

How Not to Miss the Easily Missed:

Hand and Wrist Pathology— Recognition and Management



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Hand and Upper Extremity
Surgery
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Conflicts of Interest

- ❖ Nothing to disclose



Objectives



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- ❖ Understand basic approach to hand and wrist examination
- ❖ Identify common injury and pathology patterns
- ❖ Understand basic workup to avoid missing subtle injuries
- ❖ Distinguish more serious problems requiring specialist evaluation



Hand and Wrist Pain

- ❖ Focused History
- ❖ Observation and Range of Motion
- ❖ Palpation
 - ❖ Anatomical knowledge
- ❖ Special Tests

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A Detailed History

- ❖ Age, Hand Dominance
- ❖ Occupation
 - ❖ Laborer? Skilled professional?
- ❖ PMH
 - ❖ Previous injuries
 - ❖ RA, gout, lupus, DM

- ❖ Complaint
 - ❖ Traumatic mechanism
 - ❖ Nontraumatic
 - ❖ Symptom duration, progression, sequence
 - ❖ Modifying factors

Physical Examination

- ❖ Examine entire upper extremity
 - ❖ Cervical Spine
 - ❖ Shoulder, Elbow, Wrist, Hand, Fingers
 - ❖ Active ROM
 - ❖ Inspection
 - ❖ Color
 - ❖ Swelling/Edema
 - ❖ Abnormal position or posture
 - ❖ Skin moisture/sweating
 - ❖ Localized tenderness
 - ❖ Sensibility
- ❖ Extremity should be EXPOSED



Physical Examination Inspection

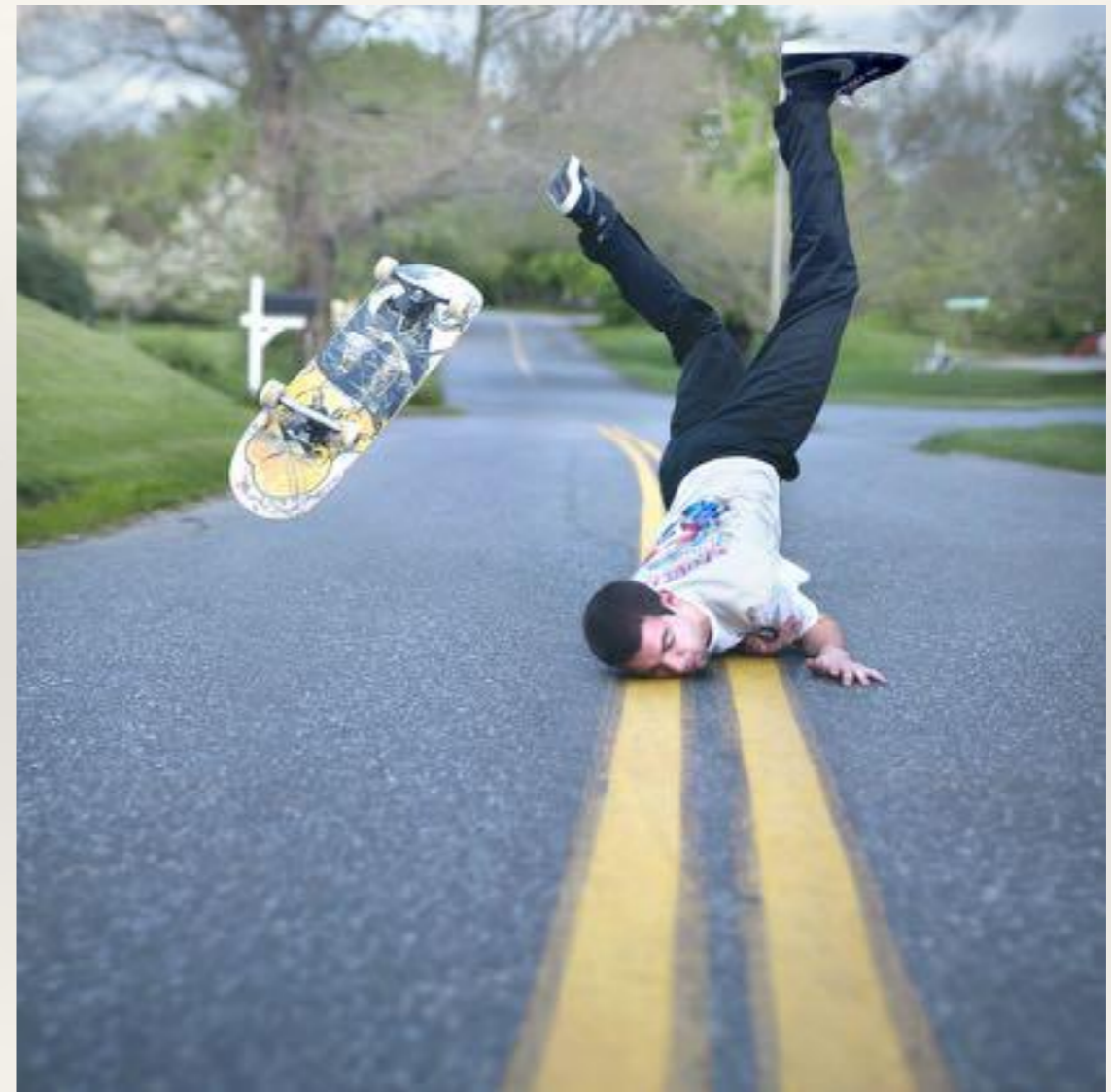
- ❖ Deformity
- ❖ Edema
- ❖ Wrinkles
- ❖ Color
- ❖ Moisture
- ❖ Scars
- ❖ Lesions
- ❖ Muscle wasting



<http://iwritealot.com/wp-content/uploads/2009/09/helping-hand.jpg>

Wrist Pain

- ❖ Patient complains of wrist pain after fall onto outstretched hand
- ❖ Minimal swelling
- ❖ Very mild wrist tenderness dorsally
- ❖ Wrist radiographs negative



