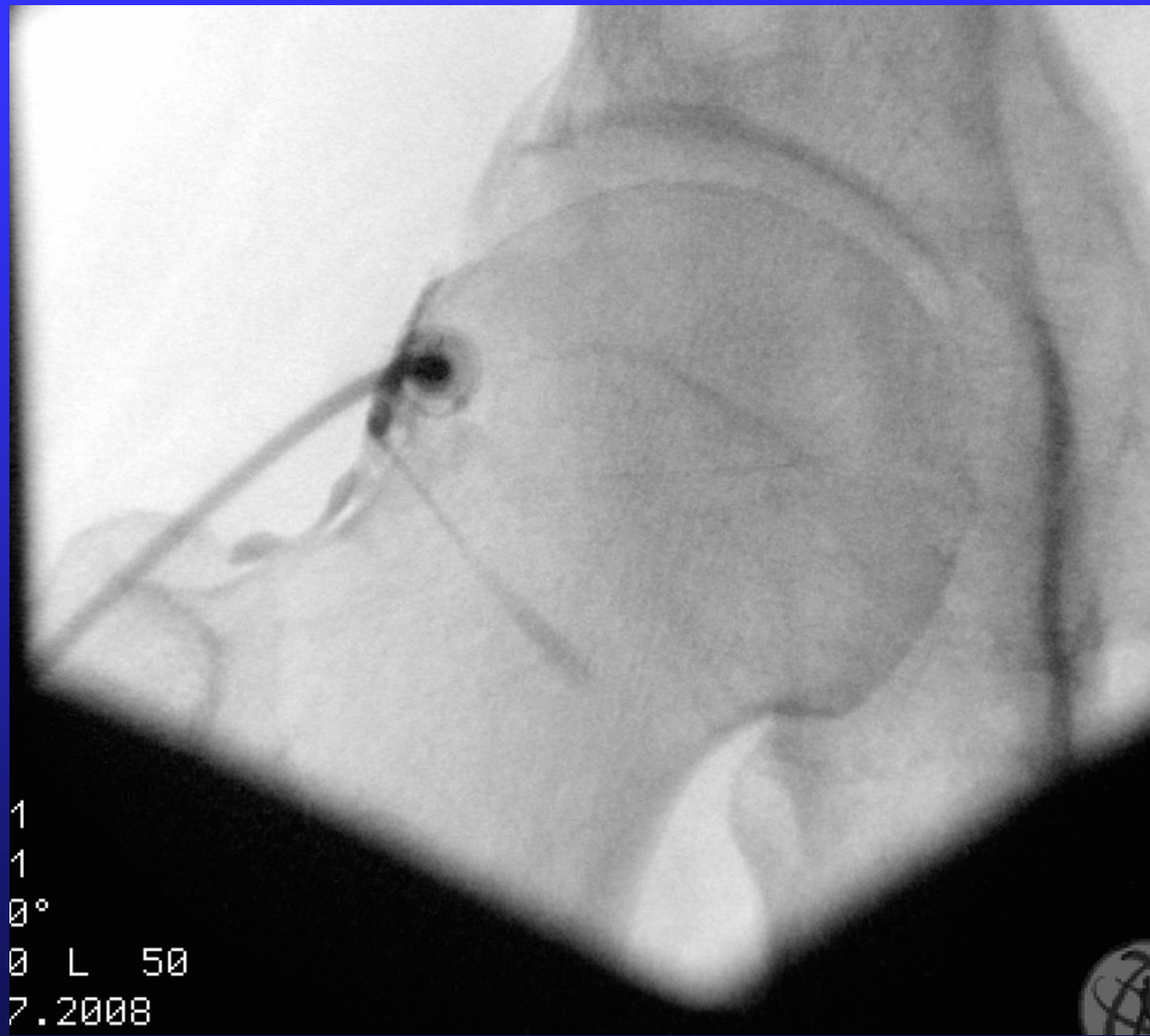




Hip Arthrography

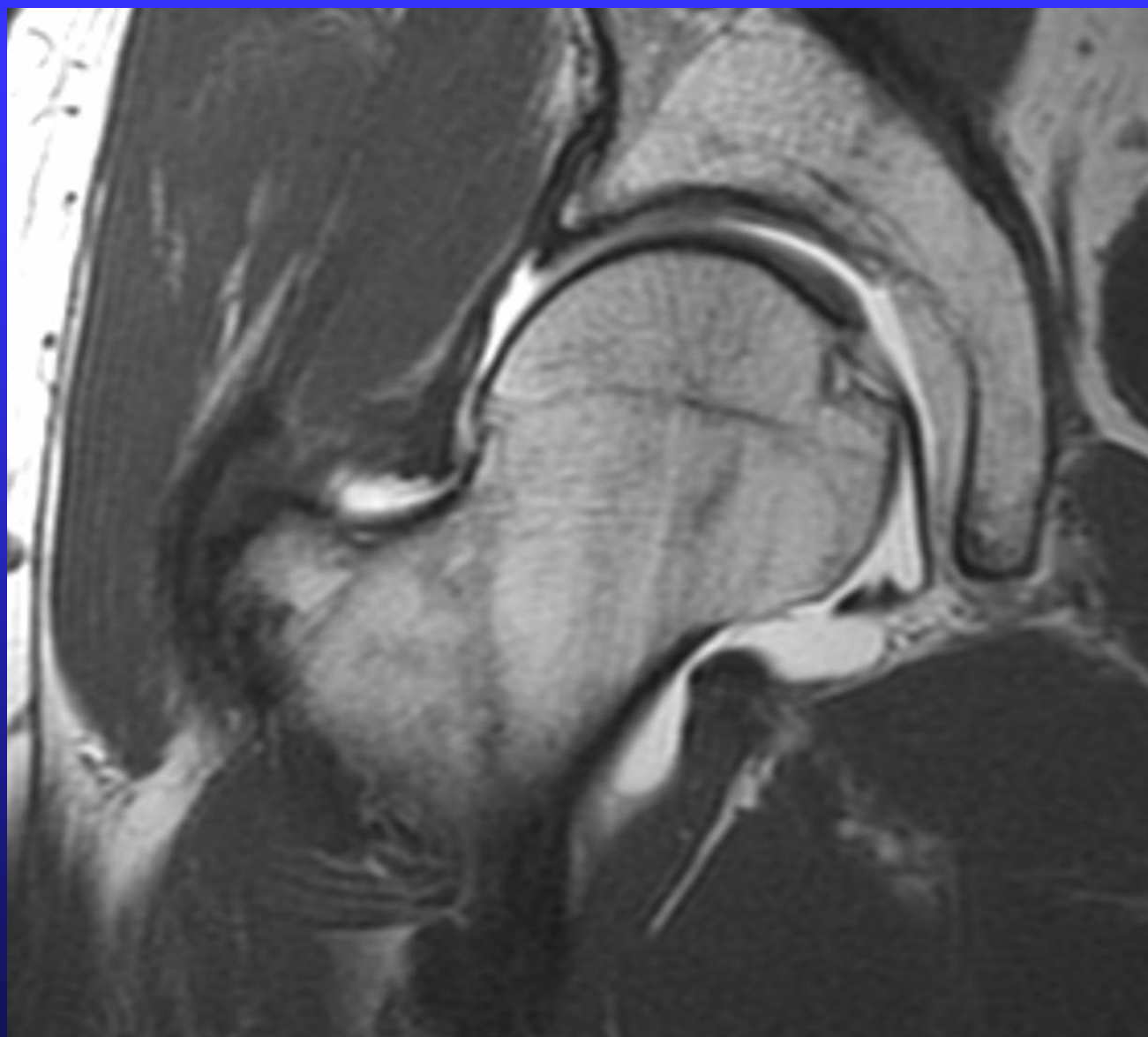
- Hip in internal rotation
- Use a lateral approach to avoid neurovascular structures
- 10-15cc's





