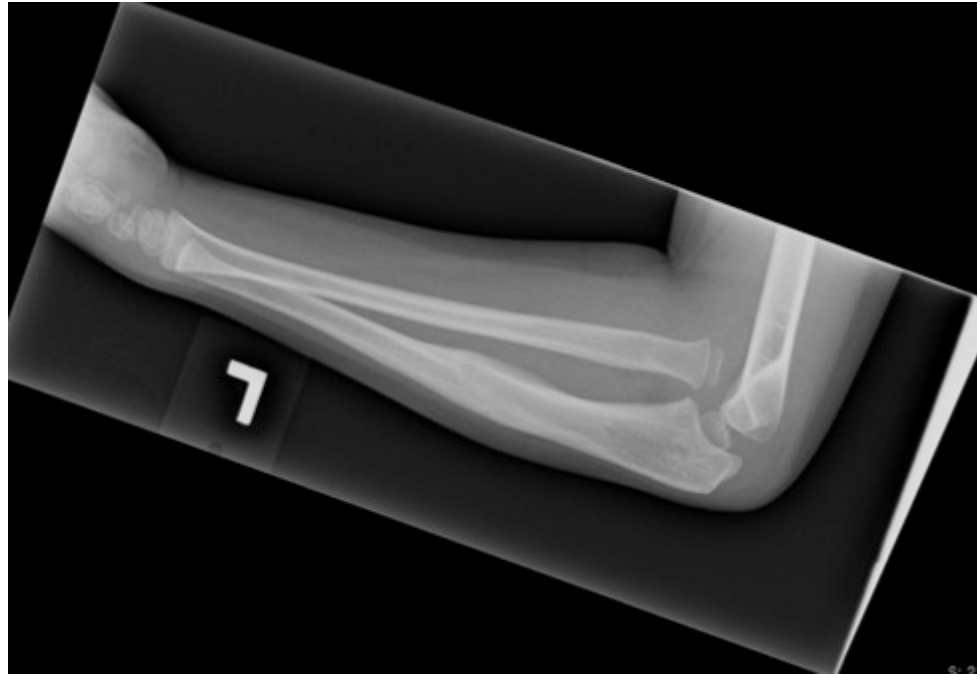

Missed Monteggia Management

Donald S. Bae, MD
Boston Children's Hospital

Chronic Monteggia lesions



Acute injuries missed in 16-33% of cases

Loss of reduction up to 20% of injuries

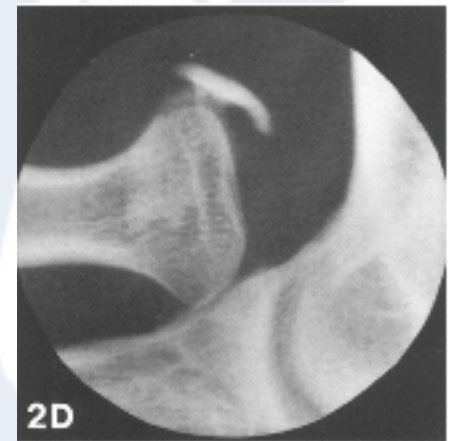
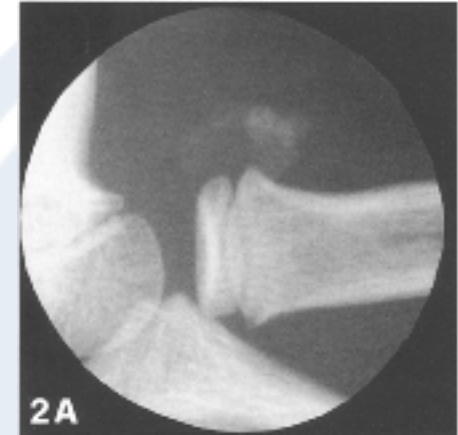
Dormans & Rang, OCNA, 1990.

Fowles et al, JBJS-A, 1983.

Chronic Monteggia lesions

Earwaker, Skeletal Radiol, 1992.

- Opacity adjacent to radial head
- Calcification of annular ligament & anterior capsule
- Not myositis ossificans



Chronic Monteggia lesions

Chronic Monteggia lesions

- Pain
- Stiffness
- Deformity
- Neuropathy
- Arthrosis?

