

Clinical Negligence

The Hand and Wrist



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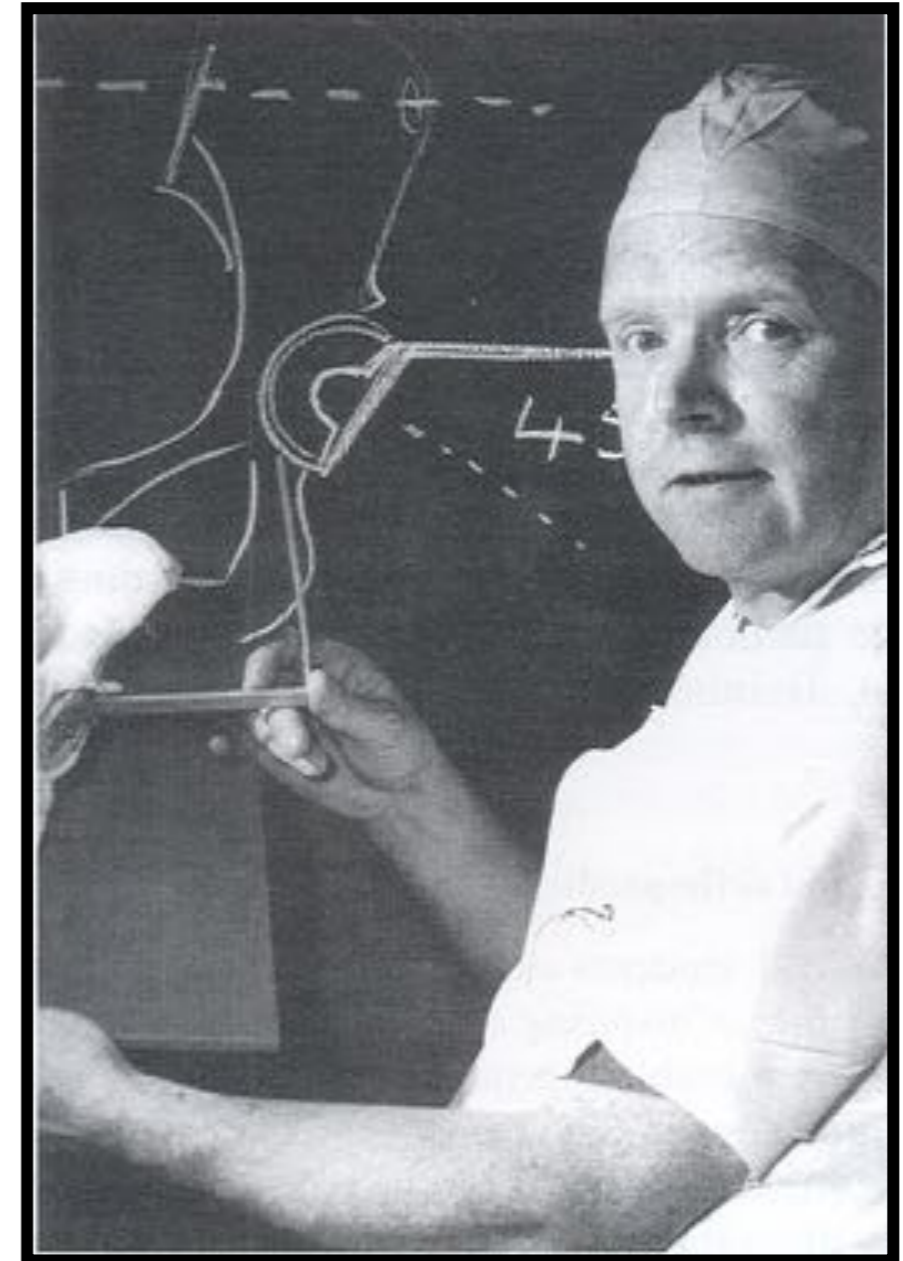


The Hand and Wrist

**Talk contains some operative
images / videos**

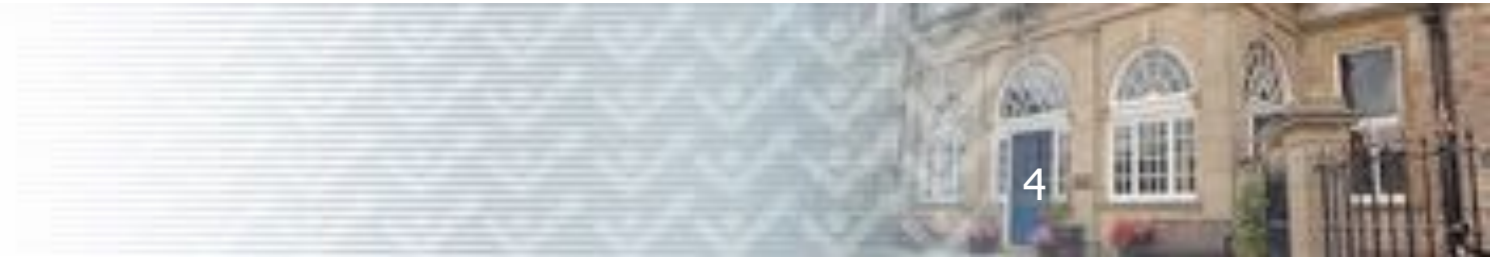


Wrightington Hospital, UK



Sir John Charnley

✚ “Never operate on a bone that you can swallow”





My background

- ✦ Rugby
 - ✦ Finger dislocations
 - ✦ Ankle fracture
 - ✦ Knee ligament rupture
 - ✦ Cauliflower ear
 - ✦ Thumb dislocation
 - ✦ Thumb ligament injury
 - ✦ Knee meniscal tear



C6/7 bifacet fracture dislocation



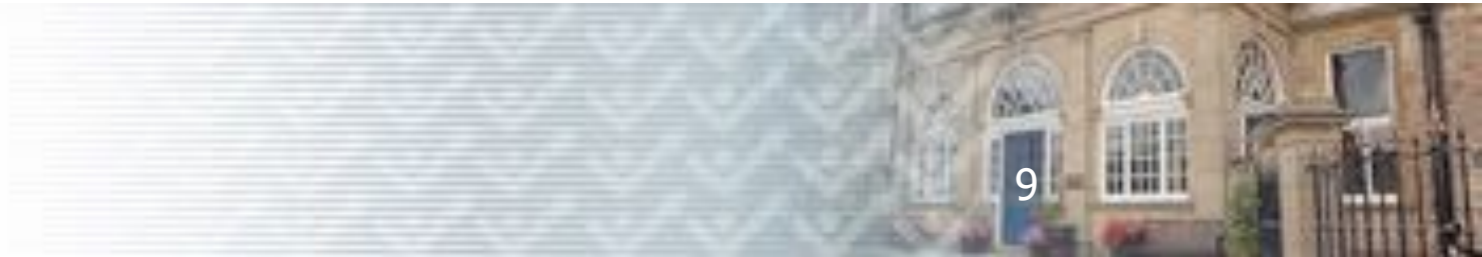


Sometimes - just get up and do it

Sometimes - just get up and do it



Sports injuries

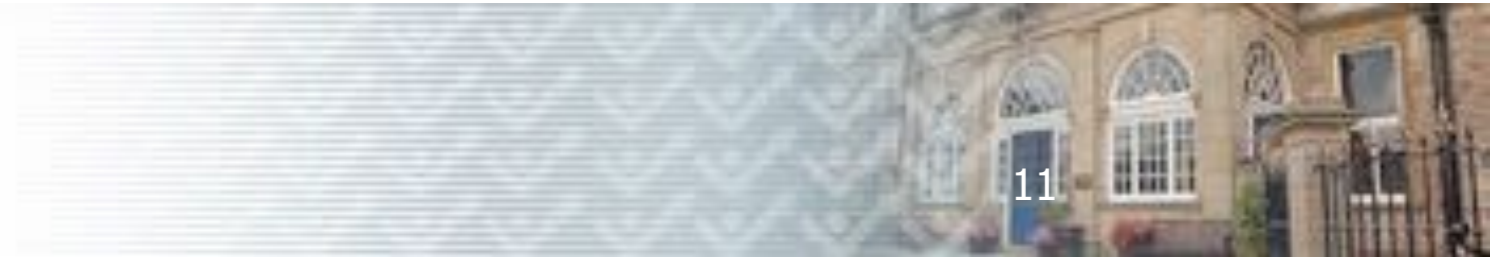


Pitfalls in Sports Injury Surgery

✦ stick with what you know



Vid



In US

- everyone is a sport med doc !

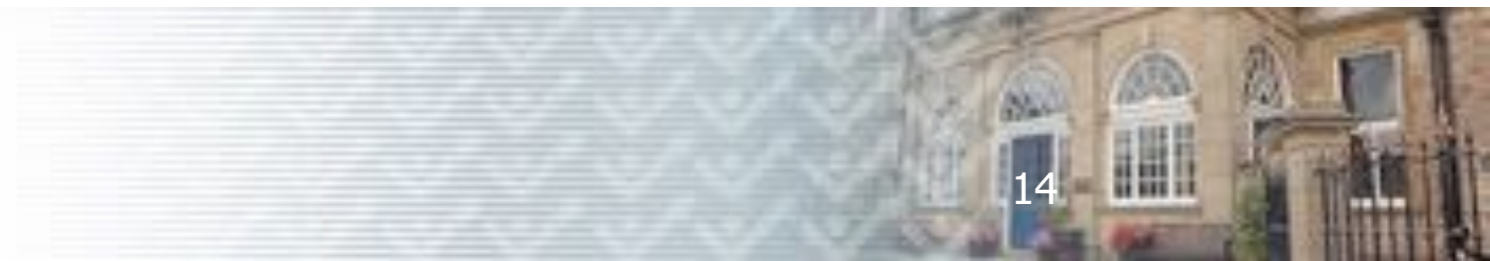


this gastroenterologist took things too seriously

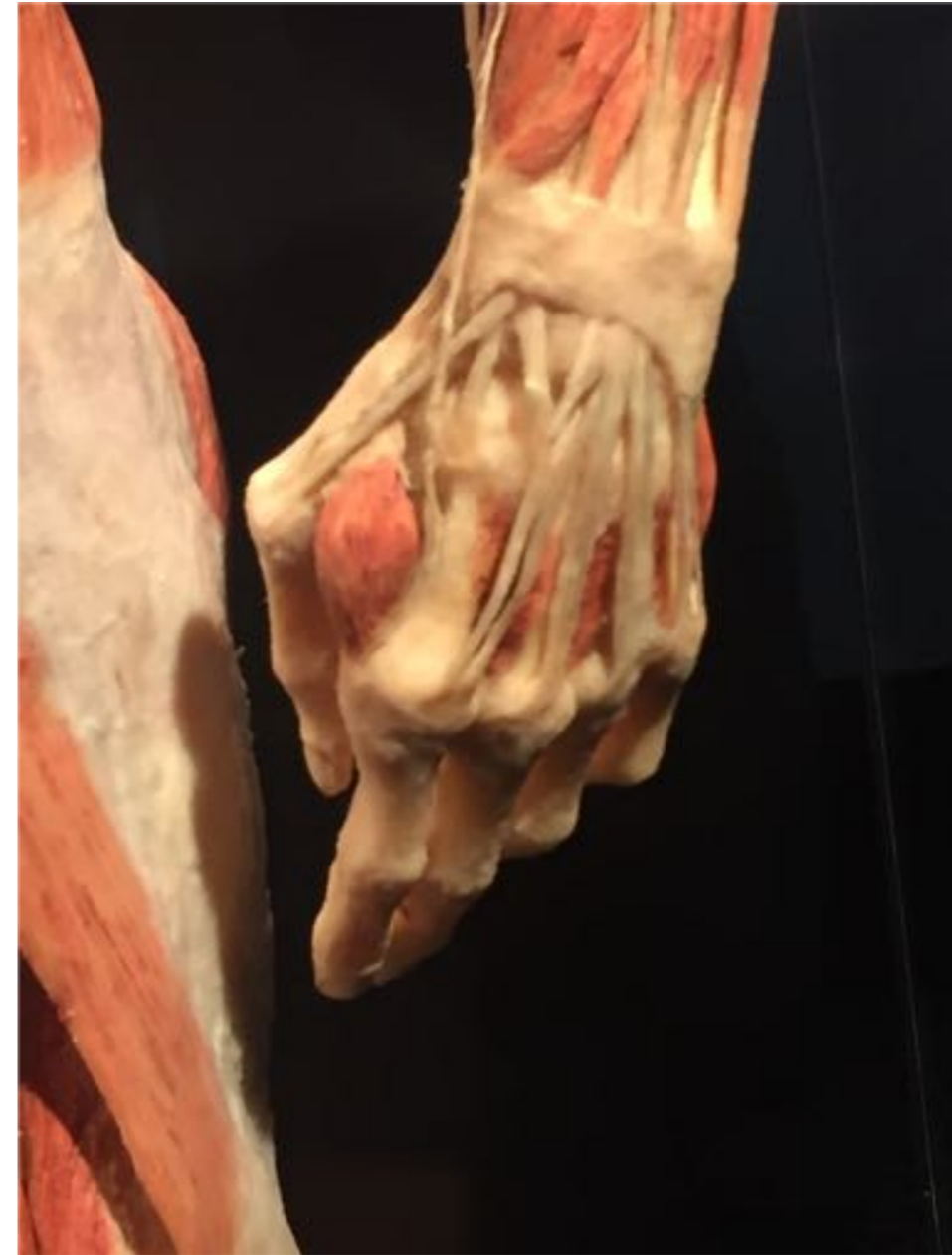


Function

- ✦ Transmit force from torso to tips
- ✦ Power
- ✦ Precision movements
- ✦ Prehension
- ✦ Single finger pull ups



Anatomy



The Common Offenders

- ✓ Scaphoid fracture
- ✓ Distal radius fracture
- ✓ Carpal tunnel syndrome
- ✓ Fight Bite
- ✓ Underestimating lacerations
- ✓ Skier's Thumb



The Scaphoid



σκαφοειδές

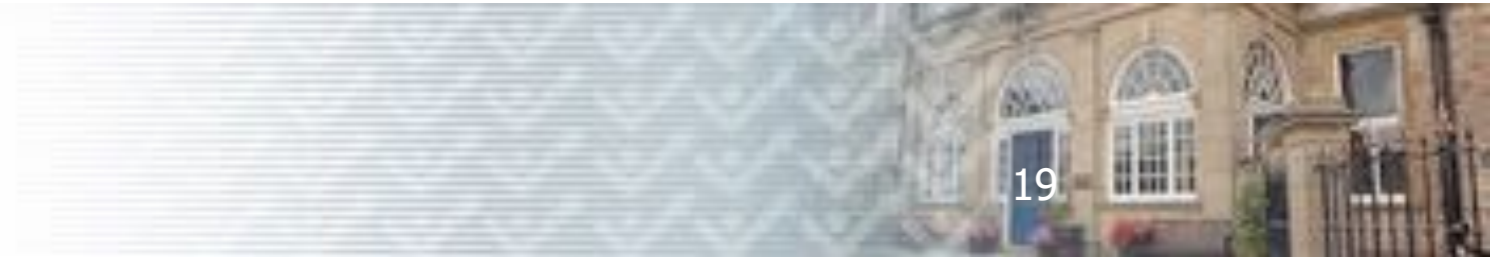
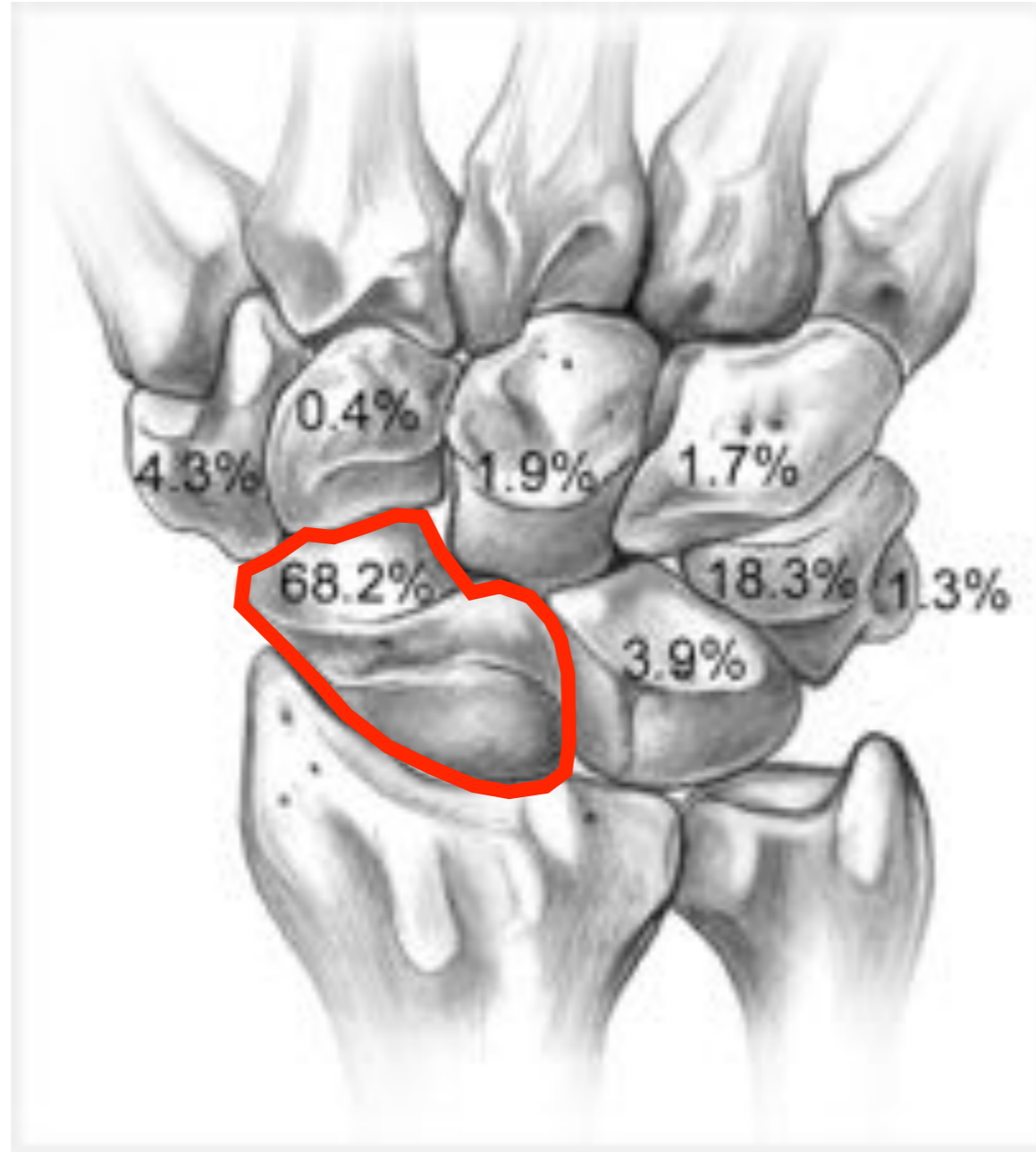
From the **Greek**

