

Common Hand Fractures Not to Miss

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Hand, Upper Extremity, and Microvascular Surgery



Disclosure

- I have no relationships or financial affiliations related to the content of this presentation to disclose.

The Frequency and Epidemiology of Hand and Forearm Fractures in the United States

Kevin C. Chung, MD, Sandra V. Spilson, MPH, Ann Arbor, MI

J Hand Surg 2001;26A:908-915

Table 1. Fracture Incidence by Anatomic Site

<i>Anatomic Site</i>	<i>No. of Fractures (%) / 95% CI</i>
Radius and/or ulna	643,087 (44) / (584,712–701,462)
Phalanx/phalanges	341,305 (23) / (310,254–372,356)
Metacarpal(s)	264,642 (18) / (240,533–288,751)
Carpal	207,880 (14) / (188,910–226,850)
Multiple hand bones	8,960 (0.6) / (8,012–9,908)
Total	1,465,874 (100) / (1,333,002–1,598,746)

Case 1

- 33y male hurts his left MF while playing basketball
- Felt a pop getting a rebound and now can't straighten finger.
- Doesn't really hurt.



Mallet Finger - Xrays

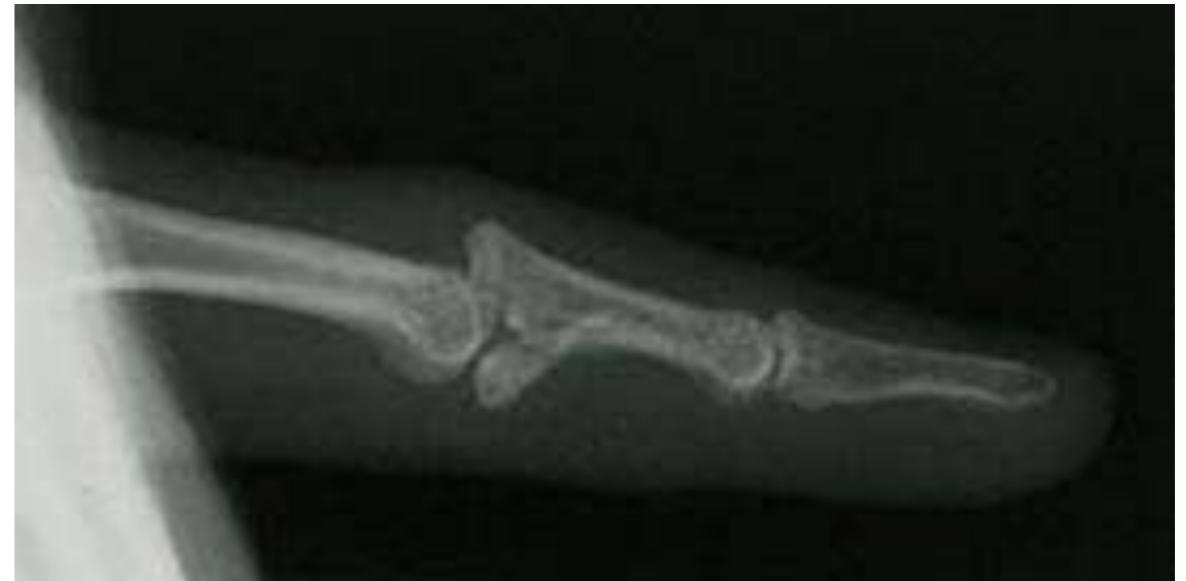


Not Subluxed.



Subluxed.

Phalanx Subluxation



Case 1

- Various treatment techniques depending on joint (MP/PIP/DIP), direction of dislocation, and size of articular component.
- Key that joint subluxation is reduced ASAP.



Case 2

- 28y male sales rep.
- Fell snowboarding.
- Went to local ER and was told no fractures seen, splinted, and referred for outpatient followup.
- Presents 5 days later.
- Minimal pain.



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Case 2

- 28y male sales rep.
- Fell snowboarding.
- Went to local ER and was told he had distal radius and ulnar styloid fractures, splinted, and referred for outpatient followup.
- Presents 5 days later.
- Minimal pain.