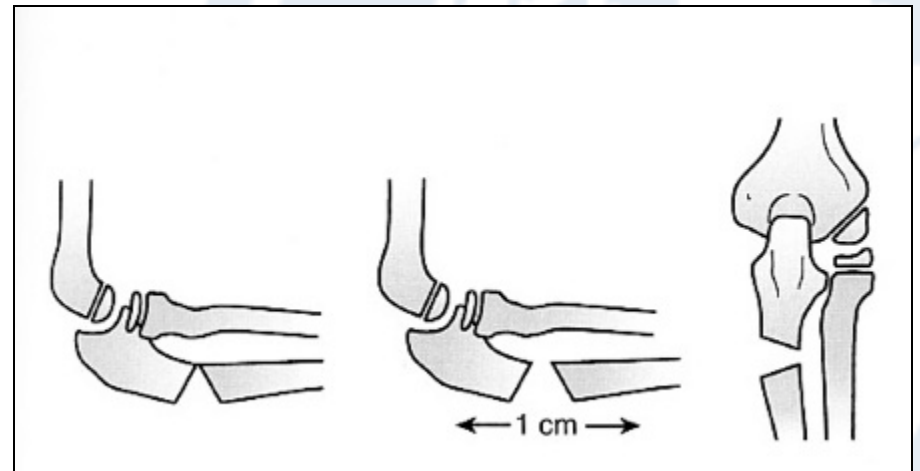
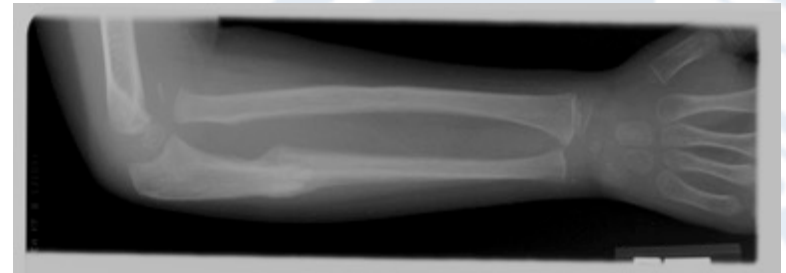


BUT natural history not well characterized

Treatment: chronic

Reconstructive principles

- Restoration of ulnar length & alignment
- Congruent radiocapitellar reduction
- Annular ligament reconstruction



Treatment: chronic

Ulnar correction

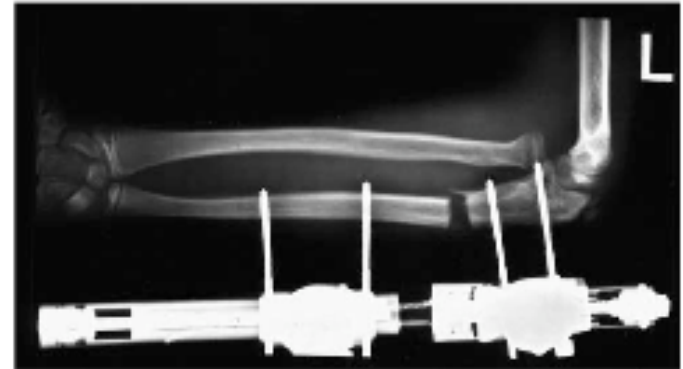
- Single stage osteotomy
 - Oblique
 - Opening wedge
 - Over-correction
- Gradual distraction lengthening

Missed chronic anterior Monteggia lesion

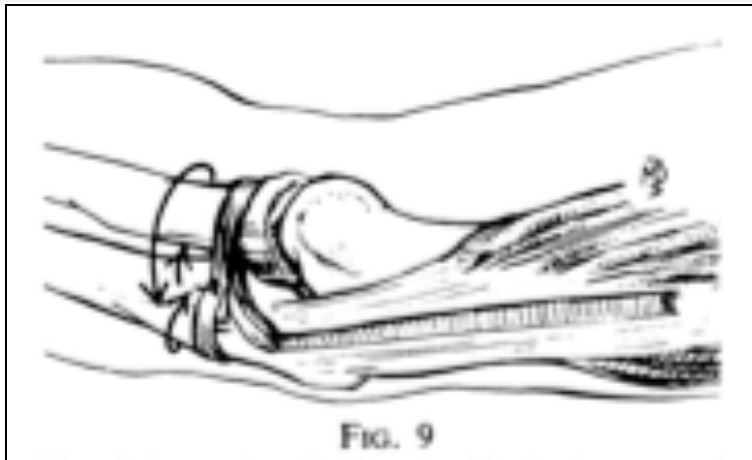
CLOSED REDUCTION BY GRADUAL LENGTHENING AND ANGULATION OF THE ULNA

G. U. Exner

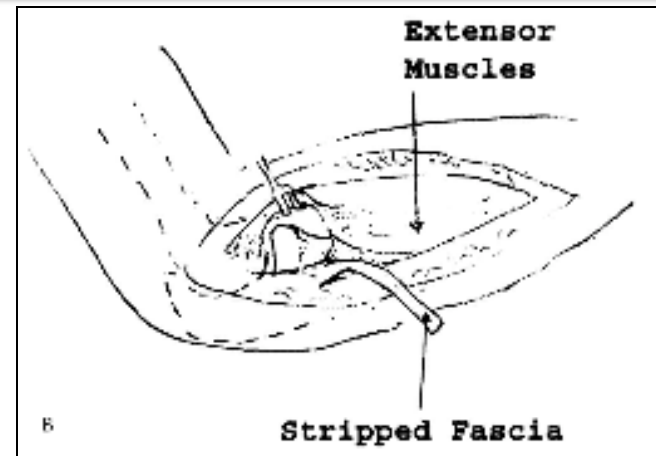
From the Orthopädische Universitätsklinik, Zürich, Switzerland