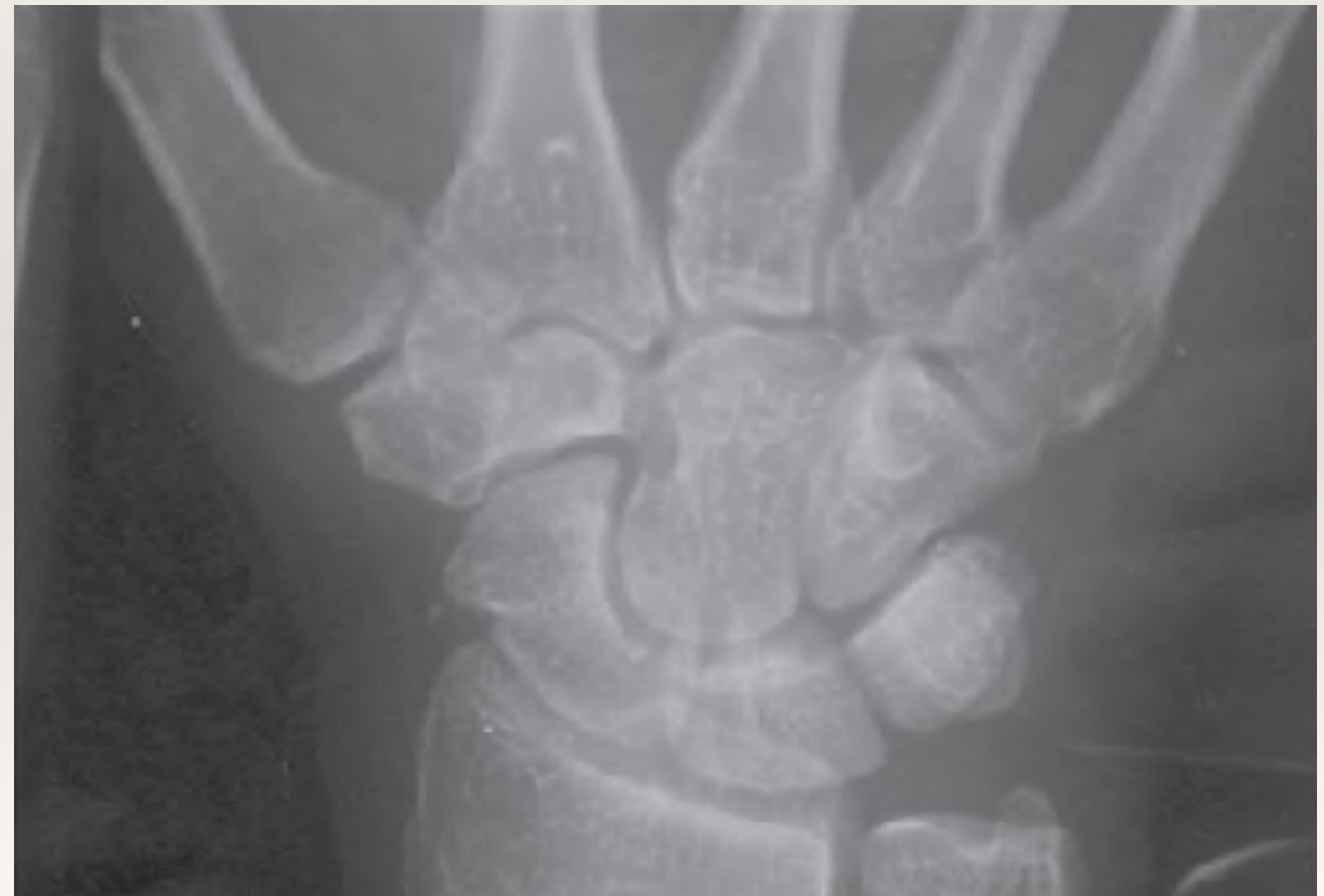
Wrist Pain



Rhemrhev et al

**Just a
sprain?**

- ❖ Tenderness in snuffbox



Phillips et al

Occult Scaphoid Fracture

- ❖ 2 months after initial radiographs



Occult Scaphoid Fracture

- ❖ Most commonly fractured carpal bone
- ❖ Typically young men
- ❖ Delay in diagnosis
 - ❖ Nonunion
 - ❖ Delayed union
 - ❖ Stiffness
 - ❖ Weakness
 - ❖ Osteoarthritis



Occult Scaphoid Fracture



a

- Tenderness at snuffbox
- 90% sensitivity
- Nonspecific (40%)



b

- Tenderness at scaphoid tubercle
- More specific, similar sensitivity



c

- Scaphoid Compression test
- Questionable predictivity

Occult Scaphoid Fracture

- ❖ Differential Diagnosis
 - ❖ Distal radius, lunate, or 1st Metacarpal fracture
 - ❖ Scapholunate Ligament Injury
 - ❖ Traumatic Arthritis Flare
 - ❖ ECRL or FCR strain
 - ❖ De Quervain's Tenosynovitis

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Occult Scaphoid Fracture

- ❖ Imaging
 - ❖ AP, lateral, oblique X-ray views
 - ❖ Add scaphoid view for any suspected scaphoid injury
 - ❖ Limited sensitivity for nondisplaced fractures
 - ❖ **Up to 30% occult scaphoid fractures negative on initial imaging**



Occult Scaphoid Fracture

- ❖ MRI

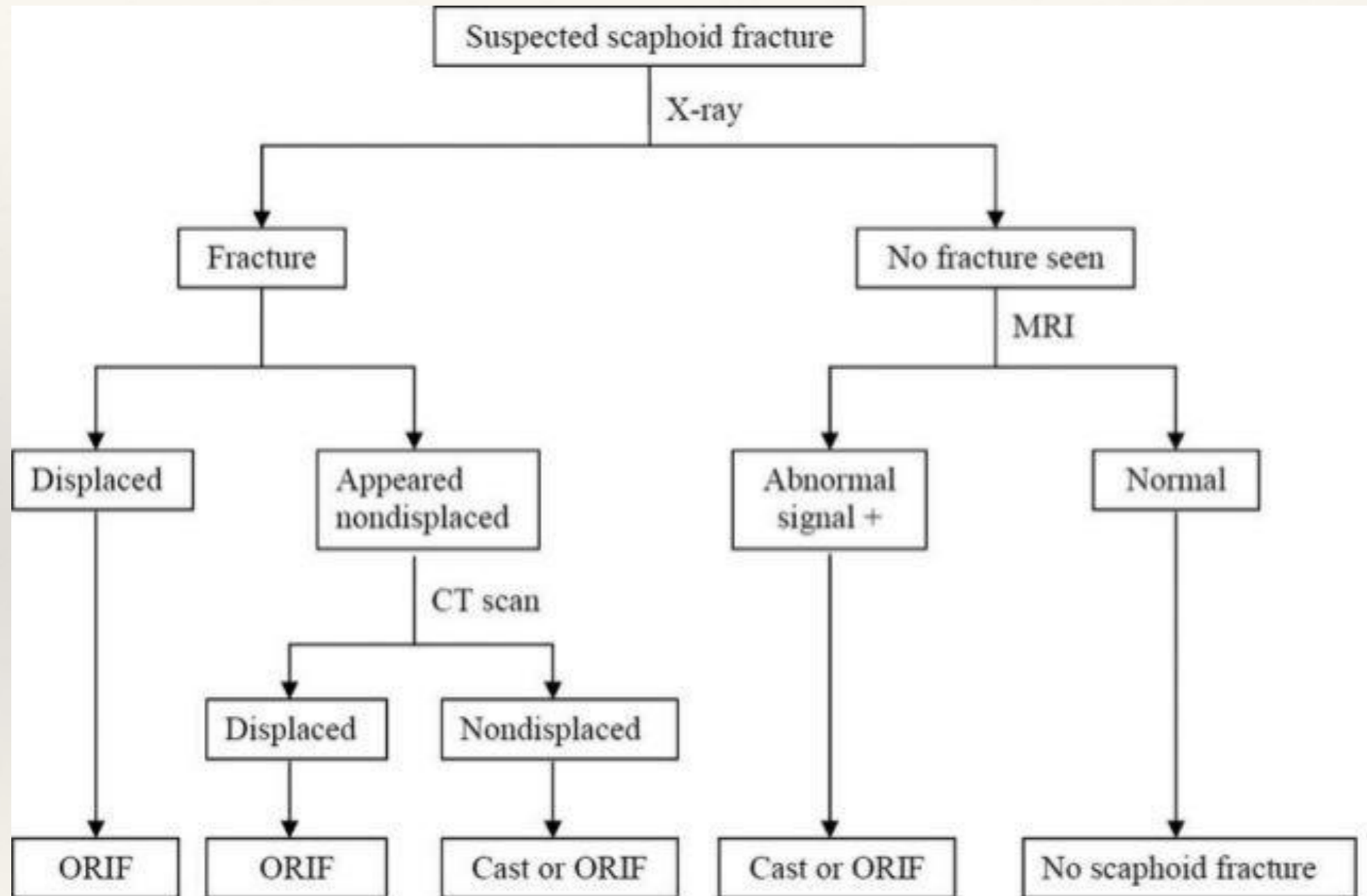
- ❖ Can differentiate sprain from scaphoid fracture in acute evaluation
- ❖ Useful for athletes, musicians, skilled laborers to avoid unnecessary prolonged immobilization
- ❖ High suspicion



Occult Scaphoid Fracture

❖ Algorithm

- ❖ May splint if no fracture seen on initial XR
- ❖ Repeat XR in 2 weeks
- ❖ If persistent pain and negative XR, obtain MRI then



Wrist Pain

- ❖ Patient complains of wrist pain after fall onto outstretched hand
- ❖ Minimal swelling
- ❖ Very mild wrist tenderness dorsally
- ❖ Wrist radiographs negative

❖ **Just a sprain?**



Scapholunate Instability

- ❖ Pain after fall with impact to hypothenar eminence as wrist is forcibly extended
- ❖ Provocative signs limited in setting of acute pain
- ❖ Dorsal tenderness poorly localized initially

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Scapholunate Instability

- ❖ Subacute Presentation (1-6 weeks after injury)
 - ❖ Fall
 - ❖ Painful popping or clicking with activity
 - ❖ Decreased grip strength
 - ❖ Tenderness at scaphoid and dorsal SL interval

