Current Solutions in Orthopaedic Trauma
Case Presentation: Comminuted Radial Head Fracture
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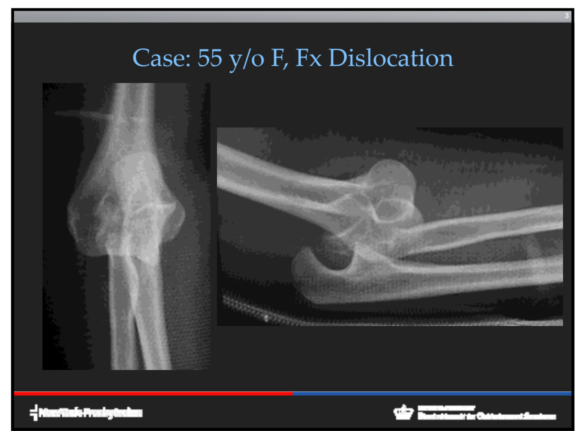
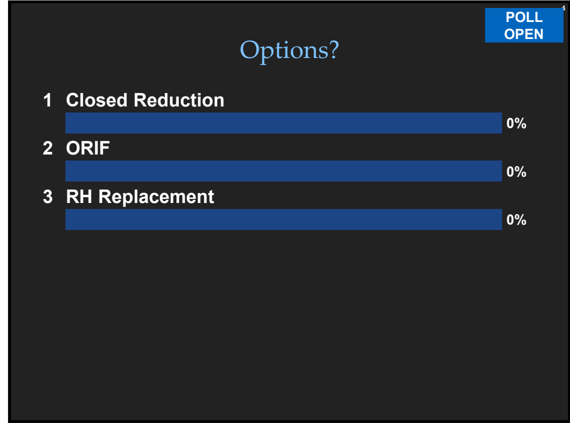
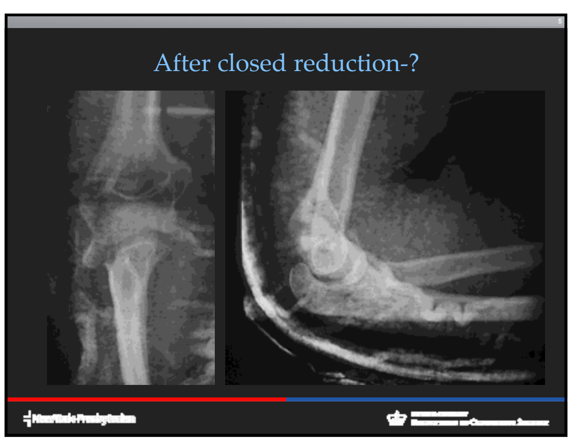
Disclosures
Consultant – Stryker, Acumed, Allosource, NewClip


Case: 55 y/o F, Fx Dislocation





POLL OPEN

Assess potential for forearm rotation- Then?

1. If forearm can rotate without block- closed Rx in LAS
   0%
2. If rotation blocked then ORIF with IM headless screw
   0%
3. If rotation blocked then ORIF with prox radius locking plate
   0%
4. Do primary radial head excision
   0%

Essex – Loprest Injury

- Injury to IOM especially critical central 1/3
- Difficult in the acute setting to insure stability despite careful distal examination of the DRUJ for pain or instability
- MRI may help - doesn't predict whether after a primary radial head resection if there will be significant proximal radial migration
- This leads to ulno carpal impingement
- Late salvage is difficult and diaphyseal ulna shortening usual RX

POLL OPEN

Neck broken – Now what?

1. Open reduction with headless bone screws — 0%
2. Open reduction with proximal locking T plate — 0%
3. Radial Head Replacement — 0%
4. Continued closed Rx to malunion and then late excision of RH — 0%

My premise is that all radial head fractures may be associated with ligament injury: MCL, IOM