Treatment: chronic



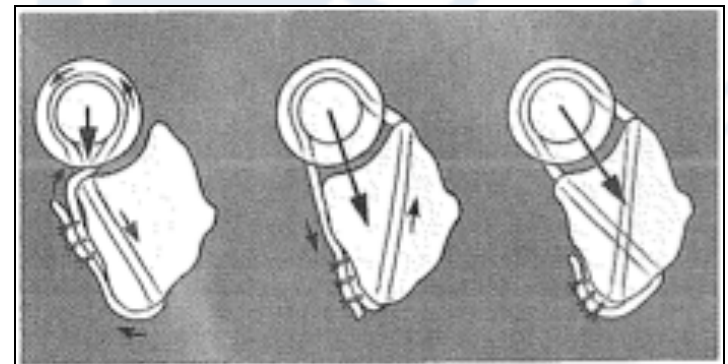
Bell Tawse, JBJS, 1965



Hui et al, JPO, 2005

Ligament reconstruction

- Local tissue
- Triceps fascia
- Forearm fascia



Seel & Peterson, JPO, 1999.

Treatment: chronic

Chronic Monteggia Lesions in Children. Complications and Results of Reconstruction

W. B. RODGERS, PETER M. WATERS and JOHN E. HALL
J. Bone Joint Surg. Am. 78:1322-9, 1996.

7 patients, average age 6 years

Average time to reconstruction 12 months after injury

14 complications, including:

- ulnar malunion (1)
- recurrent instability(3)
- ulnar neurapraxia (3)
- radial nerve laceration (1)
- compartment syndrome (1)