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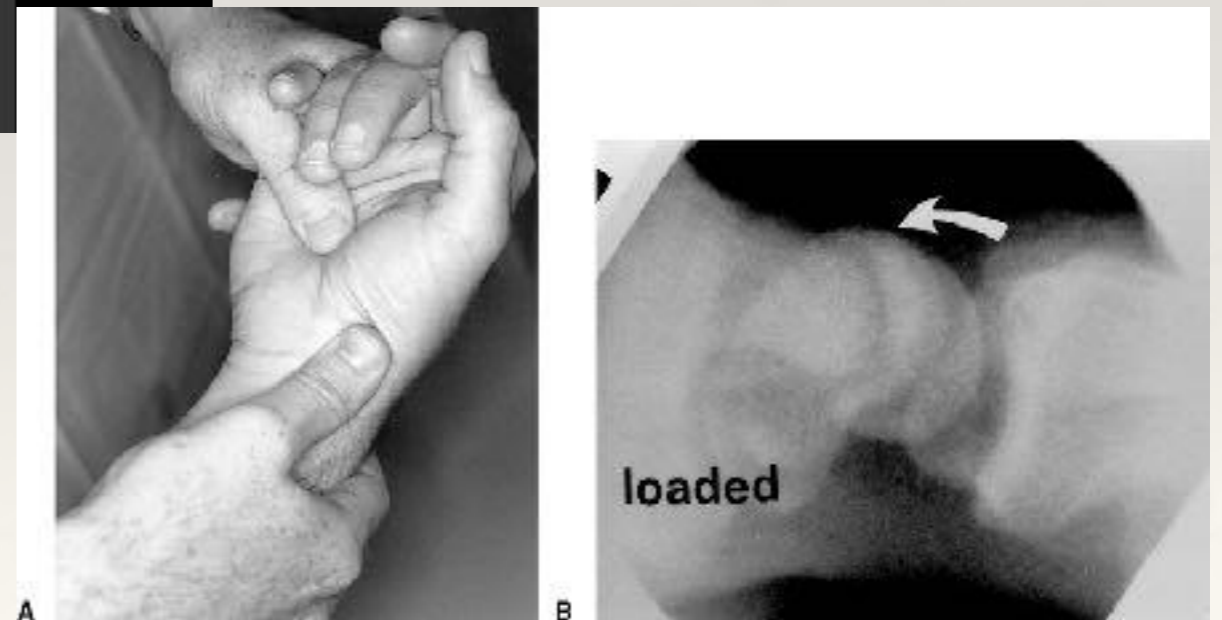


Scapholunate Instability

Scapholunate Ligament Insufficiency

Watson (Scaphoid Shift) Test

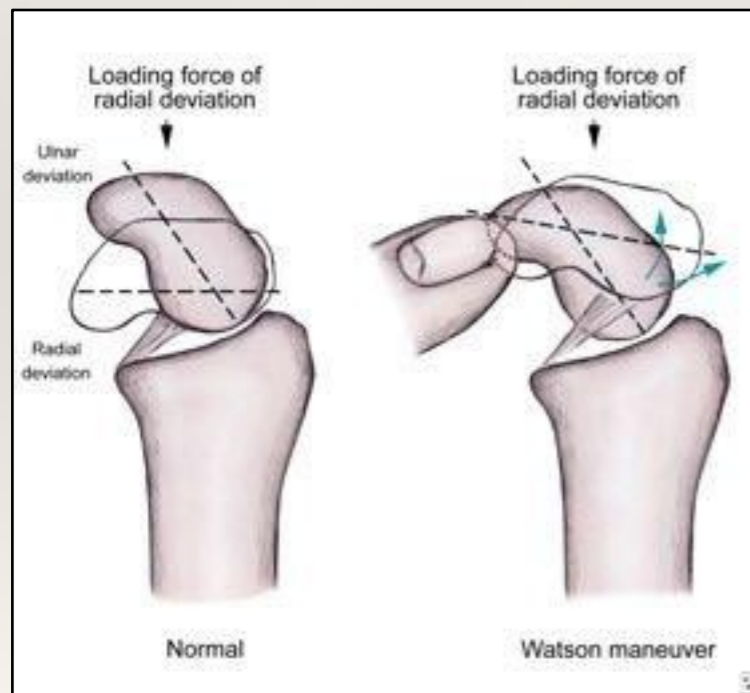
Watson Shift Test



Scapholunate Instability

Normal scaphoid motion

- Scaphoid EXTENDS with ulnar deviation
- Scaphoid will FLEX with radial deviation to make room for radial styloid



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- ❖ Scapholunate tear or instability
 - ❖ Examiner places thumb on palmar distal pole of scaphoid, applying constant pressure
 - ❖ Wrist is brought from ulnar to radial deviation in slight flexion
 - ❖ Scaphoid naturally goes from extension to flexion but is blocked by examiner's thumb
 - ❖ With tear or instability, scaphoid subluxates dorsally and is painful or will clunk when pressure released
 - ❖ Compare to opposite wrist
 - ❖ Chondromalacia or occult ganglion

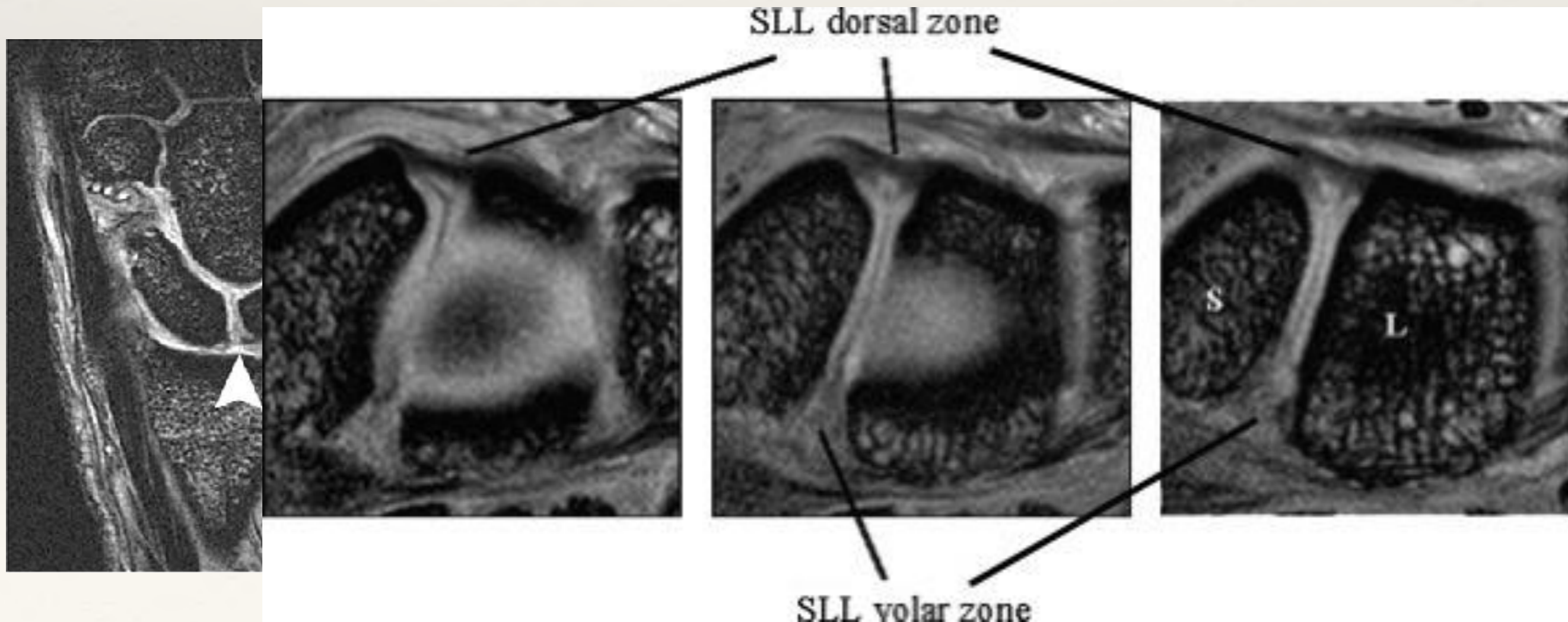
Scapholunate Instability

- ❖ Radiographs
 - ❖ Widening of SL interval $> 3\text{mm}$ indicative of static SL injury
 - ❖ If negative obtain Stress View (PA grip view)
 - ❖ Widening of SL interval indicates dynamic SL injury



Scapholunate Instability

- ❖ MRI if high clinical suspicion and no definite X-ray evidence of SL injury



Scapholunate Instability

- ❖ Sometimes it is “just a sprain”.
 - ❖ “Predynamic,” “occult” or limited partial SL injuries may do well with splinting and therapy
 - ❖ ECRB and FCR stabilization training
- ❖ Refer for
 - ❖ Static or dynamic XR SL widening
 - ❖ MRI evidence of SL injury

Dorsal Central Pain

- ❖ History:
 - ❖ Remote h/o injury to wrist with full recovery
 - ❖ Insidious dorsal central wrist pain over scapholunate interval
 - ❖ Possible report of fullness or fleeting lump on dorsal wrist