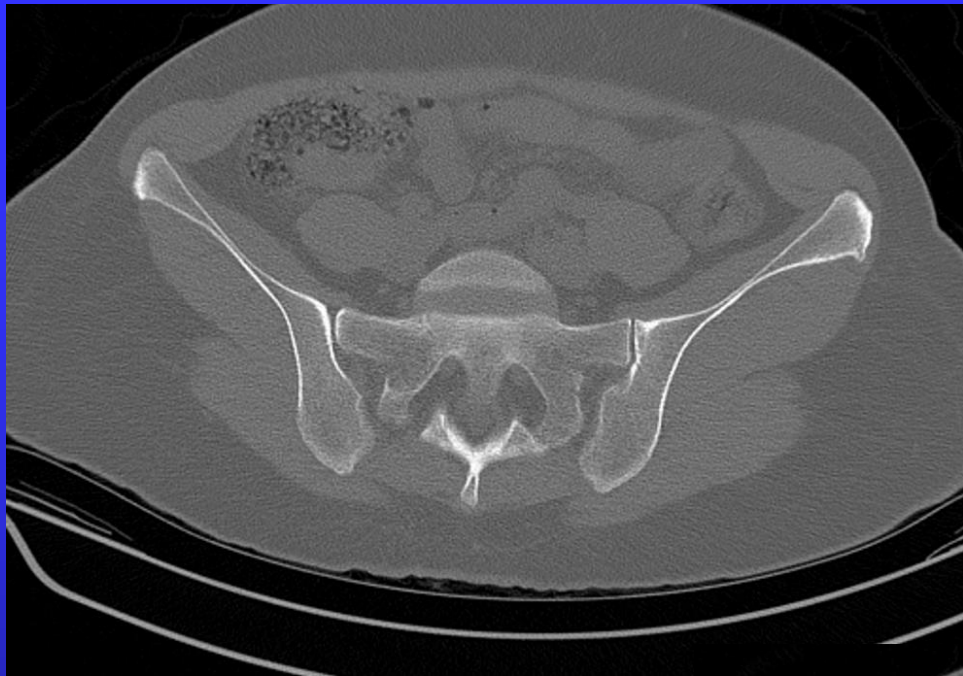
1
1
0°
0 L 50
7.2008

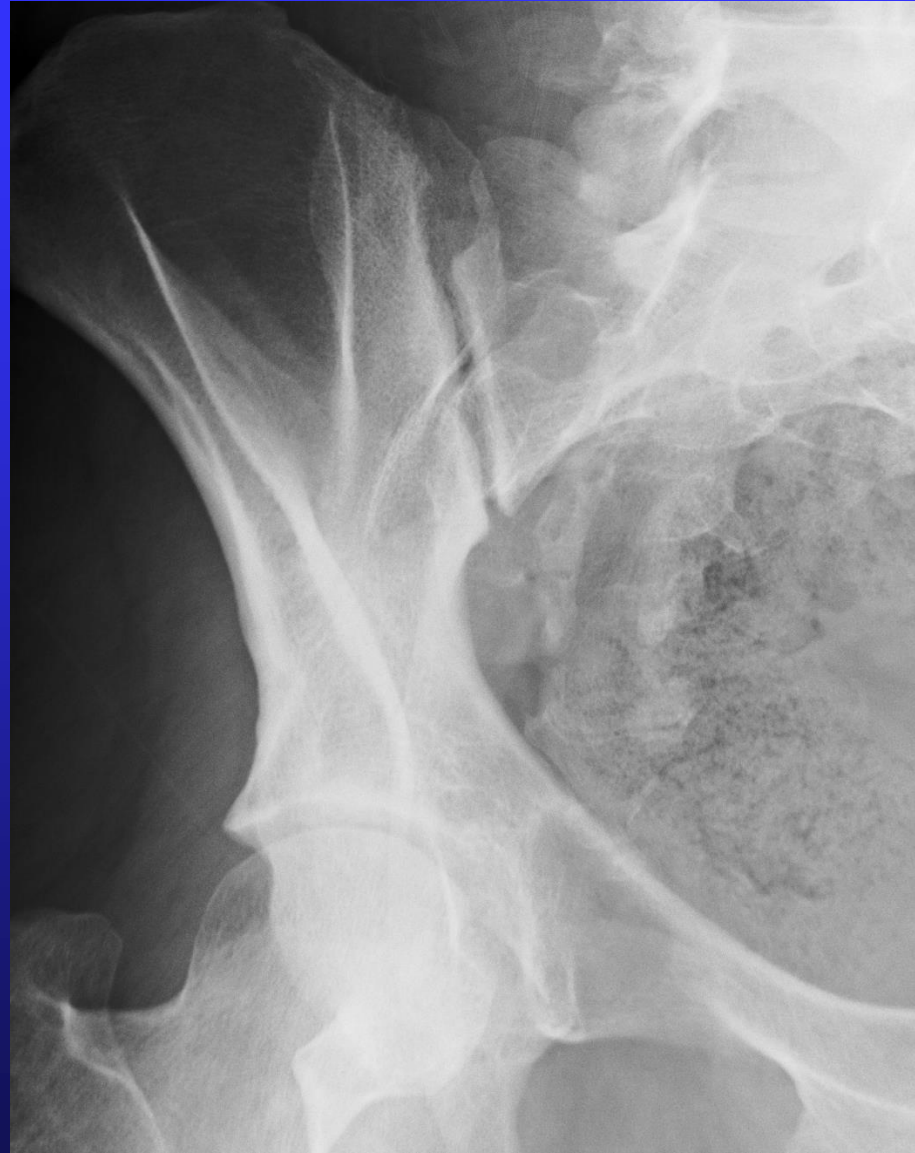




Sacroiliac Joint Injection

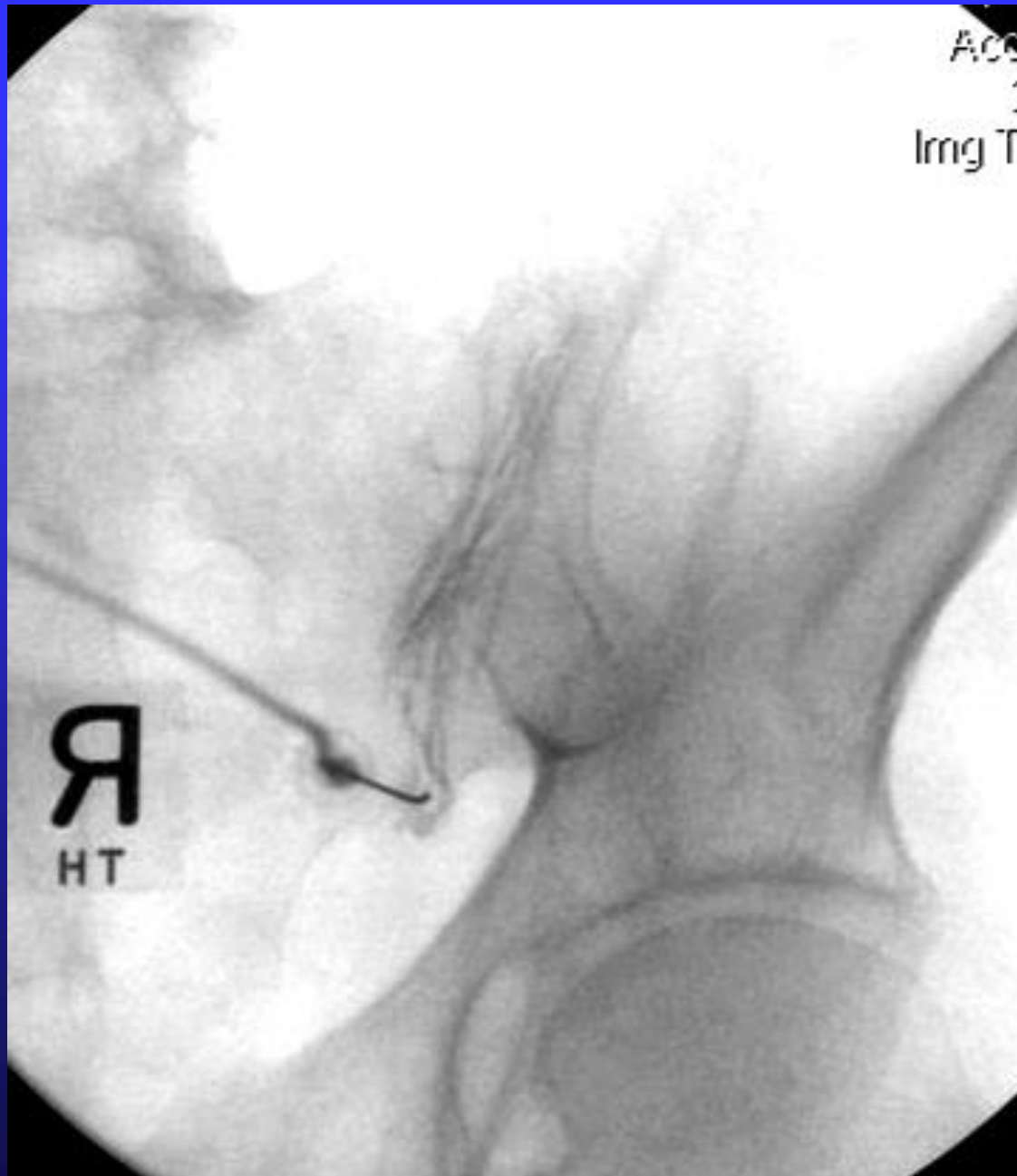
- Can be performed under fluoroscopy or CT
- Small volume joint (1-3 cc's)
- Only the inferior 1/3 is a diarthrodial (synovial) joint