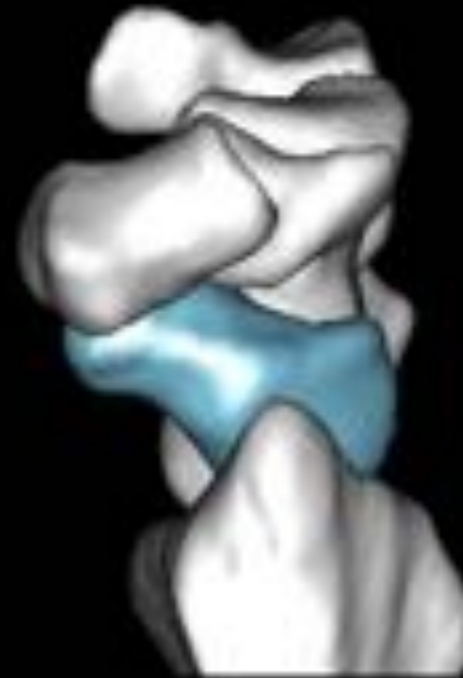
skaphos, which means "a boat"

eidos, which means "kind"

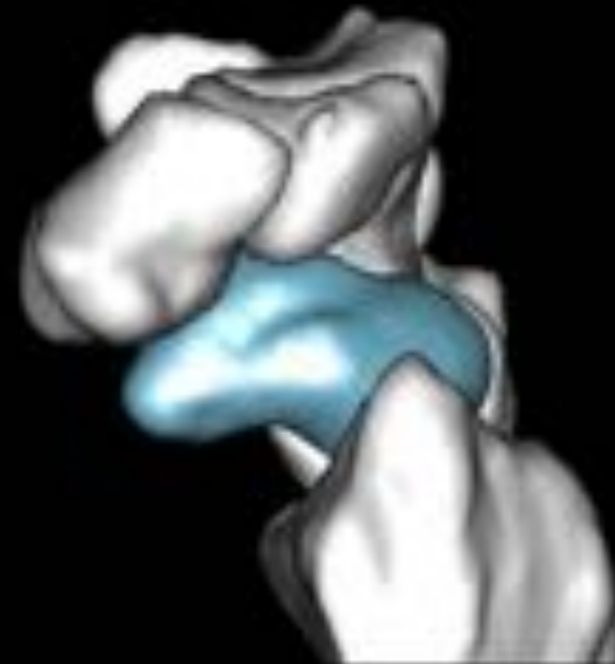


Common





complex scaphoid kinematics



History

↳ Trauma

- ↳ Social goal keeper - block a shot = pain
- ↳ FOOSH



Complain of

↙ Stiffness

- ↙ Exp extension (cock wrist back)

↙ Pain

- ↙ Unable to load in extension
 - ↙ Press ups / Get out of the bath / sofa

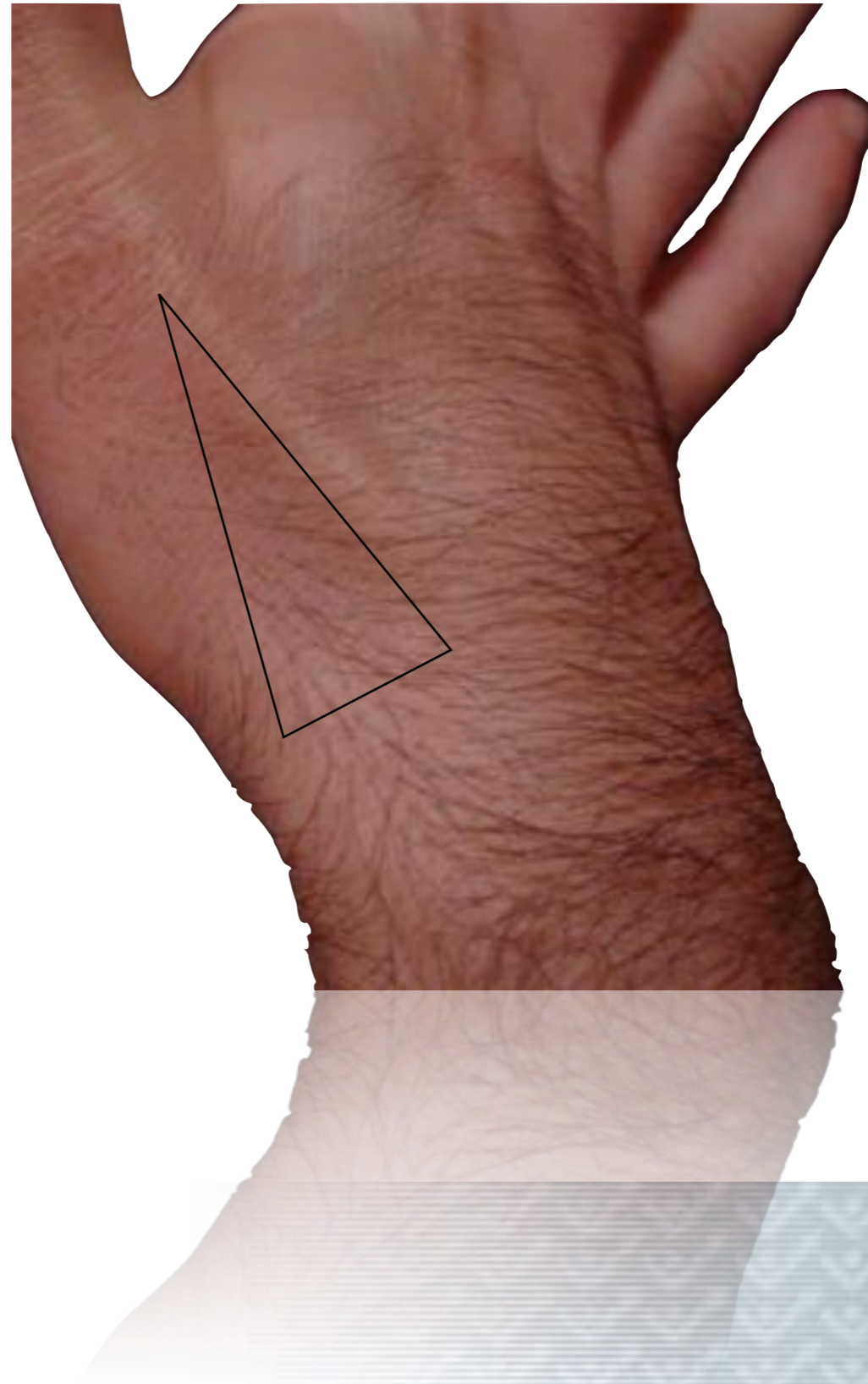


Clinical Features



Pain

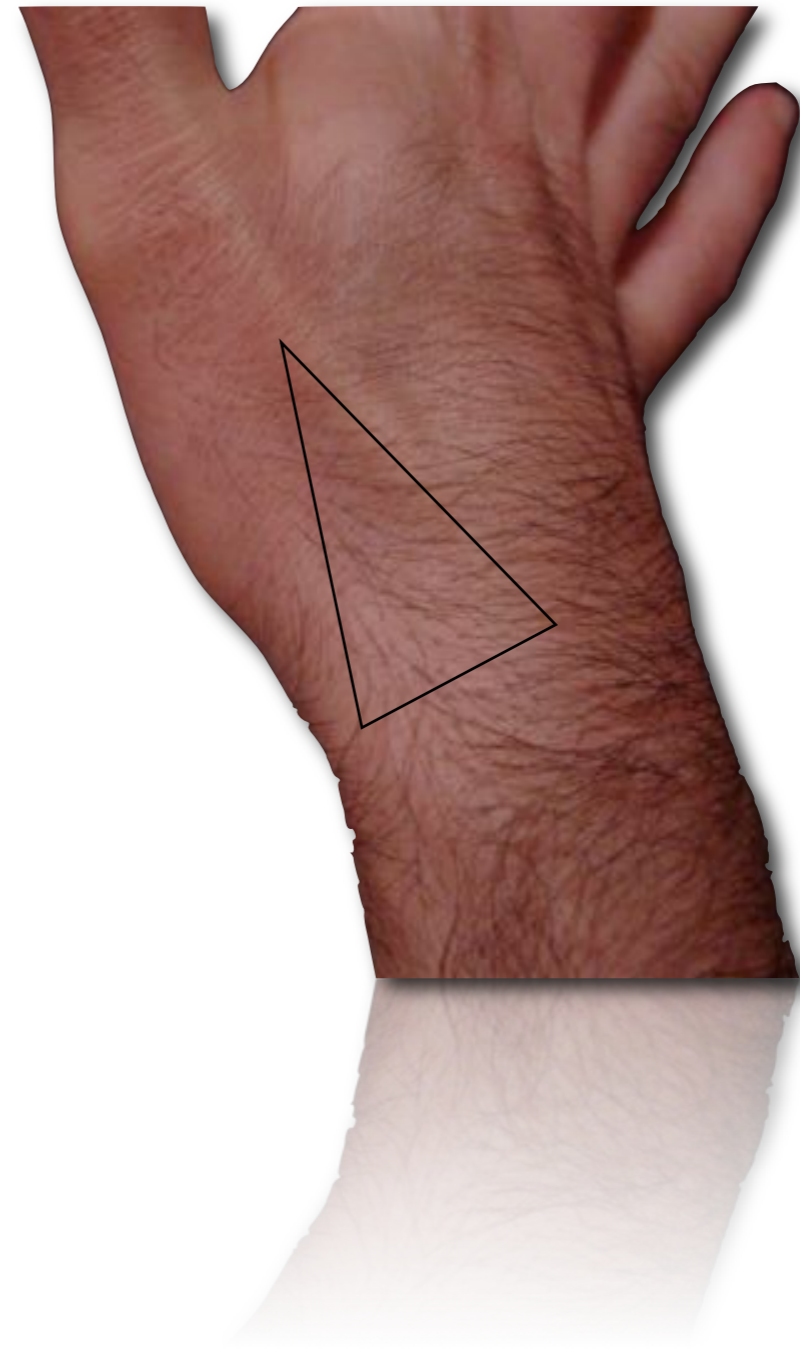
Anatomical snuff box



Clinical Features

↙ Pain

- ↙ Dorsal midline
- ↙ Tubercle
- ↙ ASB
- ↙ Telescope the thumb



Anatomical snuff box

- ↙ Swelling
 - ↙ ASB loss definition



Examination

- ✦ Reduced ROM
 - ✦ particularly extension



Investigate

✈ X-ray



Sometimes a scaphoid fracture is not seen on initial Xray

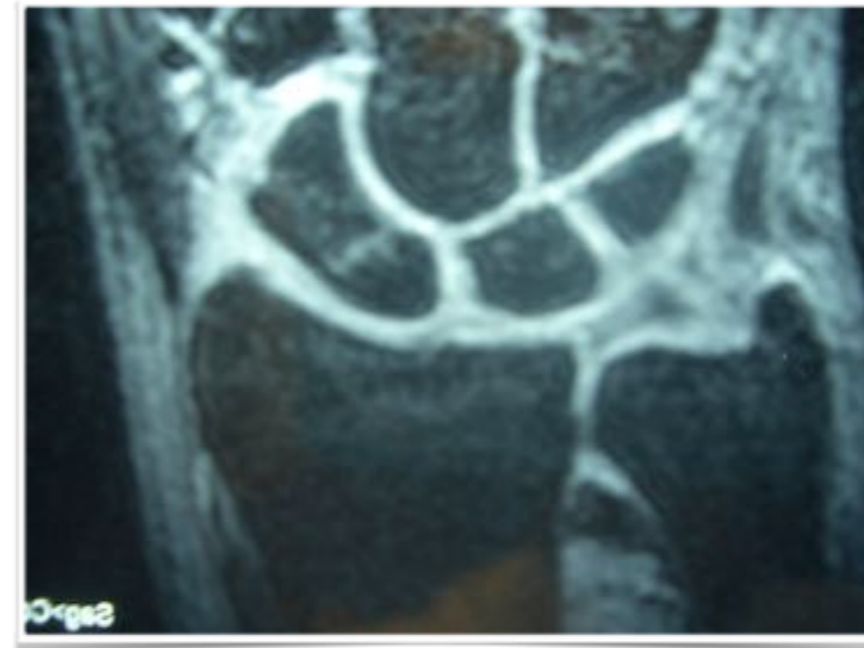
- ✦ So if suspicious clinically
 - ✦ treat as a fracture in POP and re-xray 10 days

- ✦ or get MRI



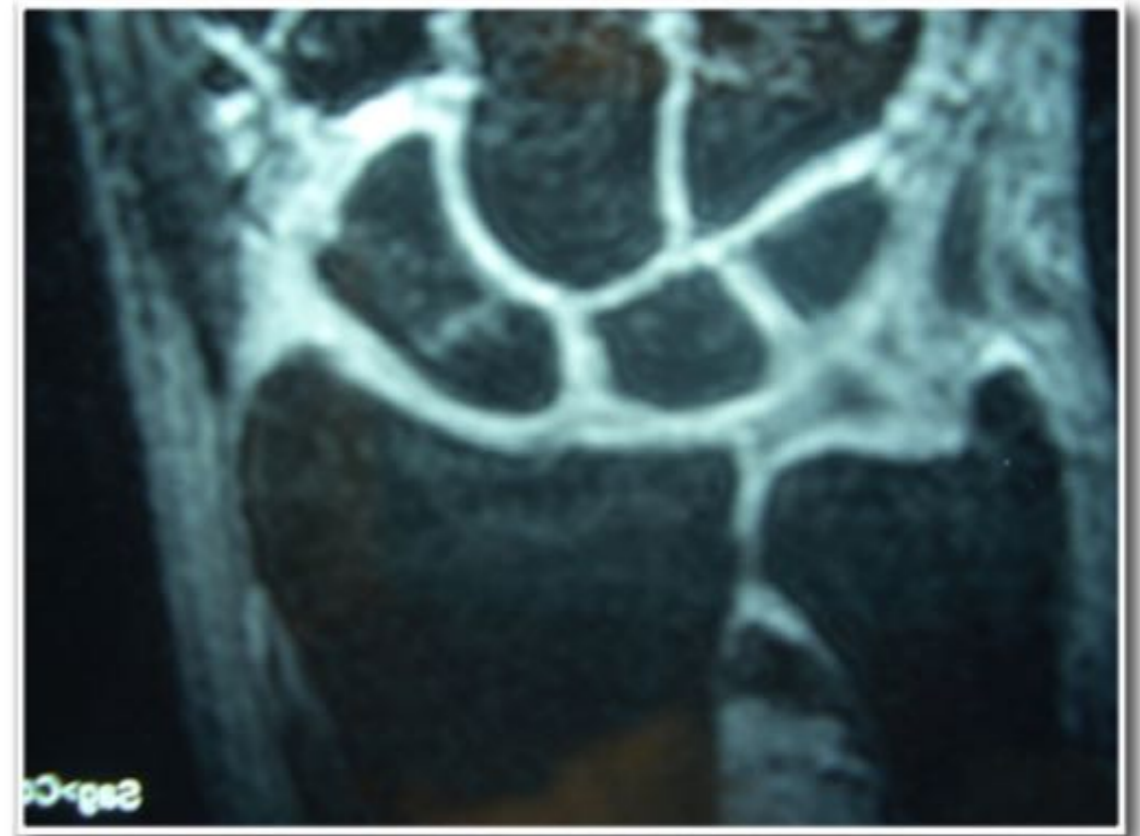
Investigate

- ✦ X-ray
- ✦ CT scan
- ✦ MRI scan
- ✦ (Isotope Bone Scan)



MRI

- ✦ Show fracture within a few hours
- ✦ Show ligament injuries
 - ✦ oedema (fluid)
 - ✦ may show the tear
 - ✦ abnormal inter-carpal angles



Scaphoid fractures are prone to non union (not uniting)

so why don't they heal ?