Dorsal Central Pain

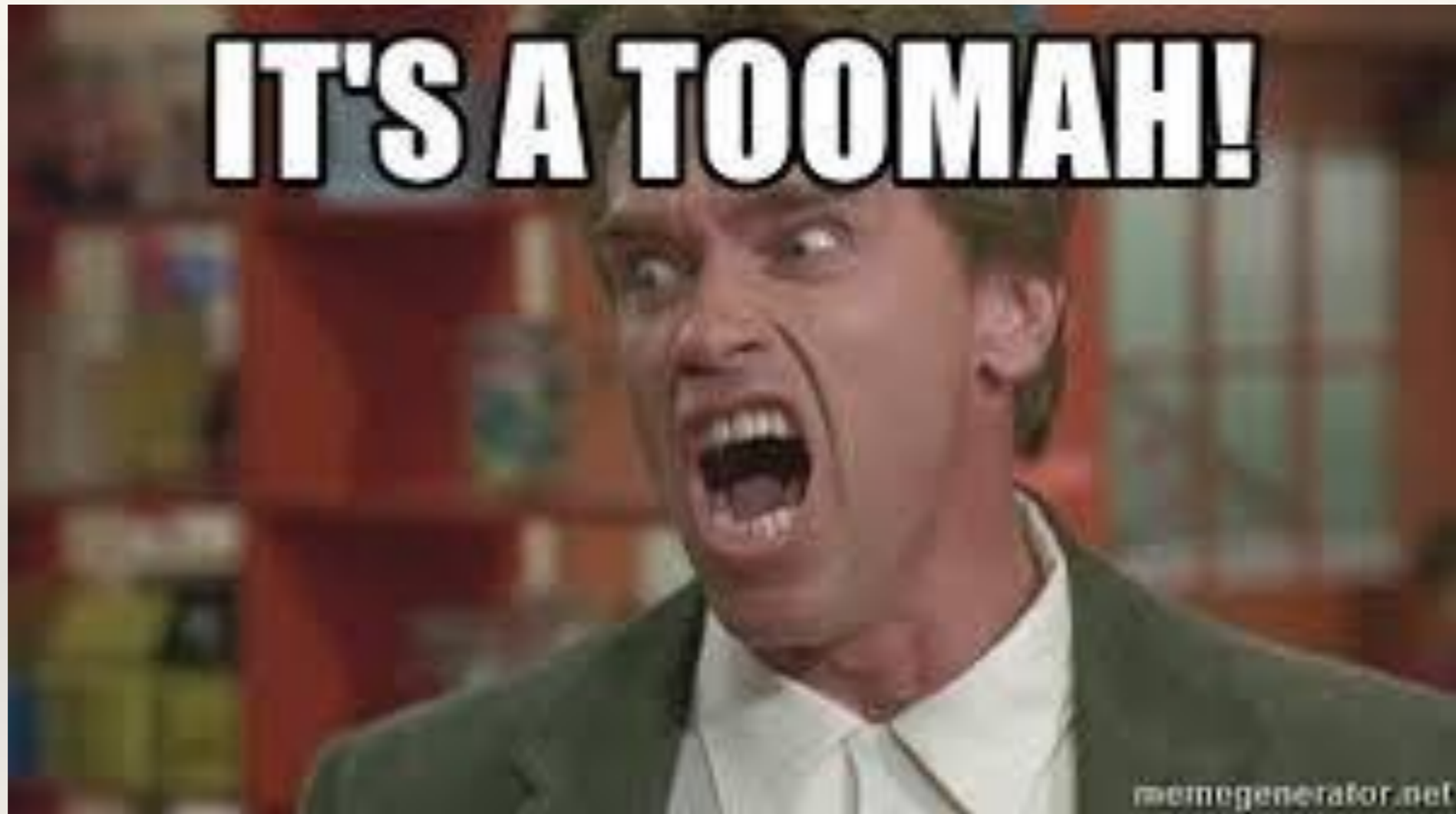
- ❖ Exam:
 - ❖ TTP directly over SL interval
 - ❖ Pain with extremes of wrist flexion / extension
- ❖ Imaging:
 - ❖ Wrist PA, Lateral and Oblique views (PA grip?)
 - ❖ Normal. No degenerative changes. No SL widening

Dorsal Central Pain

- ❖ Differential:
 - ❖ Scaphoid impaction syndrome
 - ❖ Dorsal capsulitis
 - ❖ Chondral injury
 - ❖ Distal posterior interosseous nerve syndrome
 - ❖ SL predynamic instability
 - ❖ Occult ganglion
 - ❖ Extensor tendinopathy



IT'S A TOOMAH!



Ganglion Cyst

- Fluid-filled mass
- noncancerous
- sometimes painful
- etiology unclear
- originate from joint or tendon sheath
- Treatment
 - ignore
 - aspirate
 - surgically excise



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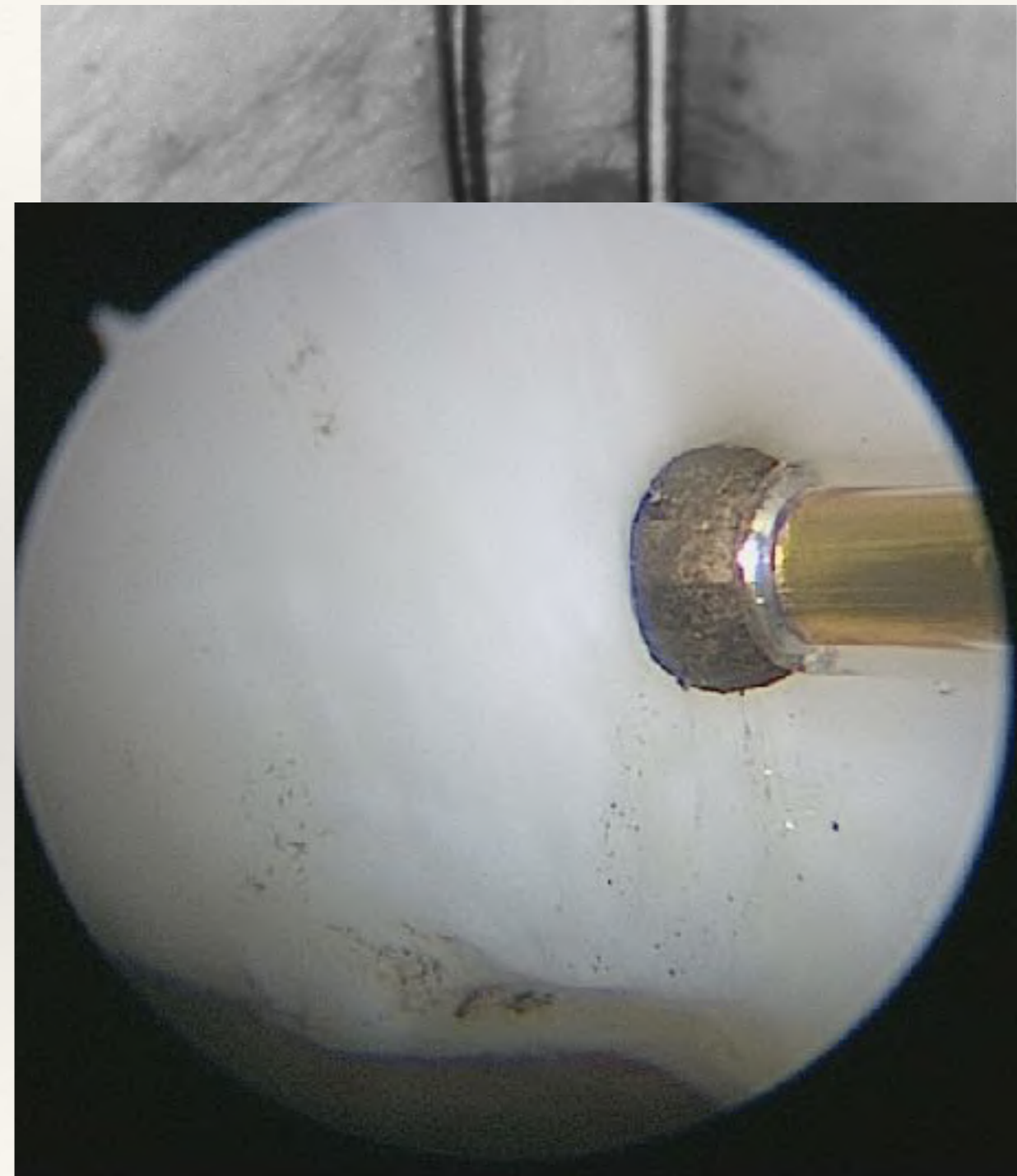
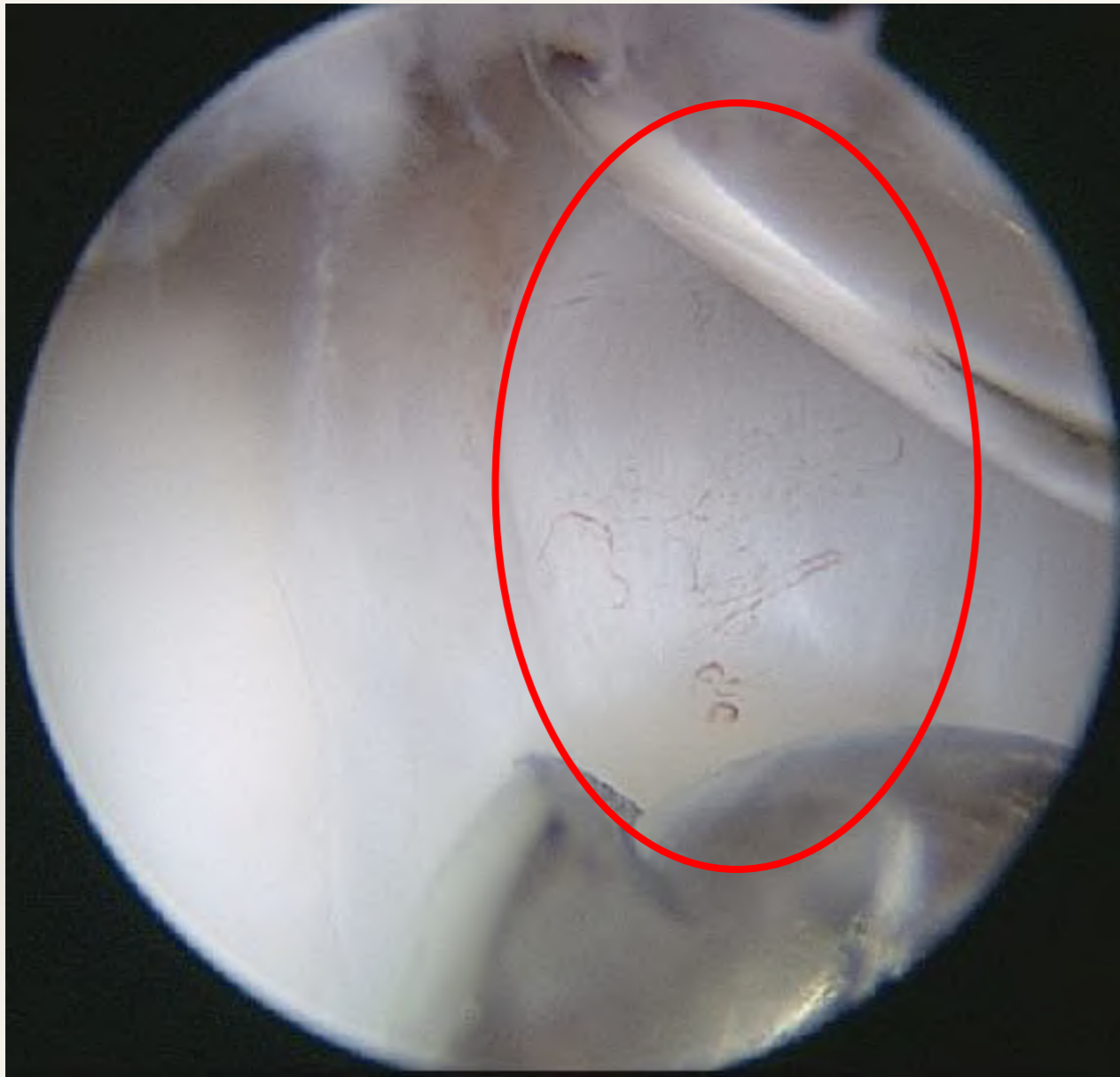
Occult Wrist Ganglion