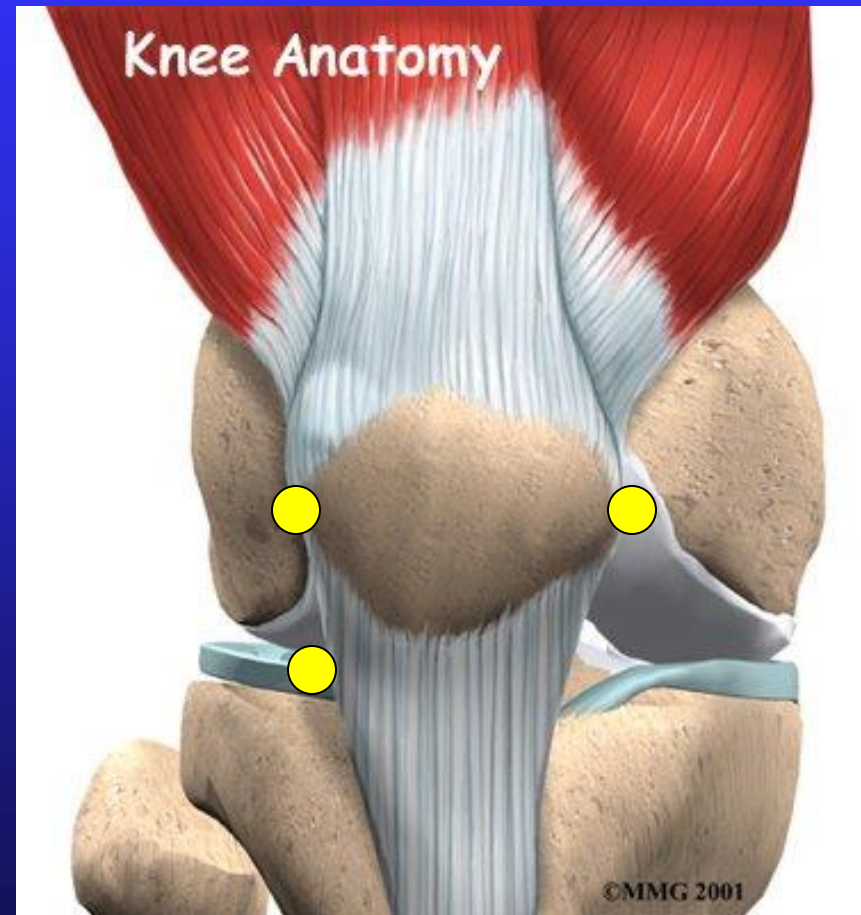
ACC
2
Imng T