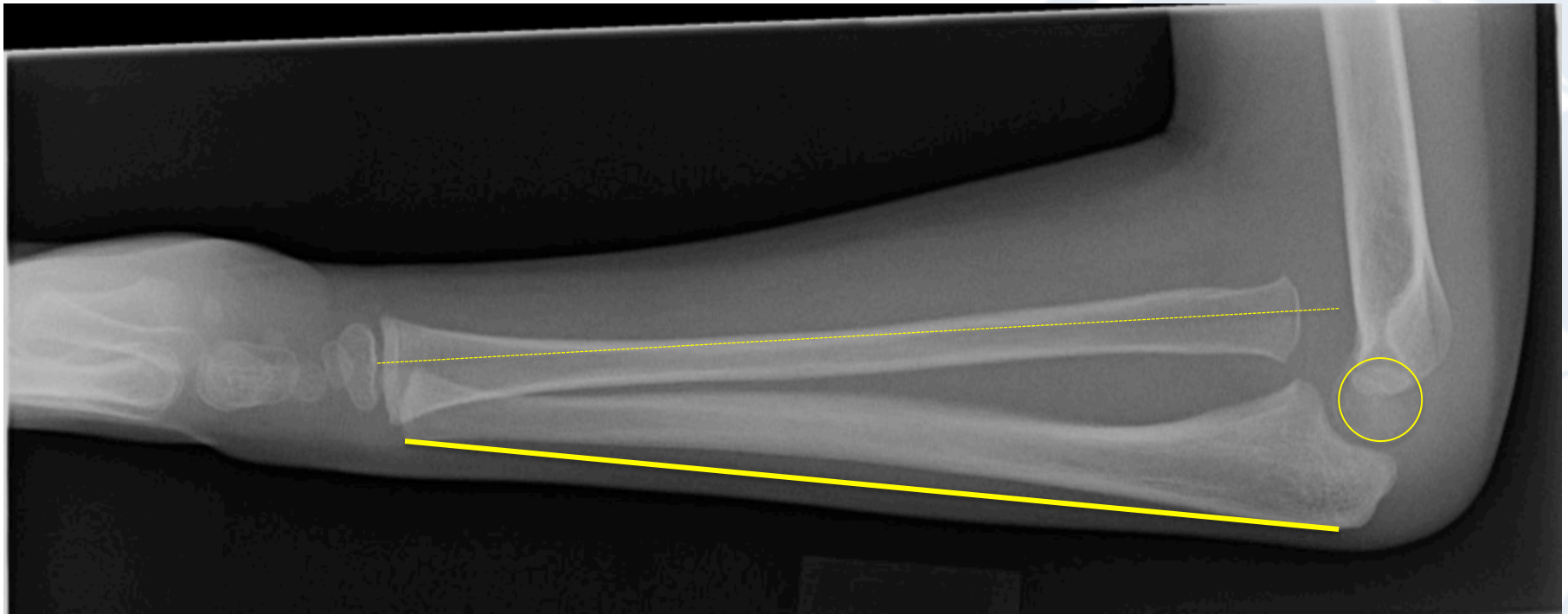
Treatment: chronic

Modification of technique

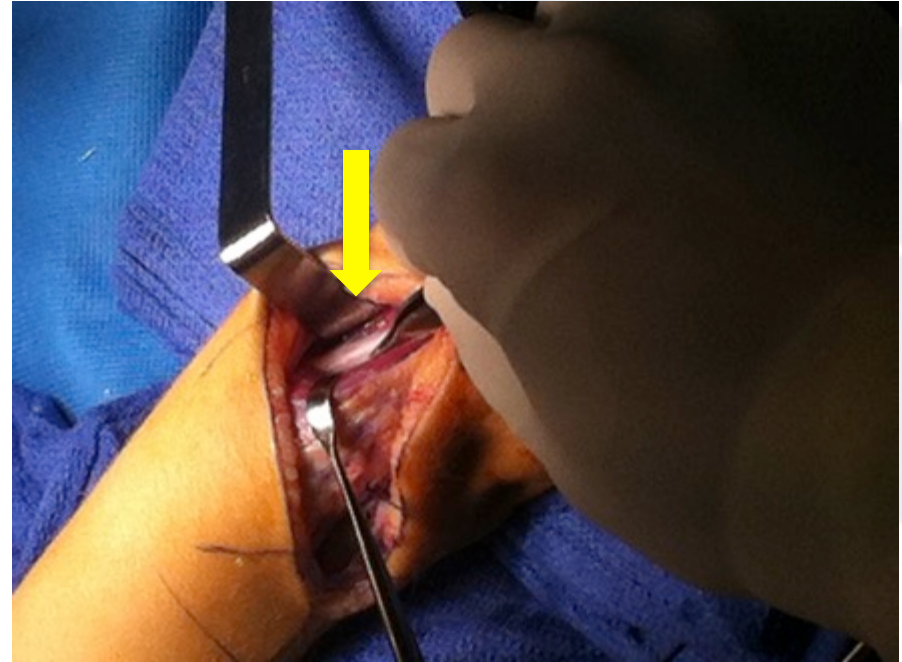
- Extensile posterolateral approach
- Decompression of radial nerve
- Open reduction of radiocapitellar joint
- Annular ligament repair or reconstruction
- Rigid fixation of ulnar osteotomy
- Prophylactic fasciotomies