Case 2

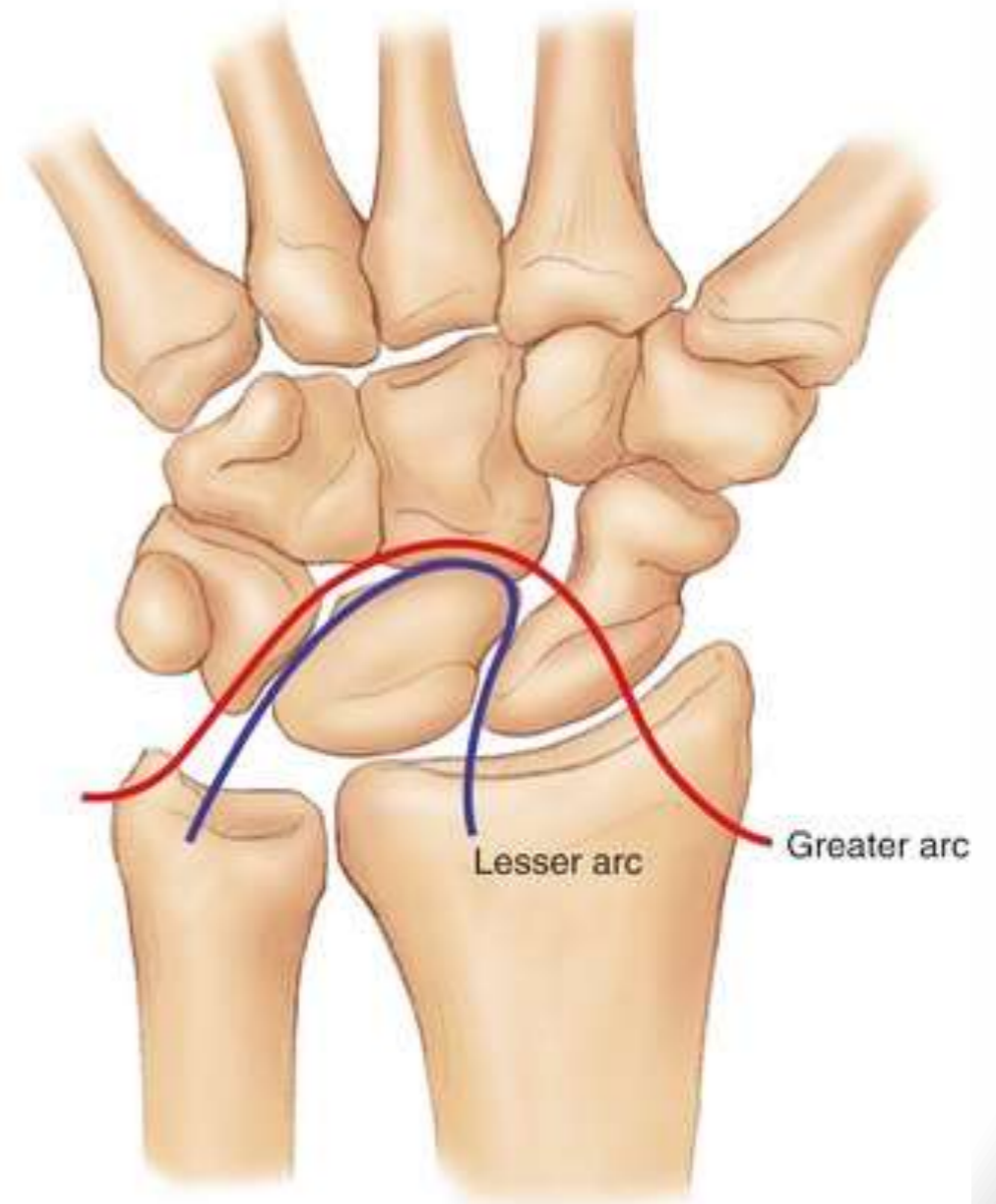


Case 2



Perilunate Injuries

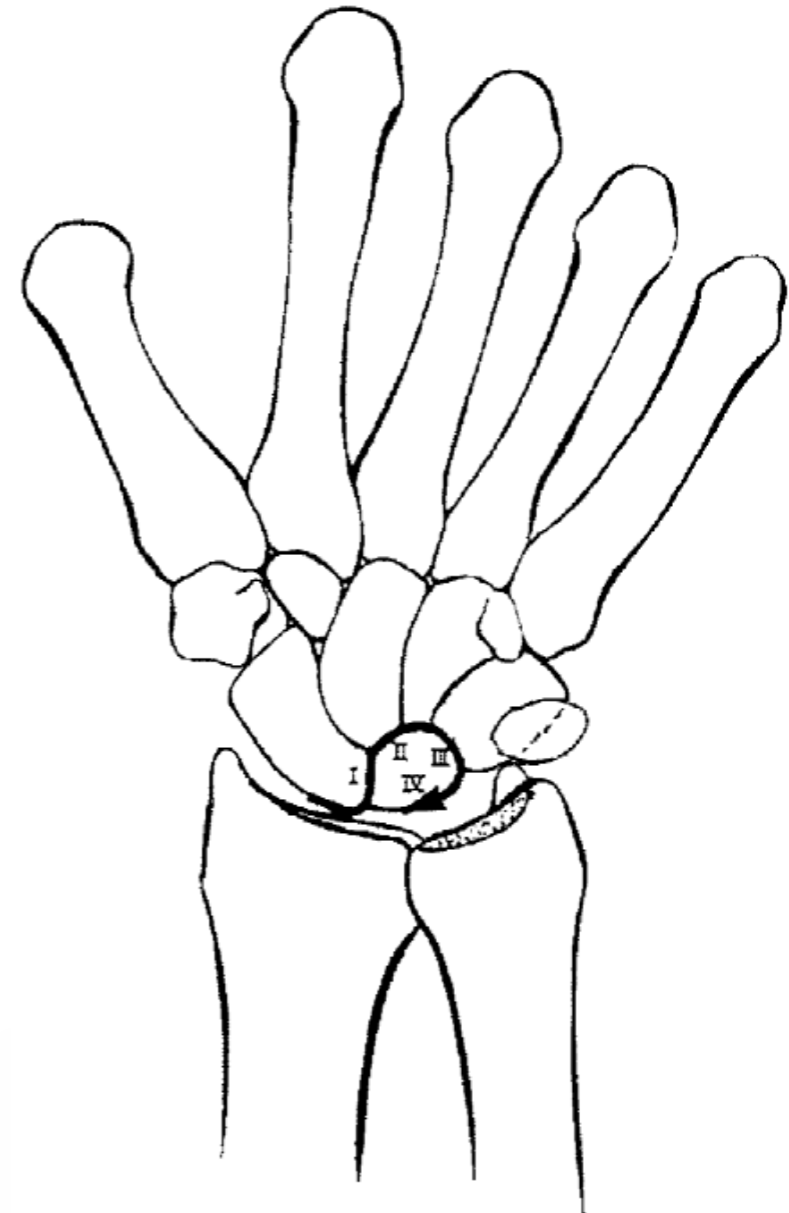
- Relatively rare injury where the carpus dislocates and disassociates from the lunate.
- Variable presentation include involvement of ligament or bony disruption, and direction of dislocation.
- Greater arc implies the energy went through a bone and caused a fracture.
- Lesser arc implies the energy went through a ligament and cause a ligament tear.