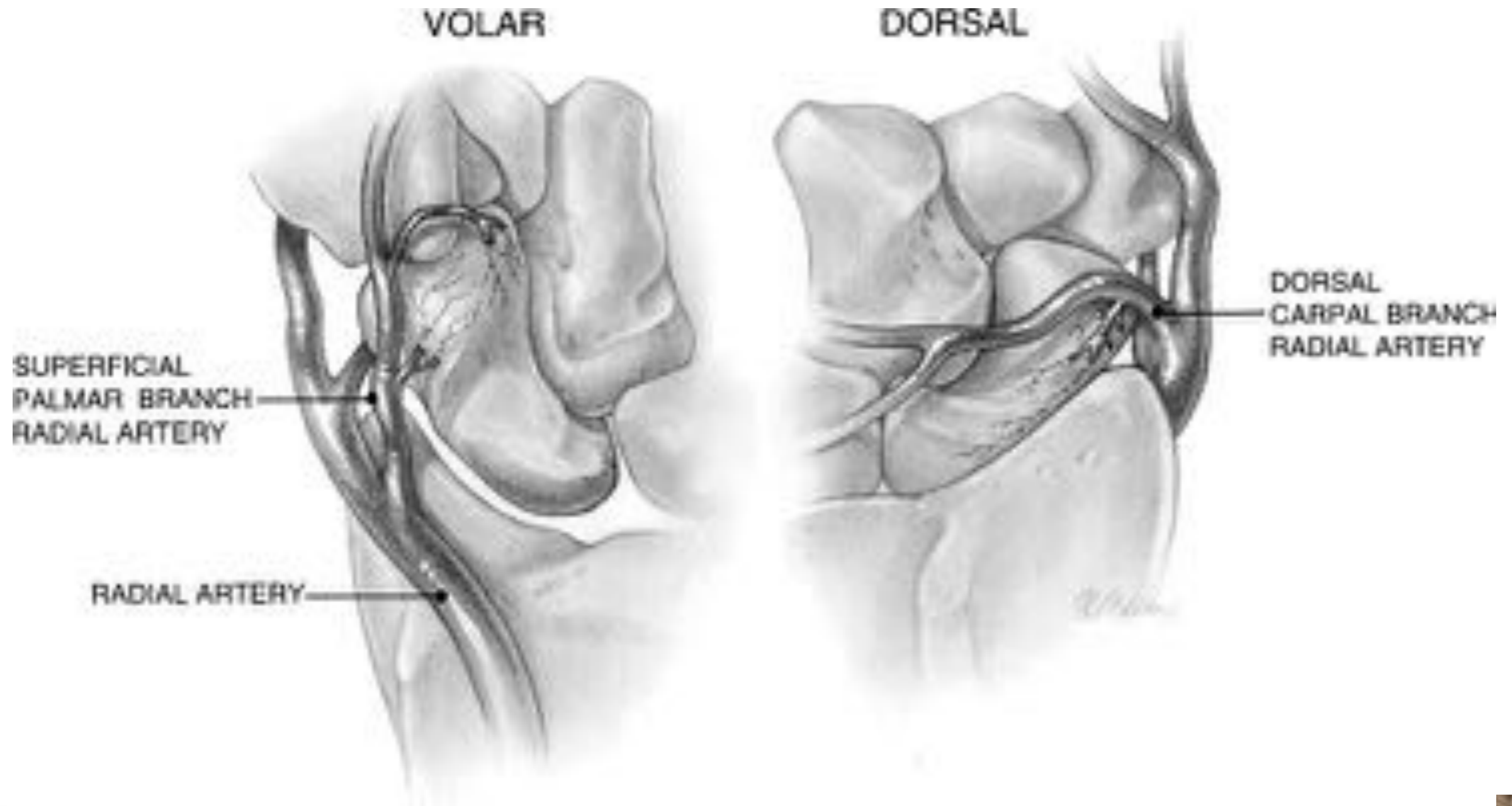
- ✦ Delay in treatment
- ✦ Location
 - ✦ Blood Supply
- ✦ Displacement
- ✦ Carpal instability
- ✦ Unstable fracture





More proximal the
fracture
...the worse the
prognosis

Blood Supply

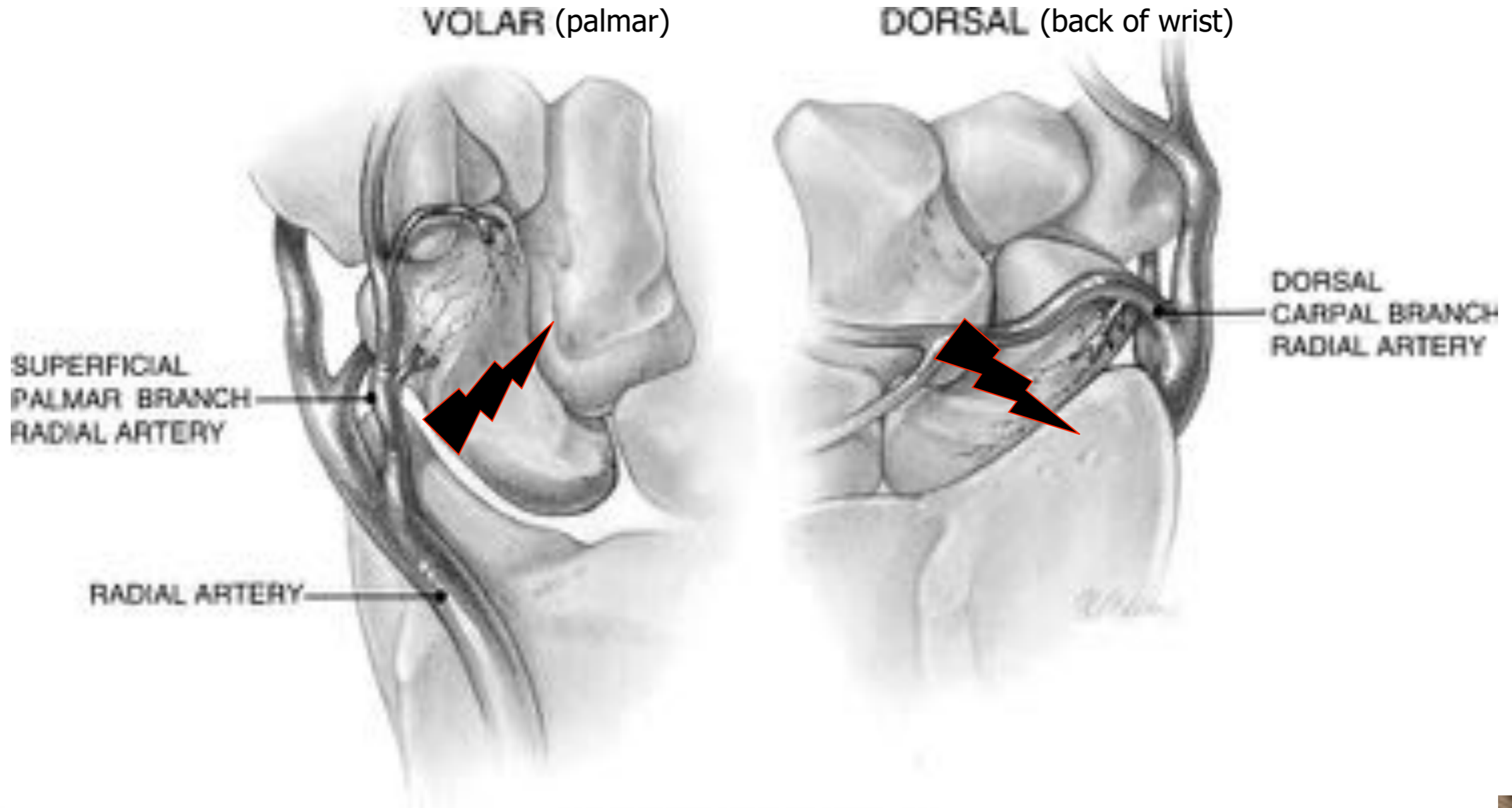


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Blood Supply

Obletz & Halbstein 1938



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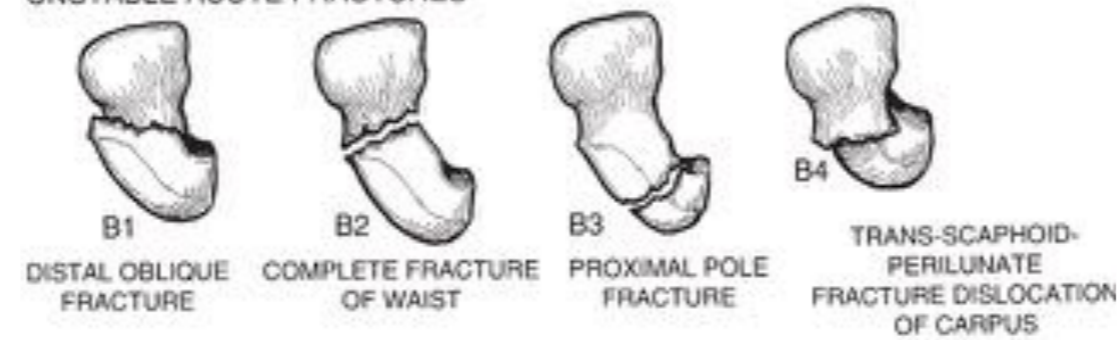


Classification - Herbert

TYPE A: STABLE ACUTE FRACTURES



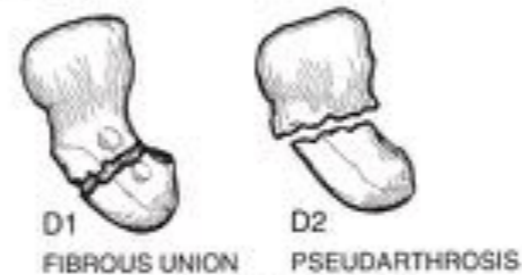
TYPE B: UNSTABLE ACUTE FRACTURES



TYPE C: DELAYED UNION

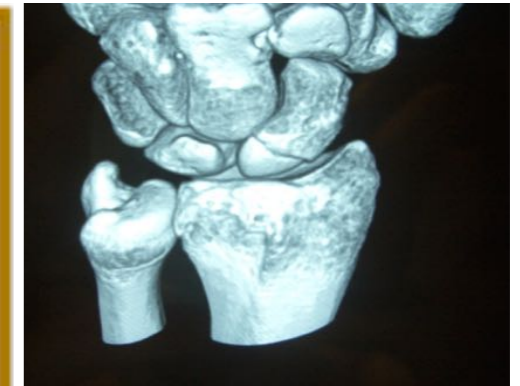
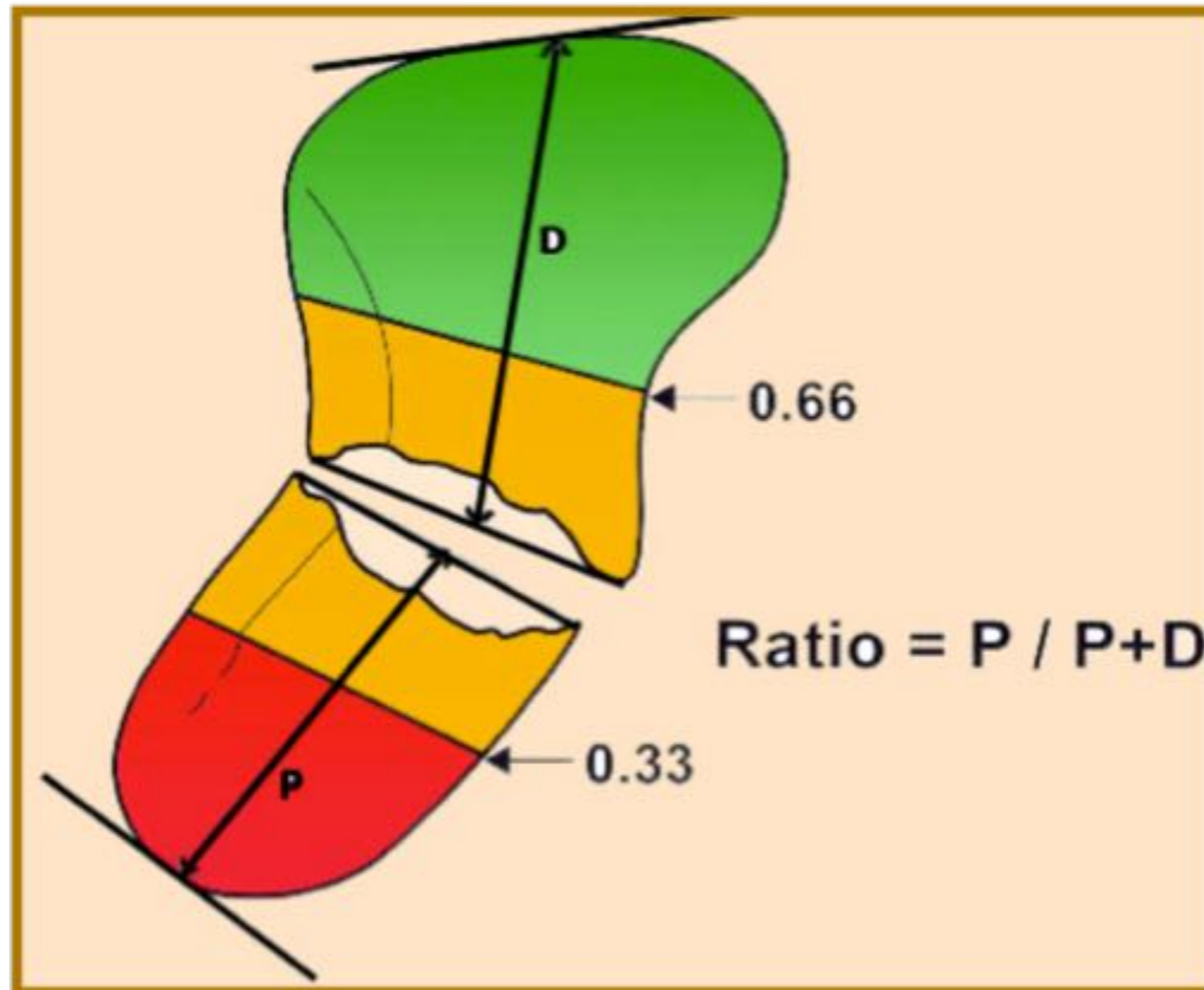


TYPE D: ESTABLISHED NONUNION



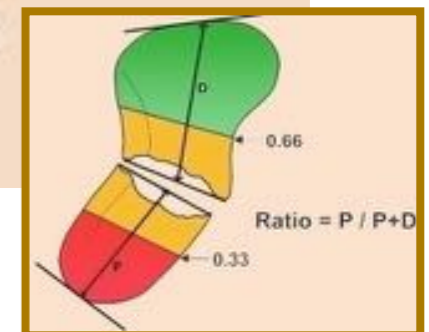
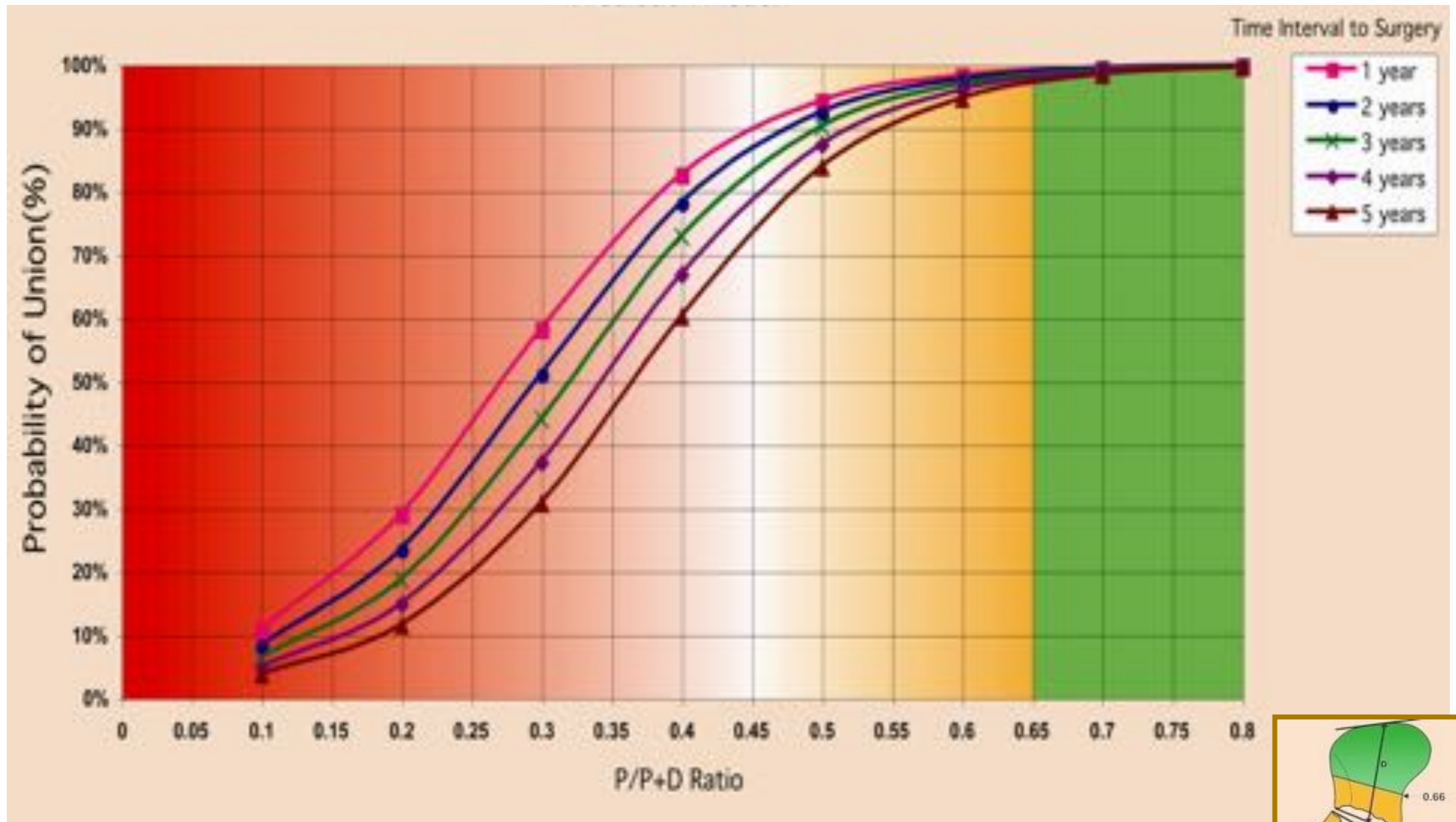
Wrightington classification