Therefore we must either save the head or replace it

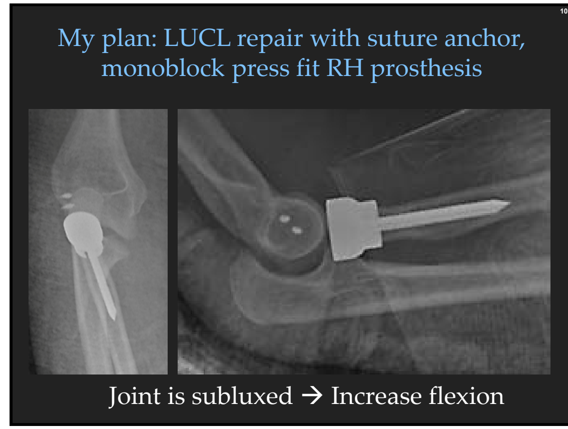
If radial head is displaced

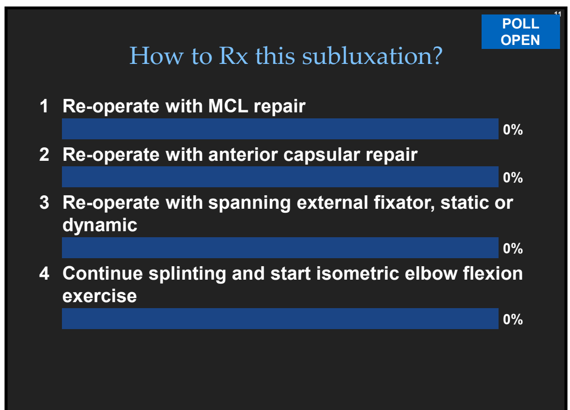
- Fix or replace, don't excise

If radial head is not displaced

- Aspirate + inject local anesthetic

→ early motion





Residual subluxation of the elbow after dislocation or fracture-dislocation: Treatment with active elbow exercises and avoidance of varus stress

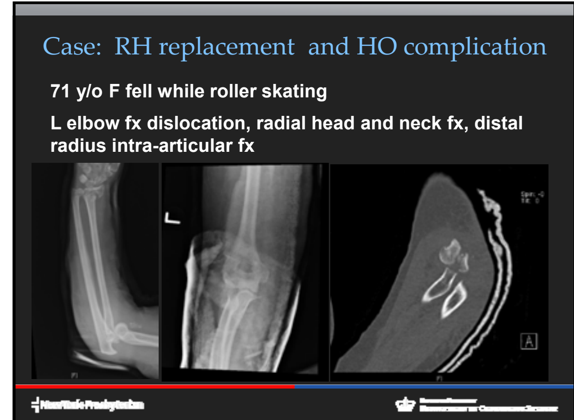
Andrew D. Duckworth, MBChB BSc (Hons), Anna Kulidjian, MD, Michael D. McKee, MD, and David Ring, MD, PhD, Edinburgh, UK, Toronto, Canada, and Boston, MA

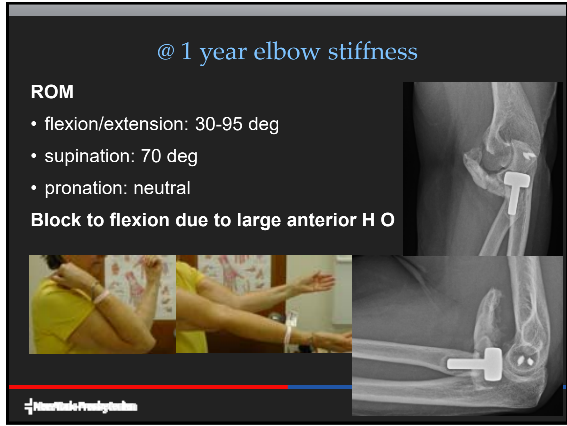
J Shoulder Elbow Surg March/April 2008

23 patients (5 non-op, 18 operative)

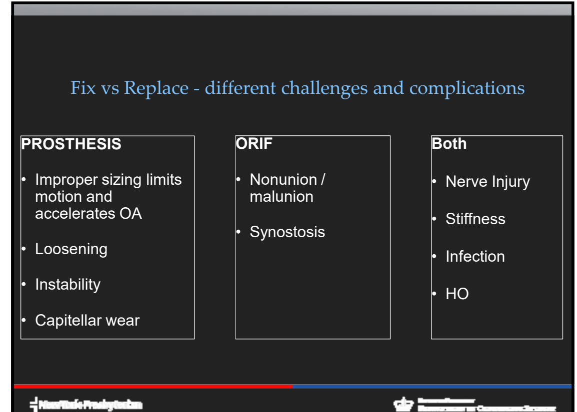
- Slight residual subluxation after treatment
- Prescribed active elbow exercises and avoidance of shoulder abduction

Slight postreduction subluxation of the elbow, without detrimental contact of the articular surfaces, a type of pseudosubluxation of the elbow sometimes referred to as the "drop sign," can be treated with active exercises and avoidance of varus stress. (J Shoulder Elbow Surg 2008;17:276-280.)