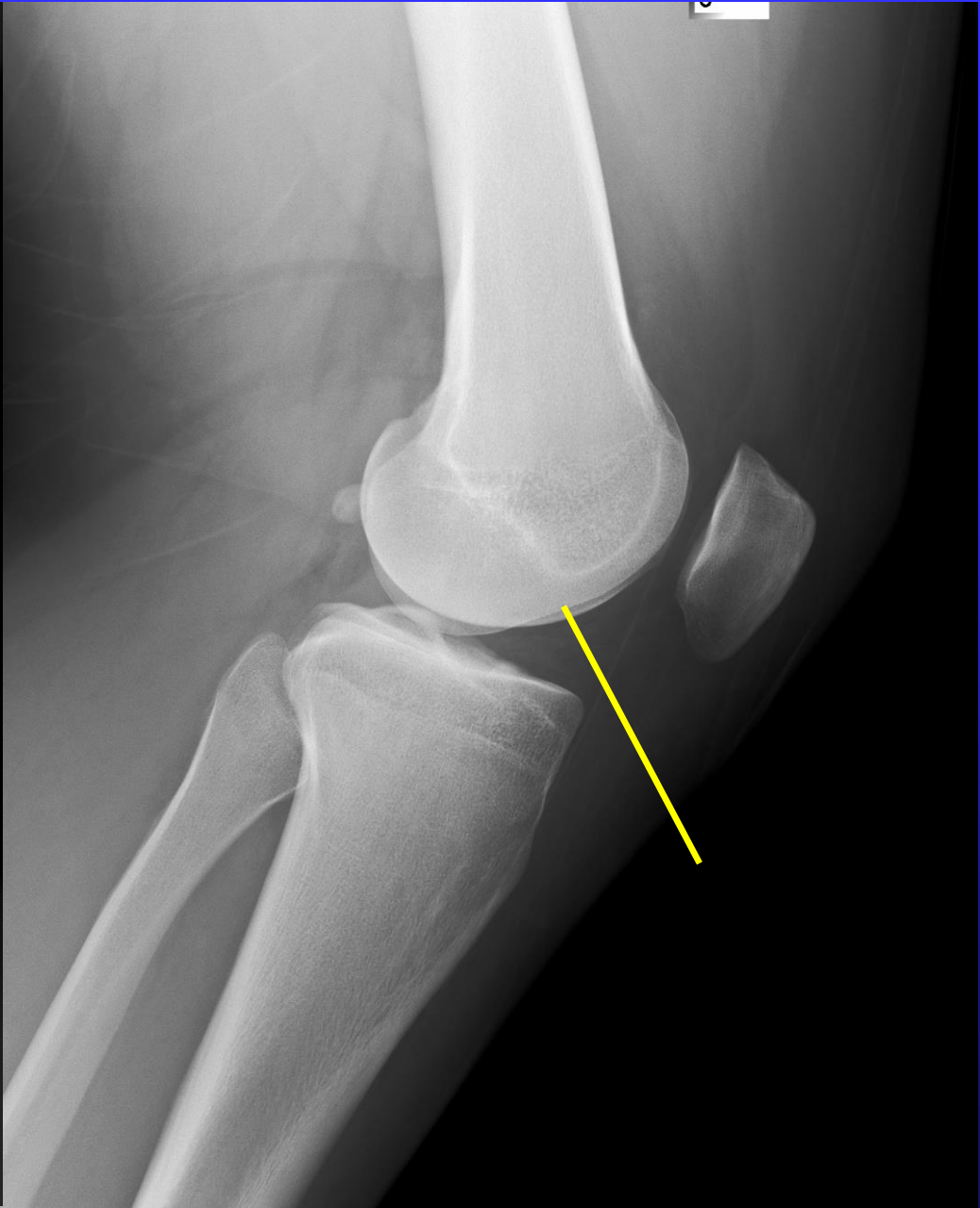
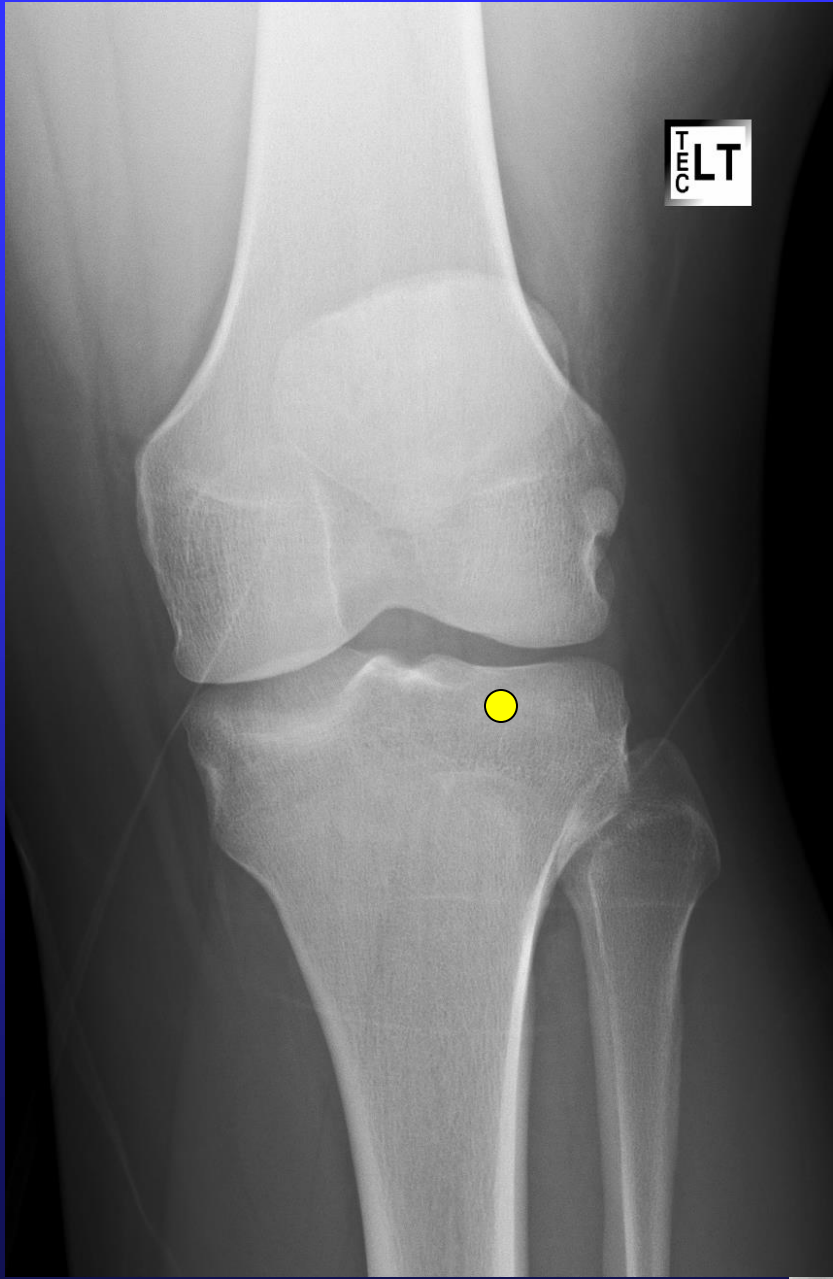
R
HT