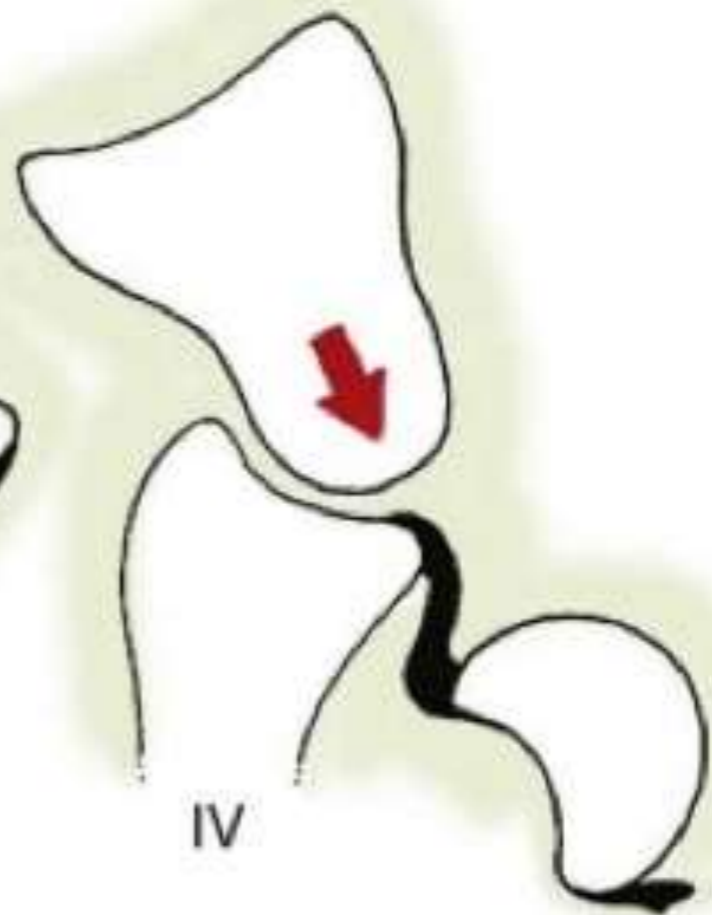
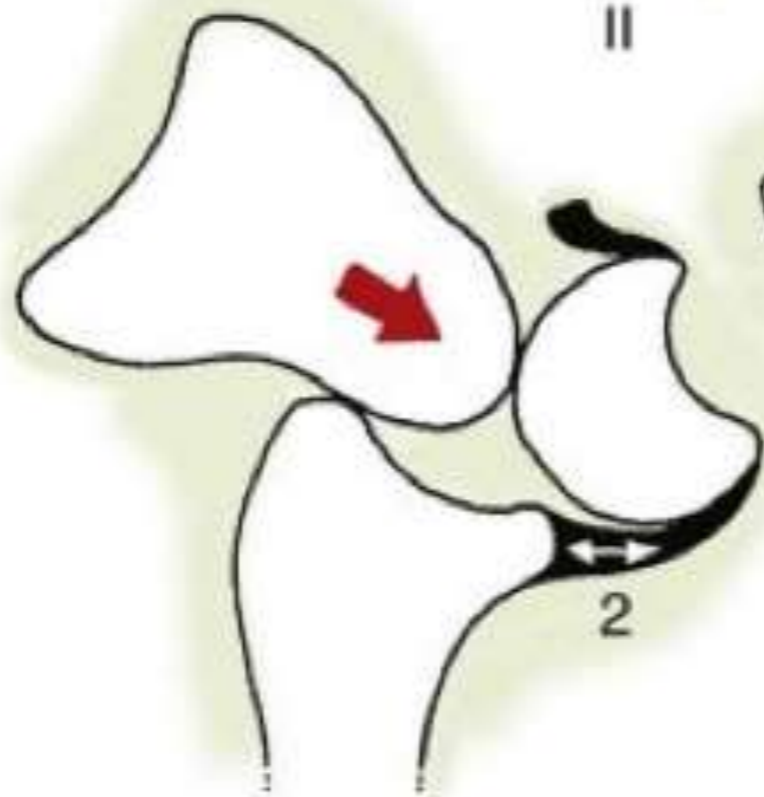
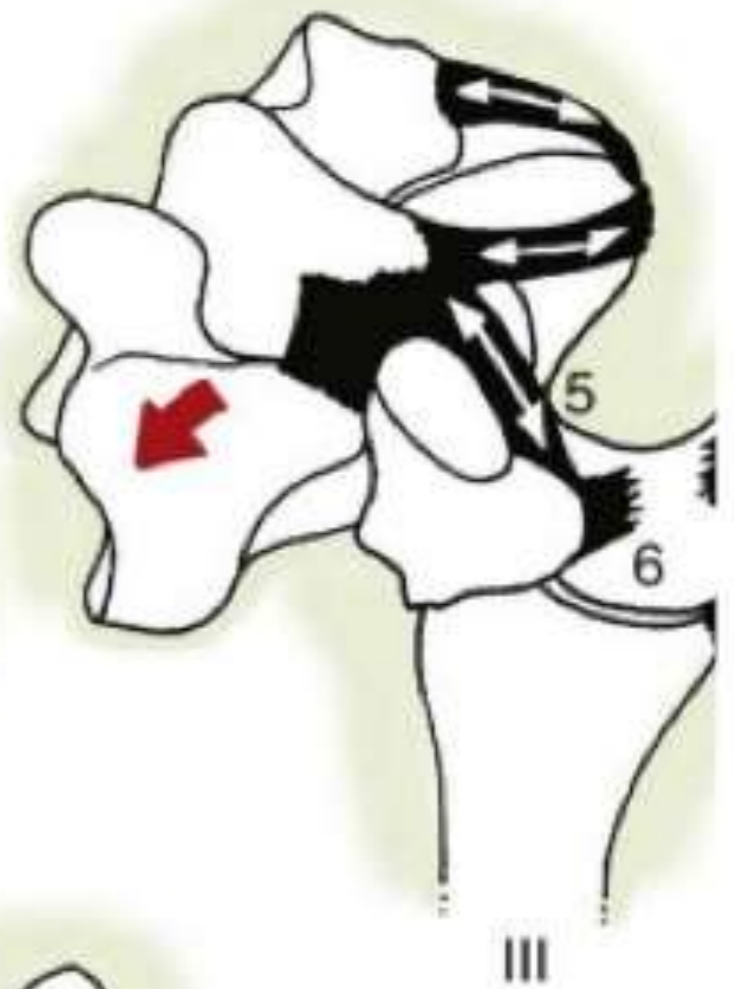