Treatment: chronic

6yo M with chronic Monteggia

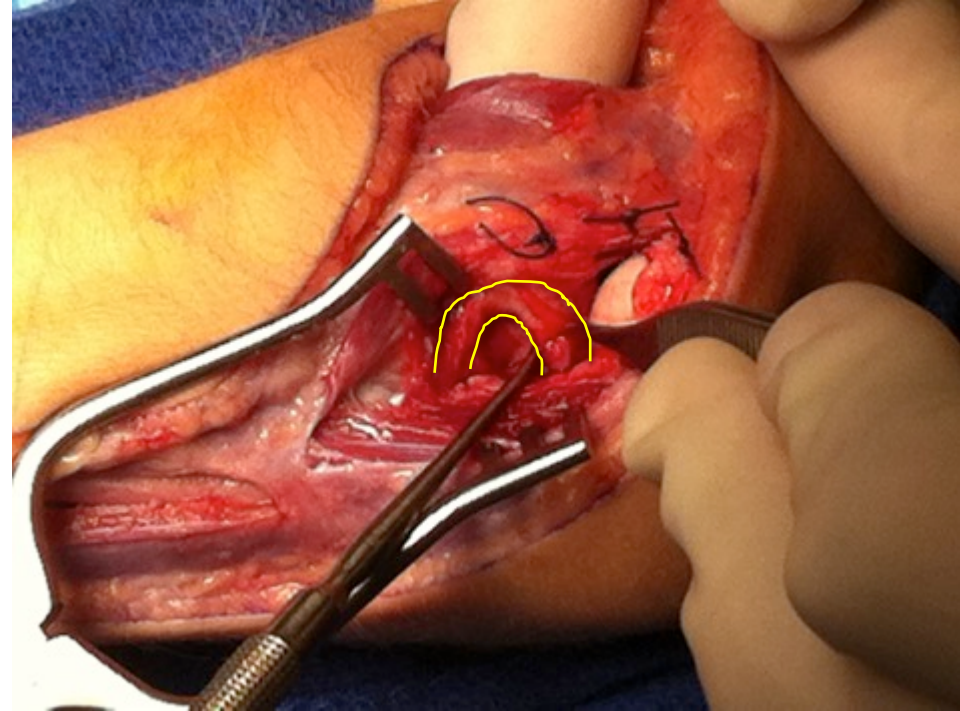


Treatment: chronic



Extended lateral (Kocher) approach
Identify and decompress radial nerve/PIN

Treatment: chronic



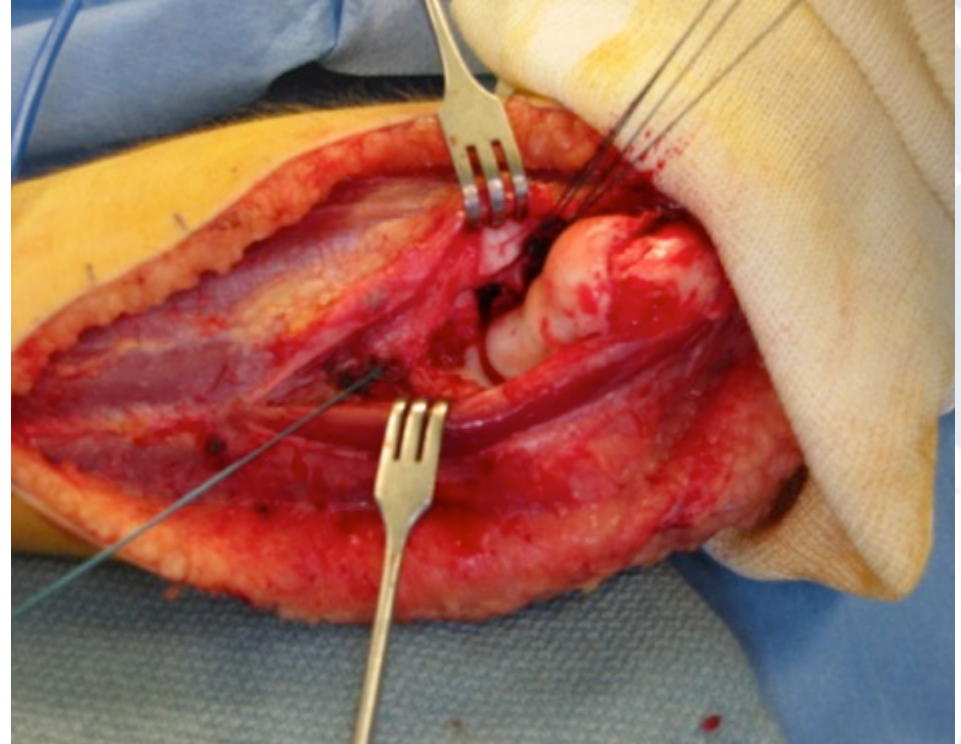
PRUJ debridement

Identify radial head & annular ligament

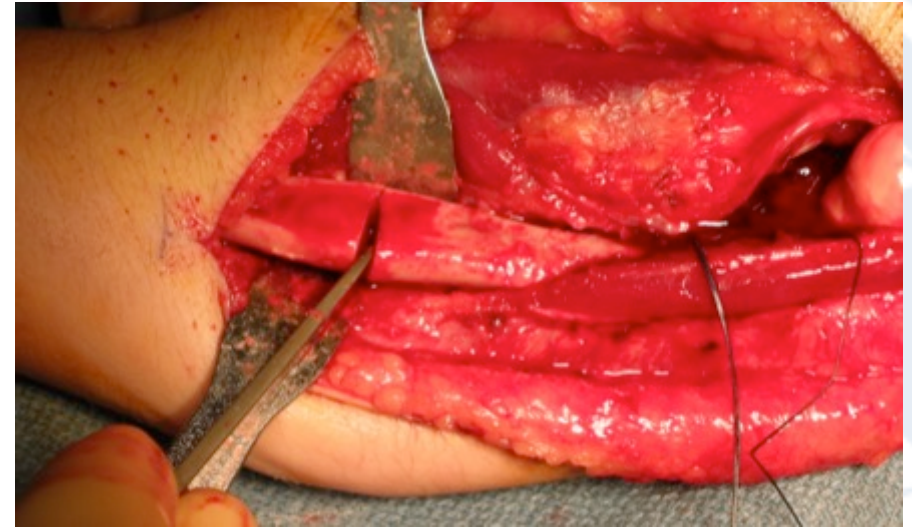
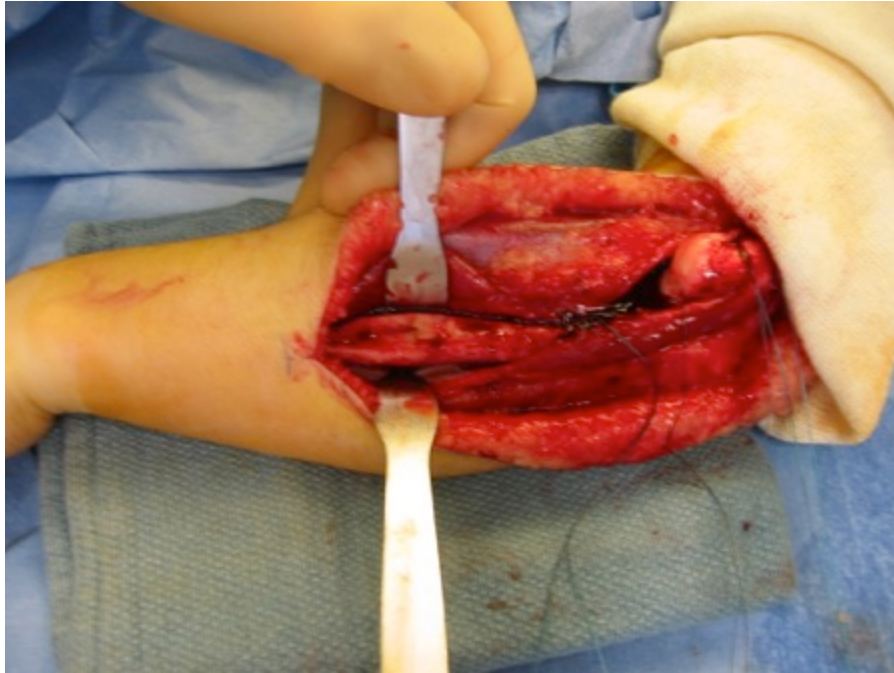
Treatment: chronic

