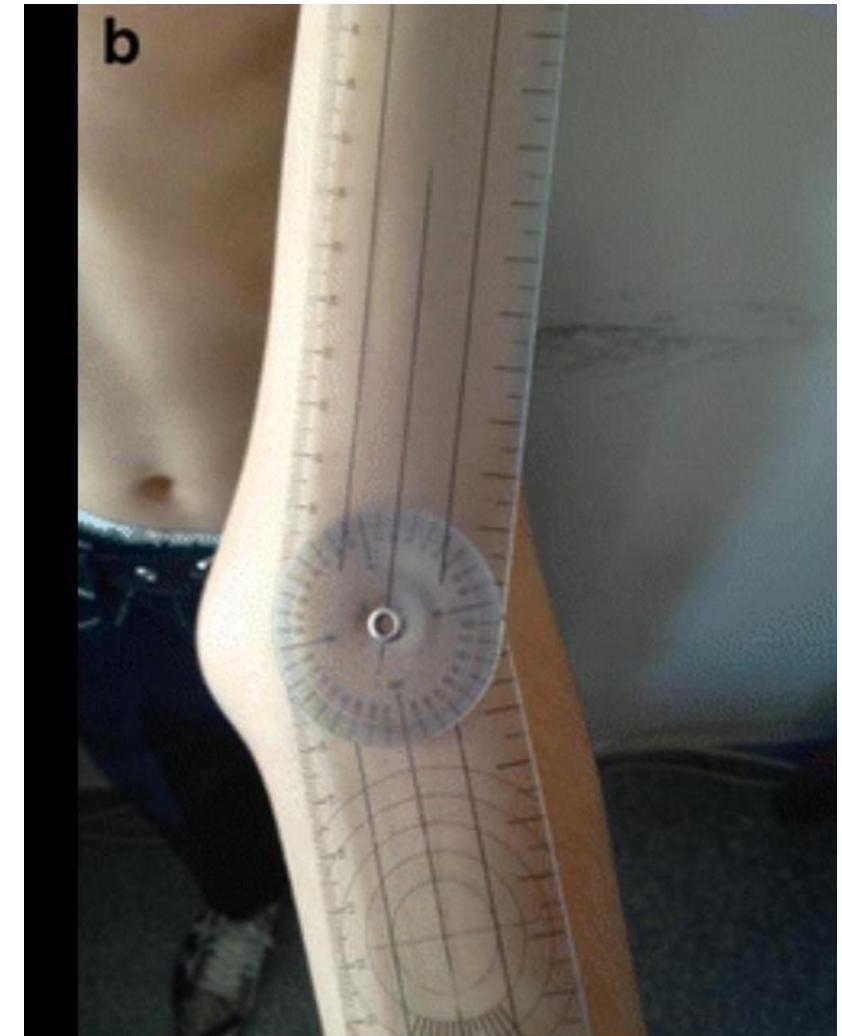


Distal lateral humeral fractures in children



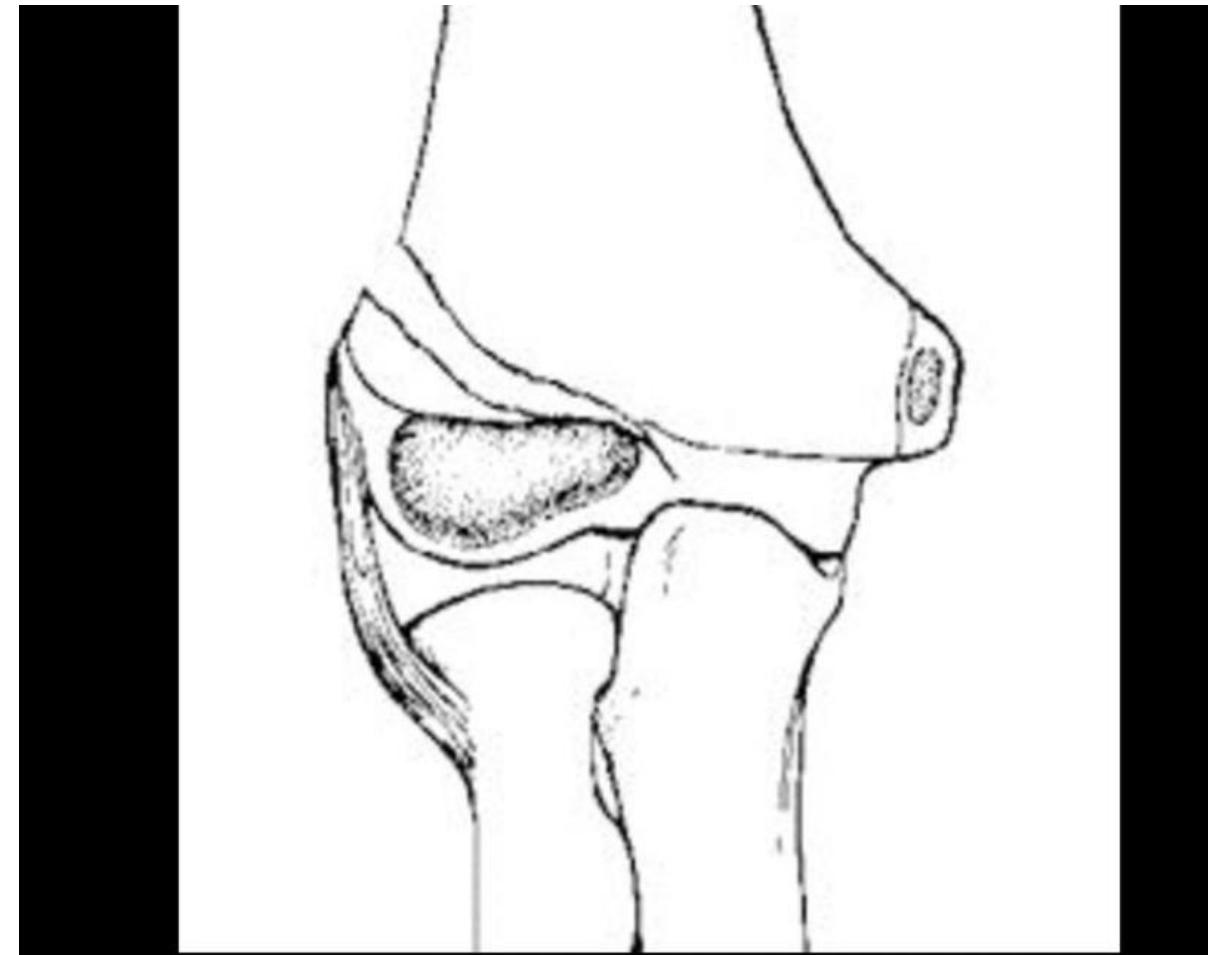
Lateral condyle fracture

- Prevalence
 - age 6 years
 - carrying angle
 - Obesity

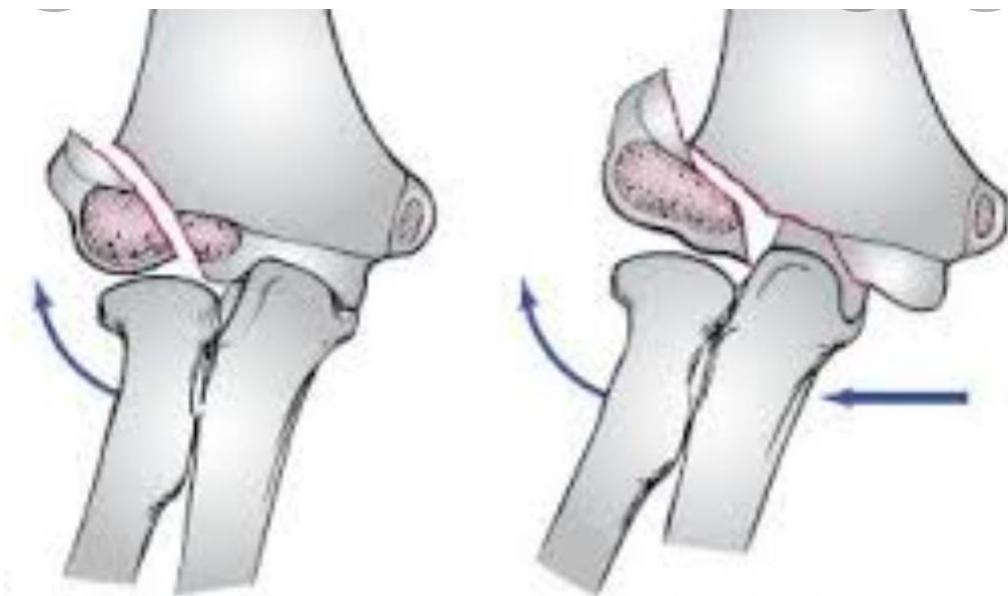