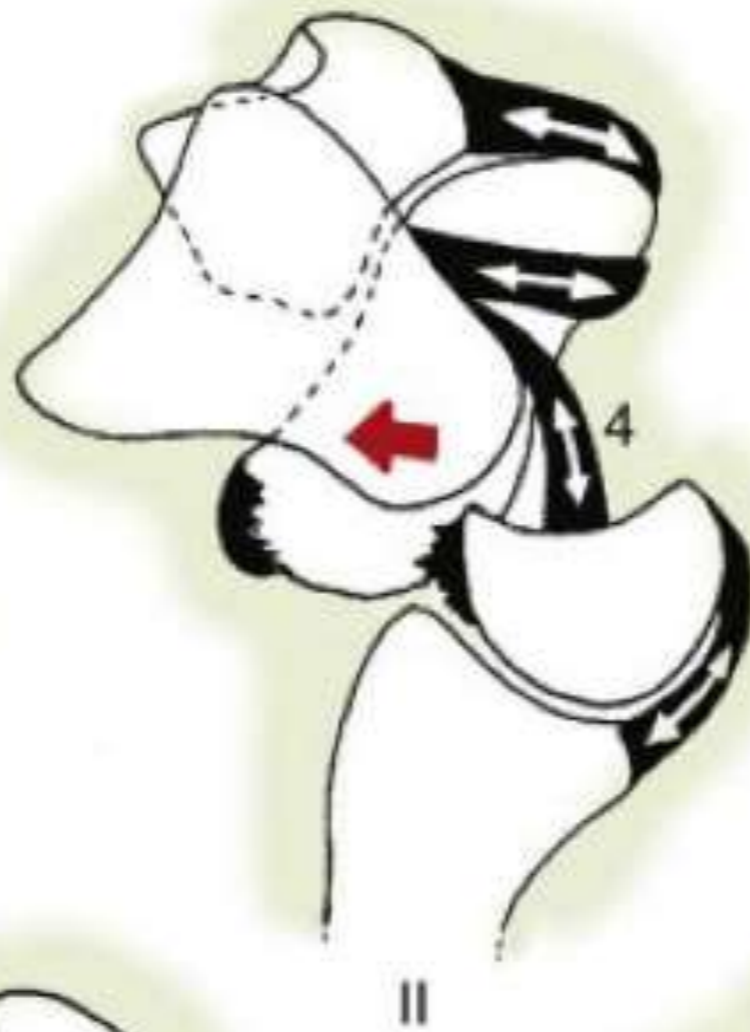
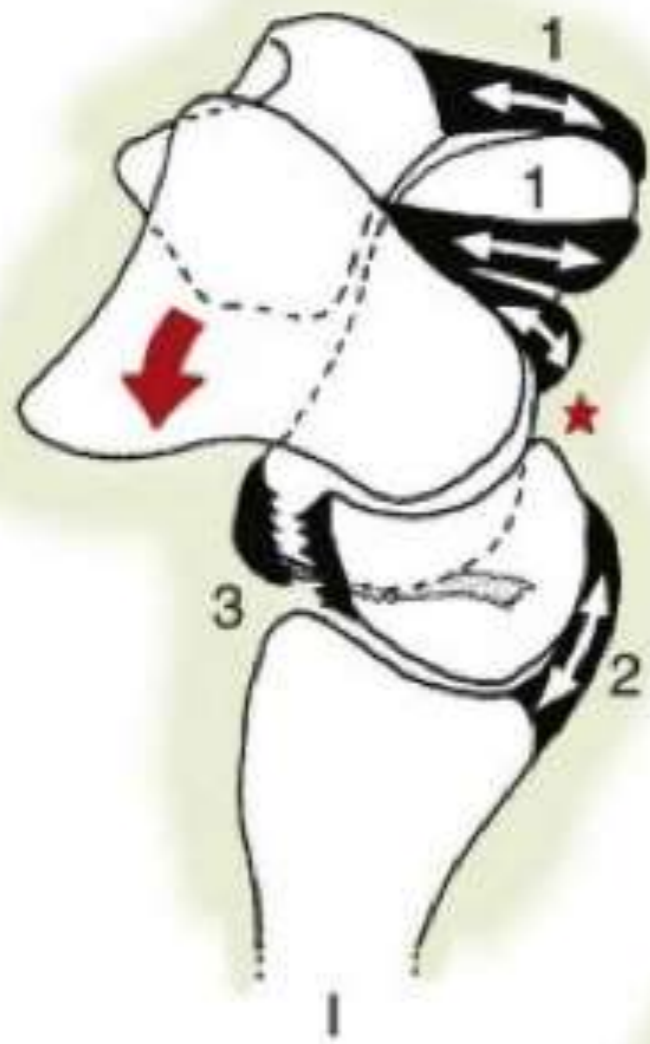