Ramamurthy C 2007 JBJS 89B : 627-632

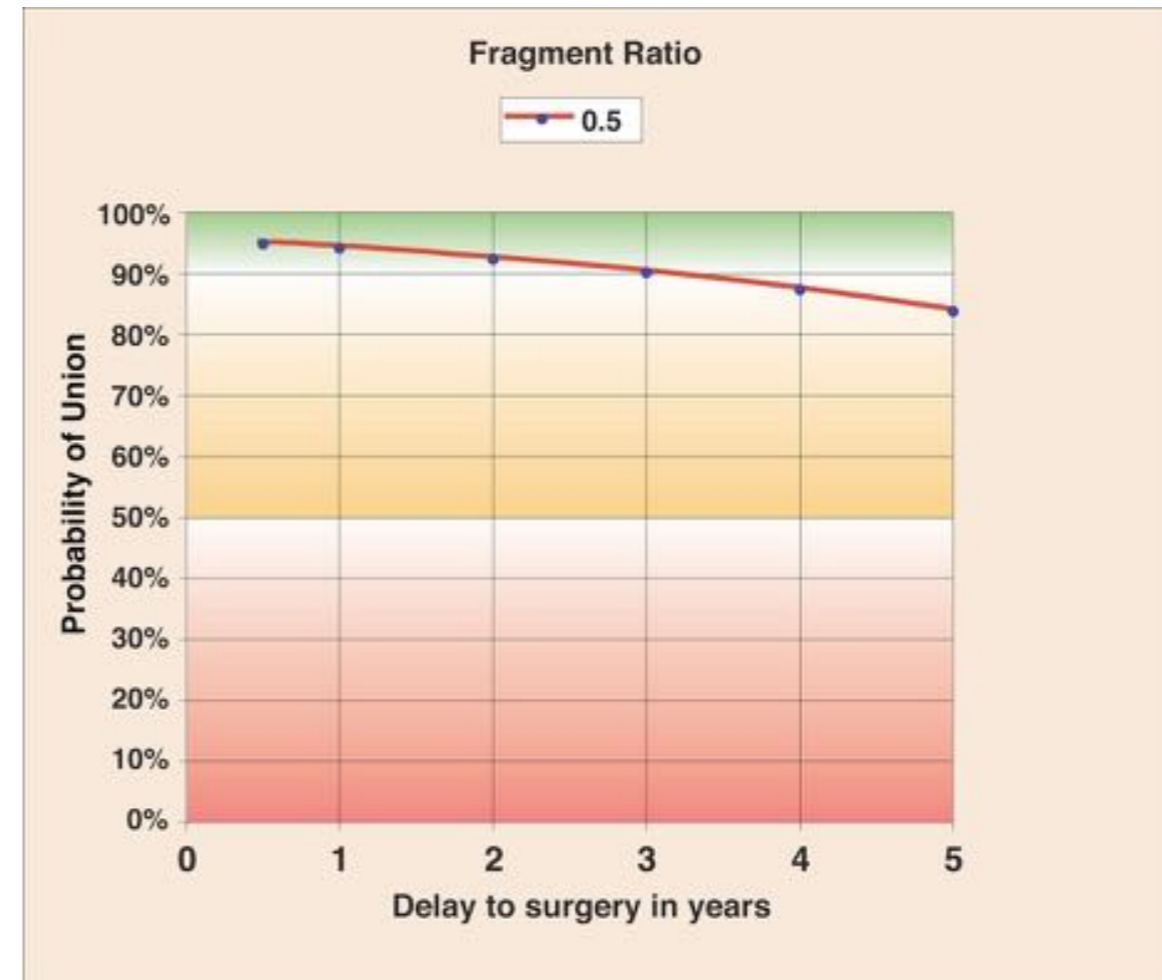
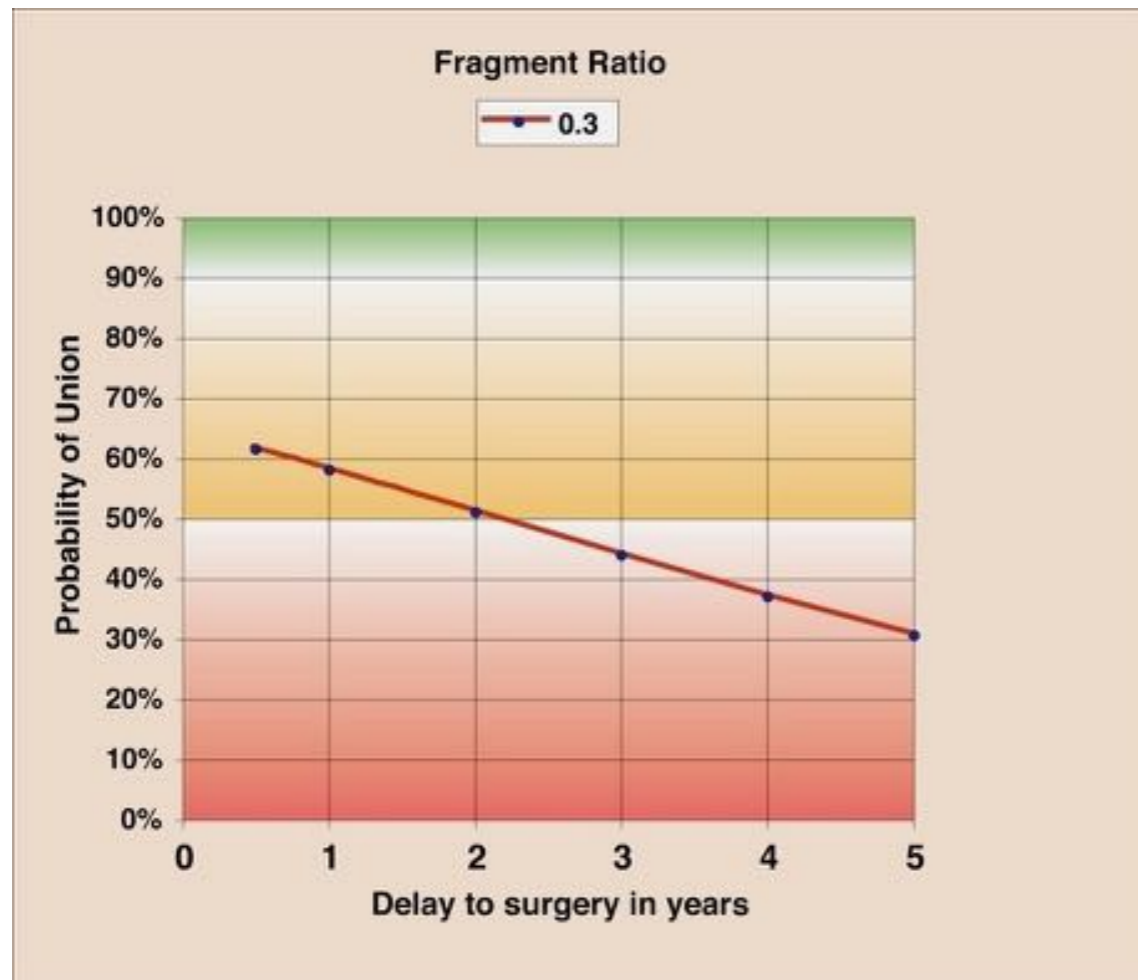
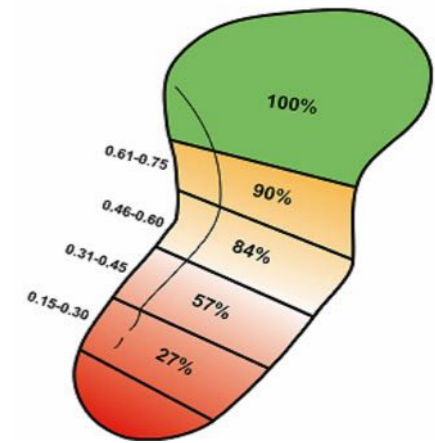




Wrightington 2007



For the first time Be specific for our patient



Treatment

↳ Cast

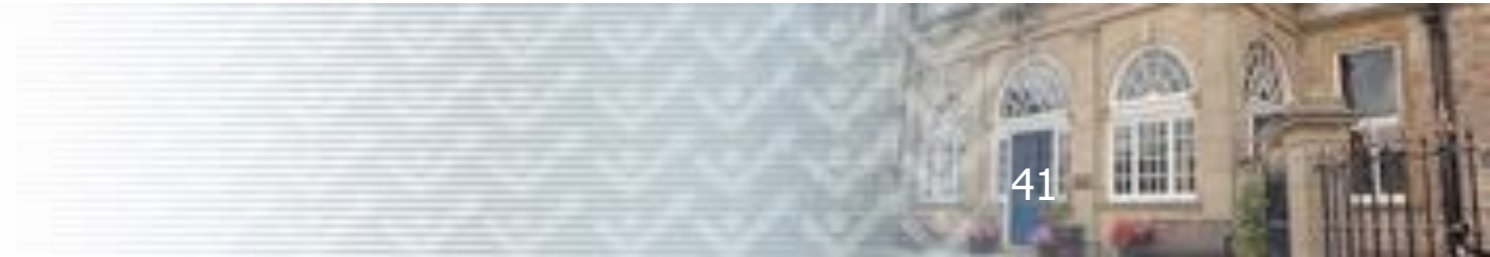
↳ Internal fixation



Non Operative

- ↳ Cast
- ↳ 6-8 weeks
- ↳ Until healed !!

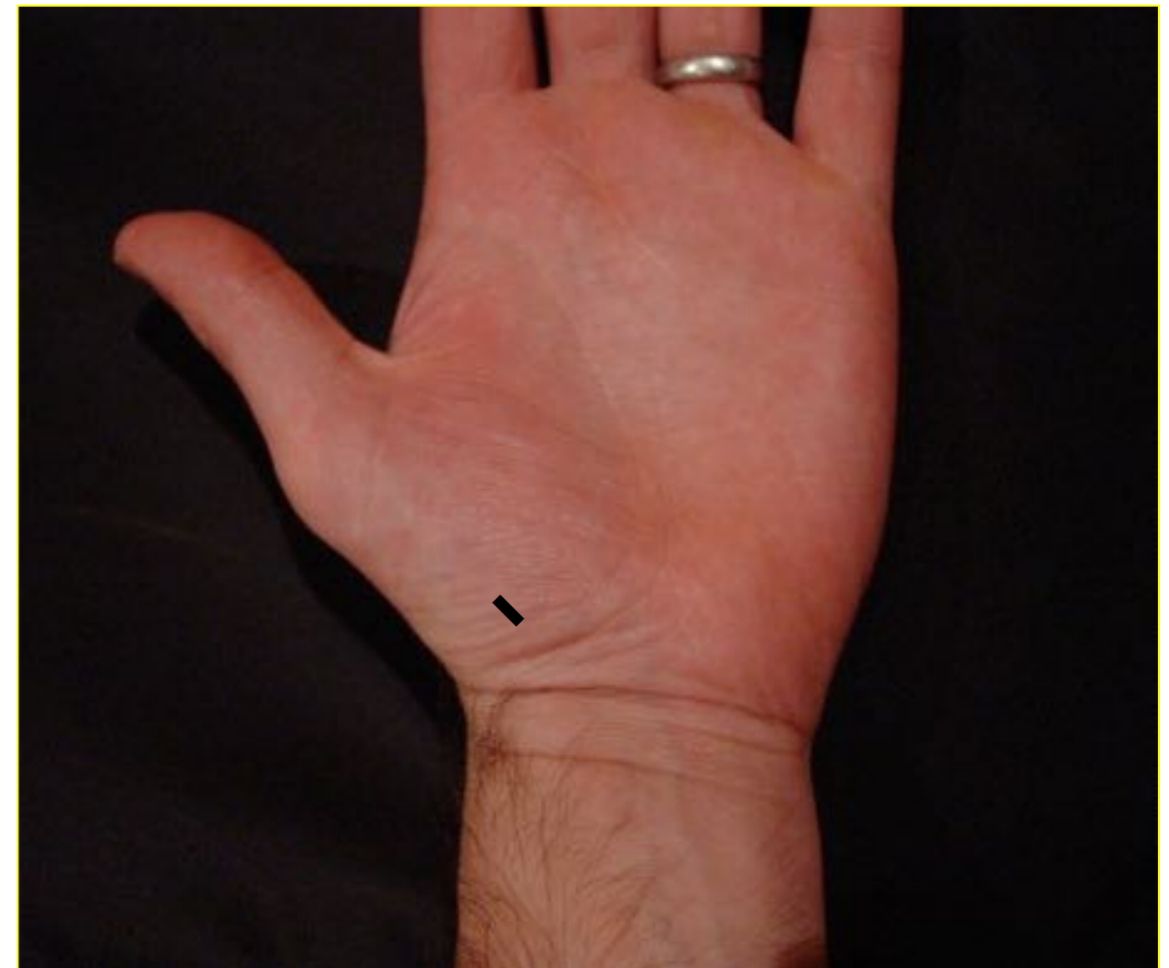
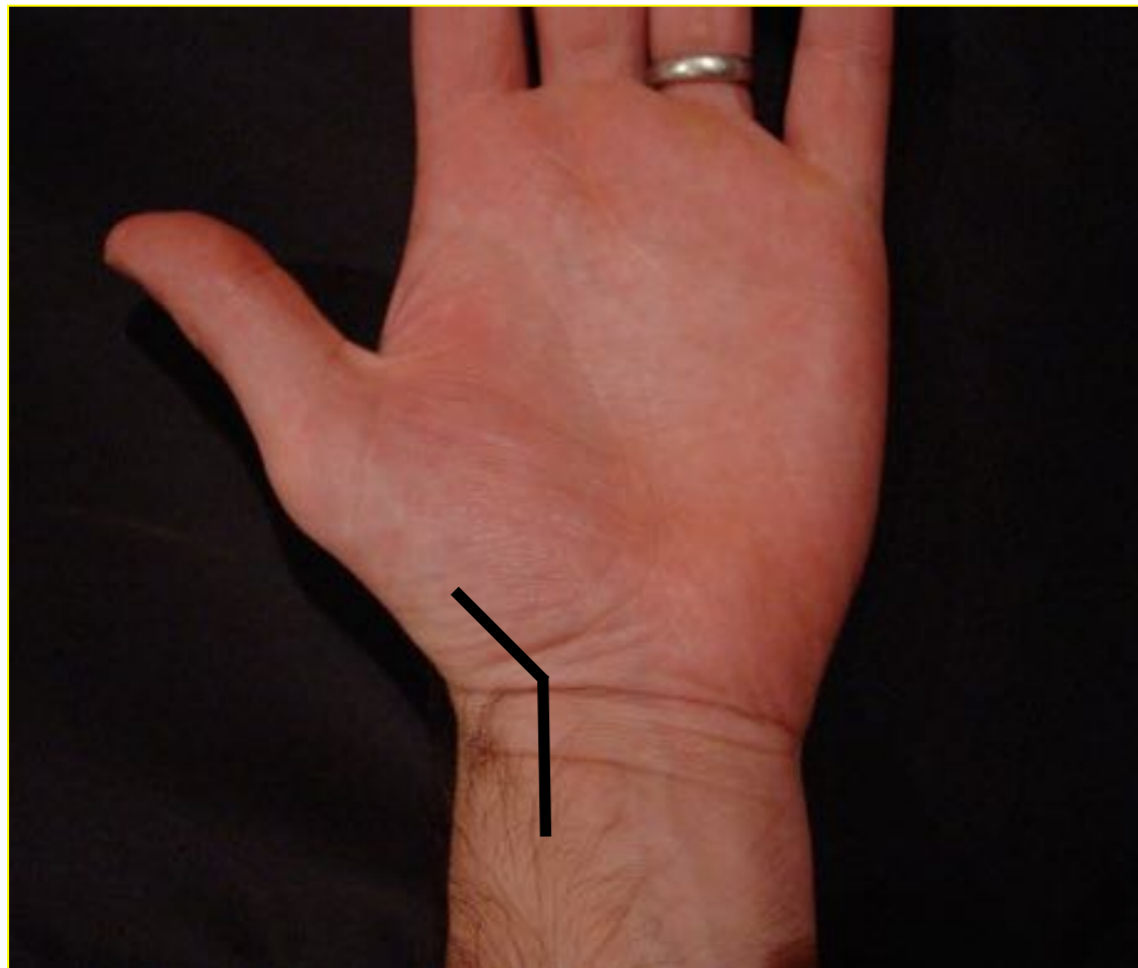
↳ Muscle wasting



