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Distal Radius Fractures

Indications, Timing and Approaches

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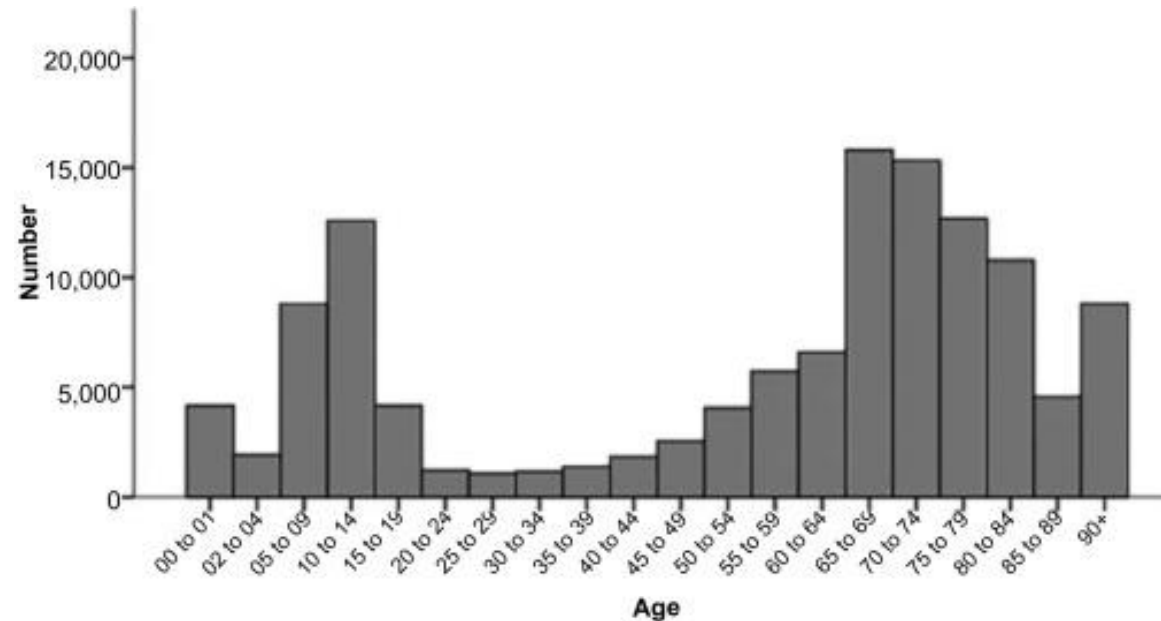
Disclosures