Case: RH replacement and HO complication
71 y/o F fell while roller skating
L elbow fx dislocation, radial head and neck fx, distal radius intra-articular fx

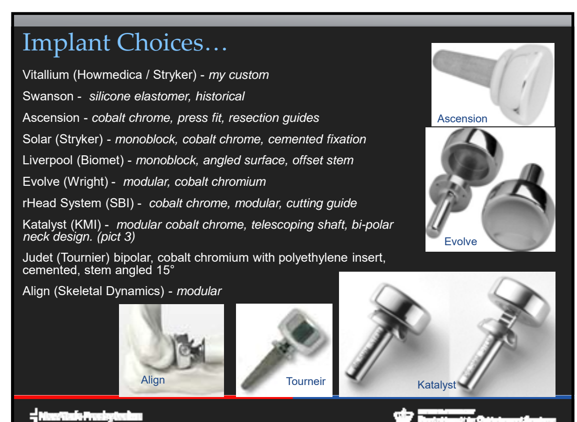

@ 1 year elbow stiffness
ROM
• flexion/extension: 30-95 deg
• supination: 70 deg
• pronation: neutral
Block to flexion due to large anterior H O

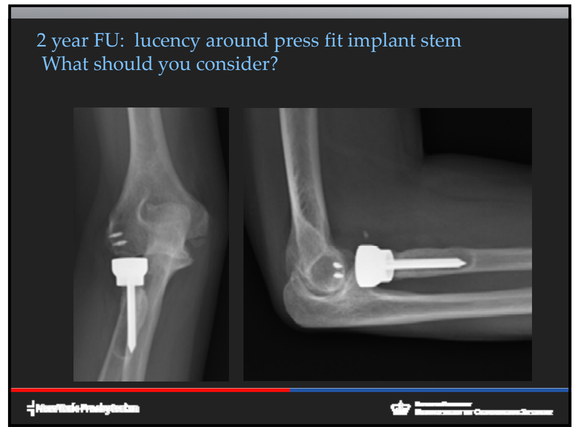
1 month s/p release and excision of heterotopic bone
▪ DASH: 19.0 flexion/extension: 25-125
Post op films

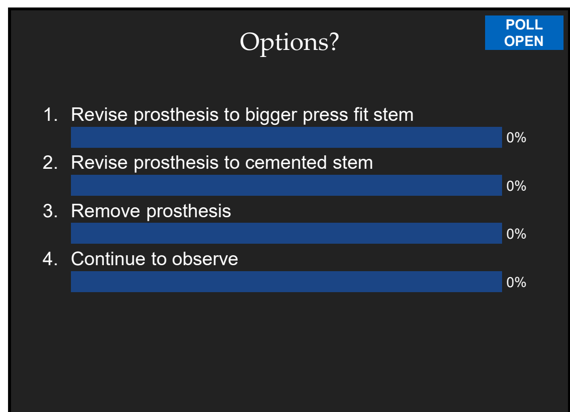


Pearls and Pitfalls: Implant selection

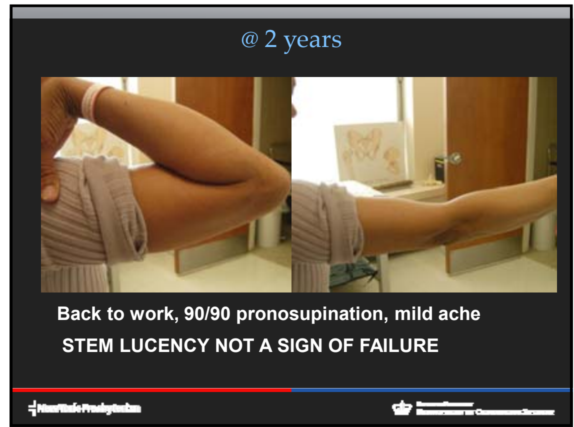
- Monoblock vs Bipolar: radial head is elliptical not spherical
- Mobile bearing vs fixed axis
- Press fit stem vs cemented
- Straight vs curved stem
- Motion around head- stem interface or in canal around stem
- Modularity to allow easier insertion