Incise annular ligament radially

Place 2-0 Ethibond sutures for future ligament repair

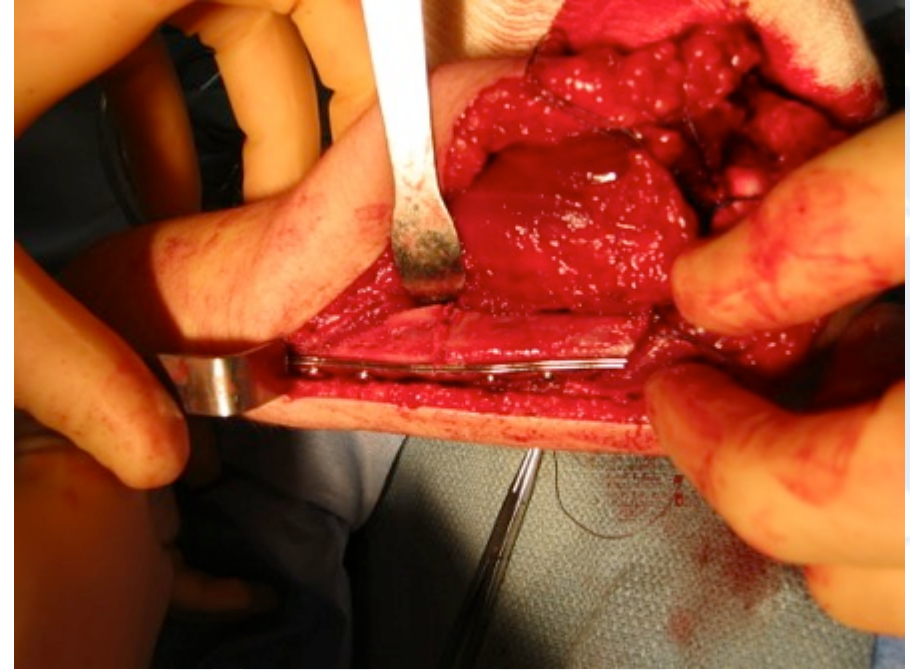


Treatment: chronic



Ulnar exposure → Identify osteotomy site
Osteotomy (preserve far cortex)