Fixation

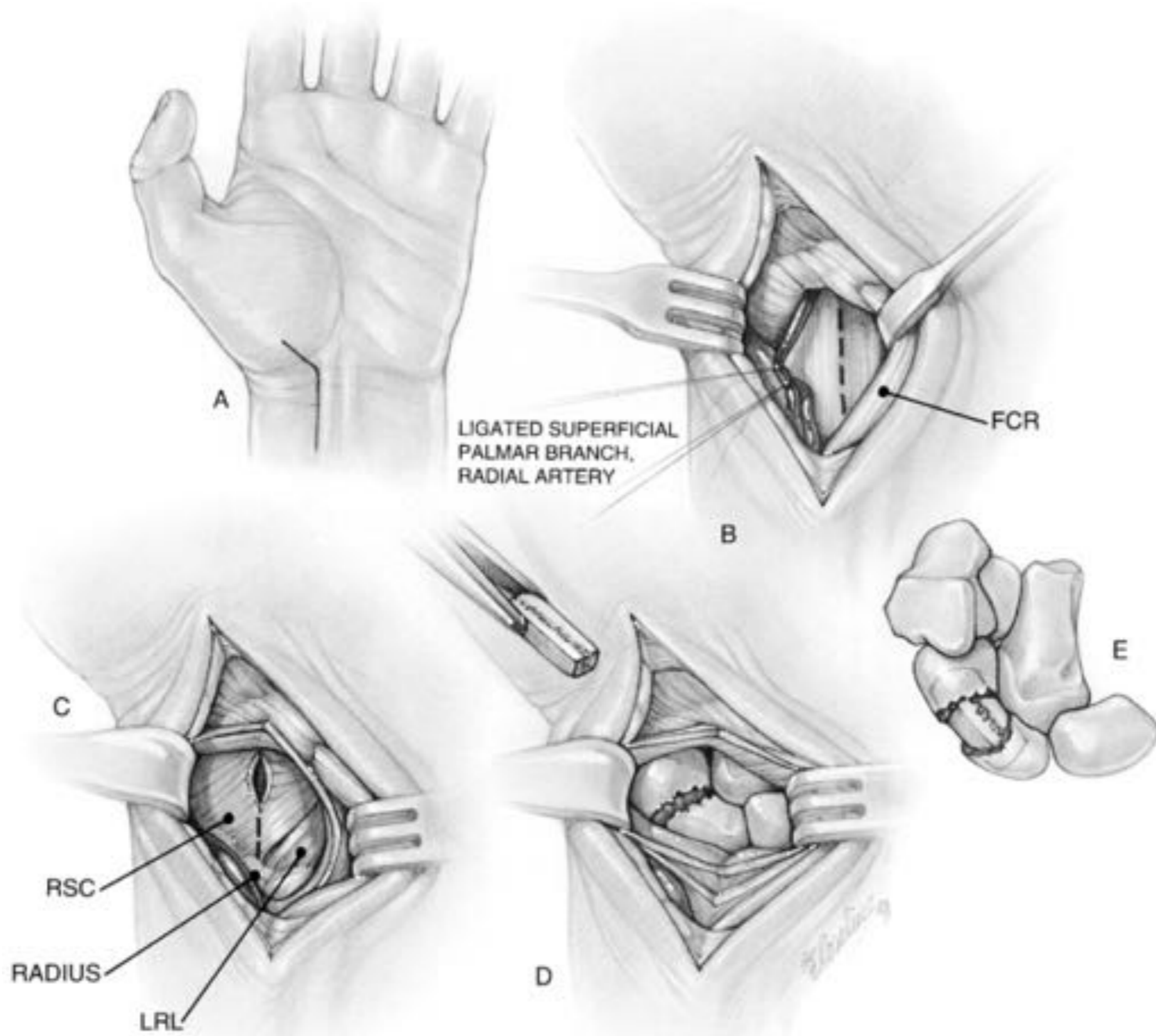
ORIF

Percutaneous



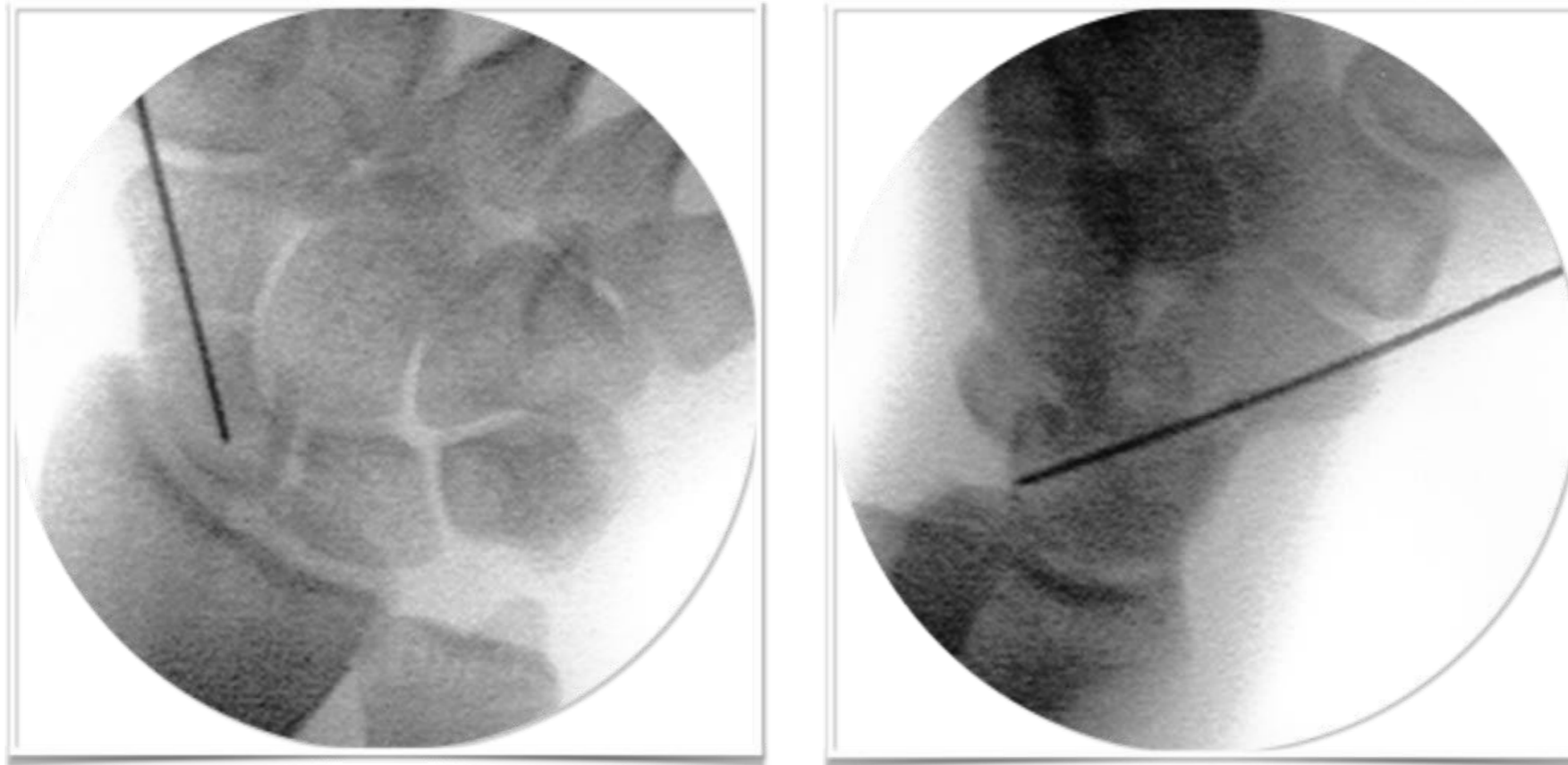


Traditional open approach



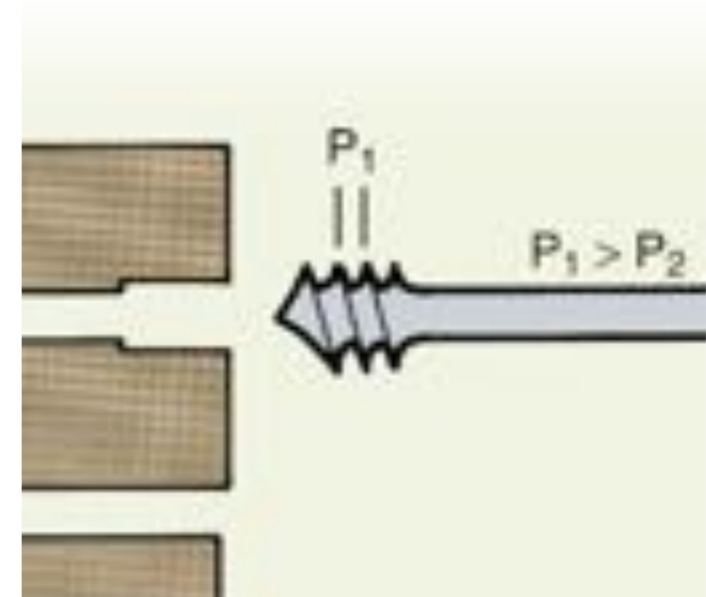
Use x-ray to guide a wire

↳ Down the middle



then thread a hollow compression screw over the wire

- Down the middle of the bone perpendicular to the fracture line



Vid of percutaneous scaphoid fixation



Surgery

Not without risks

Screw in poor position

Screw too long / short

Infection

Tendon injury etc etc

Performed by experienced user
and the risks much less



Options

↙ Distal pole

POP 6 weeks

↙ Undisplaced Waist

Mini-open Fix or POP

↙ Displaced Waist

Fix

↙ Proximal pole

Fix (Mini-open)



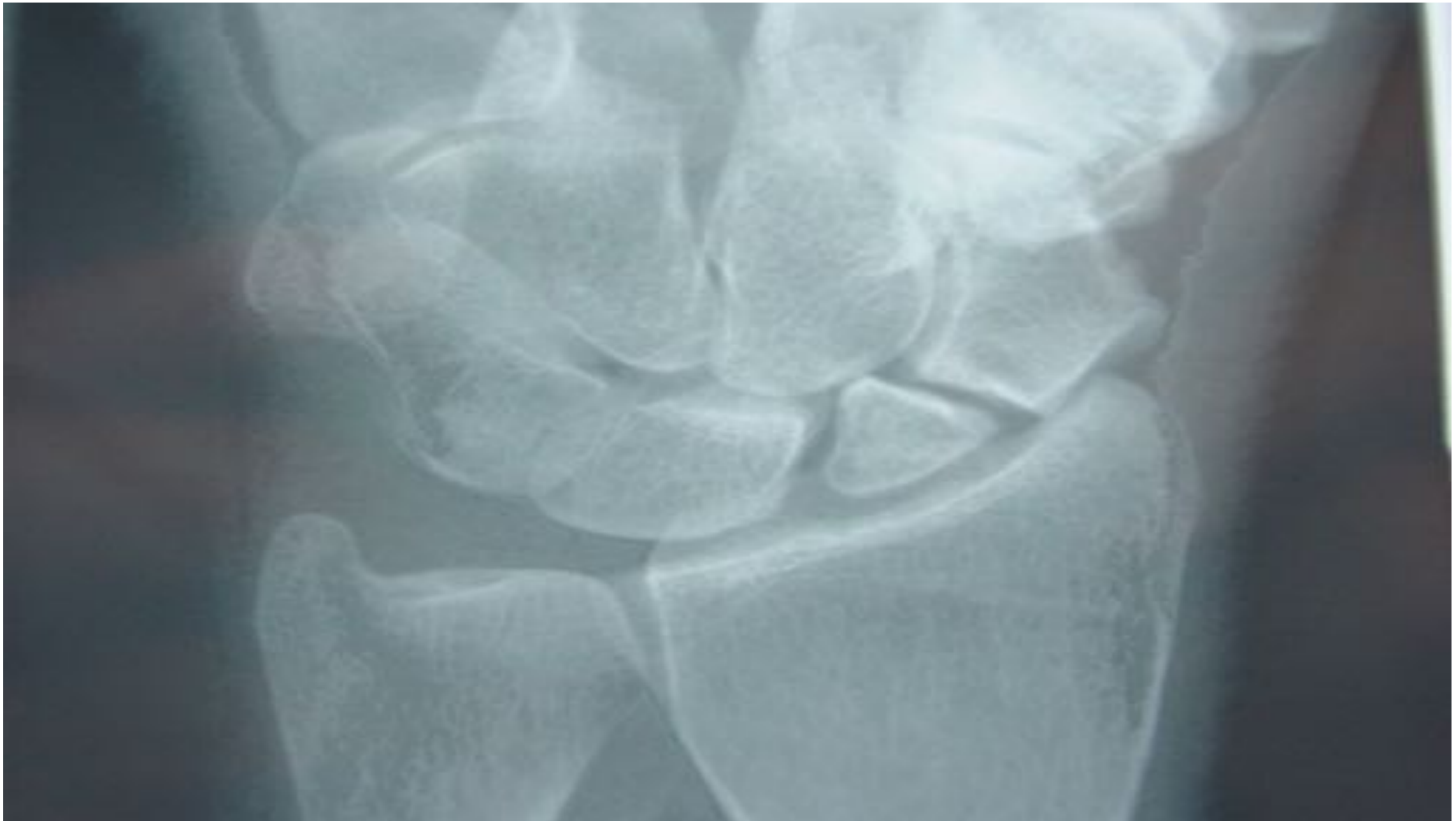
Return to drive

 vid





Non union



Long term problems

- ✦ Secondary OsteoArthritis
- ✦ Scaphoid Nonunion Advanced Collapse = SNAC
- ✦ Salvage surgery
 - ✦ Partial / total fusion / excision arthroplasty



The Distal Radius Fracture

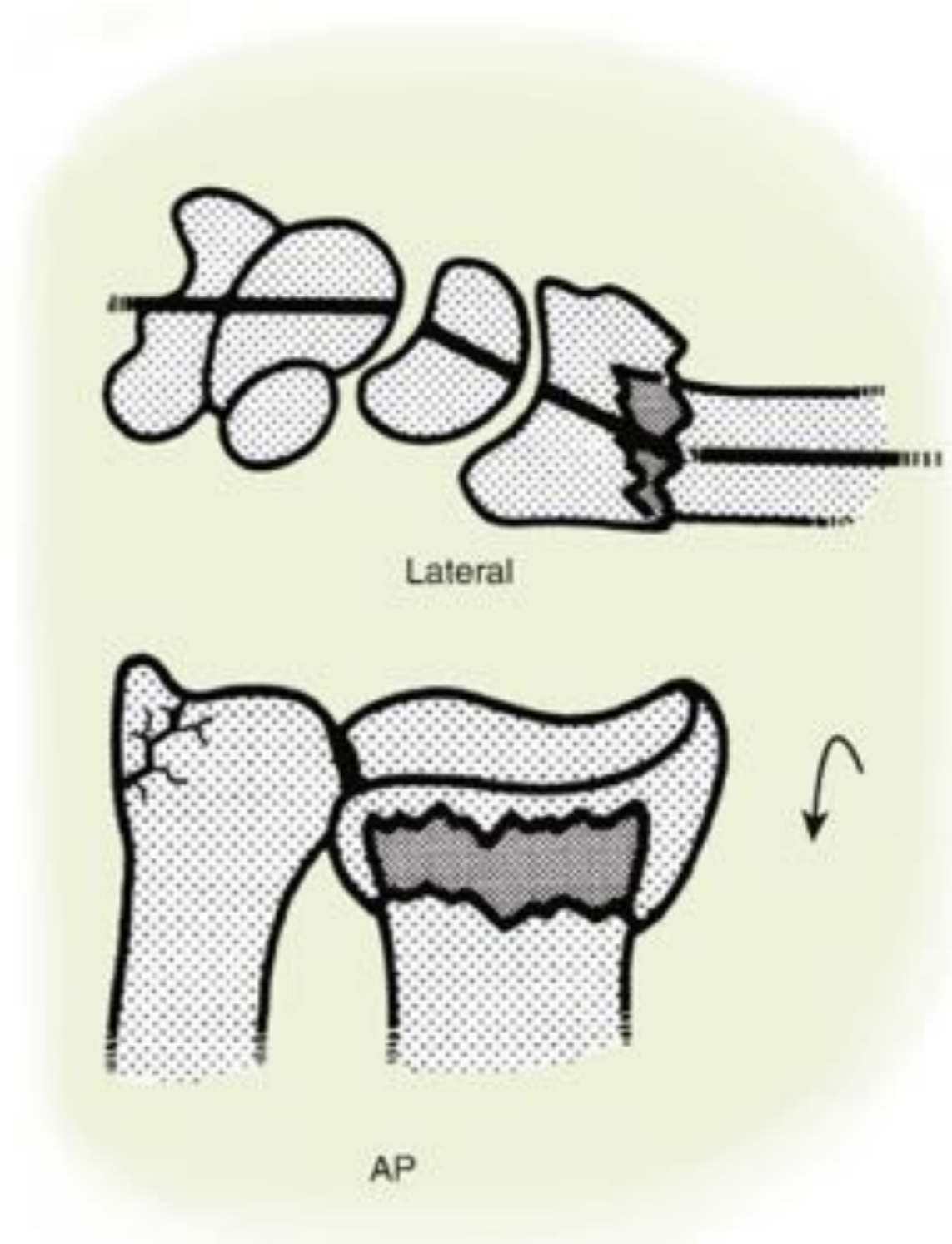


The Distal Radius

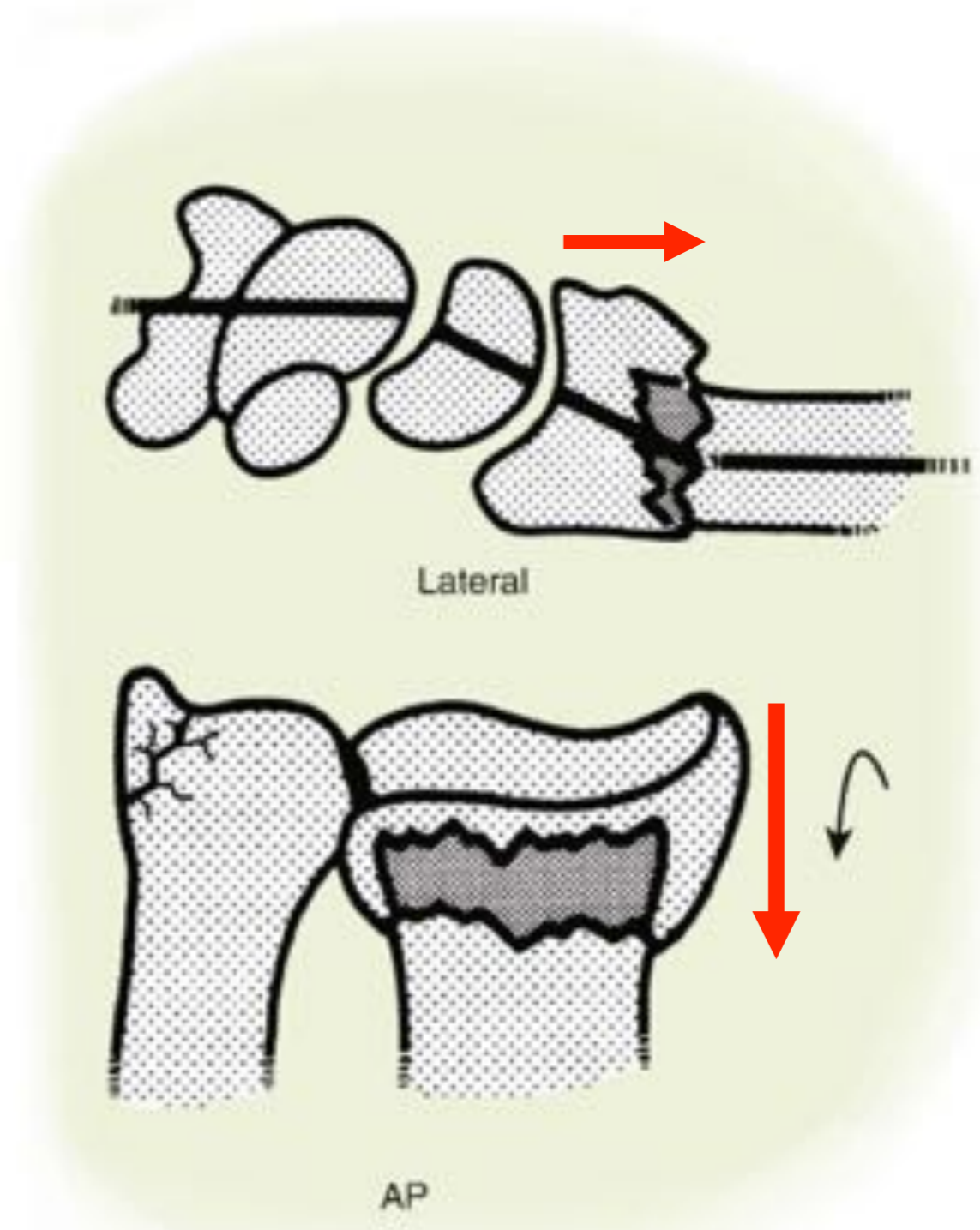
- ✓ Age is not a concern
- ✓ Lots of eponyms
 - ✓ just ask to explain the injuries
- ✓ Remember the ulna styloid fracture
- ✓ Remember associated injuries