- I have no financial disclosures or conflicts of interest

Distal Radius Fractures

Epidemiology

- One of the most common fractures in adult population
- Bimodal distribution



Distal Radius Fractures

Wide Spectrum of Fracture Patterns



Surgical Indications

Patient Factors

- Age (Chronologic/Physiologic)
- Baseline function
- Hand dominance
- Habits

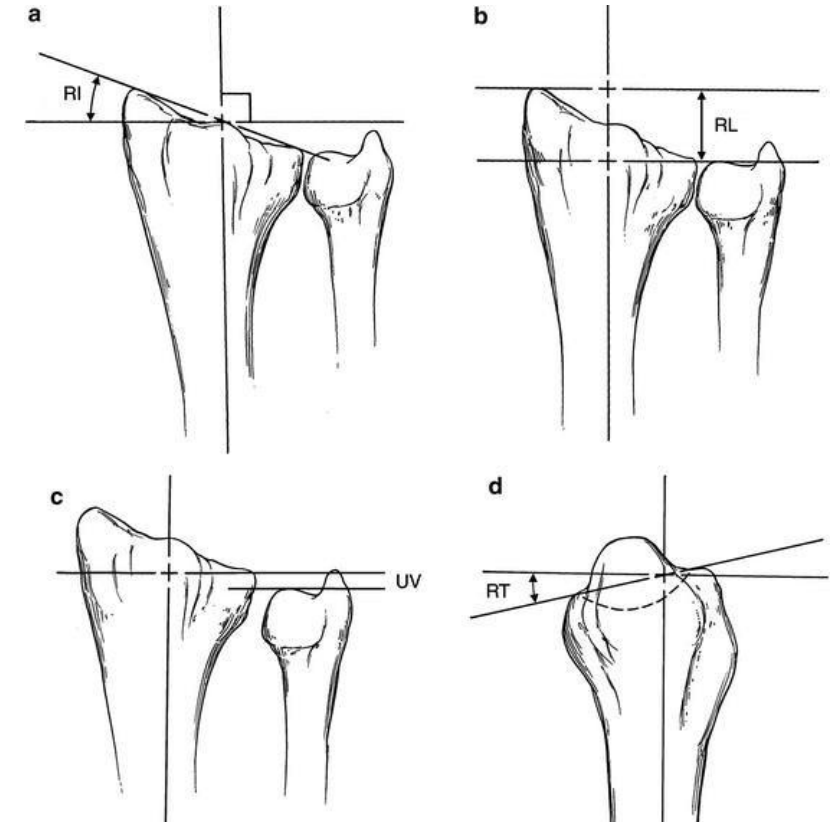
Functional Demands

- Occupation
- Physical activity
- Early mobility (e.g. polytrauma)

Surgical Indications

Fracture Features

- Open fractures
- Radiocarpal instability
- Articular stepoff >2mm
- Loss of radial height/inclination (>5mm or 5°)
- Dorsal tilt >10°



Surgical Timing

Fractures generally fixed within 2-3 wks

- Fractures >3-4wks begin to unite, obscuring fracture planes
- Malunited intraarticular fractures are especially troublesome



Urgent Cases

- Open fractures
- Neurovascular compromise



Delayed Cases

- Swelling
- Medically ill

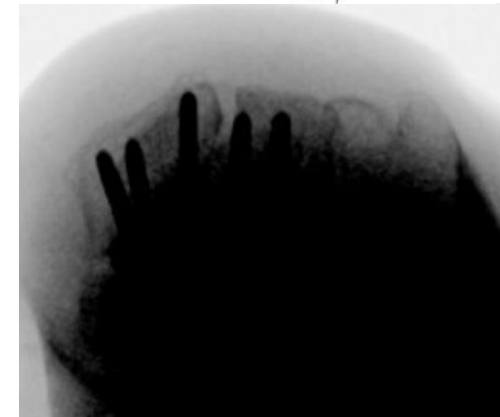
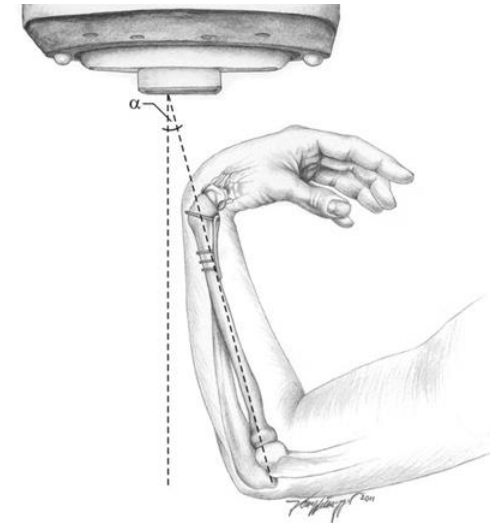
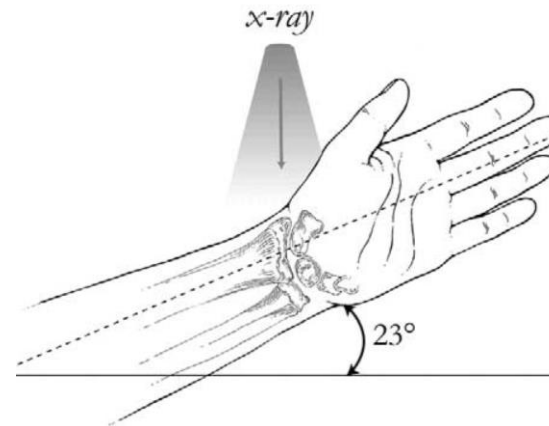


Fracture Fixation Strategies

Most distal radius fractures treated with locked volar plating

Standard Intraoperative Views

- Supinated view – DRUJ
- Oblique view – radial styloid
- Tilted lateral view – radiocarpal joint
- Skyline view – dorsal cortex

