

Complications of Distal Radius Fractures

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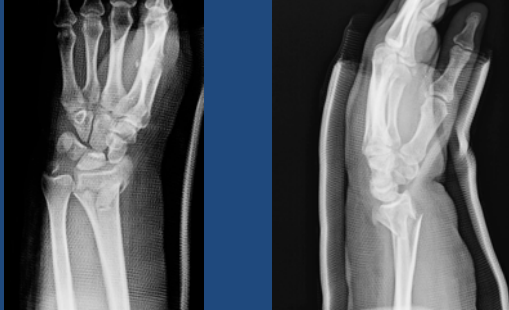
How to Treat a Distal Radius Fx

- Need to restore motion, begin with uninvolved parts
- Need to reduce an unreduced fracture
- Need to maintain the reduction
- Need to place fixation appropriately

KL

- 46 yo RHD woman left distal radius fracture on 9/17/15 from a fall
- Closed reduced and placed into a cast

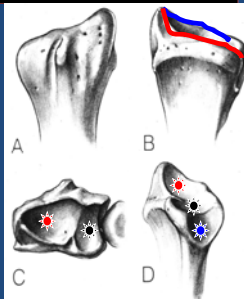
9/25/15



Anatomy

Palmar Ridge
Dorsal Ridge

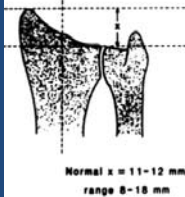
Articular Facets
Scaphoid Fossa
Lunate Fossa
Sigmoid Notch



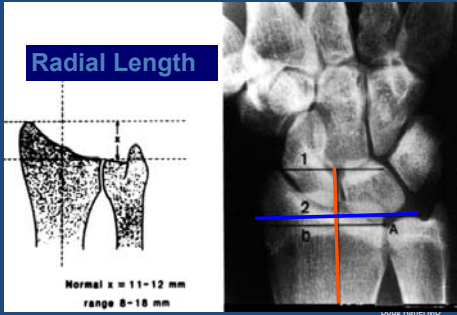
Doug Hanel MD
Harborview Medical Center - UW

Anatomy: Radiology

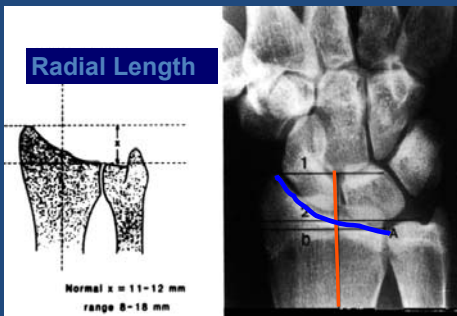
Radial Length



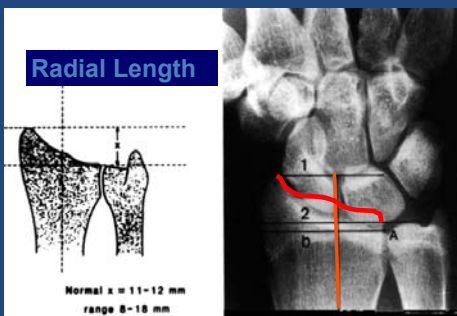
Anatomy: Radiology



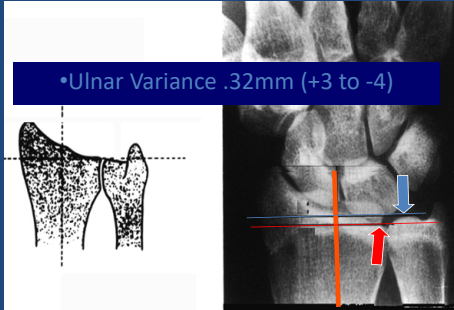
Anatomy: Radiology



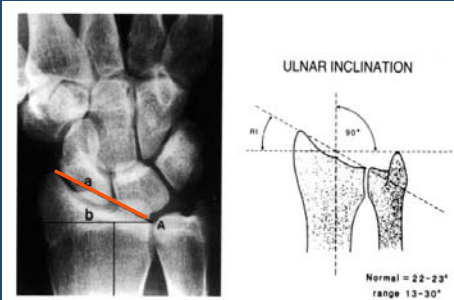
Anatomy: Radiology



Anatomy: Radiology



Anatomy: Radiology



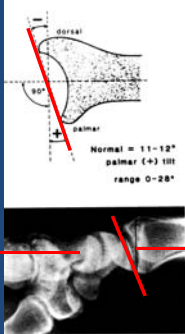
Anatomy: Radiology



•Dorsal v **Palmar**
Sigmoid Notch

•7 Degrees

Anatomy: Radiology



- Palmar Tilt
(Sagittal Tilt)
- 10 degrees (0-28)