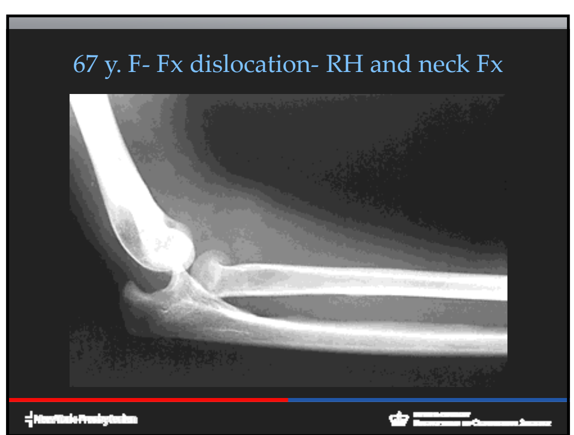


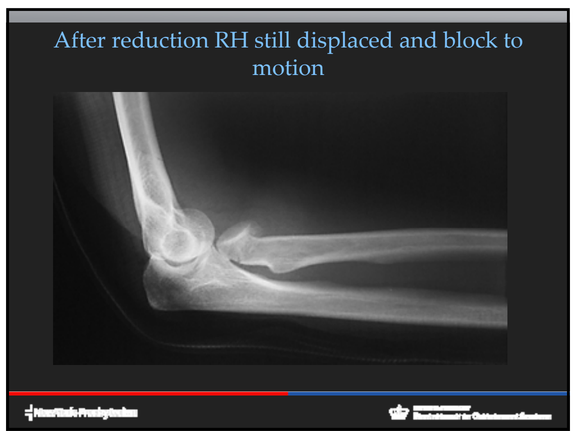

2 year FU: lucency around press fit implant stem
What should you consider?

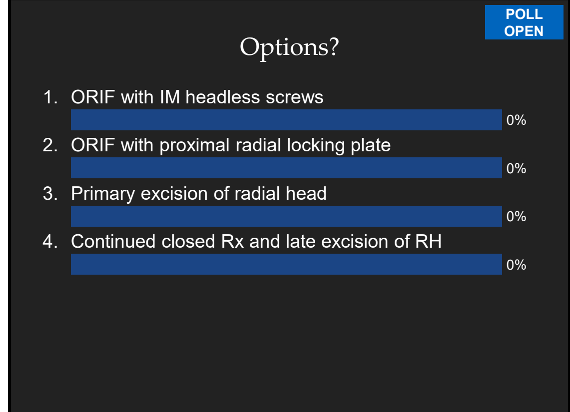

Options?
POLL OPEN
1. Revise prosthesis to bigger press fit stem
0%
2. Revise prosthesis to cemented stem
0%
3. Remove prosthesis
0%
4. Continue to observe
0%

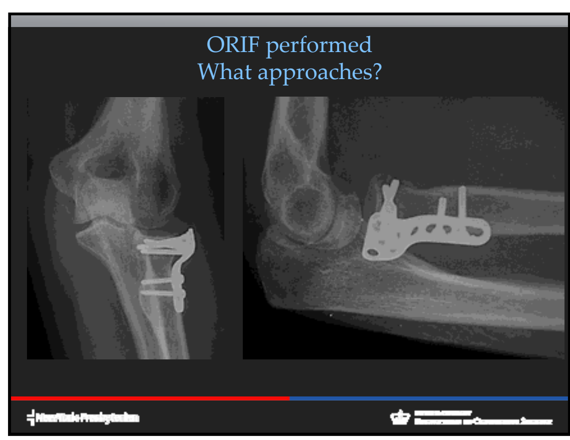
@ 7 months
Stable elbow, no pain, exc ROM