Carpal dislocations: Pathomechanics and progressive perilunar instability

Jack K. Mayfield, M.D., *Minneapolis, Minn.*, Roger P. Johnson, M.D., *and*
Raphael K. Kilcoyne, M.D., *Milwaukee, Wis.*

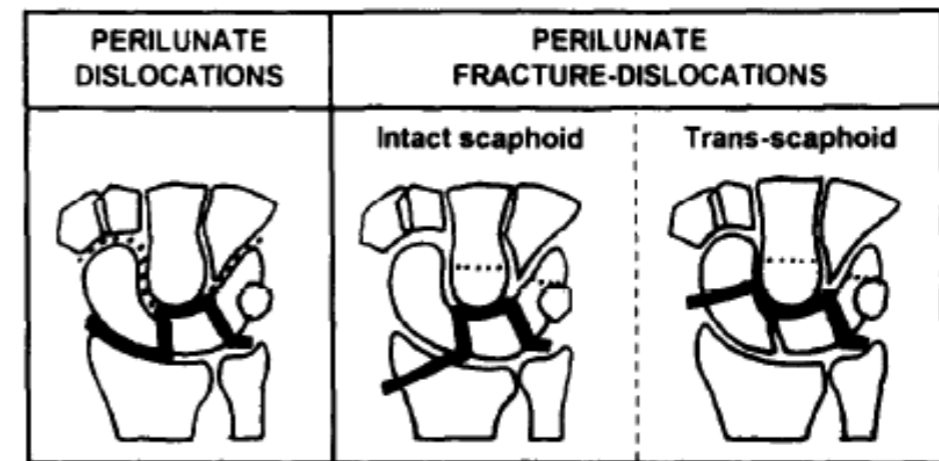
- JHS, 1980.
- Cadaver wrists were loaded to recreate injury.
- Extension, ulnar deviation, carpal supination.
- Mayfield described four stages
 - Disruption of the RSC and SLIL
 - Dislocation of the capitate
 - Disruption of the LTIL
 - Dislocation of the lunate