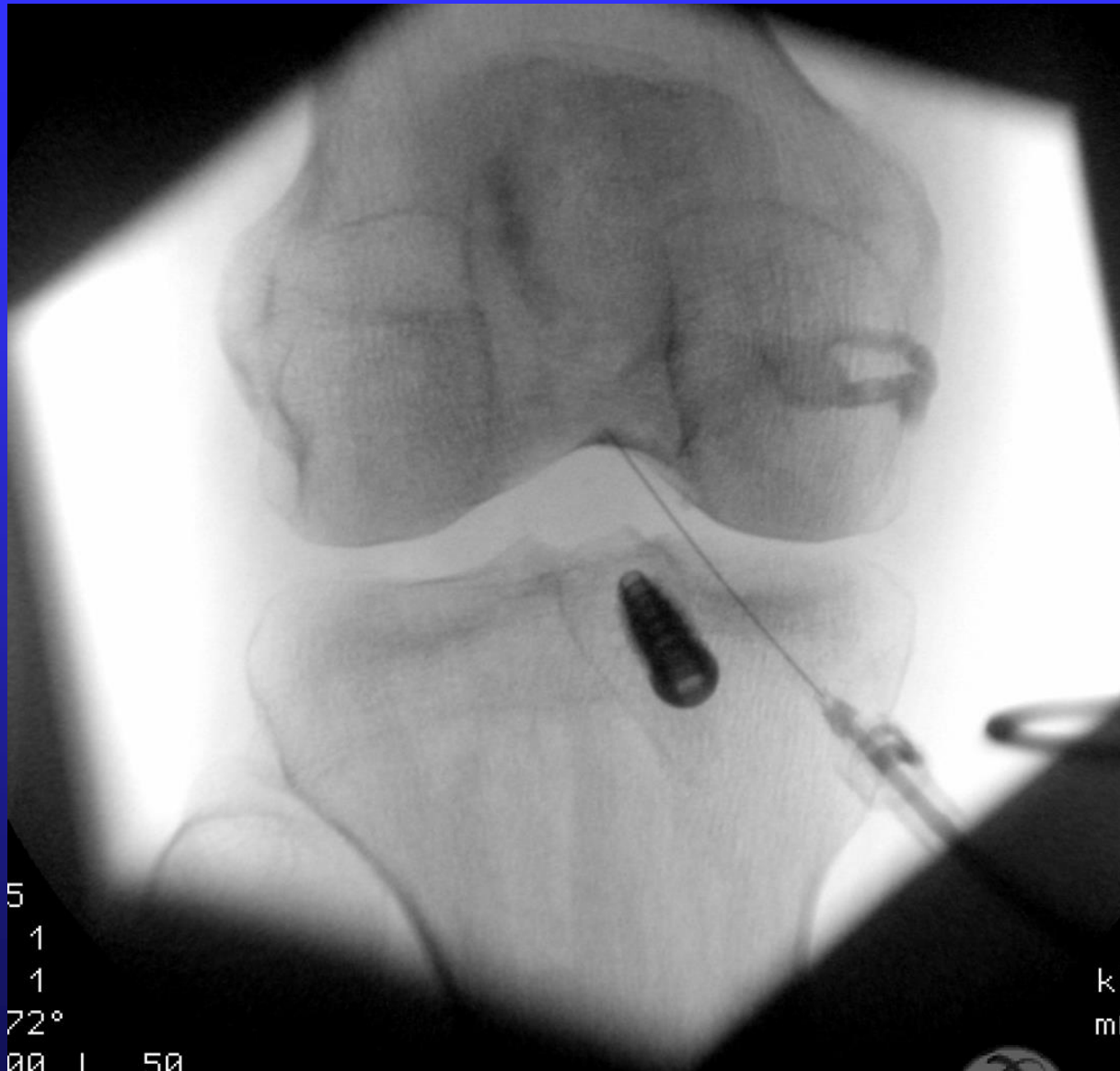


Knee Arthrography

- Approaches:
 - Medial parapatellar
 - Lateral parapatellar
 - Infrapatellar (medial or lateral)
- 40 cc's







5

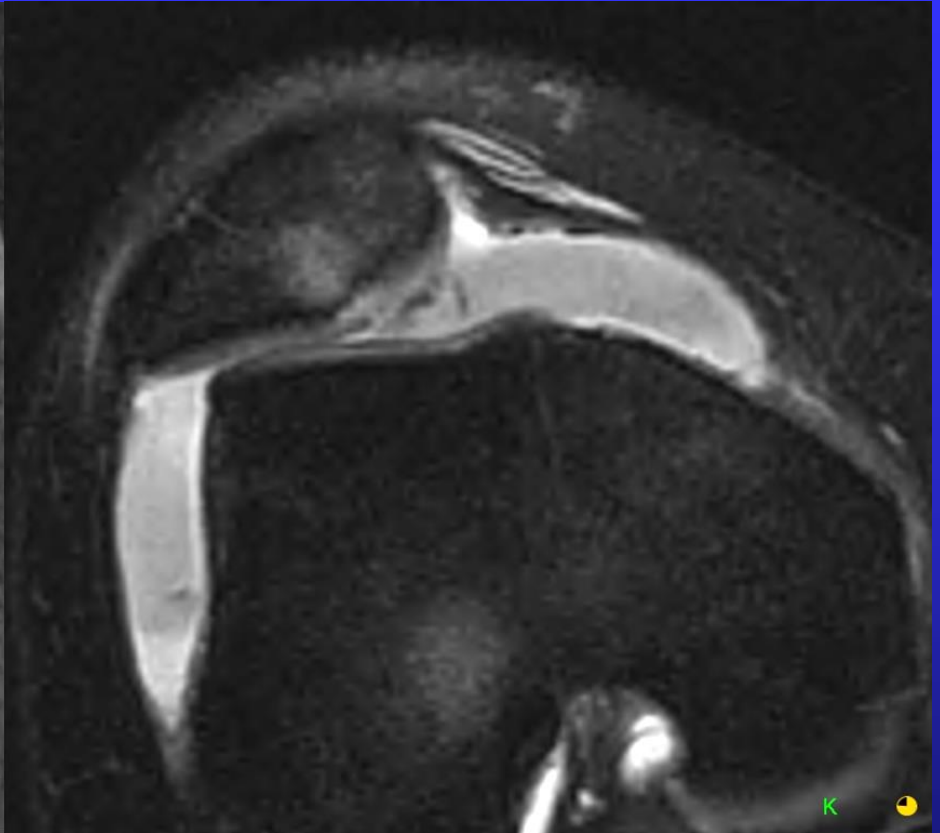
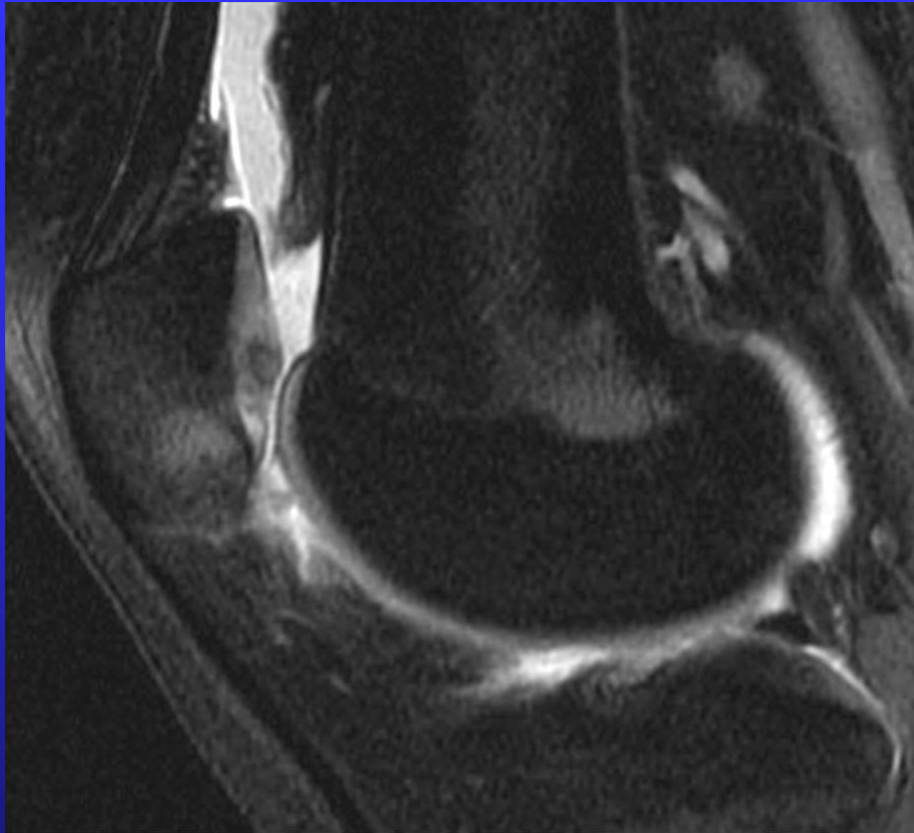
1