Unstable Fracture

- Lafontaine (repeated what Frykman said)
Lafontaine, M., Hardy, D., and Dellince, P.: Stability assessment of distal radius fractures. *Injury*, 20(4): 208-10, 1989.
- Dorsal angulation > 20 degrees
- Dorsal Comminution > 1/3 Width on Lat. X-ray
- Intra articular Fx
- Ulnar fx
- > 60 y/o

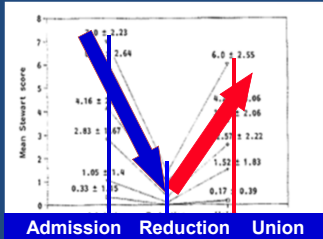
Pre-reduction X-ray

- Significant dorsal comminution is indicative of likely post-reduction displacement

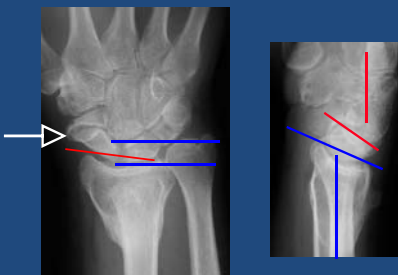


What is Unstable/Displaced?

- Lafontaine (repeated what frykman said)
Lafontaine, M.; Hardy, D.; and Delance, P.: Stability assessment of distal radius fractures. *Injury*, 20(4): 208-10, 1989.

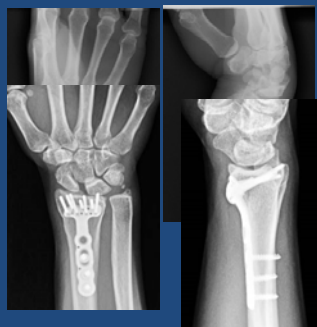


Colles' Fracture Problems



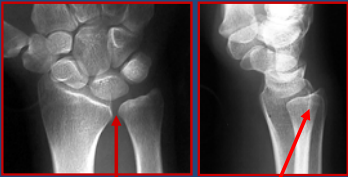
Goal of Treatment

- I. Restoration of bony anatomy
 - Articular congruency
 - Volar tilt
 - Radial length



Goal of Treatment

- II. Repair Soft tissue injuries
 - Intrinsic ligament injuries
 - Radioulnar stability
 - Capsular injuries and potential for scarring
 - Neurologic injuries




Joint widening Subluxation

Goal of Treatment

- III. Restoration of motion
 - First – Begin before surgery
 - Digital
 - Shoulder
 - Second
 - Wrist
 - Forearm

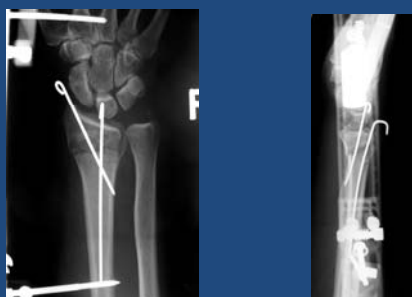
9/25/15 Reduced?



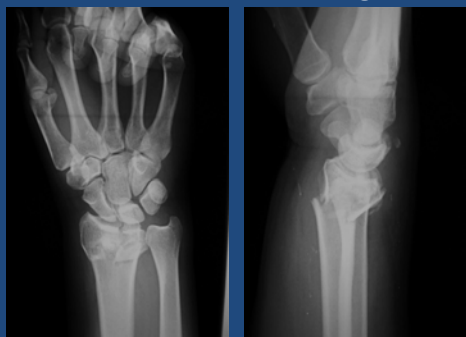
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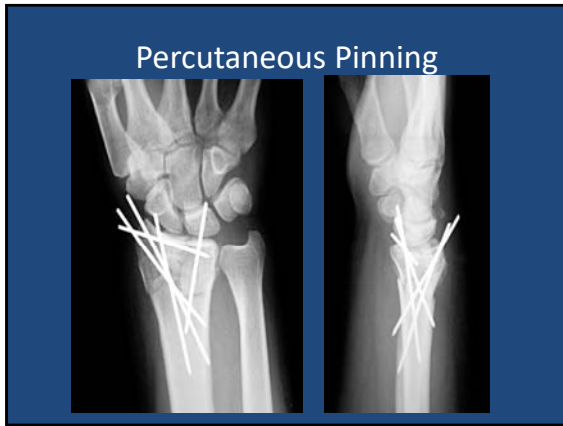
- Closed reduction not successful
- Brought to OR for operative intervention