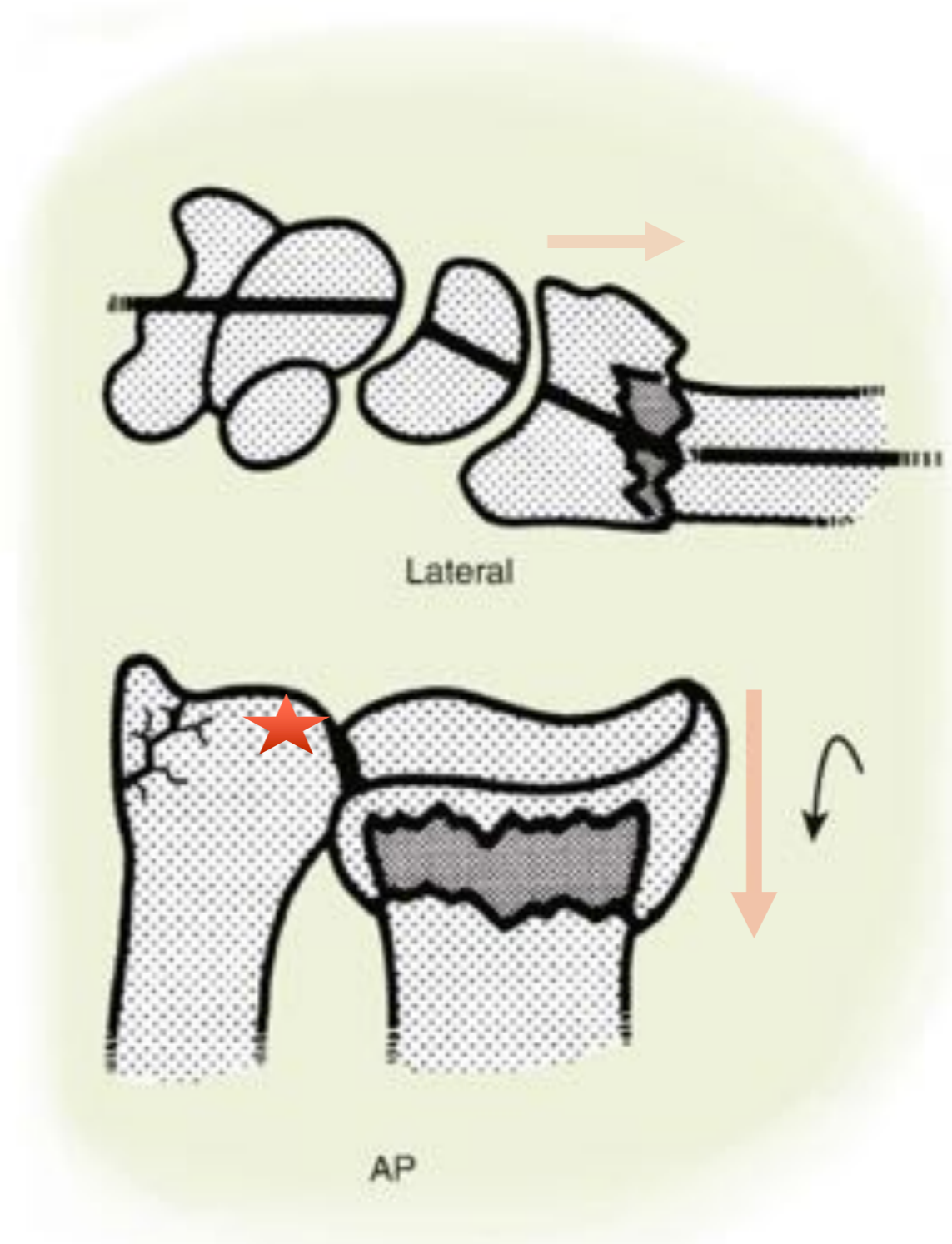
Colles - dinner fork



Colles - dinner fork



Colles - dinner fork

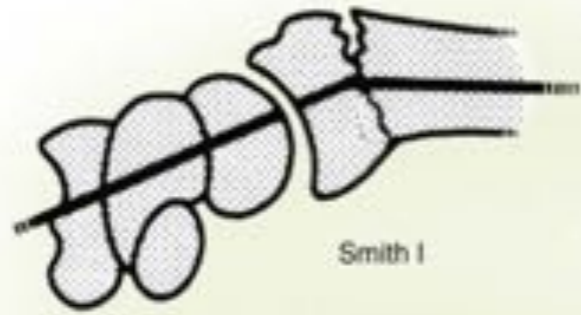


Radius shortens



Ulna impaction





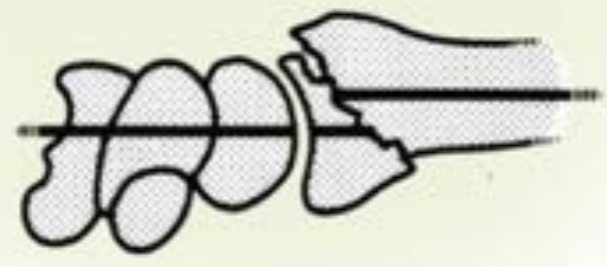
Smith I



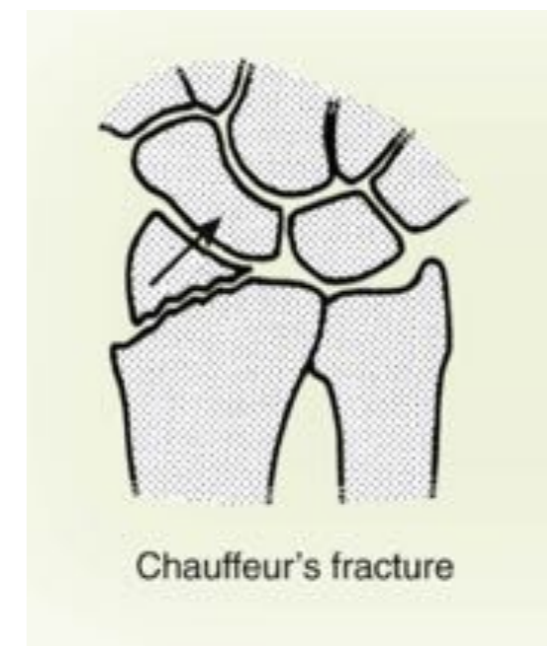
Smith II/volar Barton's



Dorsal Barton's



Smith III

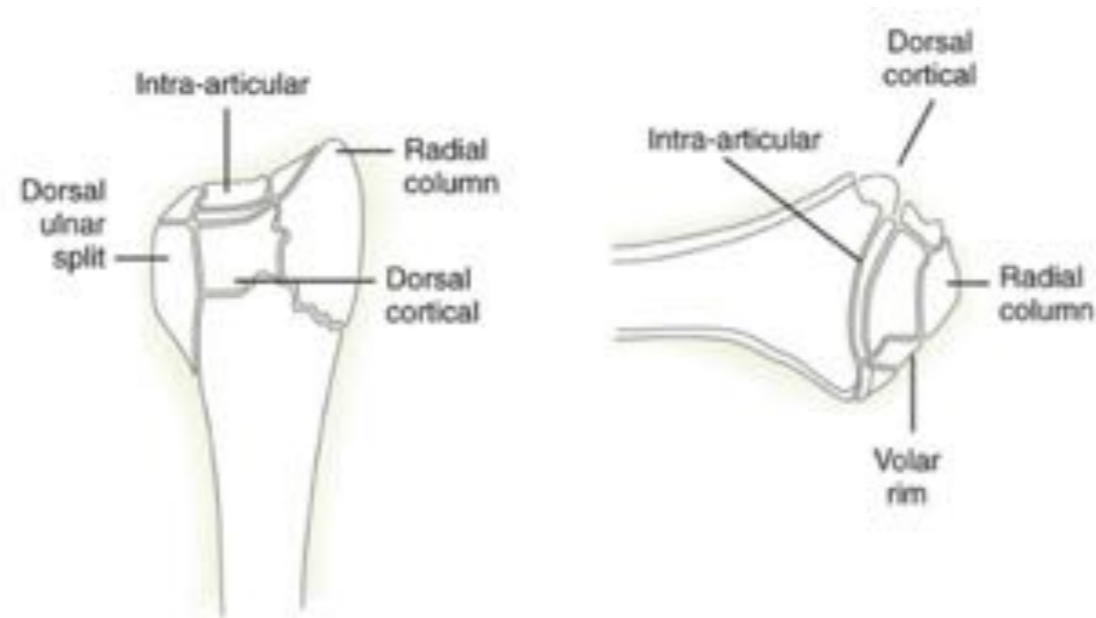


Chauffeur's fracture



Classifications

- ✓ Frykman
- ✓ Melone
- ✓ AO
- ✓ Mayo
- ✓ Fragment specific
- ✓ Columnar
- ✓ Fernandez



The Distal Radius

✦ Radius

- ✦ Dorsal comminution
- ✦ Dorsal angulation
- ✦ Shortening
- ✦ Inclination

✦ Ulna

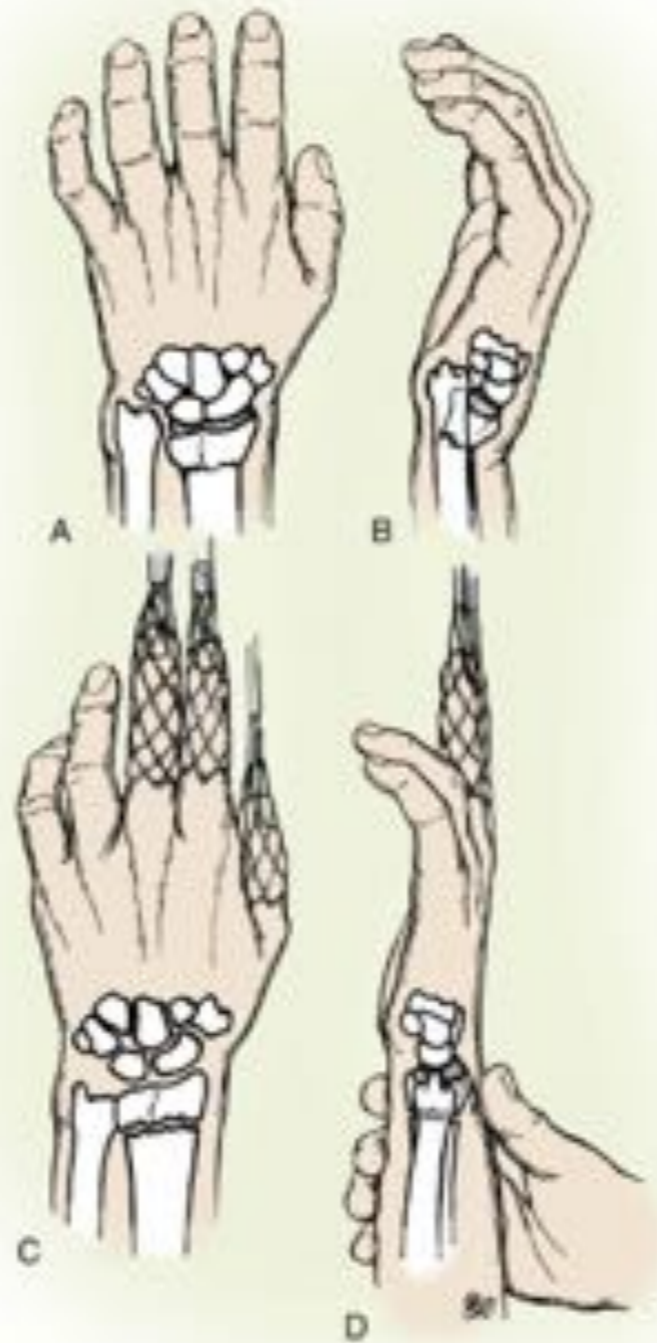


The distal radius fracture treatment options

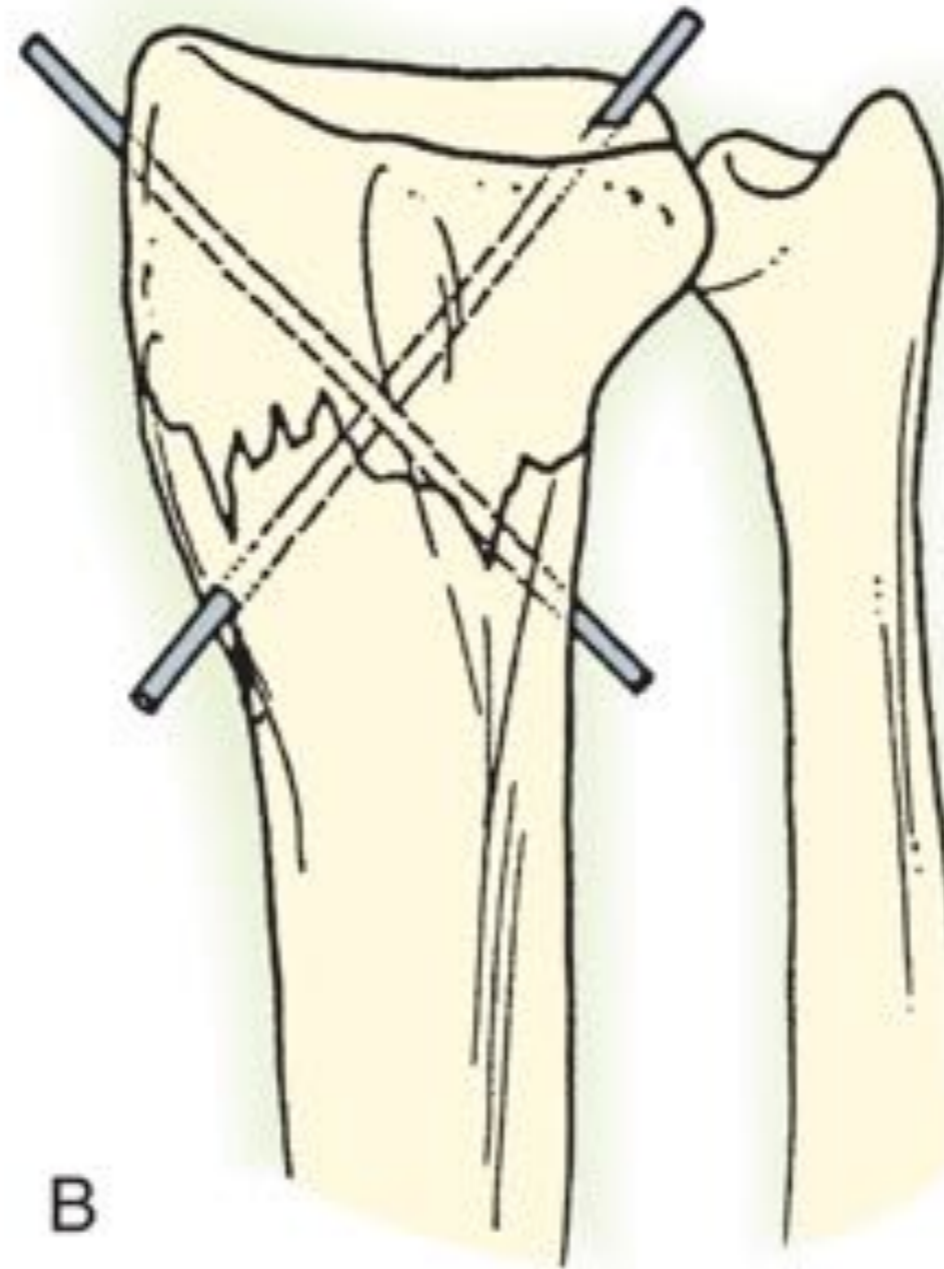
- ✦ Manipulation in A&E
- ✦ Removable splint
- ✦ POP
- ✦ Manipulation (MUA) and POP
- ✦ MUA and K wire
- ✦ Open reduction and internal fixation (ORIF)
- ✦ Ex Fix / Internal bridge plate



MUA and POP



MUA and K wire

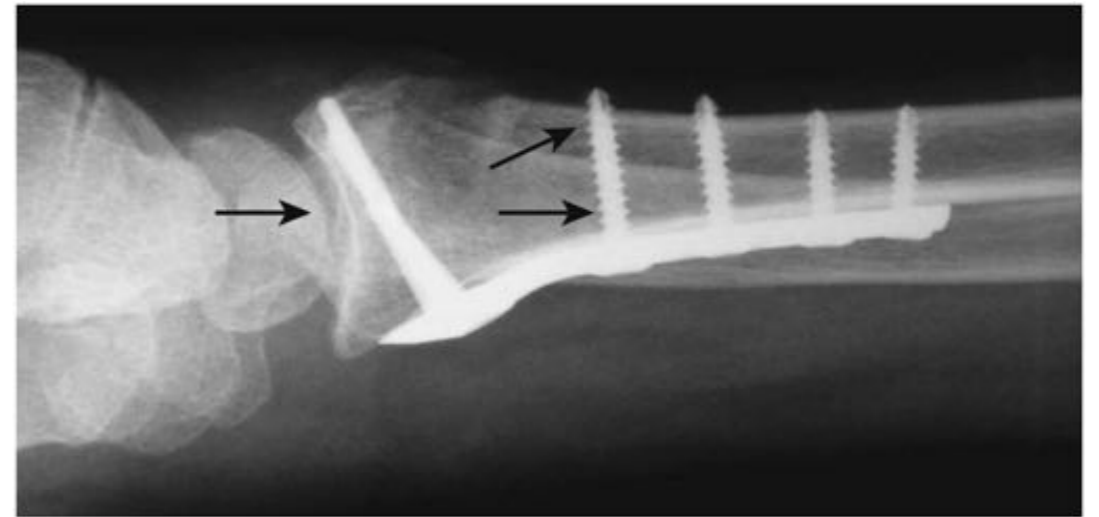




Not ideal - reduce the fracture



Big Move to ORIF



- ✓ Volar locking plates
- ✓ Can hold even very soft bone
- ✓ Early mobilisation

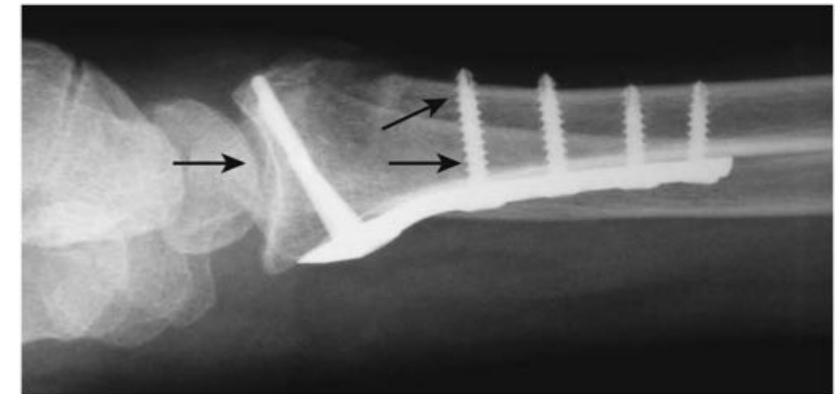
- ✓ Trials controversial
 - ✓ in some simple fractures may be no better than a POP