Treatment: chronic



Provisional RC reduction and pin
Fixation with stacked 1/3 tubular plates

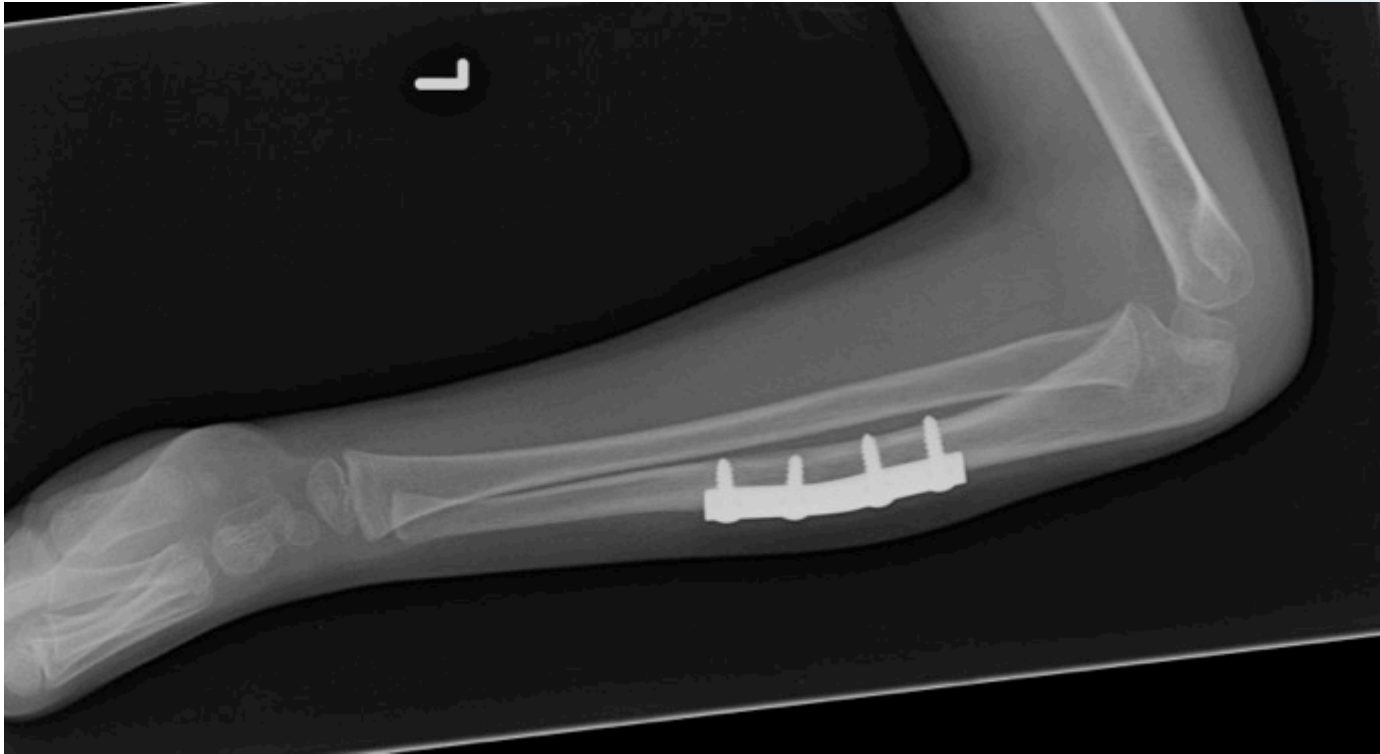
Treatment: chronic



Repair annular ligament
Prophylactic fasciotomies



Treatment: chronic



Bulky LAC in supination x 4-6 weeks

Treatment: chronic

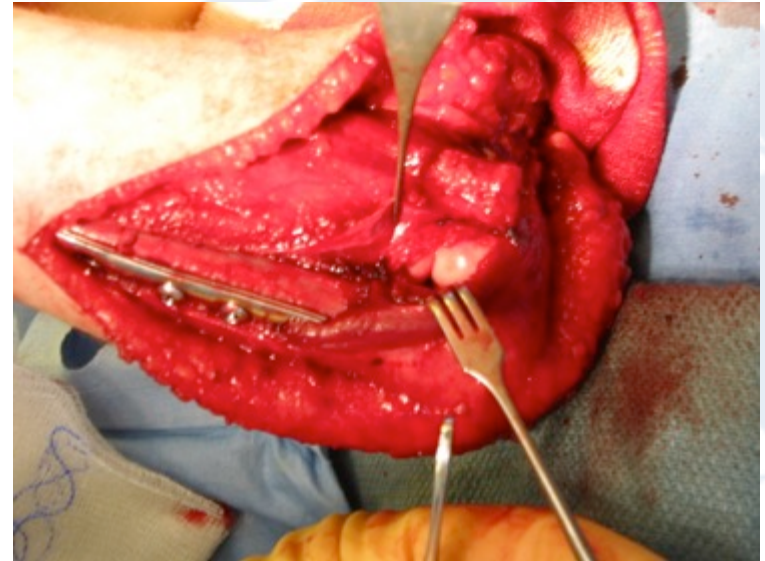
Proposed technique

- Improved motion
- Maintained RC reduction
- Minimal complications
- High satisfaction

Inoue & Shionoya, Acta Orthop Scand, 1998

Degreef & DeSmet, JOT, 2004

Gyr et al, JPO-B, 2004



• Hui et al, JPO, 2005

David-Watson et al, JPO, 2005

Kim et al, JPO, 2002

When is it too late?

Not time, but shape!

Radial head convexity

Capitellar flattening



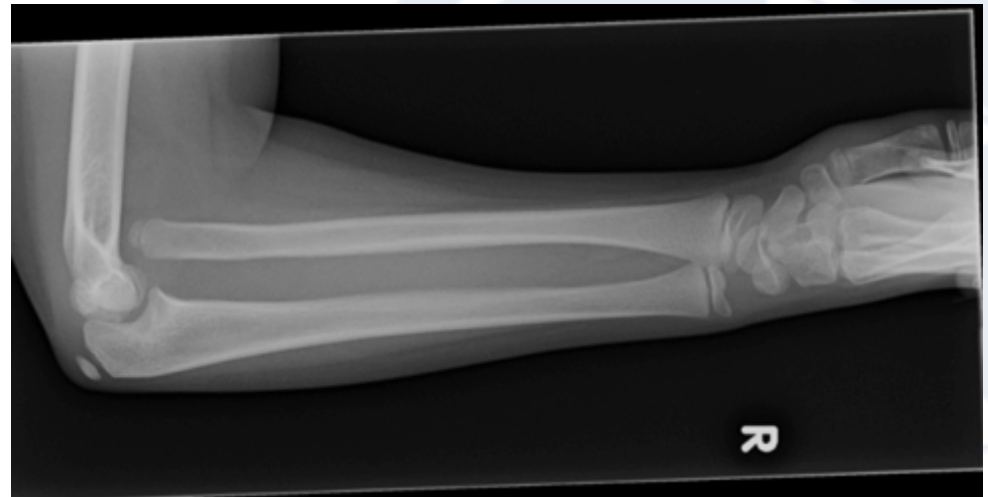
Salvage options?