- ❖ Consider in patients with negative X-rays who have failed bracing, NSAIDs, activity modification
- ❖ MRI will often reveal small, bright-enhancing lesion directly dorsal or in continuity with SL ligament
- ❖ Consider corticosteroid injection
- ❖ Refer for failed conservative management
 - ❖ - open or arthroscopic cyst excision

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Occult Wrist Ganglion

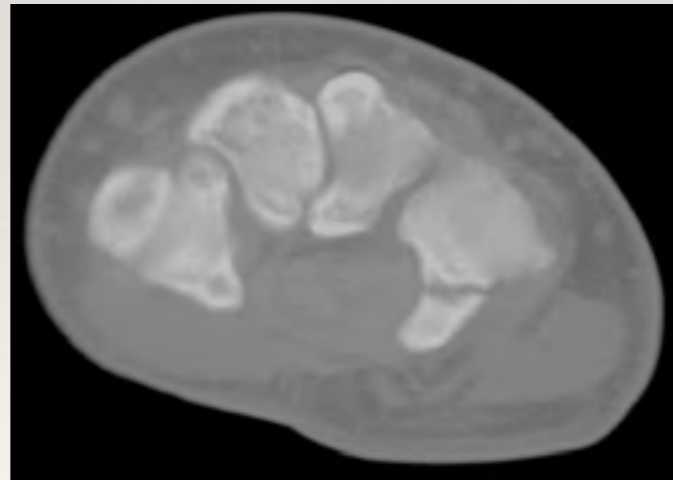
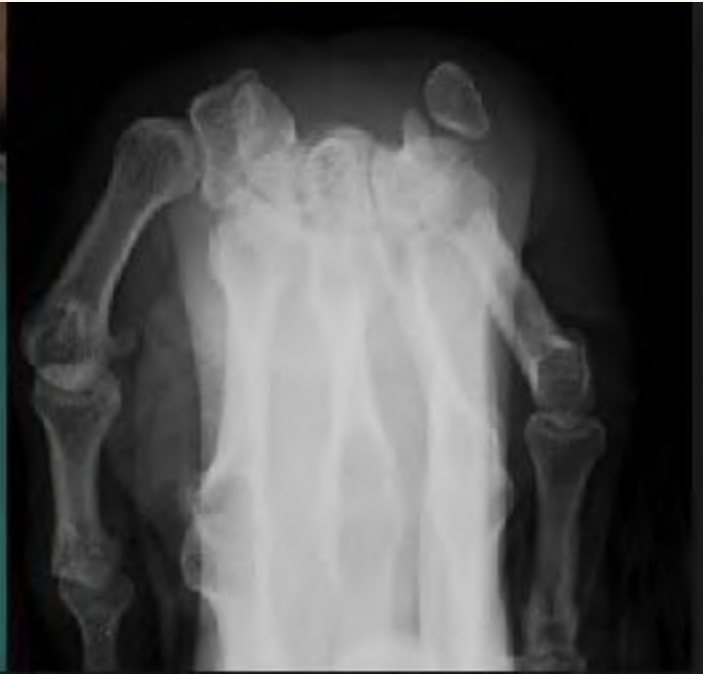


Just a hand sprain?



- ❖ 21 yo collegiate baseball player presents 3 months after forceful bat swing complaining of mild discomfort in ulnar palmar hand
- ❖ Has difficulty bearing weight through palm of hand
- ❖ Assumed it was a sprain and braced 3-4 weeks.
- ❖ Standard 3 view X-rays normal