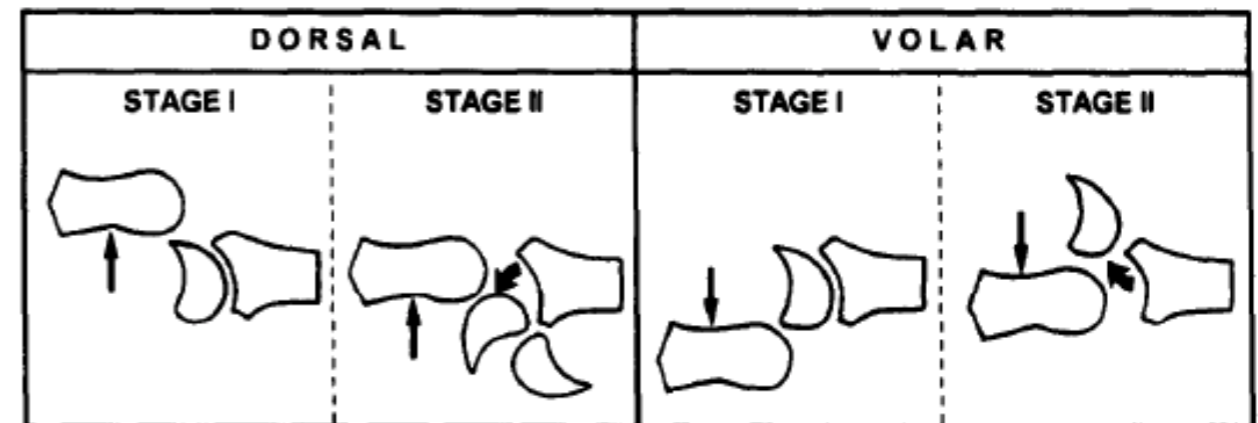
Describing Perilunate Injuries

- If purely ligamentous, “perilunate dislocation.”
- If involves a fracture, add “transscaphoid” or “transcapitate” etc. and “fracture-dislocation.”
- The carpus can dislocate dorsally or volarly, though dorsal is much more common.
- Differentiating volar between Stages I and Stage II, with Stage II being dislocation of the lunate from the radius has been described
 - In this system Stage II is subdivided to “A” and “B,” where B indicates the lunate is rotated >90 degrees from normal.



(1) PATH OF TRAUMA (PA radiograph)

(— : most usual path ; : variants)



Perilunate Dislocation



Perilunate Dislocations and Fracture-dislocations: A Multicenter Study

G. Herzberg, MD, J. J. Comtet, MD, Lyon, France, R. L. Linscheid, MD,
P. C. Amadio, MD, W. P. Cooney, MD, Rochester, Minnesota,
J. Stalder, MD, Lausanne, Switzerland

- JHS 1993.
- Multicenter study
- 166 injuries in 165 patients.
- 98% male.
- MVA most common, followed by fall from height, sports related, machine related.
- Median nerve symptoms in 23%.
- 25% of injuries were missed on initial evaluation.
- 97% were dorsal.
- 34% were purely ligamentous, 66% involved fracture.
- 95% of the fracture-dislocations had a scaphoid fracture.

Case 3

- 24y male baseball player
- Left hand pain for last month
- Doesn't remember specific trauma.
- Hurts to bat.
- Hurts to write and do homework.
- Pain with small finger flexion and gripping.
- Pain in ulnar palm.
- Trainer has been wrapping.

Case 3



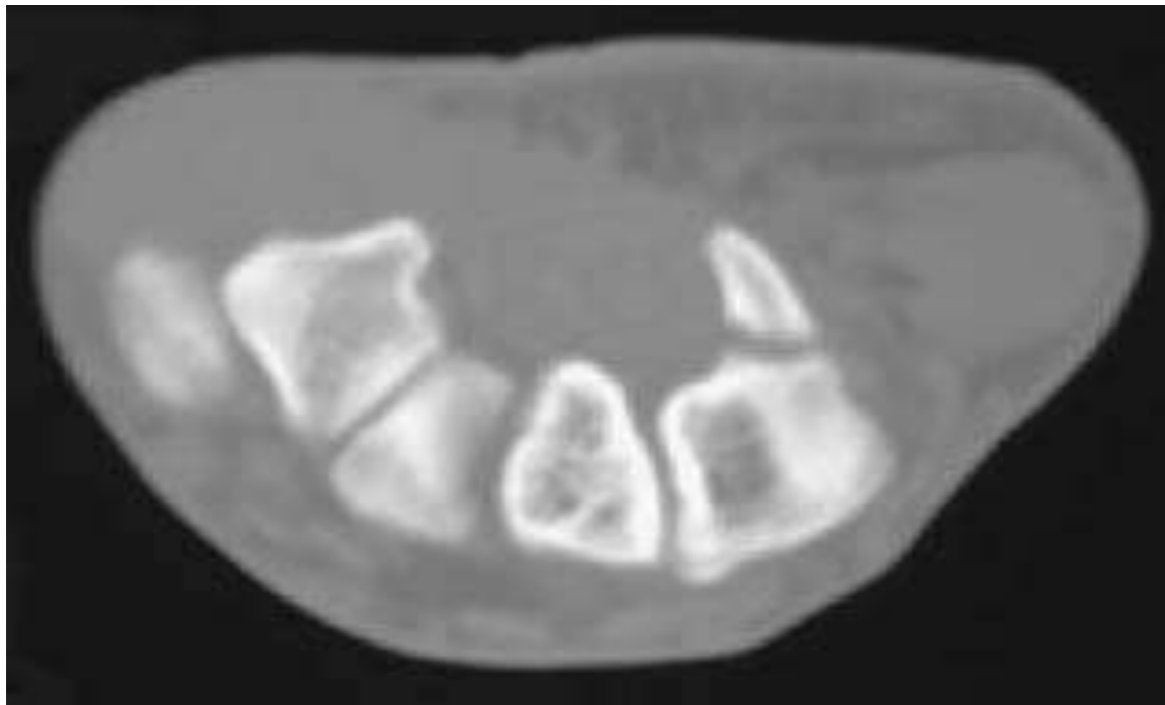
Case 3



Case 3



Case 3



Case 3

- Hook of hamate fractures
- 1-2% of carpal fractures
- Treat with immobilization for 6 weeks.
- Non-unions treated with excision.
- Untreated non-unions have risk of tendon rupture of digital flexor to small finger.