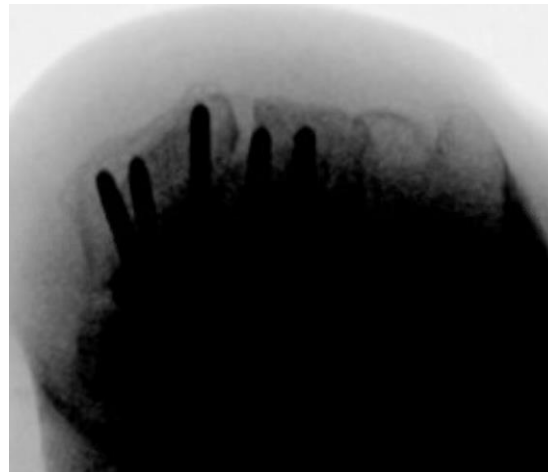


Fracture Fixation Strategies

Most distal radius fractures treated with locked volar plating

Technical Pearls

- Capture volar lunate facet
- Avoid dorsal screw prominence → extensor rupture
 - Distal locking screws just need to be 75% width – don't need to be bicortical
- Avoid distal plate placement → FPL rupture



Fracture Fixation Strategies

Most, but NOT ALL, fractures can be treated with locked volar plating
Certain patterns require different implants and different approaches

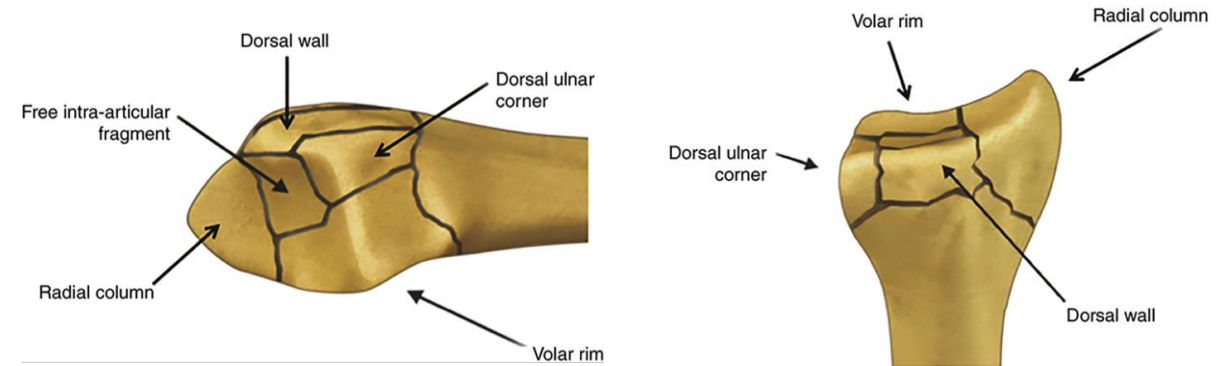


Fragment Specific vs. Locked Volar Plating

Most, but NOT ALL, fractures can be treated with locked volar plating

My Indications for Fragment-Specific Fixation

- Articular impaction
- Distal articular fractures
- Volar ulnar corner <15mm
- Chaffeur's fracture
- Dorsal impaction/shear



Fragment Specific vs. Locked Volar Plating

Most, but NOT ALL, fractures can be treated with locked volar plating

Limitations of Fragment-Specific Fixation

- STIFFNESS
- Less rigid implants
- May need 2nd approach
- Higher complication rate?

	Volar Locking Plate (n = 24)	Fragment-Specific (n = 25)	P Value
Minor complications*			
Transient radial neurapraxia	1	6	
Carpal tunnel syndrome	2	2	
Tendinitis	0	1	
Skin adherence	1	1	
<i>Total minor complications</i>	<i>4</i>	<i>10</i>	<i>.11</i>
Major complications†			
Loosening of hardware	1‡	1	
Loosening of hardware & EPL rupture	0	1	
Complex regional pain syndrome	0	1	
<i>Total major complications</i>	<i>1</i>	<i>3</i>	<i>.61</i>
Total minor and major complications	5	13	< .05§