Special Imaging

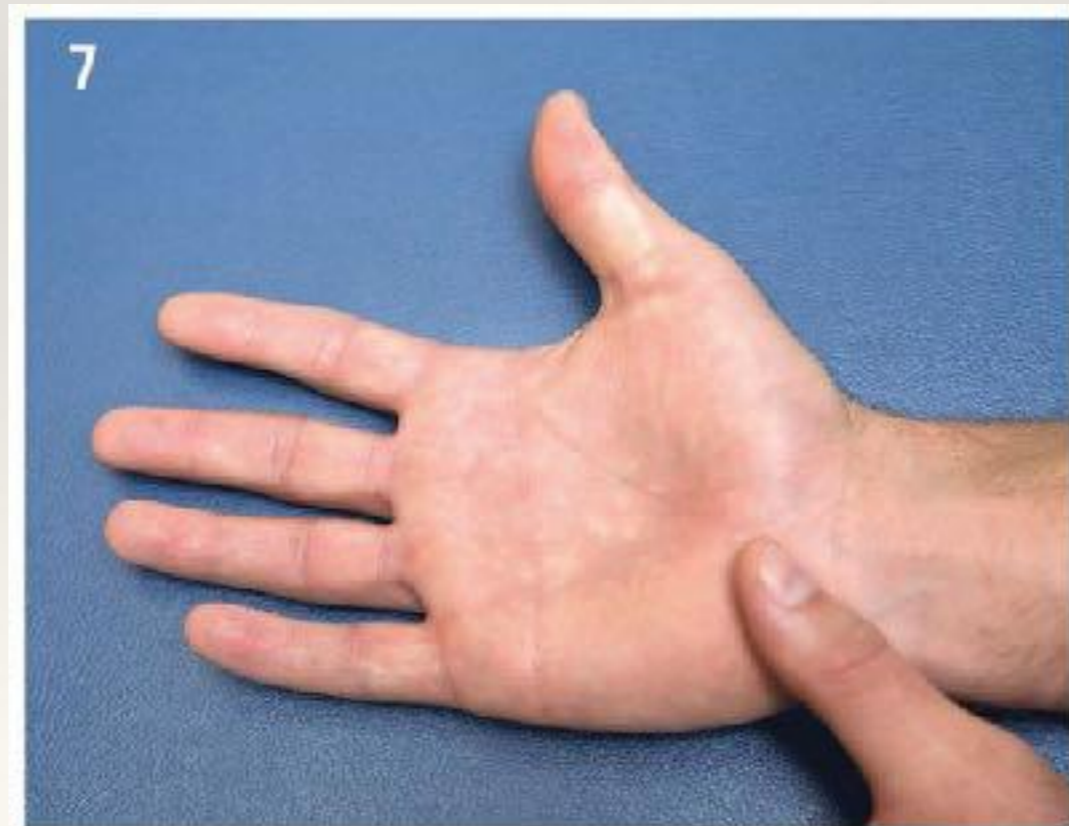
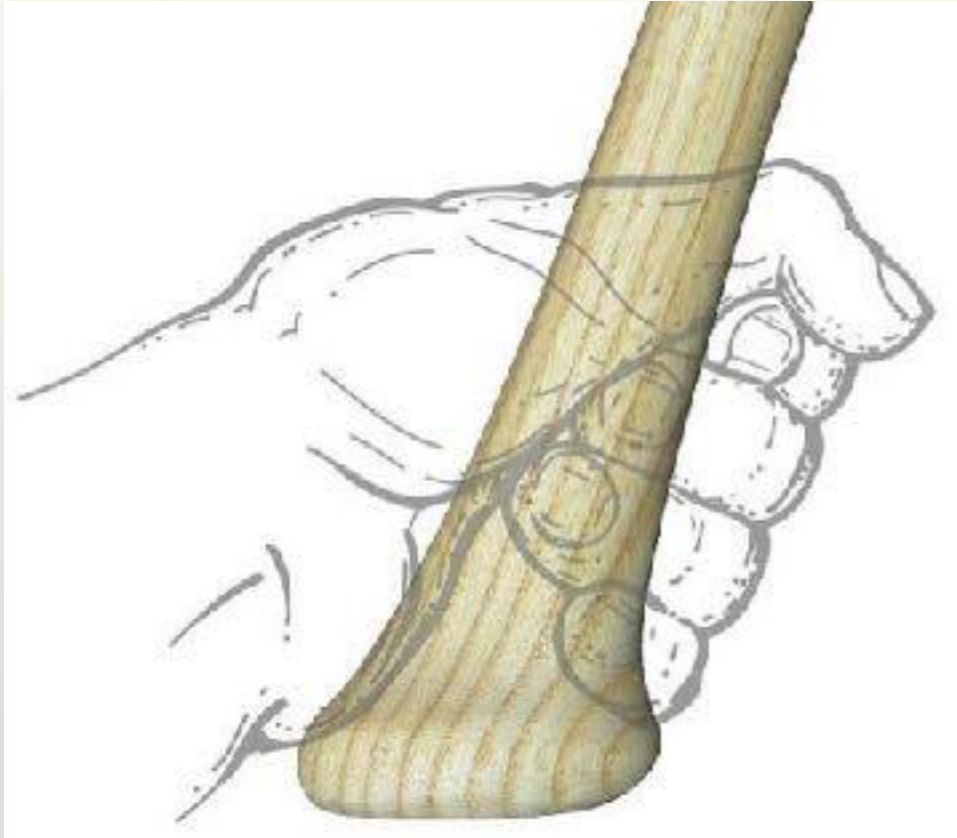


- ❖ Index of suspicion
- ❖ Carpal tunnel view
- ❖ CT scan

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Hook of Hamate Fracture



Hook of Hamate Fracture



Hook of Hamate Fracture

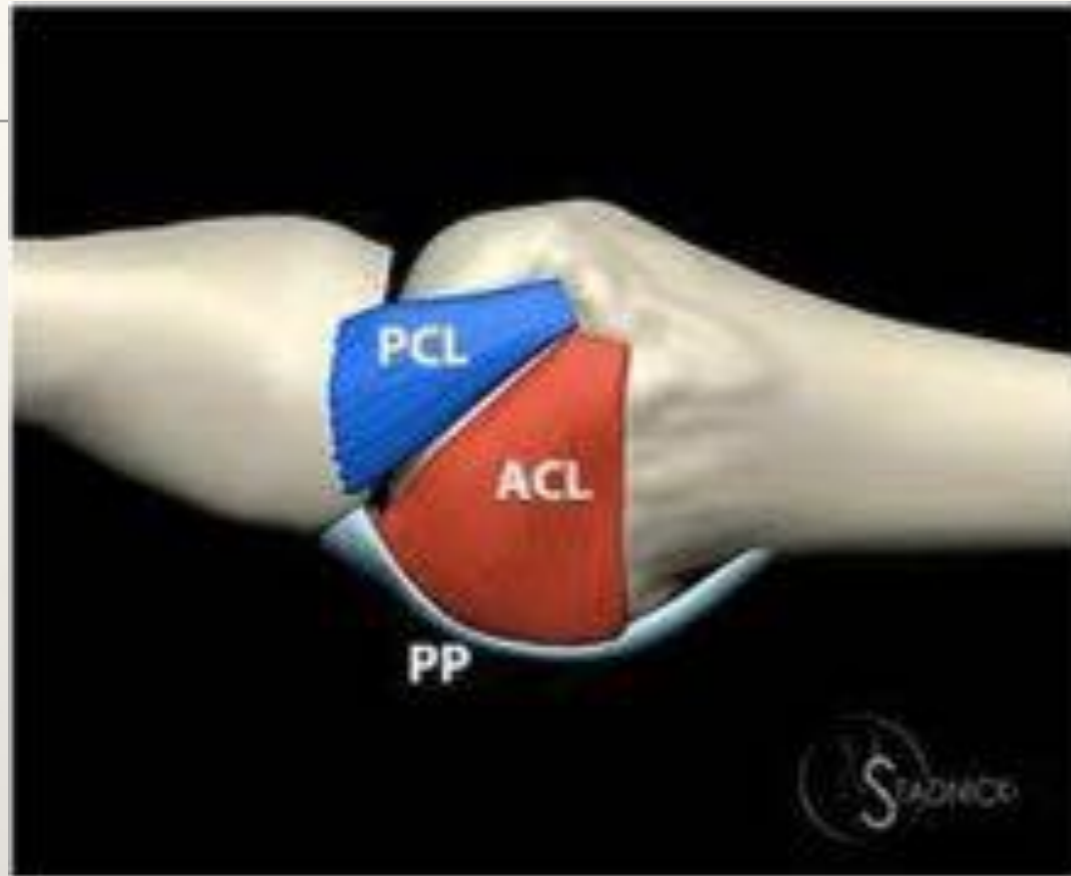
- ❖ Typically delayed presentation
- ❖ May exhibit ulnar nerve symptoms in ring and small fingers
- ❖ Rarely can present as rupture of small finger FDP
- ❖ May trial period of immobilization or casting if diagnosed acutely
- ❖ Refer for high level athlete or symptomatic delayed presentation
- ❖ ORIF vs. excision of fragment