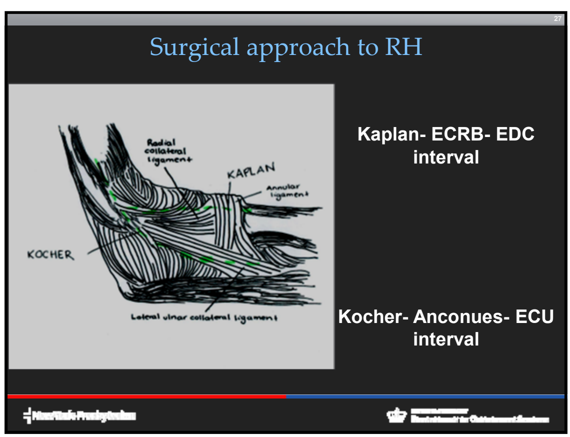

@ 2 years
Back to work, 90/90 pronosupination, mild ache
STEM LUCENCY NOT A SIGN OF FAILURE

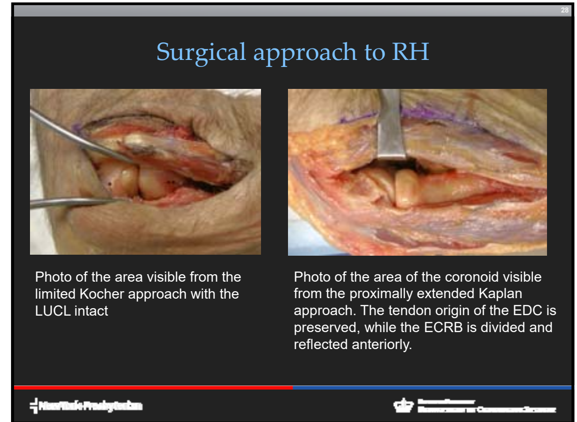

67 y. F- Fx dislocation- RH and neck Fx

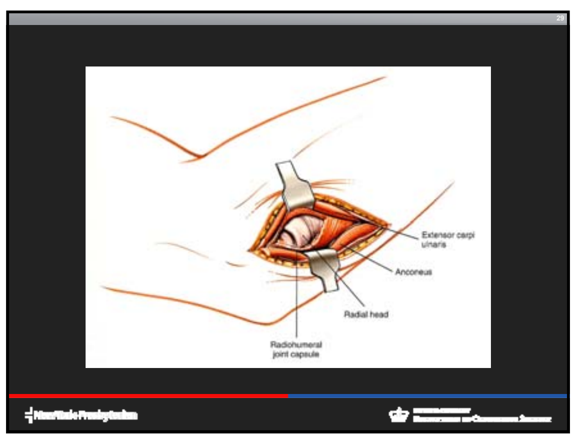

After reduction RH still displaced and block to motion

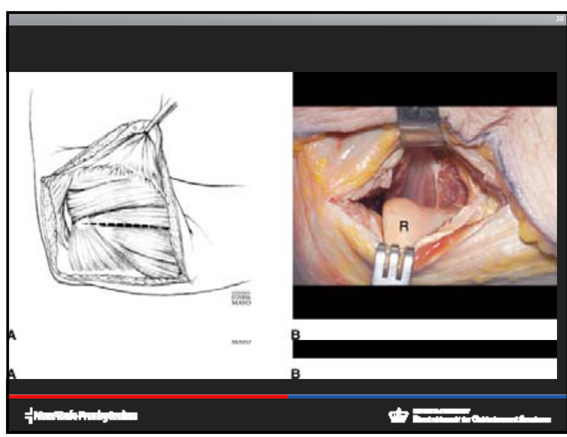

POLL OPEN
Options?
1. ORIF with IM headless screws
0%
2. ORIF with proximal radial locking plate
0%
3. Primary excision of radial head
0%
4. Continued closed Rx and late excision of RH
0%

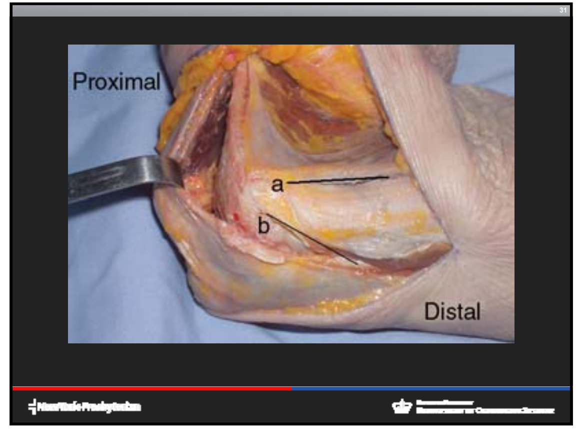

ORIF performed
What approaches?