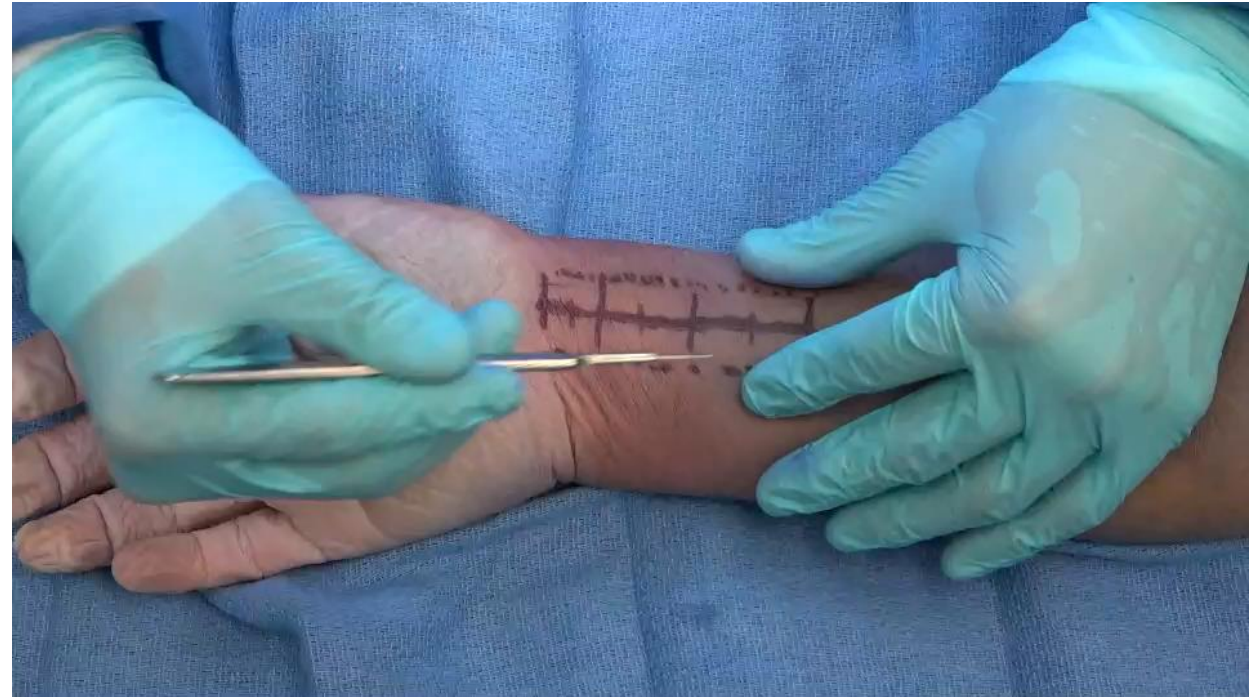
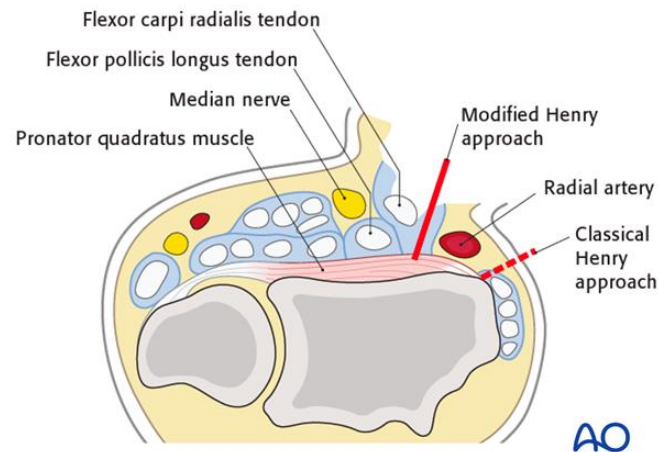
EPL, extensor pollicis longus.
*Minor complications: transient problems, considered not to affect the final outcome.
†Major complications: severe complications influencing the final outcome.
‡This patient was allocated to the volar locking plate group, but received the fragment-specific fixation.
§A significant value ($P < .05$).