What can go wrong



Inadequate treatment

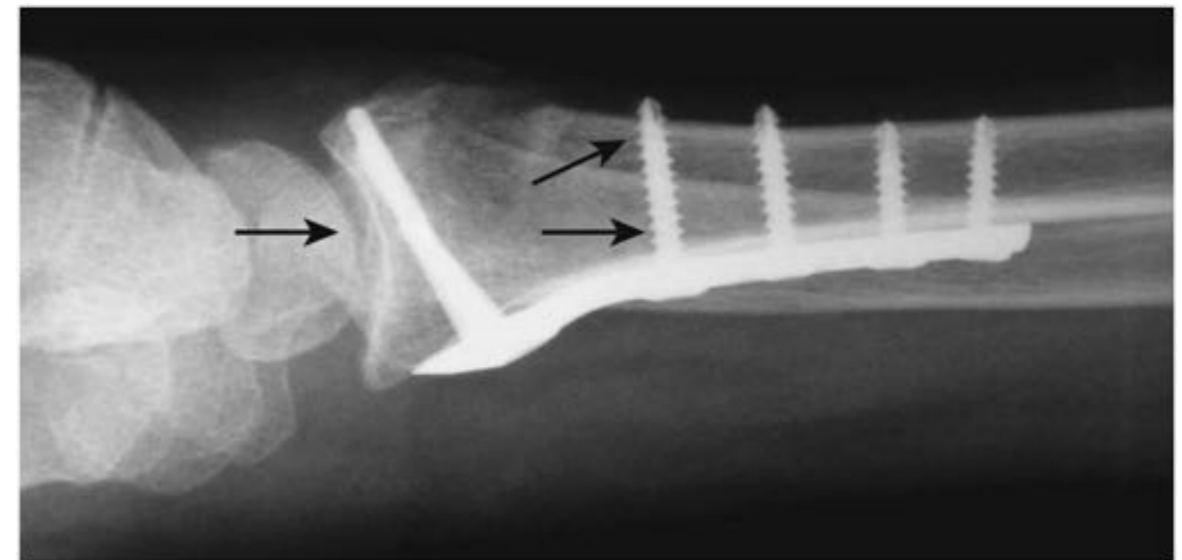
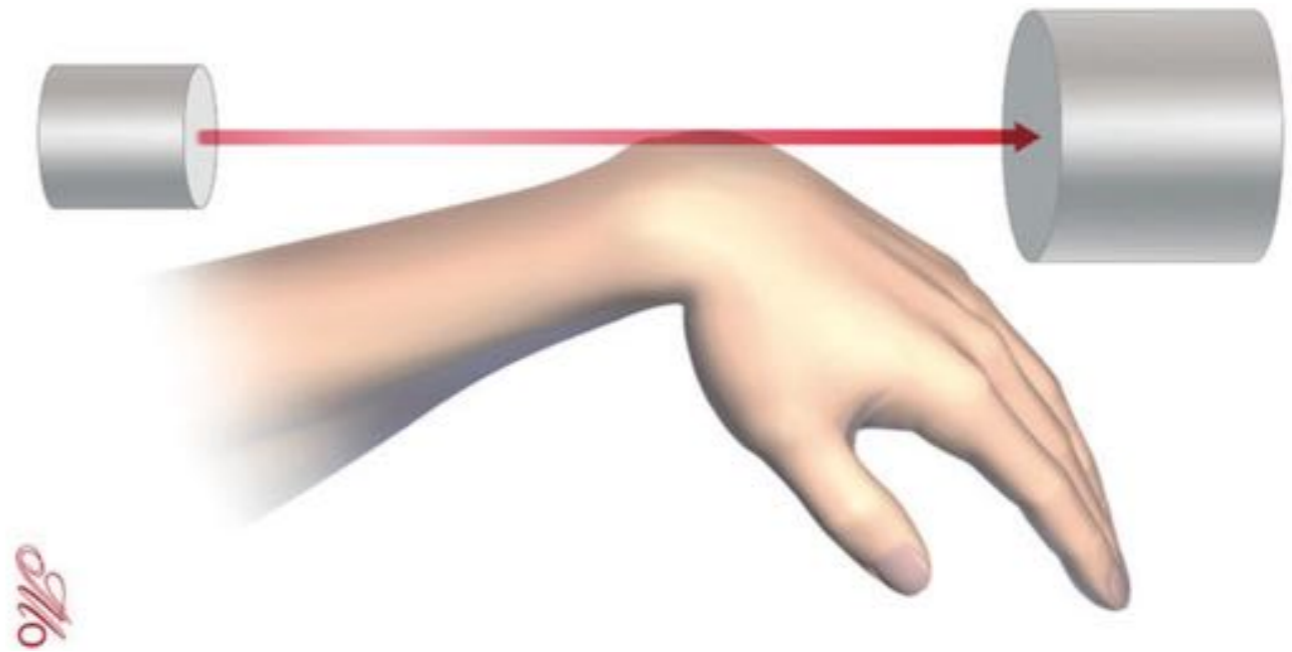


- Implant problem
- Tendon rupture
- Nerve injury
- Vessel injury
- Stiffness
- Infection
- CRPS
-



Volar plating

- ✓ Screw penetration
 - ✓ Skyline view
- ✓ Plate irritation
 - ✓ Sit flush



Chronic problems

- ↙ ulna sided wrist pain
 - ↙ TFCC tears
 - ↙ Ulna abutment
- ↙ restricted ROM
 - ↙ esp supination (palm up)
 - ↙ unable take loose change
- ↙ restricted grip
 - ↙ jam jars



Evidence

- ✦ Very little evidence to compare one form of treatment with another
- ✦ Complex
- ✦ Despite
 - ✦ DRAFFT trial
 - ✦ Cochrane Review 2008
 - ✦ Meta analysis studies



Trend to internal fixation

- ✦ Finland - (public health) 1998-2008 (J Trauma 2011)
 - ✦ increase in surgical Rx
 - ✦ x13 increase of ORIF with plate
- ✦ Rx by member of ASSH cf non member
- ✦ 33% compared to 16% $P < 0.001$ (J Hand Surg (A) 2011)



A Systematic Review of Outcomes and Complications of Treating Unstable Distal Radius Fractures in the Elderly

Rafael J. Diaz-Garcia, MD, Takashi Oda, MD, PhD, Melissa J. Shauver, MPH, Kevin C. Chung, MD, MS

Conclusions This systematic review suggests that despite worse radiographic outcomes associated with CI, functional outcomes were no different from those of surgically treated groups for patients age 60 and over. Prospective comparative outcomes studies are necessary to evaluate the rate of functional recovery, cost, and outcomes associated with these 5 treatment methods. (*J Hand Surg* 2011;36A:824–835. Copyright © 2011 by the American Society for Surgery of the Hand. All rights reserved.)



BSSH guidelines

- “There is insufficient evidence to demonstrate an association between any measured radiological parameters and patient rated outcome”
- Mobilise ‘stable’ fractures as soon as pain allows
- Cast in a neutral wrist position
- Surgery
 - Consider activity/comorbidity/injury characteristics
 - Consider K wire fixation if closed reduction possible
 - Do not use Ex fix if internal fixation possible
 - Ignore ulnar styloid #s if DRUJ clinically stable

Distal radius fractures

- Easy to predict radiographic outcomes
- Difficult to predict clinical outcomes
- Communication vital
 - Risks and benefits of various treatments
 - Uncertainty
 - Documentation
- Evidence has its limitations.....

We are here for our patients ... Rx them as individuals



Carpal Tunnel Syndrome



Tingles

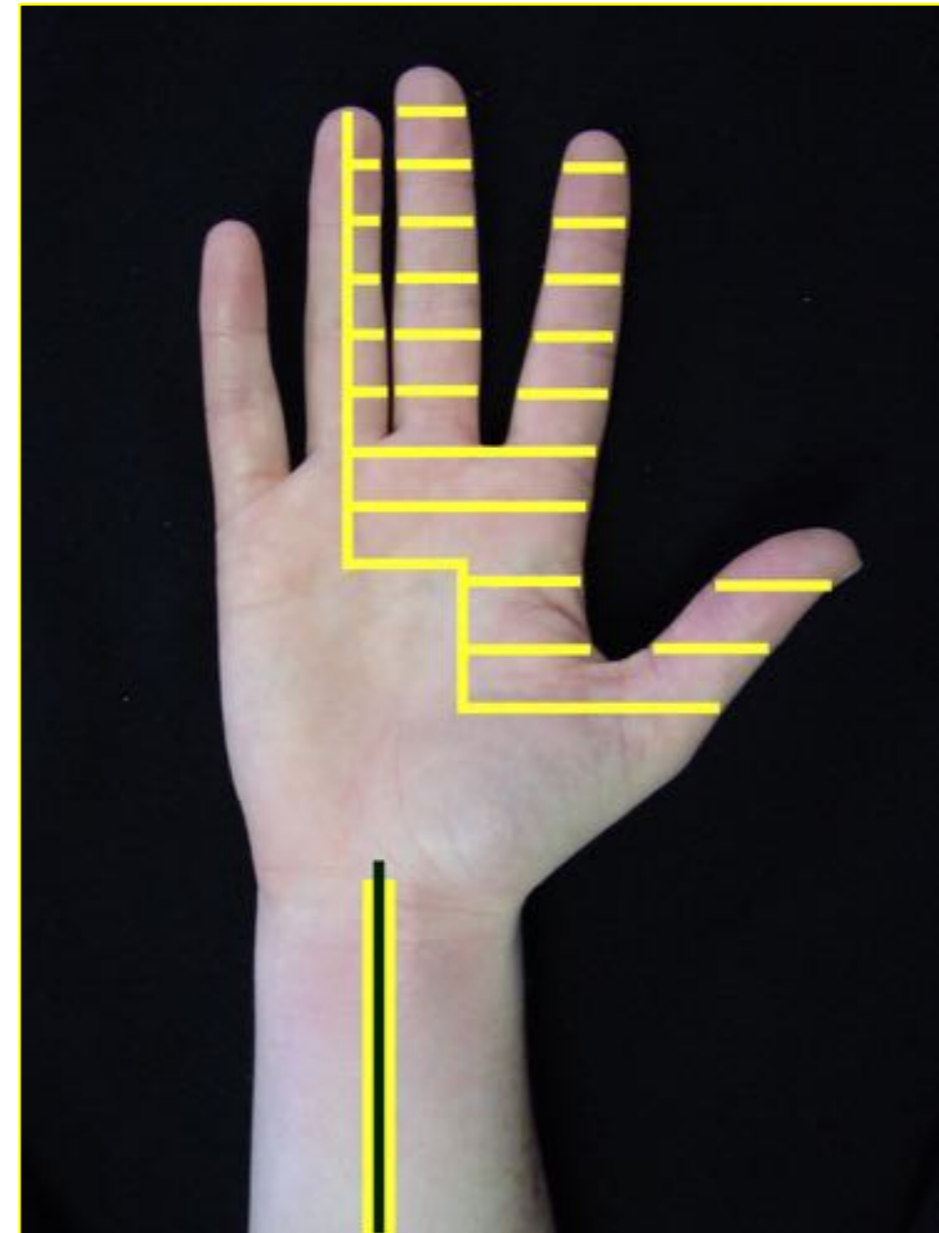
- Remember the Neck
- Double Crush
- Physiotherapy
- Posture



Carpal Tunnel Syndrome

History

- ✦ Pins and Needles
 - ✦ Median nerve
- ✦ Nocturnal
- ✦ Shake hand



Carpal Tunnel Syndrome Examination

- ✓ Look
 - ✓ Thenar muscle wasting
- ✓ Tinel's test
- ✓ Modified Phalen's test



Carpal Tunnel Syndrome Investigations

- ❏ None if barn door
- ❏ Nerve Conduction Studies if unsure



Carpal Tunnel Syndrome Treatment

➤ Splint



Carpal Tunnel Syndrome Treatment

- ✦ Cortisone injection

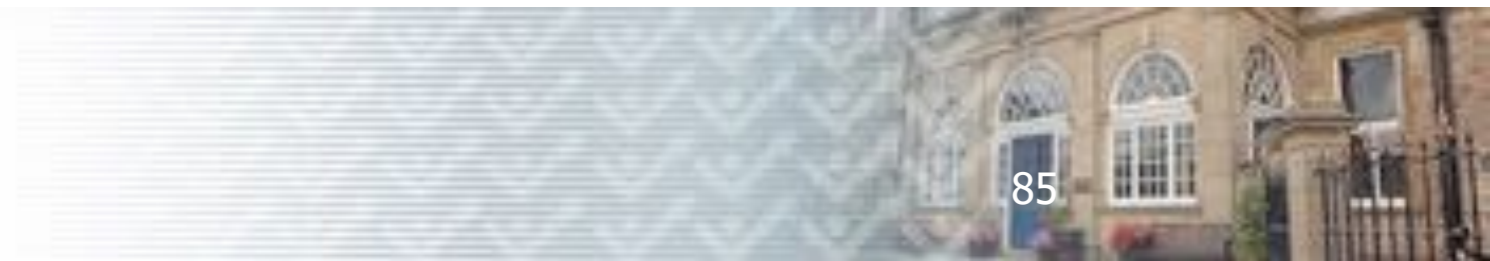
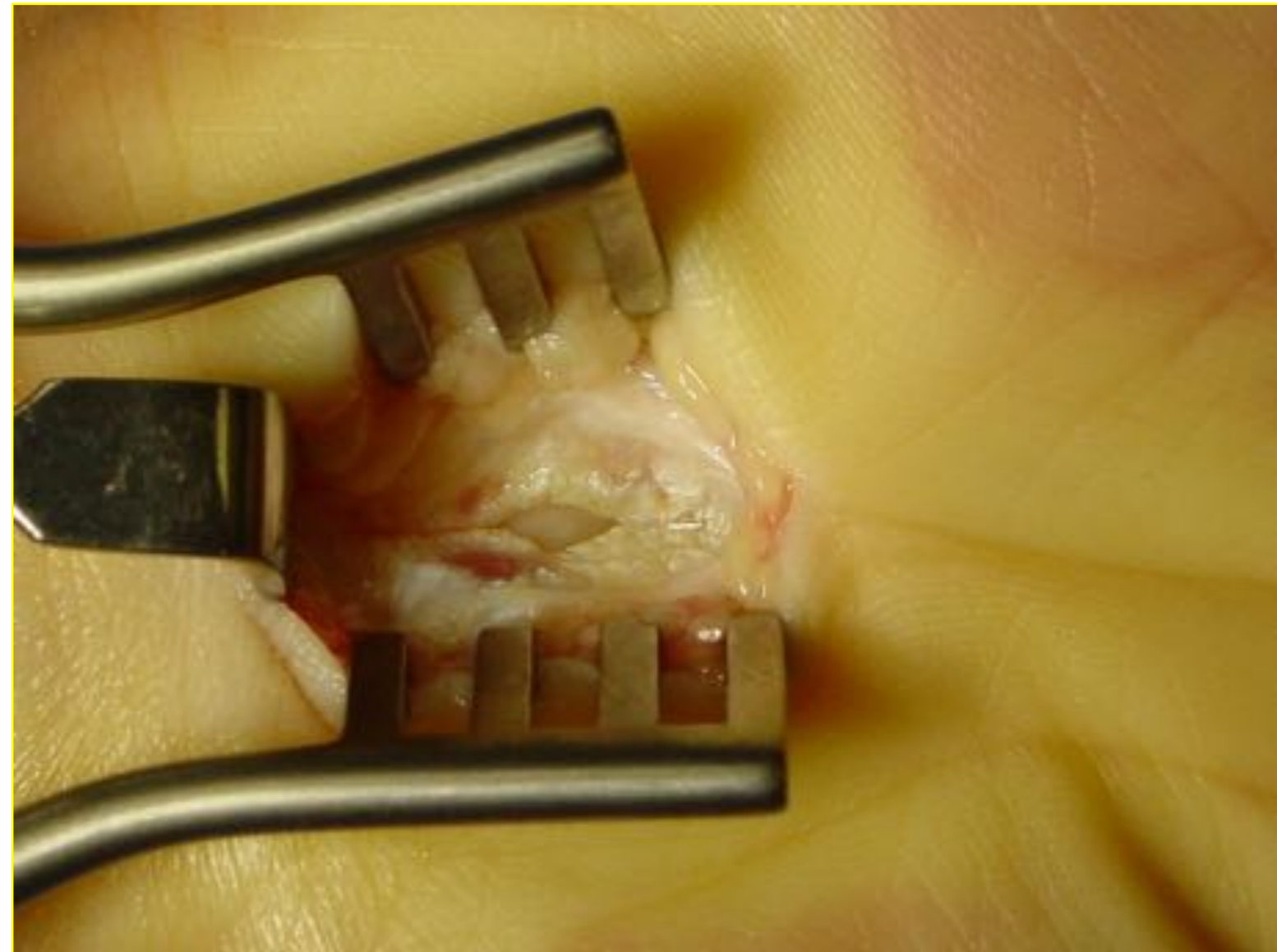
- ✦ Image guided under ultrasound control

- ✦ Blind injection is associated with injury to the nerve



Carpal Tunnel Syndrome Treatment

- Surgical release



Carpal Tunnel Syndrome Treatment

- Surgical release



Areas of interest

- ✦ Wrong diagnosis
- ✦ Painful scar
- ✦ Failure to improve symptoms
- ✦ Recurrence



Metacarpal injuries

“the fight bite”



The Metacarpal Fracture

- ✦ Often an offensive injury rather than defensive
- ✦ Often did not occur by punching the floor
 - ✦ Wall / head / mouth
- ✦ If there is wound over the knuckle must presume it was caused by a tooth
 - ✦ unless the patient is a vicar