1

72°

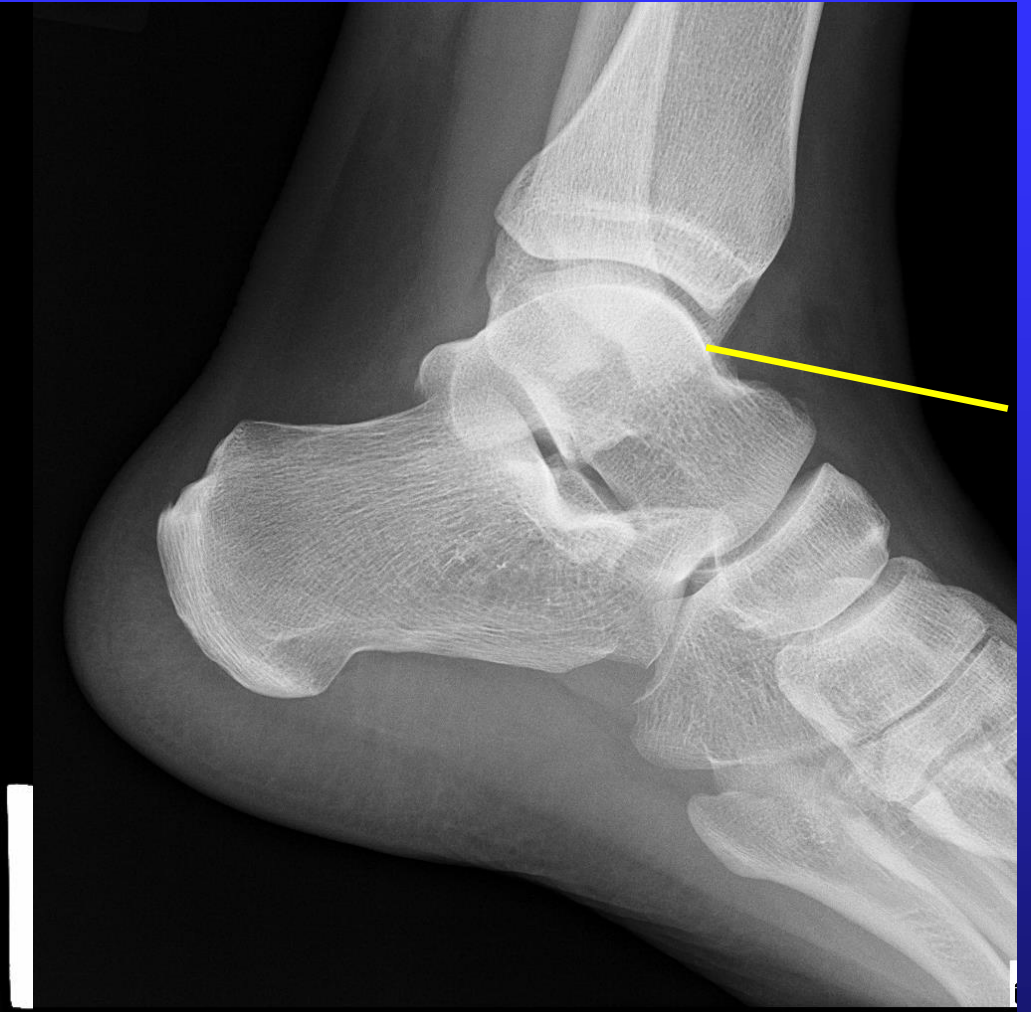
00 | 50

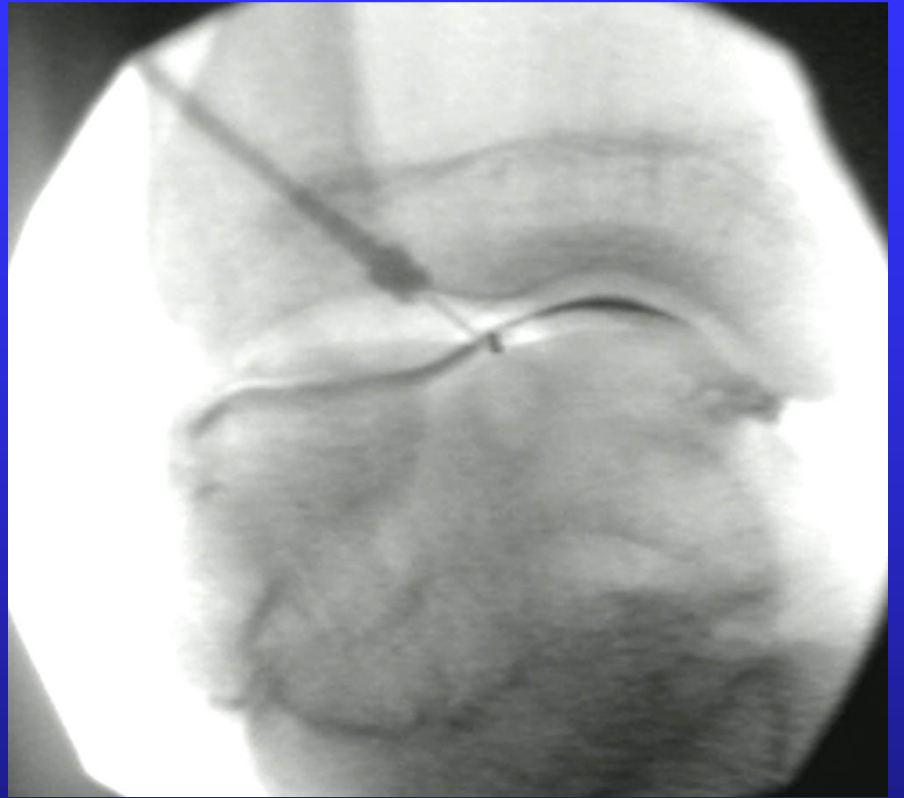
k
mf

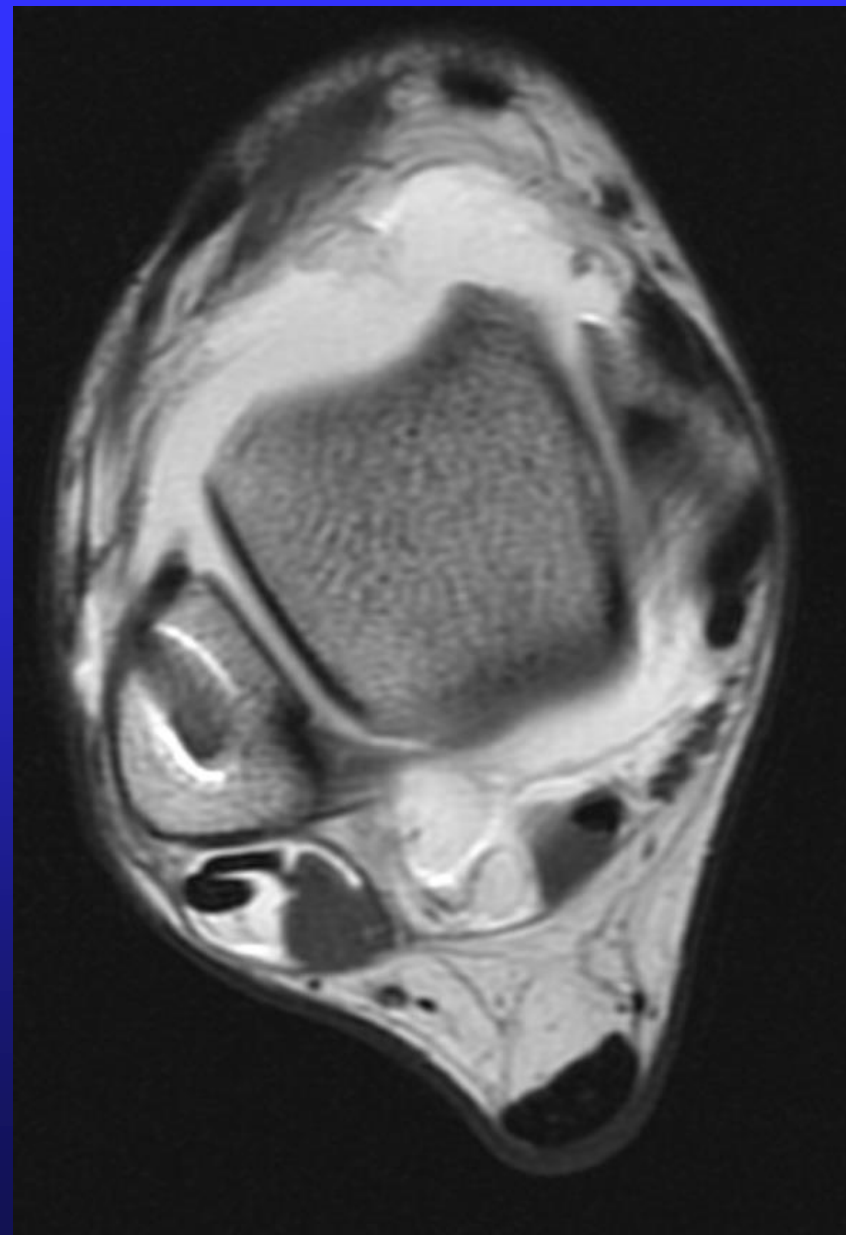


Ankle Arthrography

- Approach:
 - Anterior tibiotalar
 - Lateral projection view
- 10-20 cc's



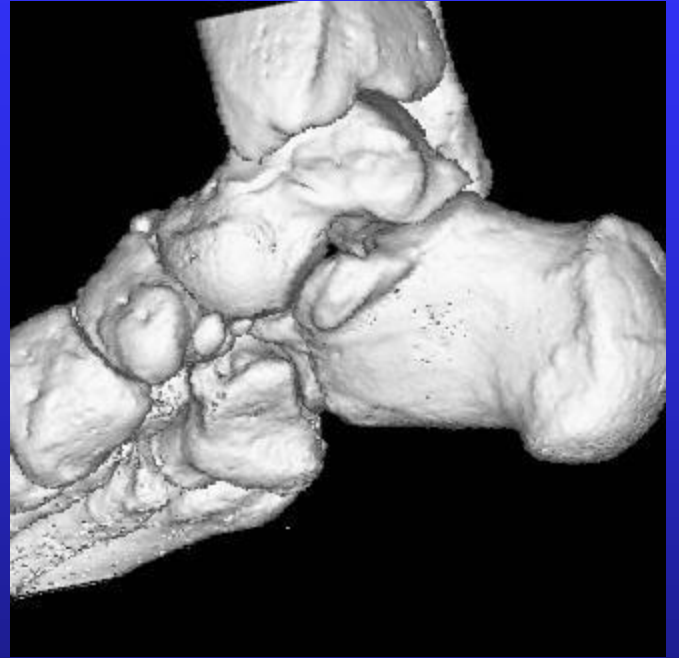


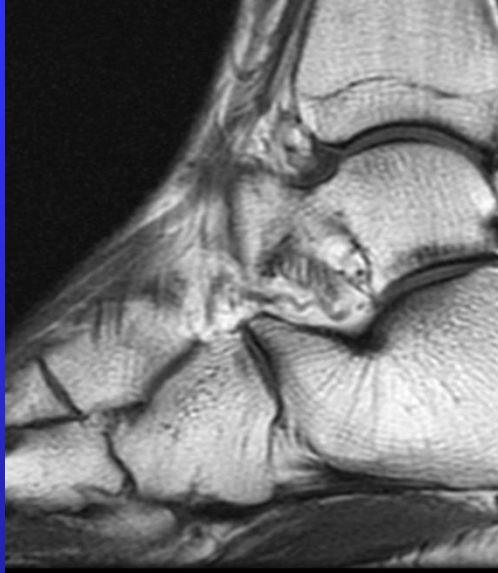
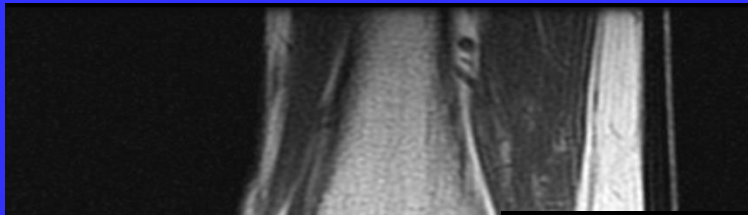