Surgical Approaches: Volar

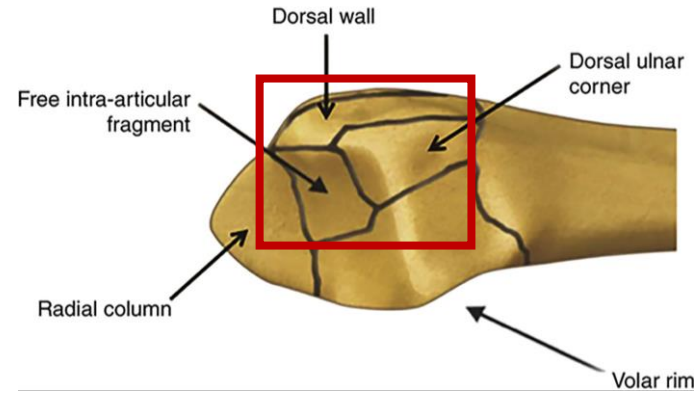
Traditional Henry

Modified Henry/Trans-FCR

- Workhorse for volar plating
- Exposes of volar ulnar corner
- Proximal extension to forearm



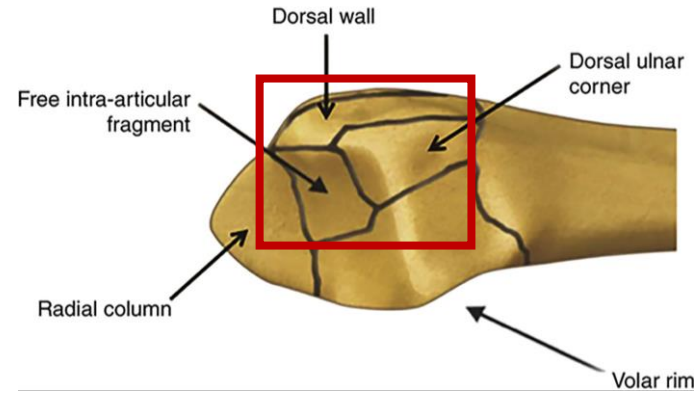
Surgical Approaches: Dorsal Wrist



Steps:

- Ulnar to Lister's, in line with 3rd ray
- Stepcut through retinaculum
- Interval between 3rd/4th compartments
- Capsulotomy

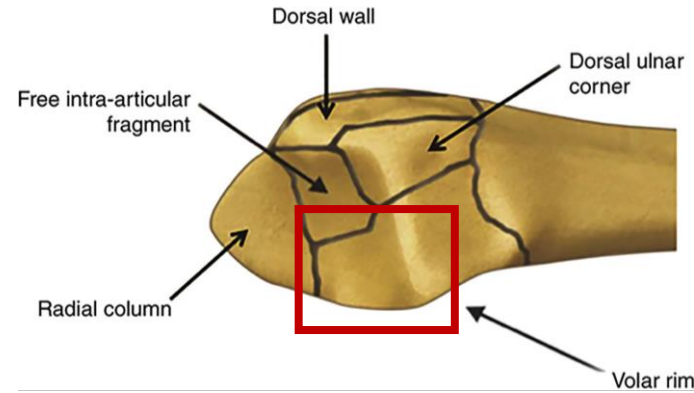
Surgical Approaches: Dorsal Wrist



Steps:

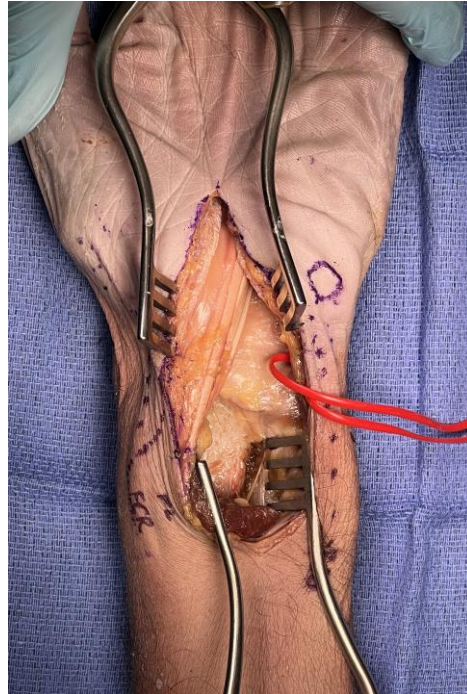
- Retinaculum slip protects tendon from hardware
- EPL can be left transposed