Observation

Ulnar lengthening

Radial head excision

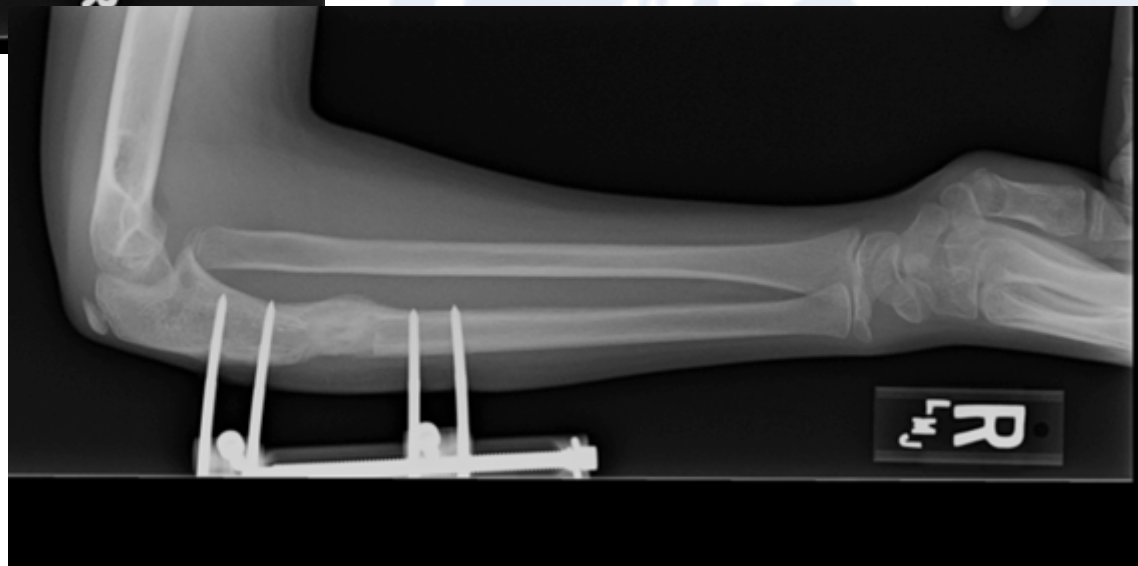
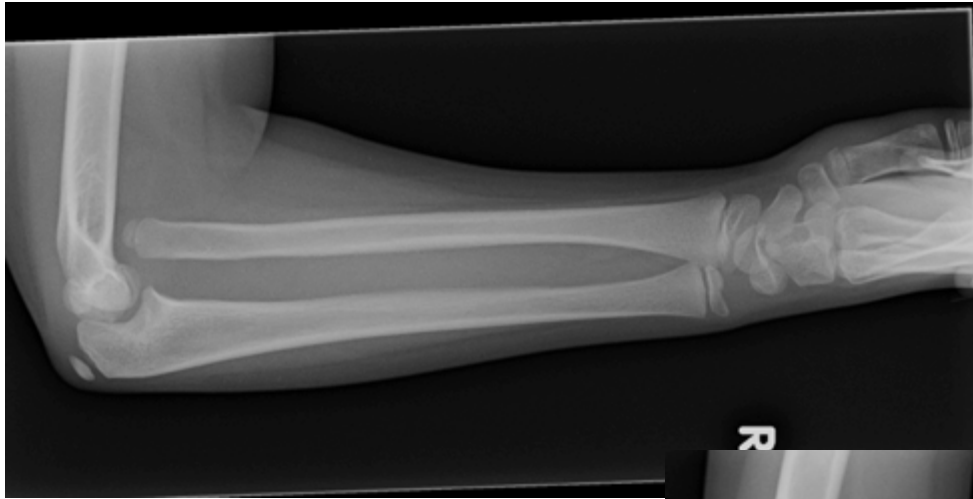
Other?



Ulnar lengthening



Ulnar lengthening



2 years postop



2 years postop



2 years postop



Summary

Prevention!

- Careful x-ray evaluation
- Acute treatment according to ulna fracture

Ulnar osteotomy, congruent reduction, annular ligament → successful reconstruction