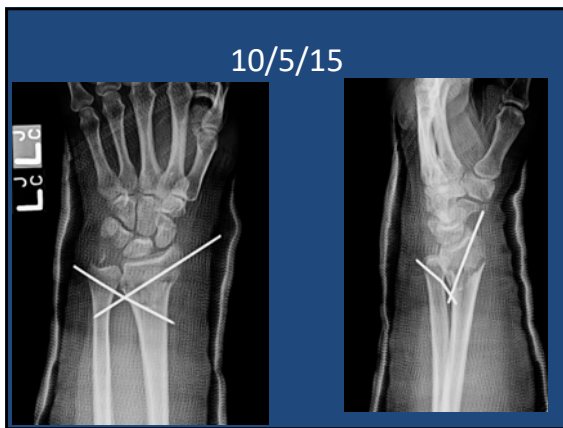
External Fixation and Percutaneous Pinning

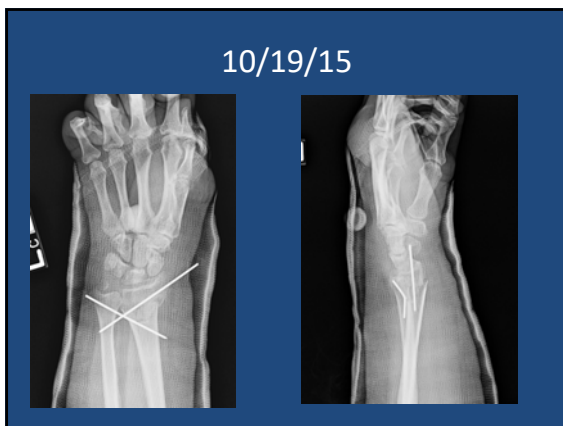


Percutaneous Pinning









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- Pins in for 8 weeks
- Cast maintained 2 weeks due to concerns for fracture healing
- When cast removed, begins OT

11/16/2015



KL 12/15/17

- First visit with me
- Problems
 - Pain
 - Swelling
 - Difficulty with ROM of fingers, wrist, and forearm

KL 12/15/17

- PE
 - ROM
 - Sup/Pron – 0/60
 - Wrist Ext/Flex – 0/20
 - Finger
 - MP 0/40
 - PIP 40/80
 - Negative Tinel’s sign over wrist (CPRS Type 2)
 - 5 mm 2 point

12/15/16



KL 12/15/17

- Problems
 - Stiffness of fingers
 - Malunion of distal radius
- Plan
 - OT to restore ROM of digits

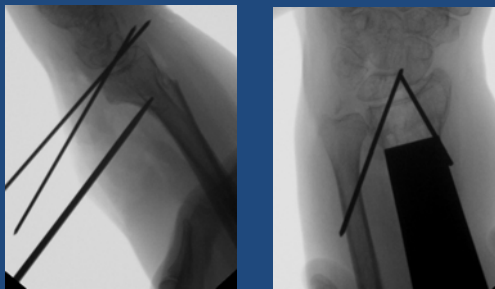
KL 1/14/16

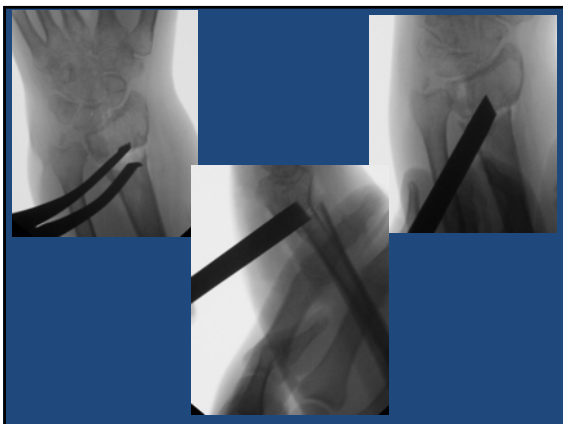
- TAM of each digit improved 40-60 degrees
- Pain and swelling have decreased
- OR for osteotomy
- ISSUES:
 - Palmar or dorsal approach?
 - Autograft or allograft?