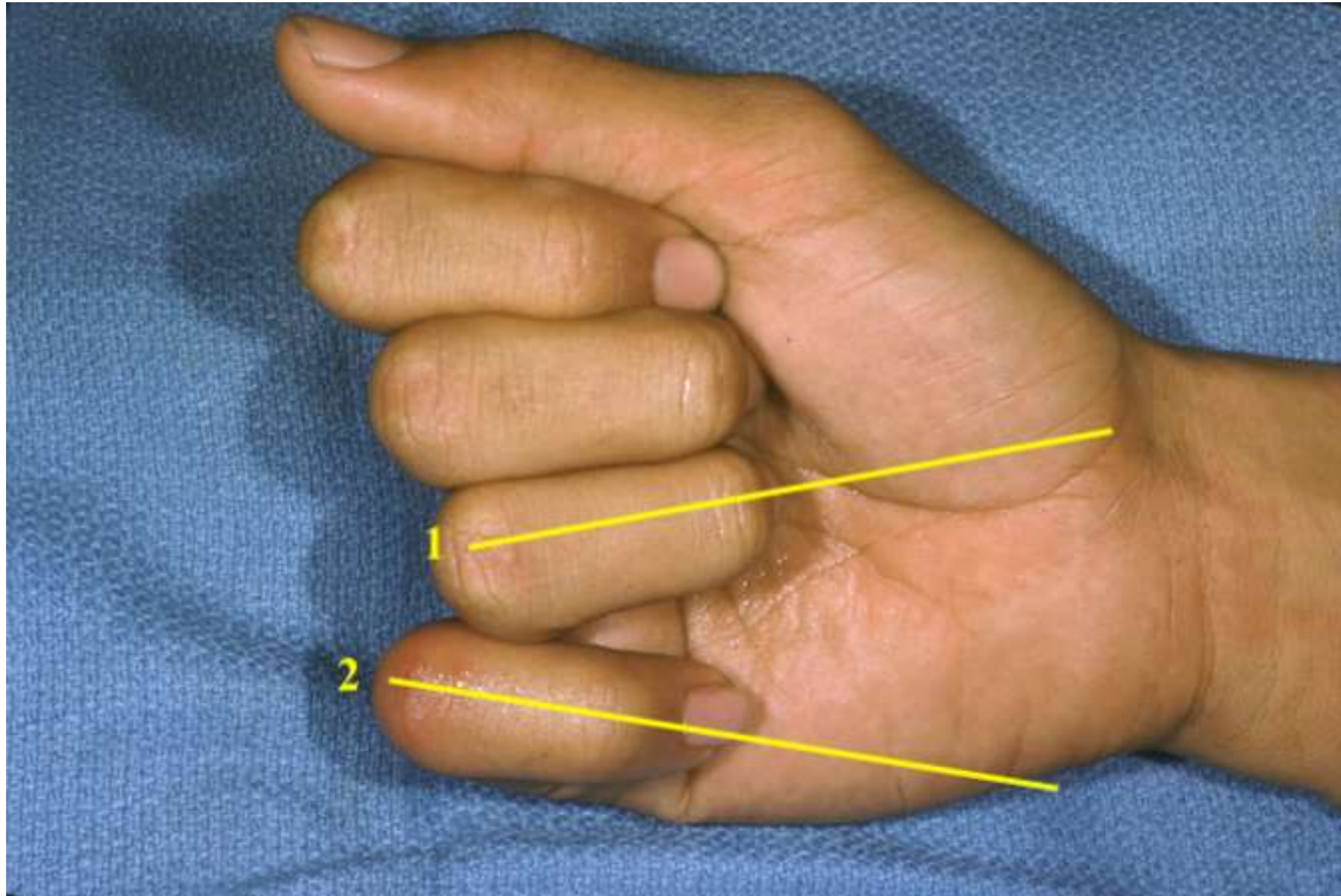
Case 4

- 42y male call center worker.
- Punched a wall in anger 1 month ago.
- Seen and outside ER and told no fracture seen, but splinted.
- Pain ulnar aspect of hand.
- Finger crooked.
- Can't make a fist.