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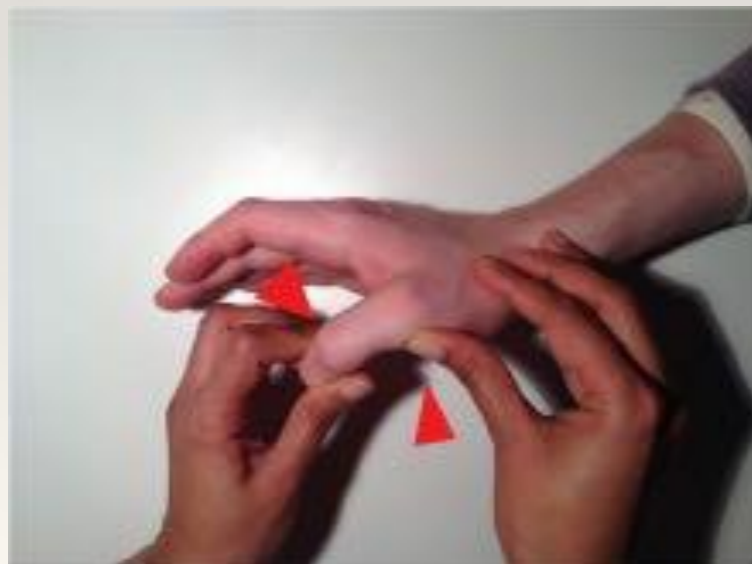




- ❖ 32 yo male presents with pain at thumb MP joint 2 days after fall while playing basketball
- ❖ Exhibits tenderness and guarding to motion or stress at MPJ
- ❖ Plain X-rays of thumb negative



- ❖ Exam: Radial stress applied at MPJ in 0 and 30 degrees of flexion
- ❖ Consider anesthetic injection if guarding or too painful



Thumb Ulnar Collateral Ligament Injury

- ❖ Skier's Thumb
- ❖ MRI if uncertain
- ❖ Stable endpoint: brace 3-6 weeks
- ❖ Unstable: refer for consideration of immobilization vs surgical repair

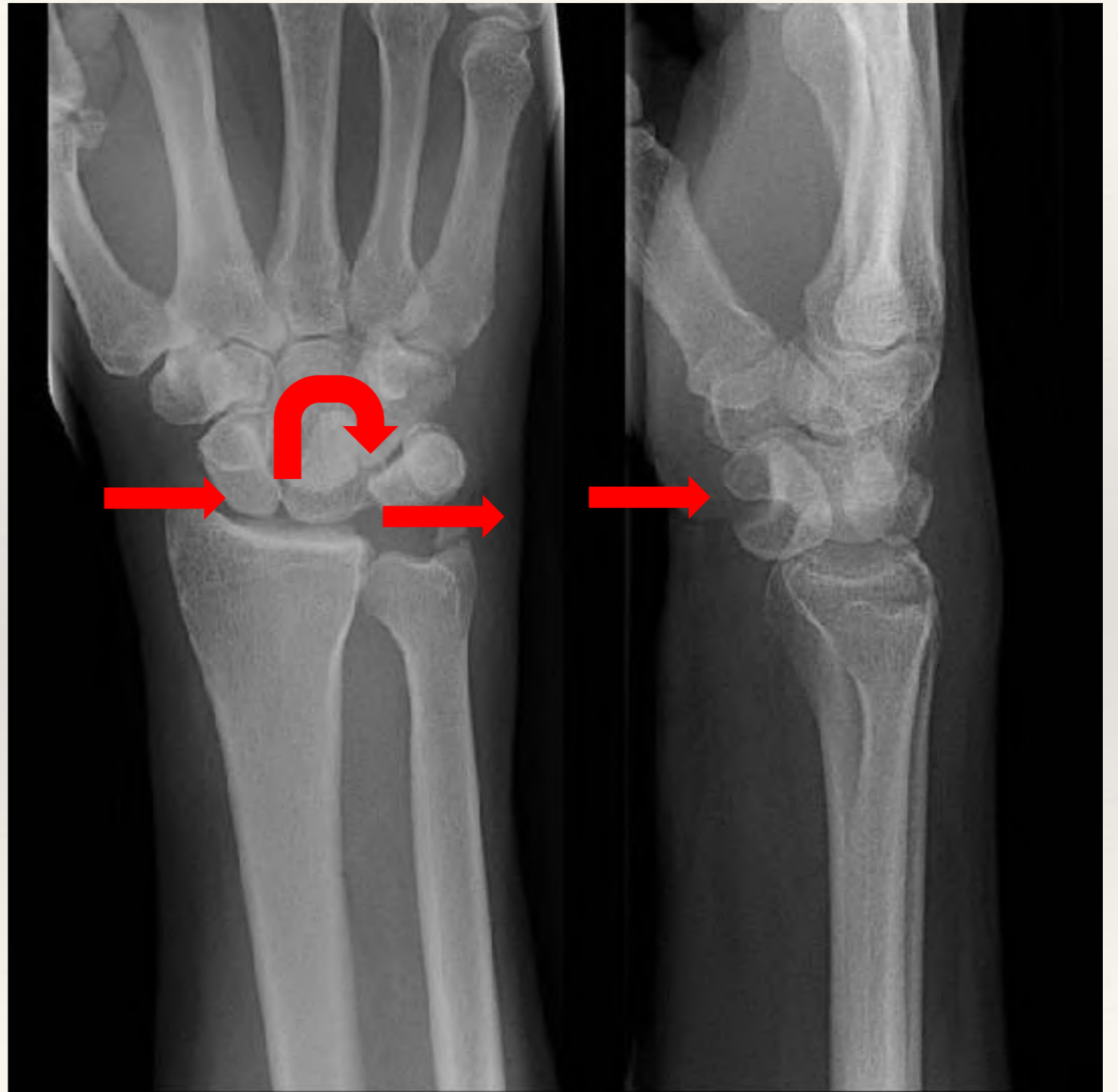


- ❖ 25 yo male presents with wrist pain and swelling after fall from horse
- ❖ Mild paresthesias in middle, index and thumb



Perilunate Dislocation

- ❖ Spectrum of traumatic instability that may involve bony or purely ligamentous injury
- ❖ How not to miss:
 - ❖ Patient will have significant pain and swelling
 - ❖ Careful attention to XR
- ❖ Beware of potential for acute carpal tunnel syndrome
- ❖ Needs urgent closed reduction to decompress median nerve
 - ❖ +/- CT scan for bony injury
- ❖ Splint and surgical stabilization within a few days



Acute Ulnar Wrist Pain



- ❖ 28 yo athlete presents after fall to extended pronated wrist
- ❖ Tender, mild swelling at ulnar wrist
- ❖ AP / oblique / lateral wrist x-rays negative

Acute Ulnar Wrist Pain

Clinical Examination

- DRUJ instability
 - ulnar fovea sign
 - distal ulna ballotment test



Functional Evaluation of the Distal Radioulnar Joint. N. Badur and M. Garcia-Elias

- DRUJ instability
 - ulnar fovea sign



Atzei A et al. Foveal TFCC Tear Classification and Treatment. Hand Clin 2011

- ❖ Pain at ulnar fovea
- ❖ Pain with extremes of rotation
- ❖ Differential is broad
- ❖ Evaluate for instability

Acute TFCC Injury

Differential for Ulnar Sided Wrist Pain		
Condition	Provactive manuever	Imaging
TFCC tear	ulnar deviation of wrist	negative
Ulnarcarpal abutment syndrome	rotation or ulnar loading	sclerosis in lunate and ulnar head
Ulnar styloid impaction syndrome	pain over ulnar styloid	excessive styloid length
Ulnar styloid fx	pain over ulnar styloid	fx on xray
Hook of hamate fx	hypothenar pain and ulnar paresthesias	carpal tunnel veiw xrays shows fx
Ulnar nerve entrapment at Guyon's canal	ulnar nerve paresthesias and or weakness	
Pisotriquitral arthritis		arthritis seen on xrays
ECU subluxation	pain and snapping over 6th extensor compartment	

Acute TFCC Injury

- ❖ Frequently associated with distal radius fractures
- ❖ Initial treatment if DRUJ stable:
 - ❖ High short arm brace/splint
 - ❖ Muenster
 - ❖ 4-6 weeks followed by wrist mobilization and strengthening
- ❖ If DRUJ unstable or persistently painful
 - ❖ MRI and/or referral