Mechanisms

- pull-off or avulsion
extended . supinated

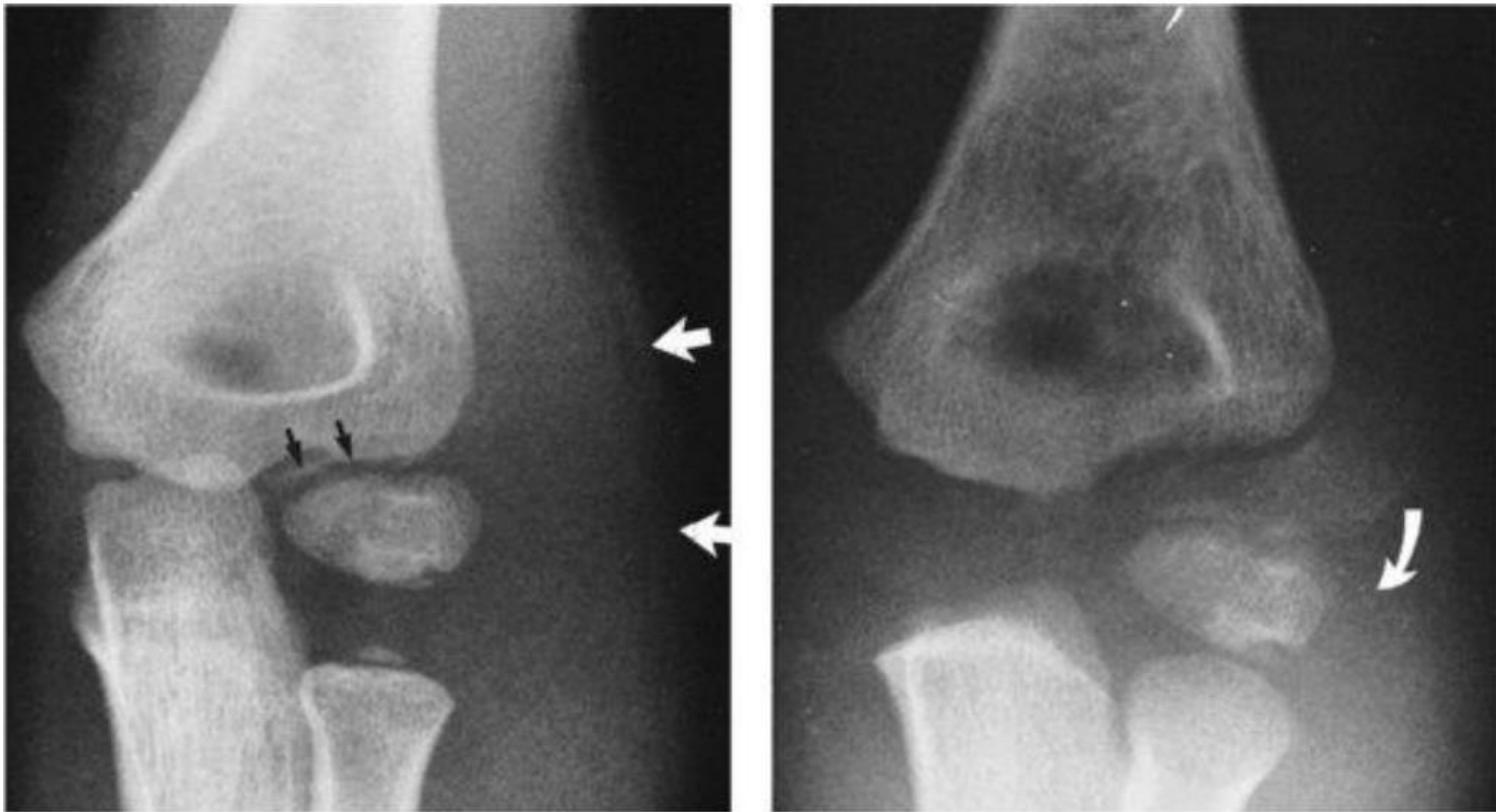


- push-off
 - flexed



- intrinsic instability

soft tissue



Symptoms

- little distortion
tenderness
flexing the wrist



Associated
radial head
olecranon
dislocation