Surgical approach to RH
Radial collateral ligament
KAPLAN
Annular ligament
KOCHER
Lateral ulnar collateral ligament
Kaplan- ECRB- EDC interval
Kocher- Anconues- ECU interval


Surgical approach to RH
Photo of the area visible from the limited Kocher approach with the LUCL intact
Photo of the area of the coronoid visible from the proximally extended Kaplan approach. The tendon origin of the EDC is preserved, while the ECRB is divided and reflected anteriorly.


Extensor carpi ulnaris
Anconeus
Radial head
Radiohumeral joint capsule


R
A
B



Comparison of Exposure in the Kaplan versus the Kocher Approach in the Treatment of Radial Head Fractures

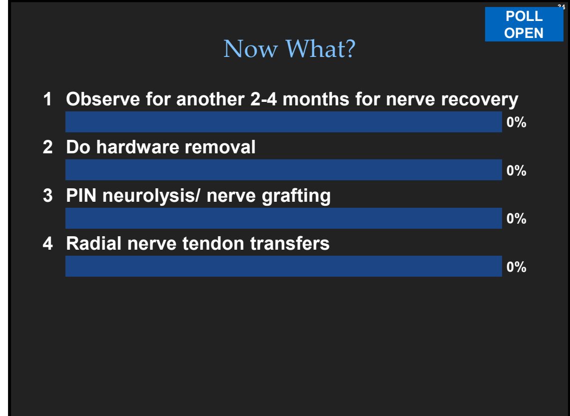
Accepted for publication in HAND

Abstract:

- **Conclusions: The Kaplan approach affords significantly greater visible surface area of the proximal radius than the Kocher approach.**

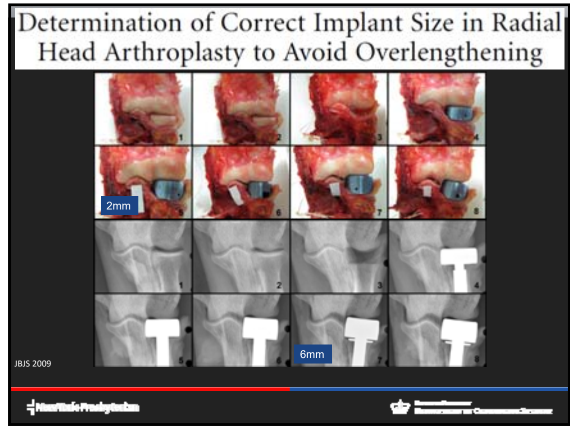
ORIF through Kocher approach

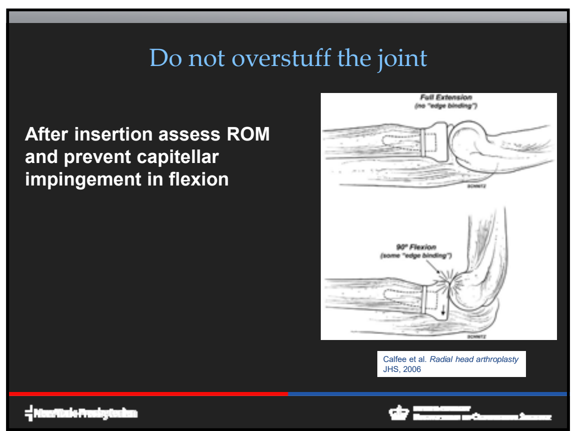
- **Immediate PIN palsy**
- **No recovery @ 4 months**



Moral of this story

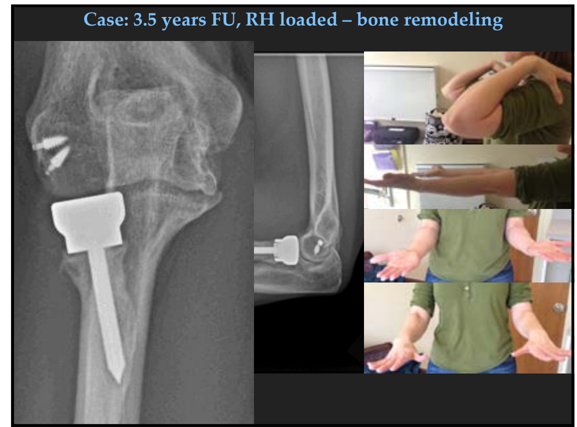
- See and protect the PIN during this procedure
- Don't rely on "'SAFE" intervals
- Don't use Homan levering retractors as it will stretch the nerve

