AAOS Clinical Practice Guidelines

- Nerve decompression for dysfunction after reduction?
- Arthroscopic eval during op. tx of intra-articular DRF
- Casting as definitive tx for unstable fractures
- Radial shortening > 3 mm, dorsal tilt > 10 deg, intra-art stepoff > 2mm
- No consensus on specific operative method for fixation
- Operative treatment for patients > 55 y/o
- Locking plates for patients > 55 y/o tx operatively
- Rigid immobilization instead of removable splints for Displaced DRF
- Removable splints ok for minimally displaced DRF
- No recommendation for elbow immobilization in DRF
- Op. repair of (SLIL, LT, TFCC) at time of DRF fixation
- Dx Arthro for wrist ligaments?
- Dx CT for intra-articular fxrs
- No recc for supplemental bone grafts w/ locking plates
- DRF tx Non-op should have xray f/u at 3 wks, and end of immobilization
- No recc for 2 or 3 K-wires for DRF fracture fixation
Only Moderate Evidence for Surgical Indications

- Radial Shortening > 3mm
- Dorsal tilt > 10 degrees
- Intra-articular stepoff > 2 mm

I am going to touch on these points

- Other Surgical Approaches to get there
- How to reduce- lift off technique
- DRUJ reduction (i.e. lunate facet) and effect on supination
- DRUJ stability
- When is secondary plate necessary?
- When is bone graft/ filler necessary?
- How to minimize/avoid complications

59 y/o RHD M Displaced intrarticular fx
ORIF, FCR split approach, volar locking plate

Dorsal comminution and marked reversal of tilt corrected
Excellent reduction and good plate placement

2 weeks later collapse while still in splint
Volar Locking Plates no matter how well applied are not always the answer

Dorsal ORIF with Dorsal Plate married to same volar plate
Lunate facet reduced, spanning ext fix to neutralize
Radial column ignored
@ 1 month stable alignment: fixator removed
EXT FIX still useful in revision and volar shear fx with lig instability
Alternative is a dorsal spanning plate

Volar Locking Plate may not always capture radial column despite 2 radial styloid screws

@2 mo F/U
Further subsidence of radial column
Column Analysis will define instability and surgical indication

- Radial Column
- **Intermediate Column**
  Most Important Lunate facet dorsal and palmar
- Ulnar Column

Both facets must be captured to restore DRUJ

Must consider congruence of DRUJ
Hard to determine with plain x ray
DRUJ Stability
Not determined by size of ulnar styloid fx fragment but by integrity of TFC deep attachment (blue)

Carpus will follow articular facets
- Instability of facet fragments following closed reduction indicates ORIF
What I do when ORIF is elected

- Get traction views of wrist to assess pattern and comminution
- Assess Carpal translation
- Know the optimal surgical approach to educe and fix facet displacement
- ManipulateFx manually or with instruments to obtain reduction, dorsal incision when necessary

Patient regains supination early when DRUJ reduced and congruent

Restoration of supination most closely related to patient satisfaction

Closed Reduction Prediction of Supination potential

- Slight traction and rotation only through the forearm not the hand
- A block to supination suggests DRUJ incongruity
- If supination preserved then continue closed reduction
- Check axial CT to be certain DRUJ congruence before committing to closed treatment
Case
- 38 y/o RHD university maintenance worker and former major league baseball pitcher fell down 6 stairs at home.

1 Week Later- Is this acceptable?

CT at 2 weeks – DRUJ congruent- Acceptable
Healed @ 6 weeks- Outcome?

At 2.5 Months- nearly full motion, no pain, full function.
Volar Barton’sFx- Lunate facet unstable

Carpal translation – DRUJ incongruence loss of supination

Plate must capture lunate facet and be medial
One approach won’t do it for all fracture patterns

- Most Fractures-Trans FCR
- Volar lunate facet - midline/ Carpal Tunnel approach
- Radial column - through 1st DC
- Dorsal lunate facet - between 4th-5th DC

Case: Volar Barton’s Fx
54 y.o. Physician fell while rollerblading

Volar approach- FCR
Is Lunate Facet Captured?
Midline approach for displaced Volar Barton's

Modified Carpal Tunnel Approach
- Division of transverse carpal tunnel ligament
- Division of fascia between finger flexors and FCU
- Divide pronator quadratus from ulnar attachment
- Mobilize other tissues as necessary

Midline approach for displaced Volar Barton’s
Midline approach easier to place plate at medial margin of lunate facet

CT scan with screws in ideal position

CT scan demonstrating subchondral support preventing dorsal collapse
Axial CT medial screw capture of lunate facet

Case: 63 yo RHD F, fall- volar Barton’s
Don’t forget about DRUJ stability

Always Test DRUJ stability after radius ORIF

(VIDEO)
ORIF then DRUJ stress testing
If unstable, repair TFCC attachment
suture anchor looped around TFCC

Control of the Dorsal Lunate Facet

- Volar plate even with locking screws may not control thin, comminuted, osteoporotic fragments
- Screws cannot be bicortical dorsally because of tendon rupture
- Consider second incision and dorsal facet plate along with a primary volar locking plate
- Especially so when the volar cortex is either unbroken or nondisplaced
- This occurs with die punch injuries

Case: 50 y/o F s/p fall
Dorsal lunate facet fx with displacement and intact volar cortex
Approach?
Dorsal Facet Approach between 4th and 5th

Dorsal approach minimal tendon dissection/ retraction

Metaphyseal grafting to support facet reduction
I use allograft cancellous croutons
Dorsal facet fixation
Note excellent capture without impingement

1 Year Follow-Up - Fixation stable

1.5 Year Follow-Up
My Preferred Approach to the Dorsal Lunate Facet

Dorsal Approach to the Wrist for Lunate Fossa Fractures and DRUJ Pathology

- Incision along ulnar border of distal radius
- Divide retinaculum between EDM and EDC
- Subperiosteal elevation under EDC for lunate fossa fractures
- Create window between EDM and ECU for DRUJ pathology

Case: 23 y/o M s/p MVA
radial column and dorsal facet fx

@ 1 yr  No HWR migration, No tendon or nerve pain
Double plating well tolerated
Another double plating to control unstable radial column

Midline volar and 1sr DC incisions with viable skin bridge

Liftoff Technique- Difficult or late reduction 2-3 wks
Wires parallel to deformity
Plate precontour restores volar tilt
Avoid plate positioning distal to watershed line
- Reduction must be obtained for plate to sit properly and thus avoid encroachment of tendons
- Plate must not encroach watershed line

5 yrs s/p ORIF – FPL rupture
Never out of the woods

Screws must look short on lateral or they are out
- Make screws short to avoid tendon injury
- However facet capture may be inadequate
- Remember dorsal approach and secondary dorsal plate