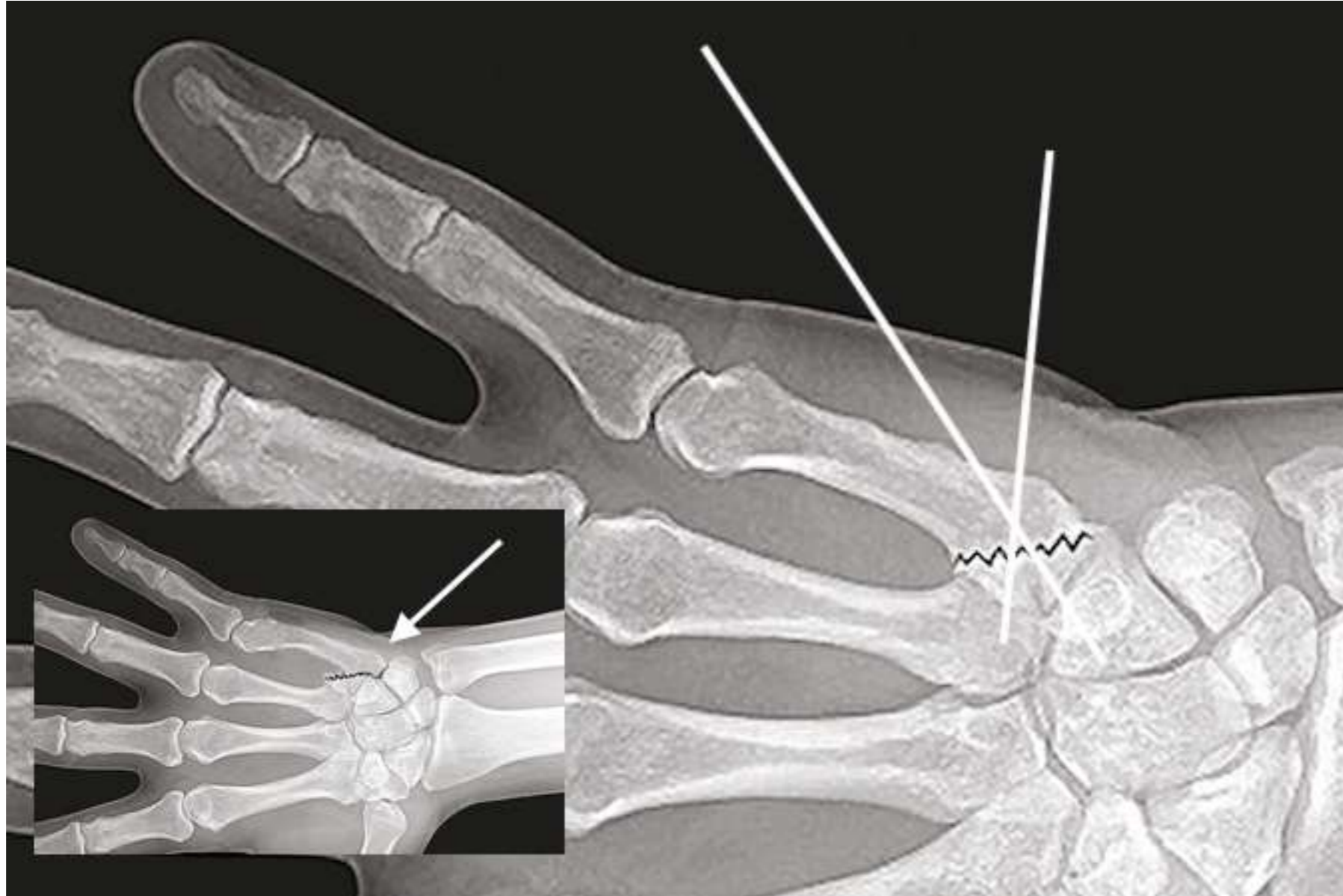
Case 4



Case 4



Case 4



Case 4

- CMC fracture dislocation
- Ring and small metacarpals more mobile and more prone to dislocation
- Generally unstable and require fixation but more simple fractures may respond to closed reduction and splinting with close monitoring.
- Get multiple oblique xray views, supinated and pronated, to best visualize.

Case 5

- 22y male college student.
- Fell on scooter.
- Seen at outside clinic and splinted for sprain.
- Persistent wrist pain.
- Casted.
- Persistent wrist pain and limited motion.

Case 5



B



Case 5



Case 5

- DRUJ dislocation.
- Can be isolated injury and associated with ligamentous disruption, or related to distal radius and/or ulnar styloid fracture.
- If able to reduce, immobilize in stable forearm position for 4 weeks.
- Muenster cast.
- Surgical intervention may require simple pinning, ligamentous repair, or fracture repair.

Case 6

- 63y male retired engineer.
- Fell while hiking.
- Seen at outside clinic, told no fracture on xrays, splinted and referred.
- Pain persists.
- Casted.
- Persistent wrist pain and limited motion.

Case 6



Case 6

- Dorsal triquetrum fracture.
- Represents avulsion of dorsal wrist capsule.
- Likely more common than thought, simply under diagnosed as largely clinically insignificant.
- Immobilize for 4-6 weeks.
- Inform patients from the start that radiographic appearance will not change over healing course.
- Consider steroid injection if persistent pain.

Case 7

- 68y female retired attorney.
- Fell while on vacation.
- Pain in wrist.
- Seen at outside clinic, told no fracture on wrist xrays, put in wrist splint and referred.
- On exam pain more mid-forearm.
- Wrist and forearm motion painful.

Case 7



Case 7



Case 7

- Radial neck fracture
- Reinforces need to evaluate joint above and below suspected injuries.
- Fortunately high likelihood that no intervention is needed.
- Limited weight bearing with early motion.
- No immobilization.

Summary List

- Peri-articular phalanx fracture with subluxation (including mallet fracture).
- Perilunate fracture/dislocation.
- Hook of Hamate fracture.
- 5th metacarpal base intra-articular fracture with subluxation.
- Dorsal Triquetrum fracture.
- DRUJ dislocation.
- Radial neck fracture.

Summary List



Thank you!

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