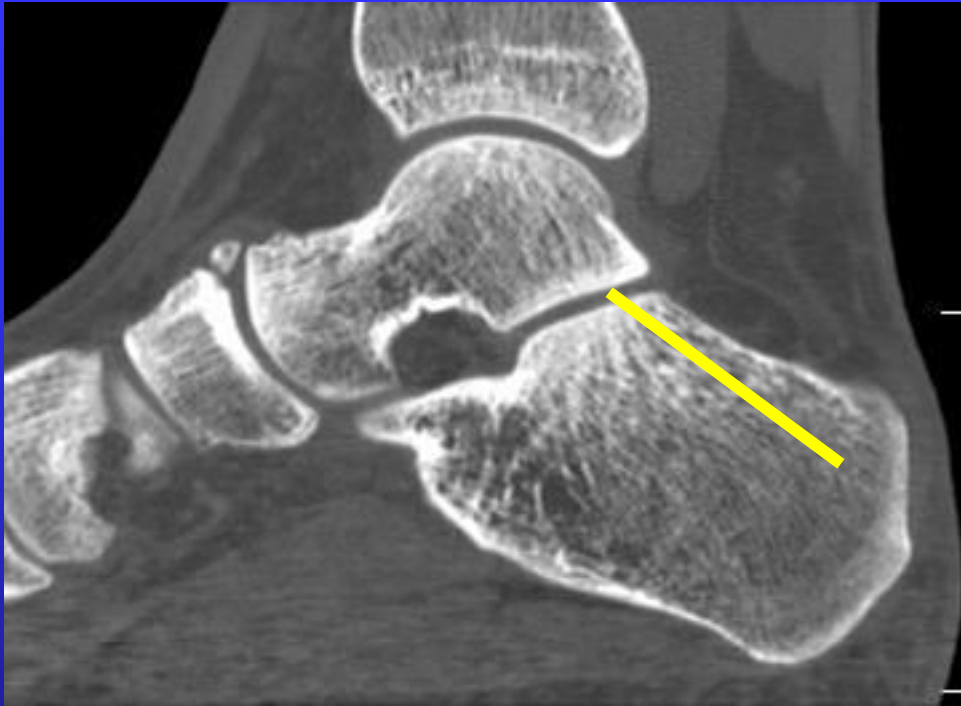
Subtalar Injection

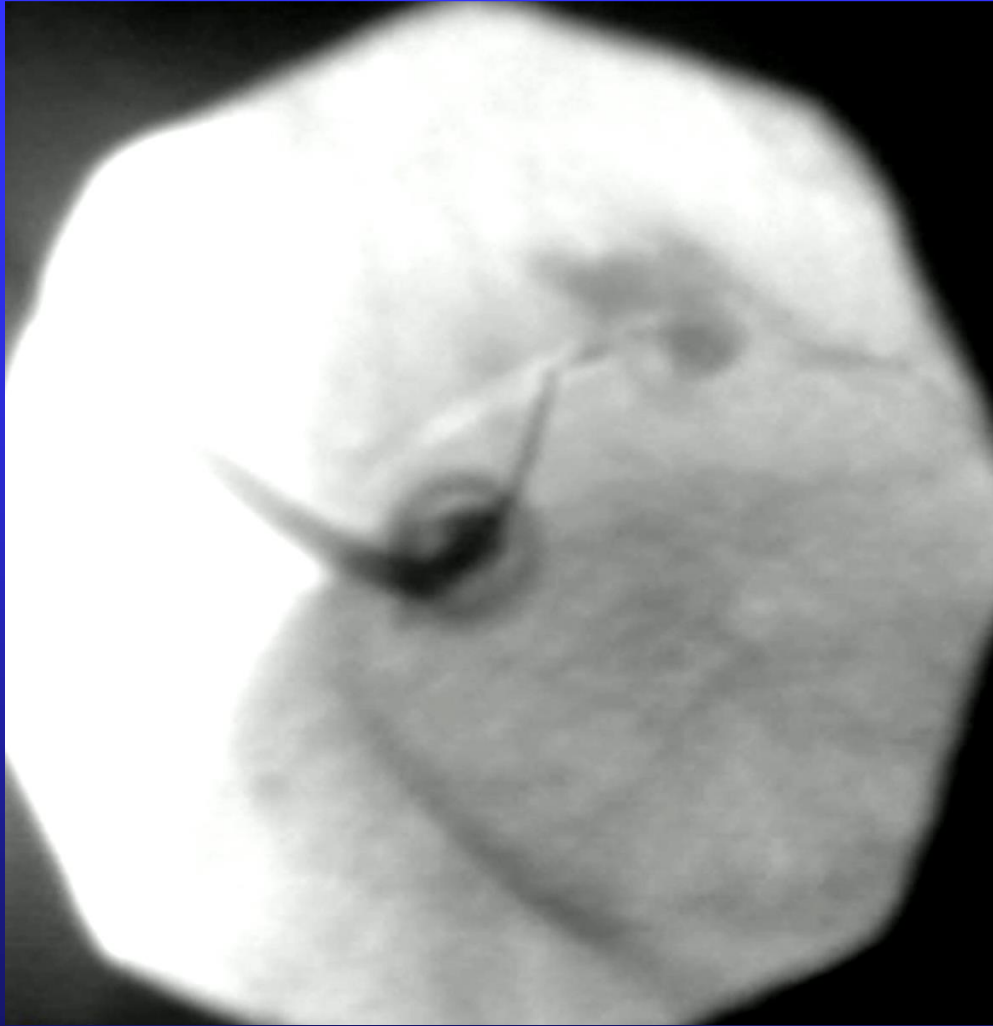
- Complex angle of joint
- Posterolateral approach
- 2-5 cc's











Other Foot Joints

- Calcaneocuboid
- Talonavicular
- Tarsometatarsal
- Others



Arthrography: Summary

- Must understand the anatomy of what you are injecting
- Simplest, most direct route
- Air good for XR and CT, bad for MRI
- Document, document, document!

Thank You