12/15/16



1/25/16







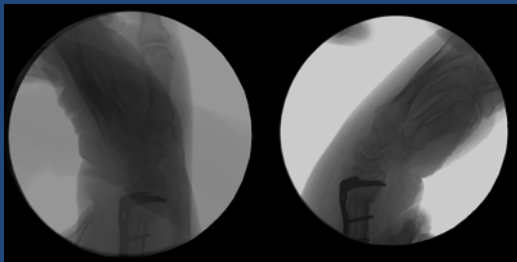
KL 3/4/16

- Problems after surgery
 - Wrist ROM 0/60, pain with motion past 15 degrees of extension
 - Sup/Pron 20/70
 - Tightness of the digits
- Cast wrist in maximum extension
- OT for ROM of digits

KL 7/14/16

- Finger MP motion
 - Index 0-90
 - Middle 0/90
 - Ring 0/70
 - Small 0/70
- Wrist
 - 0/40
- Remove plate

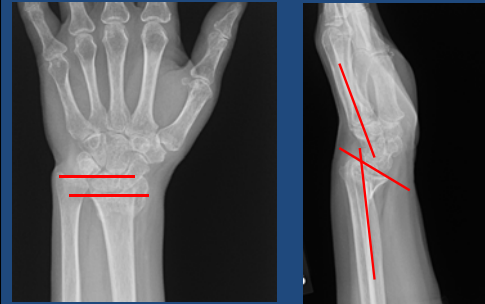
9/12/16



How to Treat a Distal Radius Fx

- Need to restore motion, begin with uninvolved parts
- Need to reduce an unreduced fracture
 - Palmarly displaced fracture is a "Fracture of Necessity"
- Need to maintain the reduction
- Need to place fixation appropriately

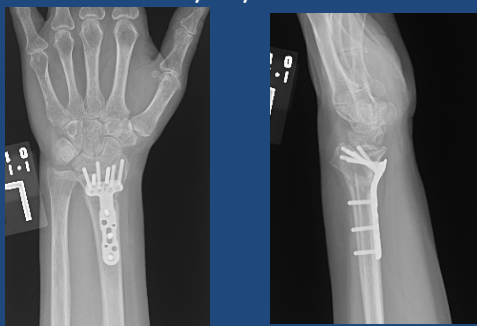
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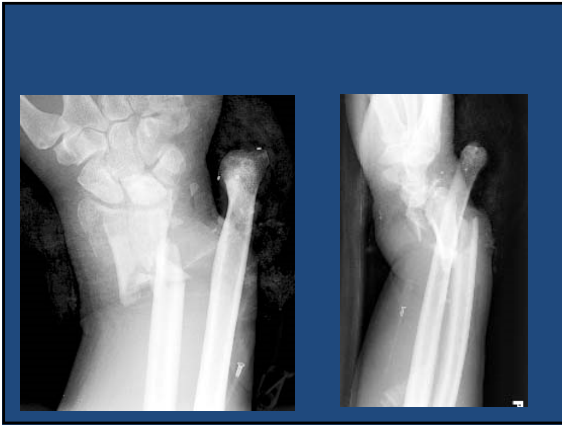