Beware the fight bite



Often previous MC fractures



Vulnerable individual

- ✦ Intoxicated
- ✦ Fear criminal consequences
- ✦ Needs washout









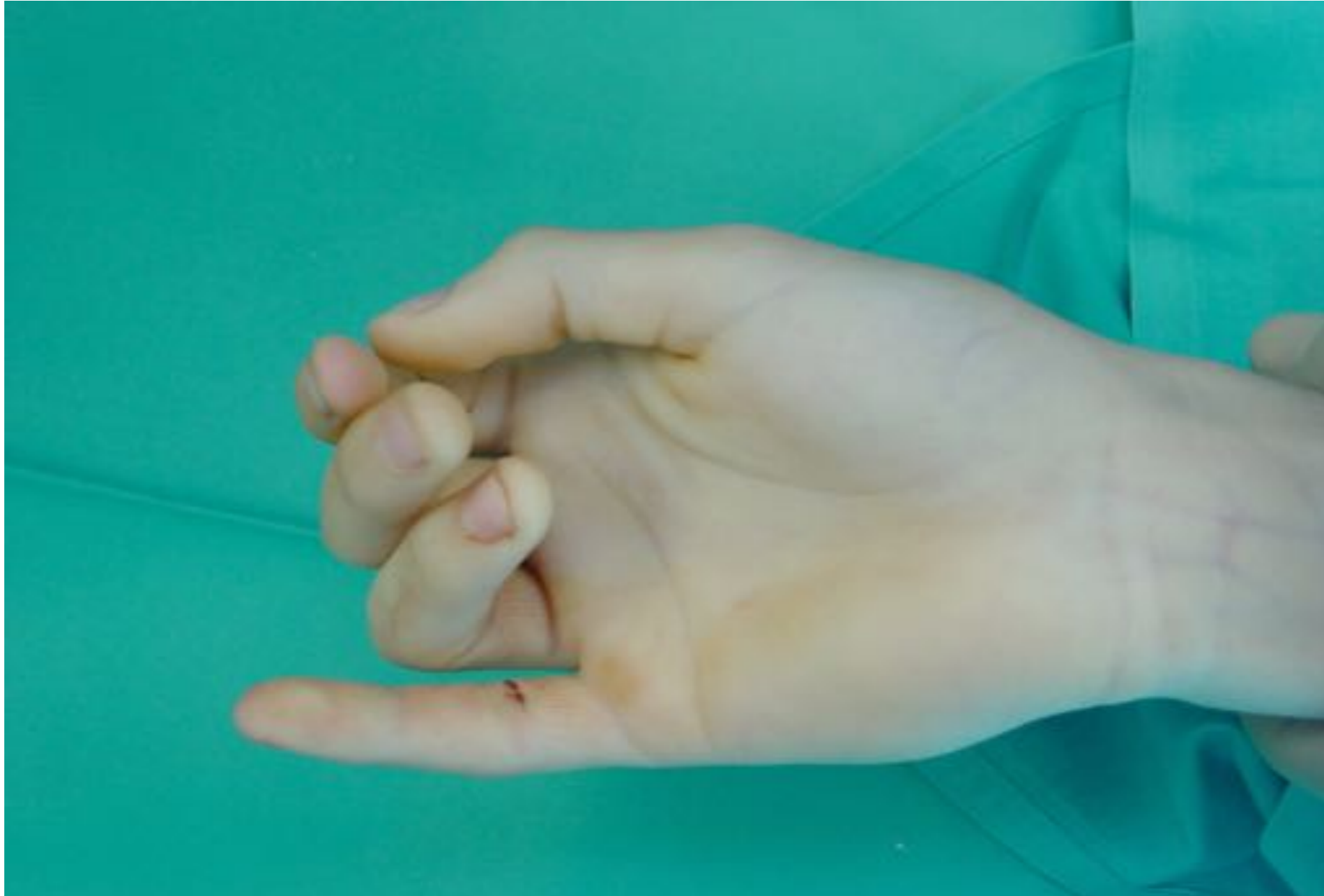
Septic arthritis



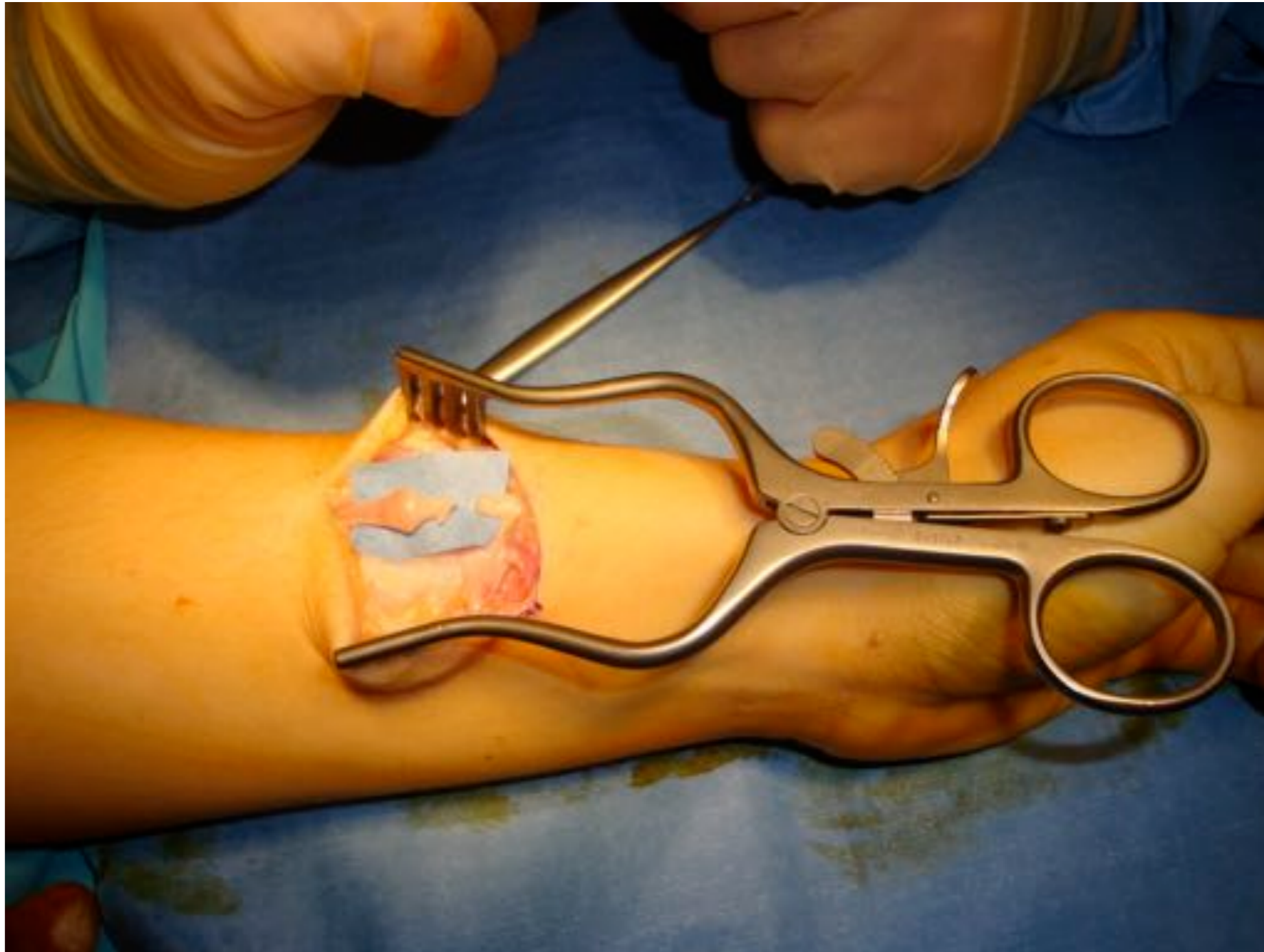
Underestimating lacerations



“Nothing on earth cuts like glass”



Small glass stab wound





All glass lacerations require exploration



Skier's thumb

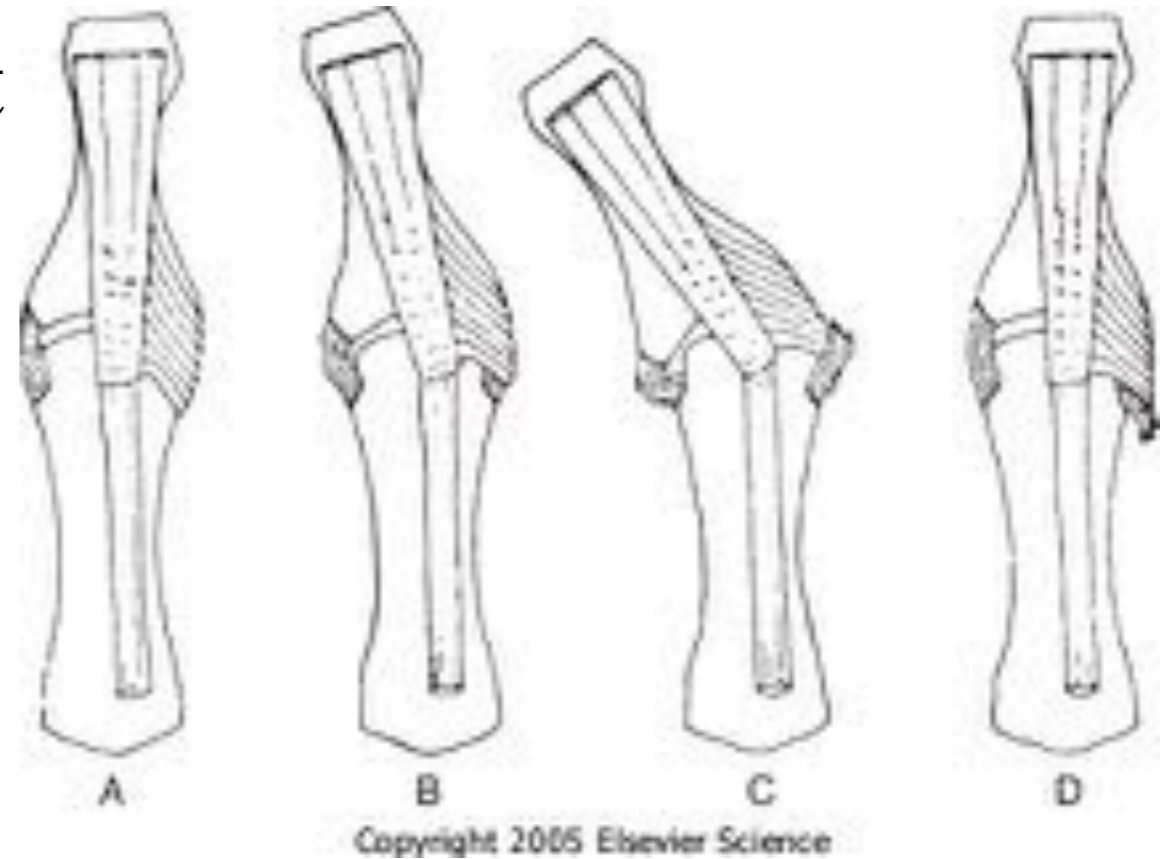


Laxity

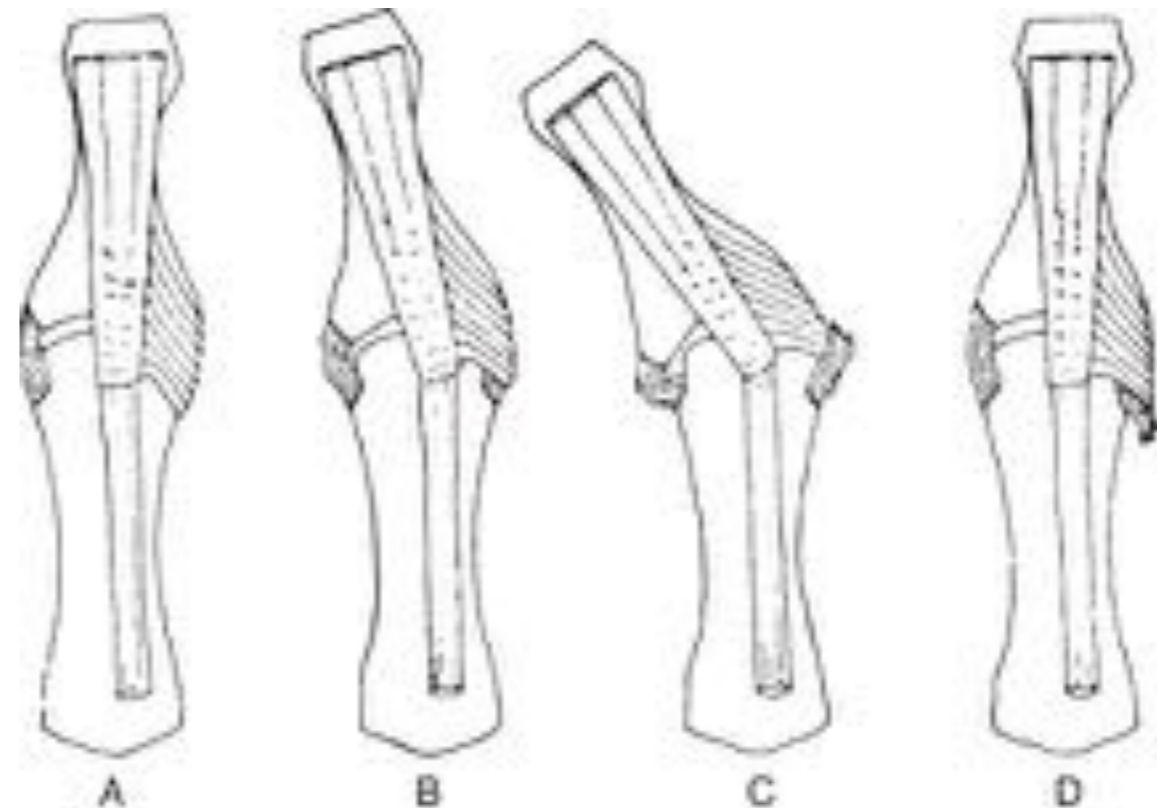


Skier's Thumb

- UCL tear of Thumb MP joint
- Forced abduction
- Immediate pain over UCL
 - Less pain if complete
- Lax



- Adductor Aponeurosis
- UCL avulsion distally
- Flips outside adductor aponeurosis
- Will not heal



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Assessment

- ↙ Tender over thumb MPJ UCL
- ↙ ? Lump (Stener lesion)

- ↙ Laxity - no end point



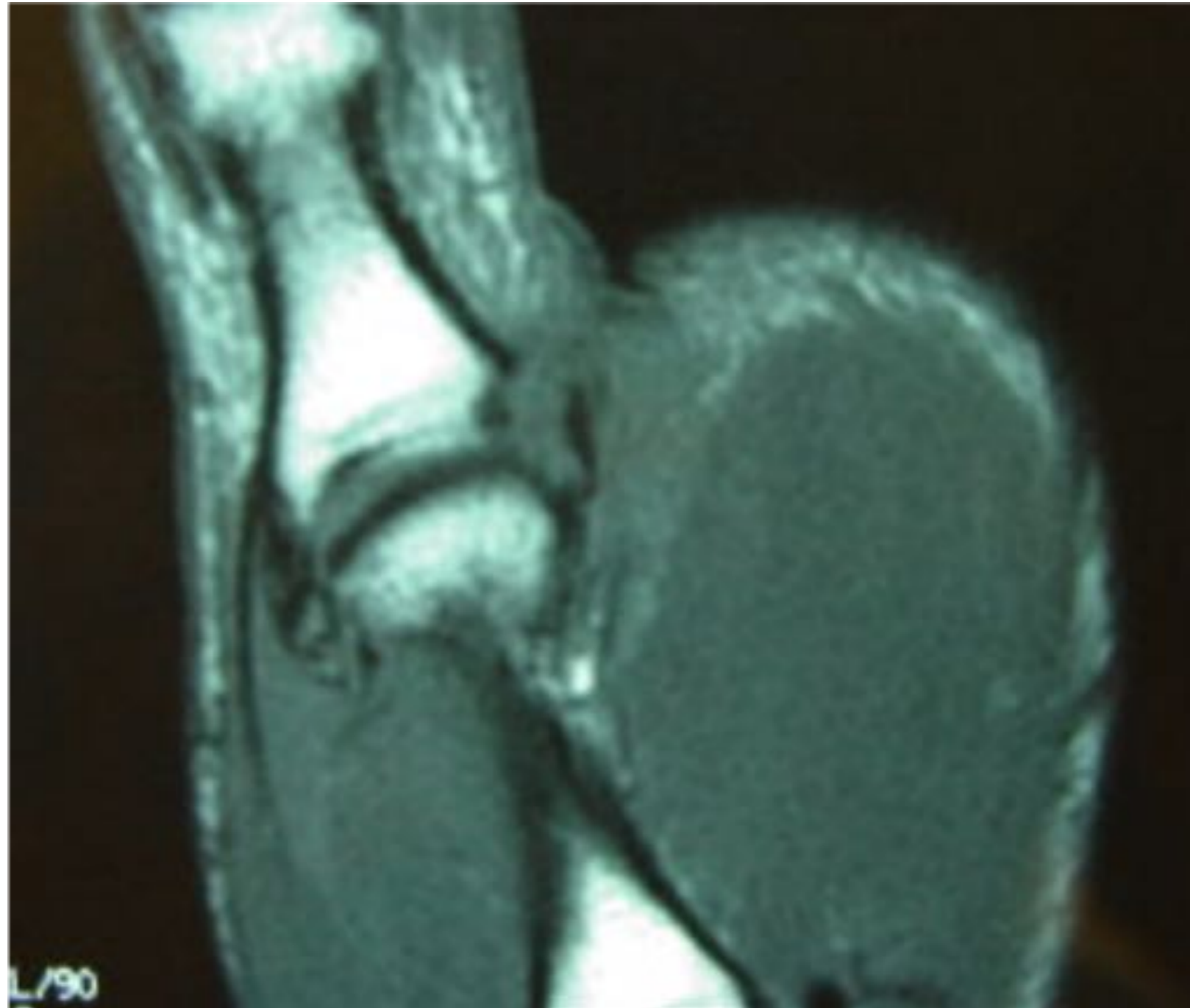
Investigations



Investigations



Investigations



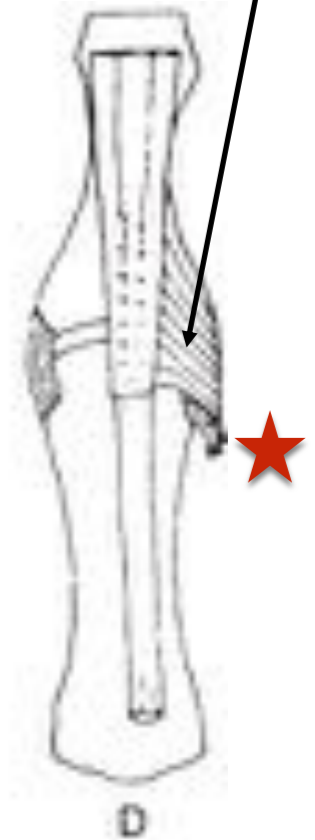
Stener lesion

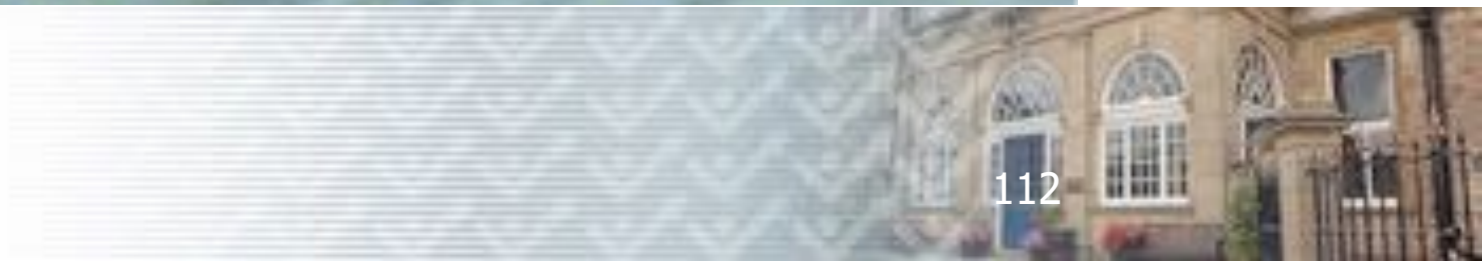


Stener lesion

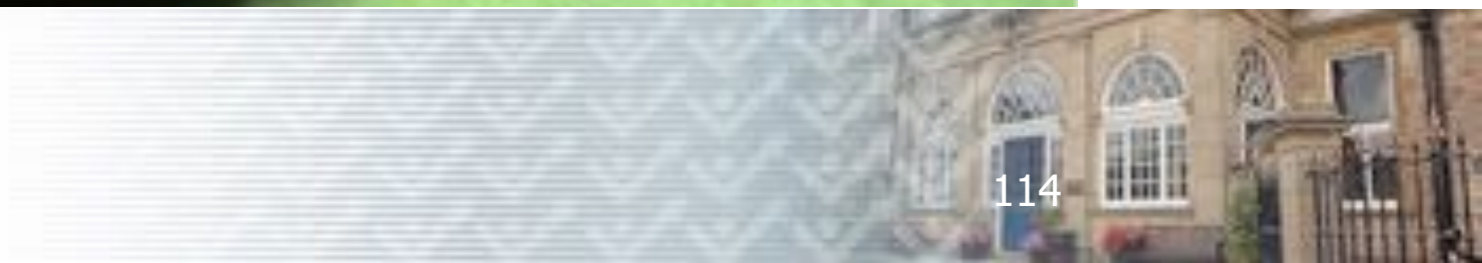


Adductor aponeurosis









If not treated

vid

Summary

Quick run through the main offenders in hand and wrist



✓ The most are q straight forward

✓ The distal radius malunion is more complex



In Summary

- ✚ Quick run through the main offenders in hand and wrist
- ✚ The most are q straight forward
- ✚ The distal radius malunion is more complex