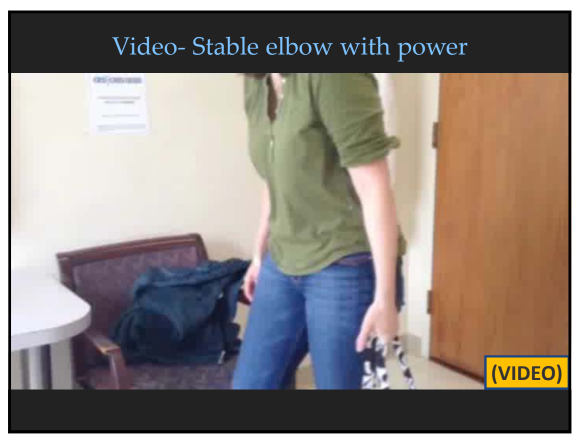


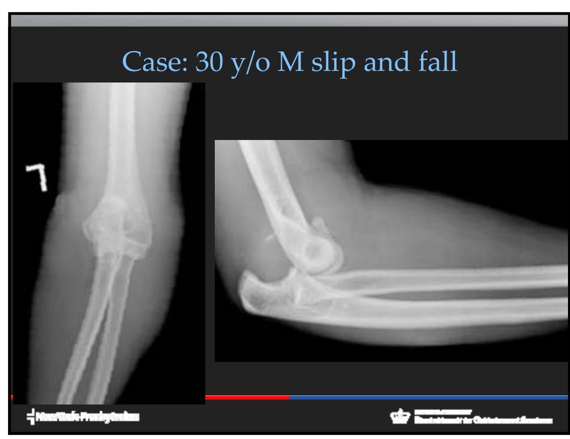


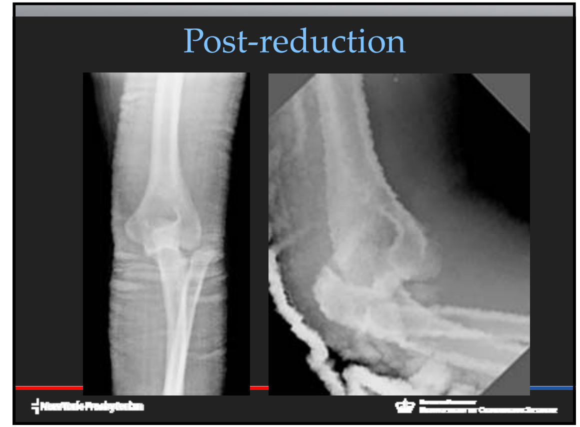
Technical Pearls

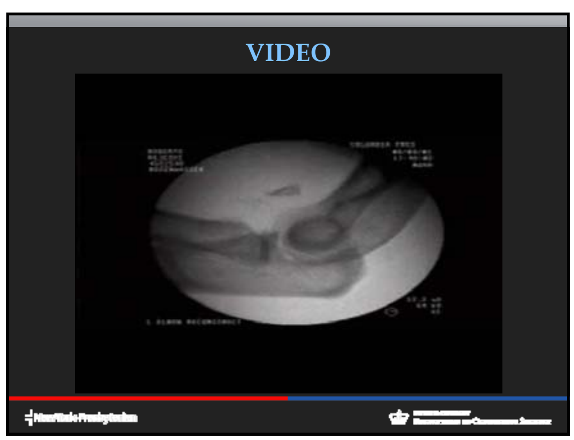
- Resected radial head is the best template for sizing the implant
- Move elbow through ROM after insertion to observe radio-capitellar contact and to scrutinize the height and diameter of the implant
- Examine for parallelism of the medial ulnotrochlear joint space via fluoroscopy
- Examine DRUJ alignment and ulnar variance
- Avoid over-lengthening the radius→ excessive capitellar loads can cause early capitellar degeneration