Problems

- Aching sensation of wrist
- Loss of supination

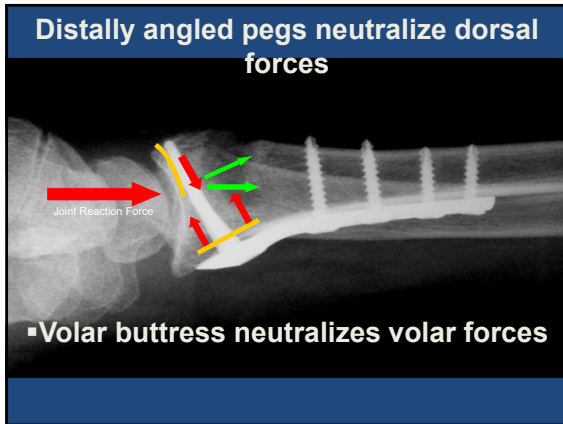
1/26/17

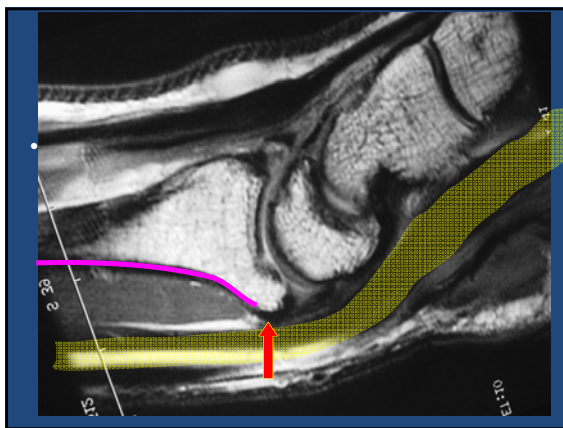


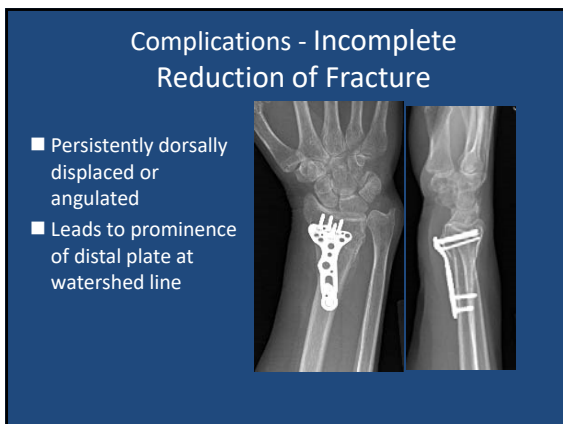








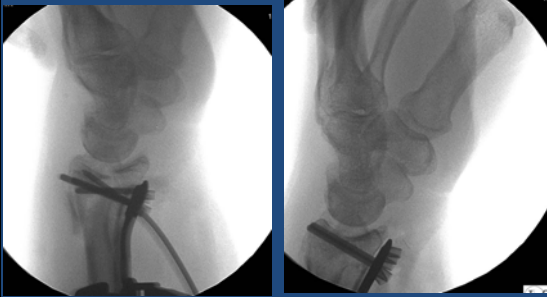




Complications by the Steps of the Procedure




Correct Placement of Hardware-Plate Too Proximal

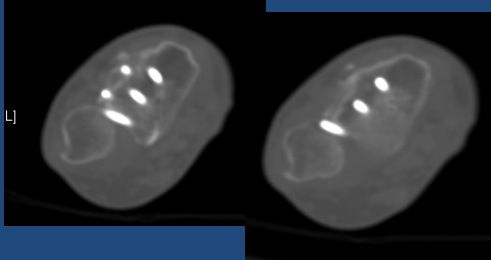


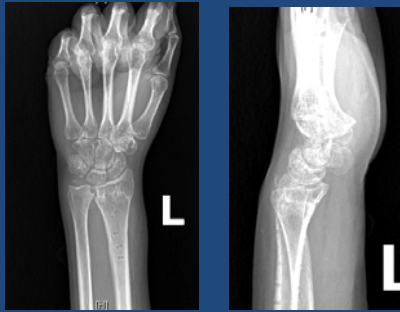
Correct Placement of Hardware

- 32 yo female massage therapist
- S/p ORIF of distal radius 3 months ago
- Restricted, painful supination
- Placed in dynamic forearm brace



Intra-Articular Screw Placement





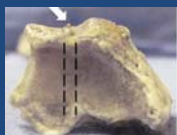
Complications – Screws Too Long

- Irritation of extensor tendons
 - EPL most commonly ruptured
 - Causes, Benson (CORR 2006)
 - Postreduction bone spurs
 - Dorsal gapping
 - Prominent screw tips



Complications – Screws Too Long

- Difficult to determine screw length intra-operatively, Greenberg (J Hand Surg Am 2009)
- Fluoroscopy sensitivity in detecting cortical penetration
 - 82% sensitive in the radial-most position
 - 77% sensitive in the central position
 - 57% sensitive in the ulnar position



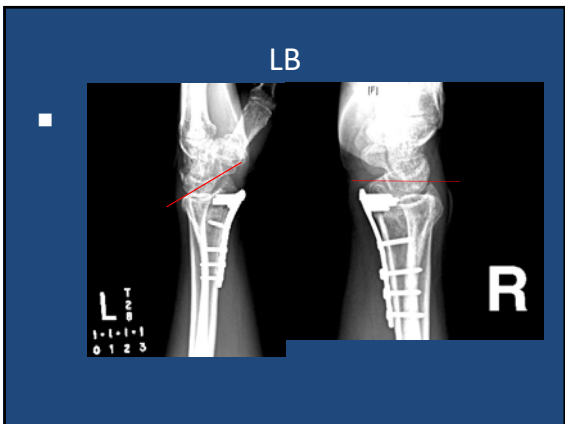
Complications – Screws Too Long

- Treatment
 - High index of suspicion
 - Undersize locking/screw peg
 - Remove hardware if irritation occurs



Complications – Screws Too Short

- Poor support with subchondral bone
- Locking screws/pegs need to be in contact with dorsal subchondral bone
- Locking screws/pegs need to be at least 75% of the AP diameter of the subchondral surface



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THANK YOU