Aron M.Trocchia John C.Elfar Warren C.Hammert, JHS 2012

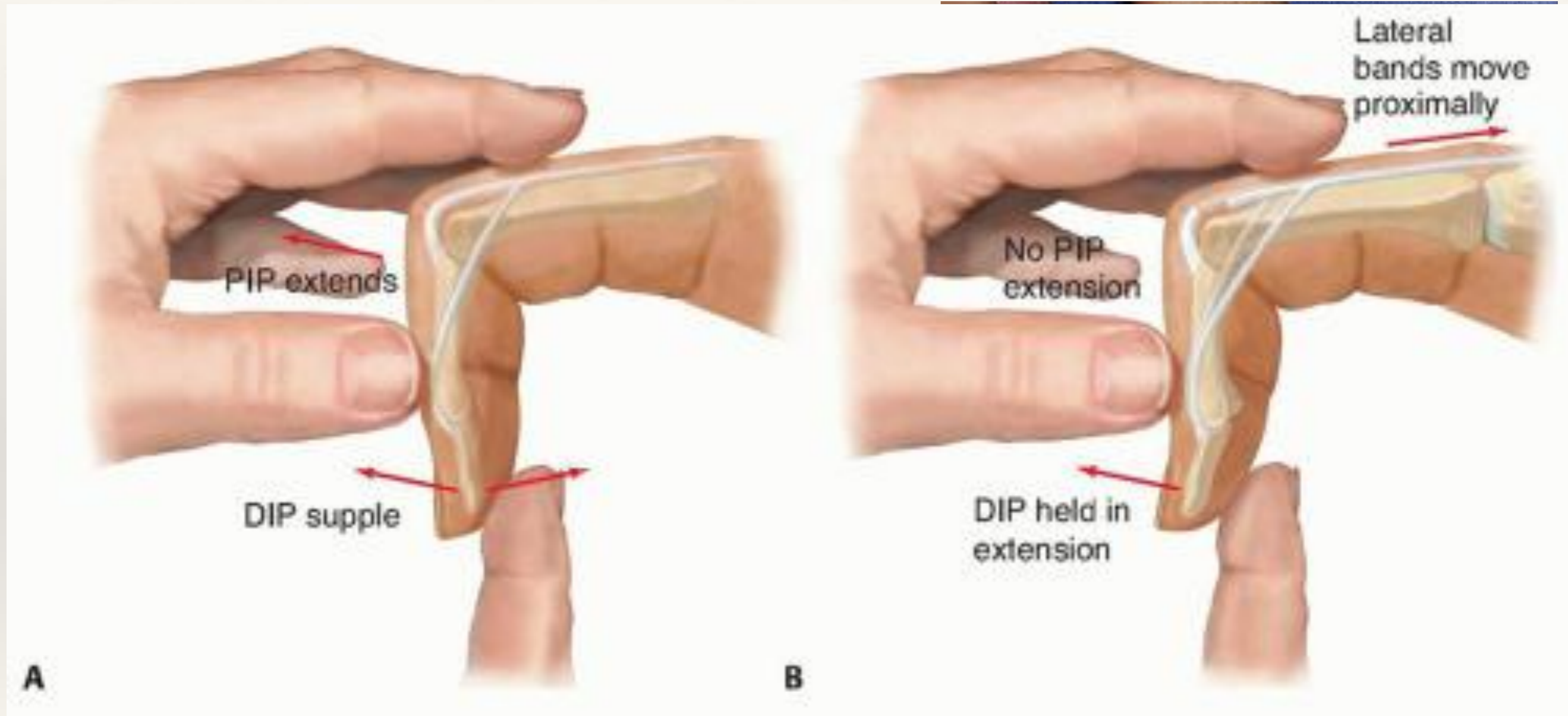
Just a Sprain?

- ❖ 48 yo female presents with swelling, pain, and tenderness to middle finger PIP after “jamming” event when she fell 6 days ago
- ❖ X-rays normal
- ❖ Exam:
 - ❖ Motion limited by swelling and pain
 - ❖ Slight tendency toward PIP flexed resting posture
 - ❖ Tenderness more focally dorsal than palmar

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Central Slip Injury



Central Slip Injury

- ❖ Treatment:
 - ❖ Splint in PIP extension
 - ❖ Referral for management
 - ❖ Closed, Acute: Splint PIP in extension 4-6 weeks followed by 4-6 weeks night splint
 - ❖ OT
 - ❖ Open: surgical repair
 - ❖ Avoid the chronic Boutonniere



High Pressure Injection Injury



28 yo painter presents with increasing pain, stiffness, and redness in nondominant middle finger

Reports a puncture into fingertip while working yesterday

High Pressure Injection Injury

- ❖ Work-related injury
- ❖ Industrial grease, oil, hydraulic grease, or paint
- ❖ Delayed presentation
- ❖ Innocuous
- ❖ Emergent exploration, I&D
- ❖ High risk digital ischemia, necrosis and digital loss
 - ❖ > 50% amputation rate

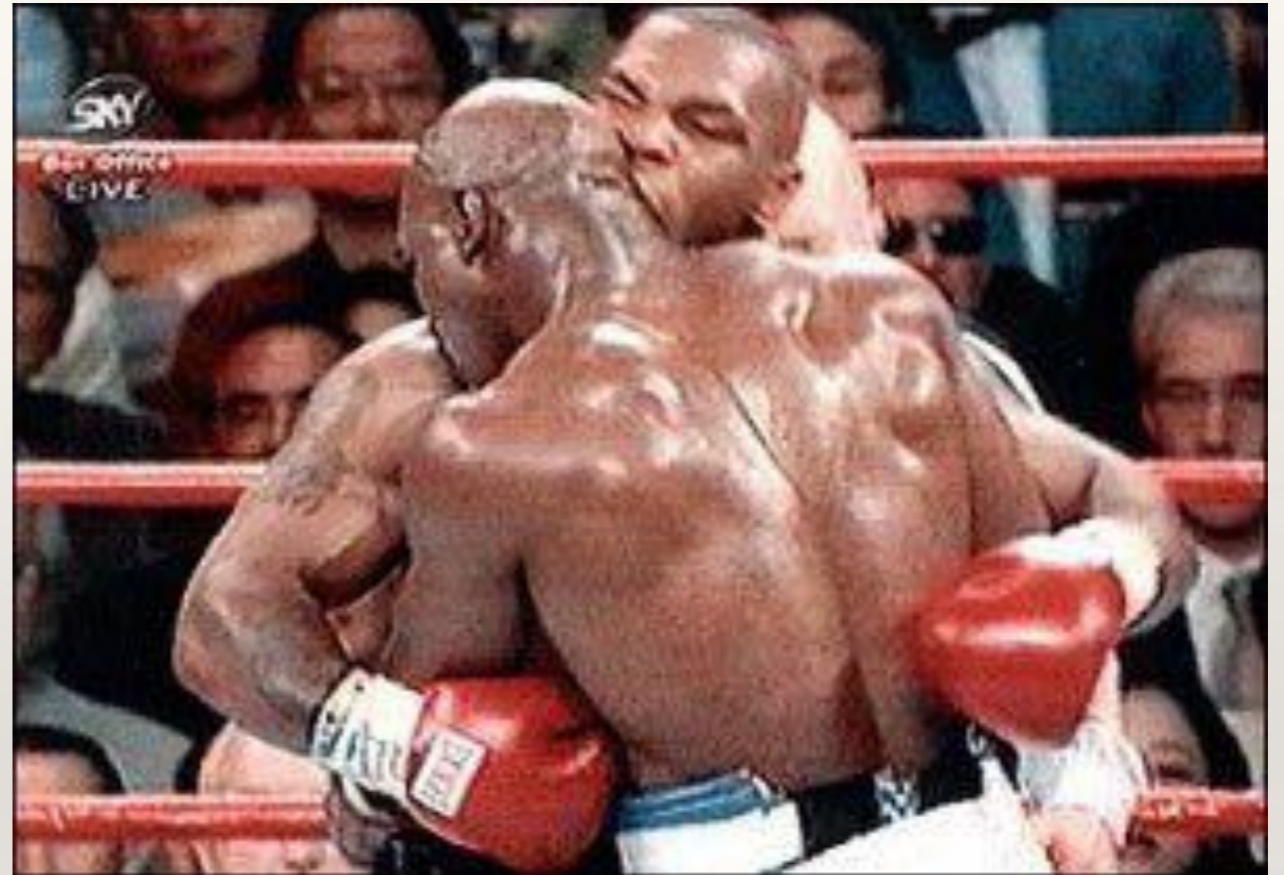


- ❖ 25 yo female presents with pain and redness over 4th MCP joint
- ❖ Reports getting in an altercation the night before



Fight Bite

- ❖ Fist strikes tooth in a punch
- ❖ May appear benign w/ retraction proximal to MCP joint
- ❖ Soft tissue, extensor, MPJ
- ❖ Potent mix of “bad actors”
 - ❖ Staph, strep, E. corrodens, anaerobes



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Fight Bite

- ❖ Management
 - ❖ XR
 - ❖ Irrigate
 - ❖ Examine under bloodless field
 - ❖ Leave wound open
 - ❖ Dress / splint
 - ❖ Hand surgery consult
 - ❖ Gross infection
 - ❖ tendon or joint penetration
 - ❖ Augmentin, 1st gen CSP



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Thanks!