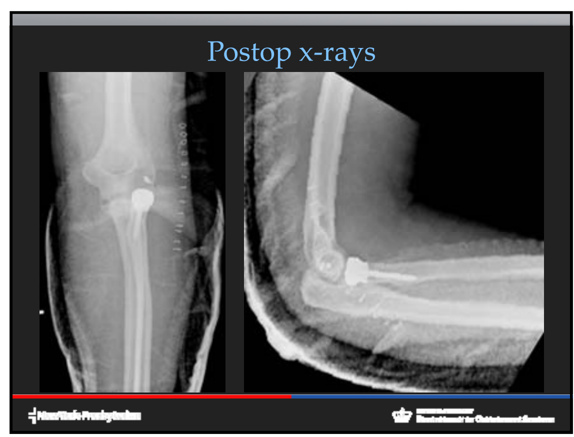

Case: 3.5 years FU, RH loaded – bone remodeling


Video- Stable elbow with power
(VIDEO)


Case: 30 y/o M slip and fall


Post-reduction


VIDEO


Postop x-rays

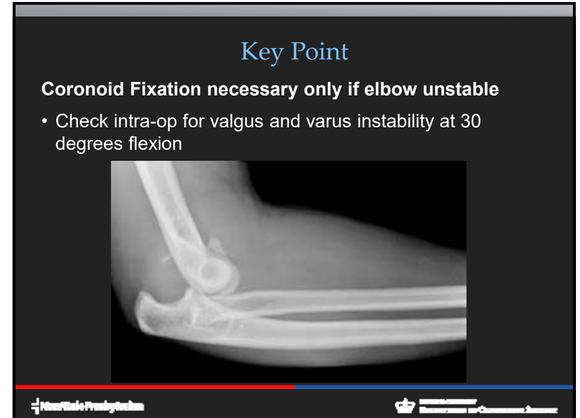
9 months Post-op

- Patient ROM 10-130
- Minimal Pain
- Returned to Work as Construction Worker
- elbow STABLE

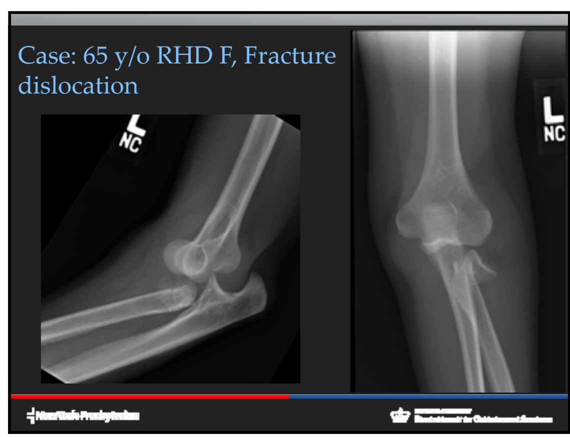
Key Point

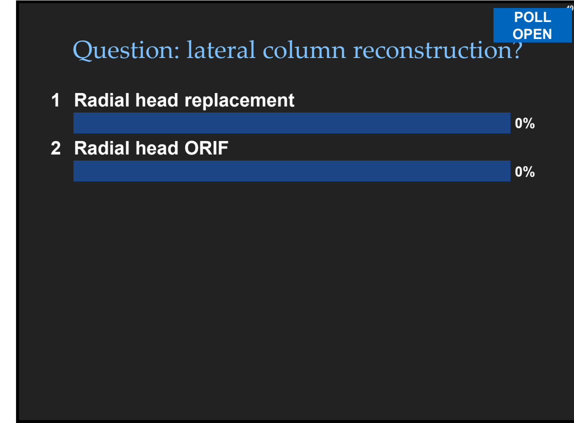
Coronoid Fixation necessary only if elbow unstable

- Check intra-op for valgus and varus instability at 30 degrees flexion



Case: 65 y/o RHD F, Fracture dislocation




POLL
OPEN
Question: lateral column reconstruction?
1 Radial head replacement
0%
2 Radial head ORIF
0%

6 weeks post-op

1 year follow up

Pearls

Kaplan approach preferred over Kocher

- Better visualization, better access, protect vital structures

Undersize the head when replacing

- Intraoperative visualization of lateral ulnohumeral joint space

Partial radial head resection / fragment excision not a good option

Fix the head with headless bone screws if less than 3 fragments

Fix the LUCL always, coronoid and MCL, ant capsule when necessary

Elbow must be stable from 30-130 at surgery