Surgical Approaches: Extended CTR

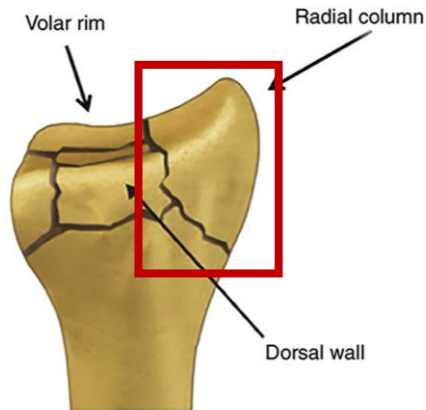


Steps:

- Carpal tunnel release
- Interval between FCU/ulnar NVB and finger flexors
- Elevate PQ off ulna and radius

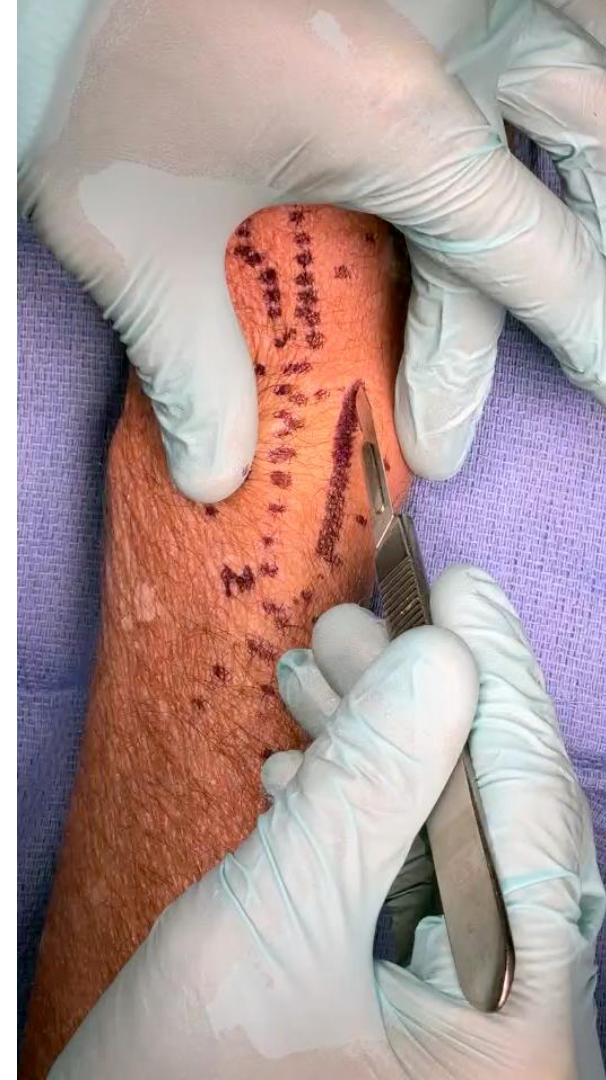


Surgical Approaches: Radial Wrist



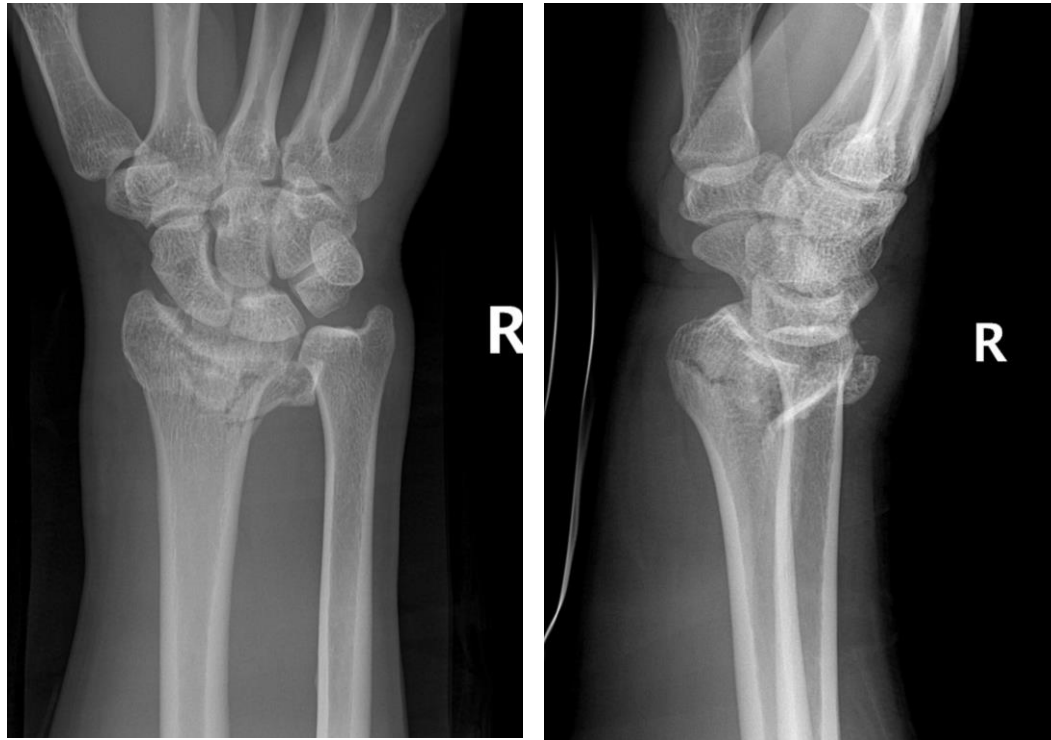
Steps:

- Interval between 1st and 2nd compartments
- Protect SBRN branches
- Release 1st compartment



Case Example

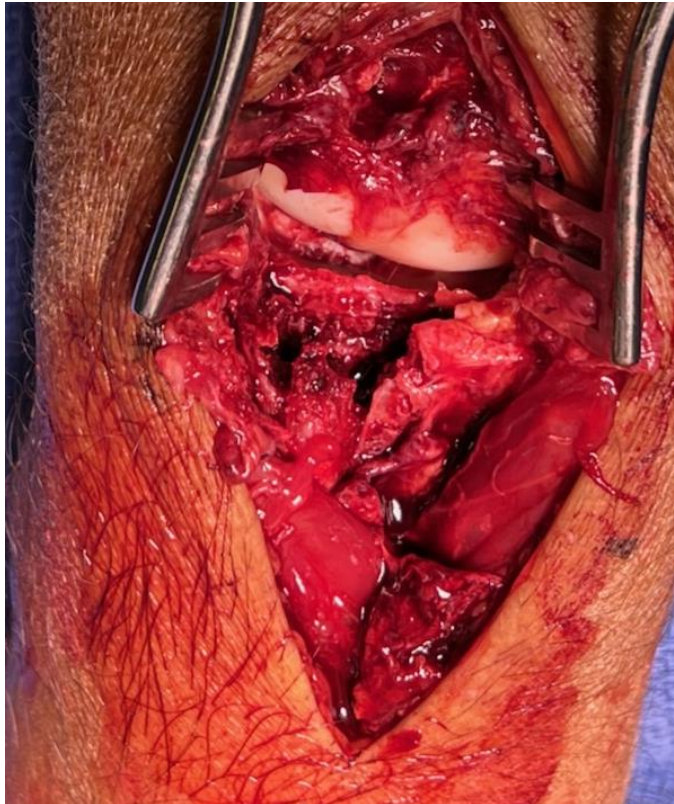
40 yo M involved in MVA and sustained comminuted closed R distal radius fracture



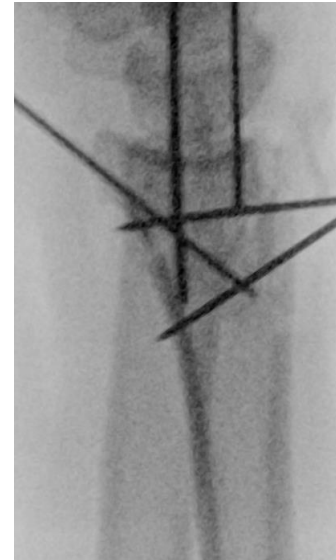
Case Example



Articular impaction



Articular reduction & fixation



Case Example



Summary

Distal radius fractures come in various shapes and sizes

Surgical indications are multifactorial

- Fracture alignment and pattern
- Patient age, hand dominance, baseline function, social factors

Operative treatment within 2-3 wks

Locked volar plating is most common, but it does not address every fracture pattern

- Tailor treatment to the fracture pattern, surgical goals, patient

Fragment specific fixation can access fragments volar locking plates cannot capture

- May need a second approach → stiffness? Complications?

Thank You



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Thank You