Imaging

standard

metaphyseal flake



Oblique

displacement
stability



articular hinge

Arthrography
MRI
ultrasound



- Differential diagnosis
 - entire distal humeral physis.
 - posteromedial
 - lateral condylar ossification center to the proximal radius





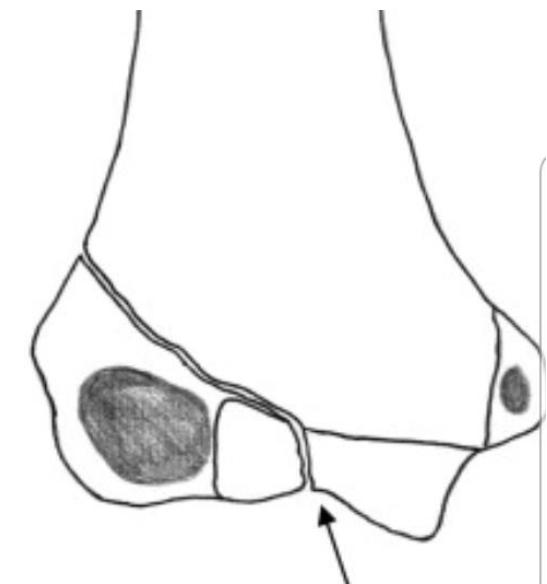
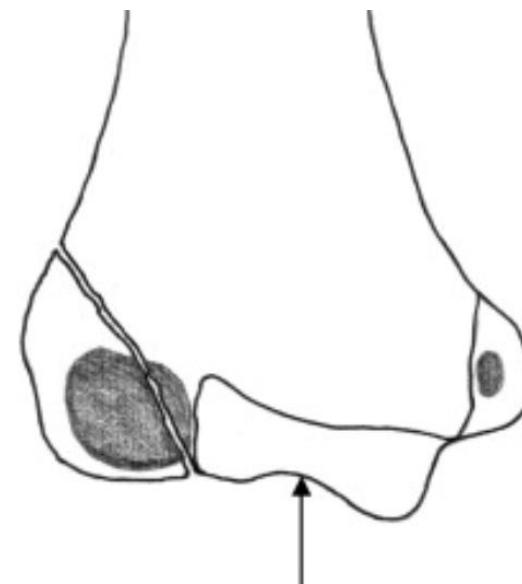
A



B

Classification

- Milch
 - (type I)
 - (type II)



- Song et al. Classification
 - metaphysis
 - articular cartilage
 - Medial and lateral displacement
 - No rotation
 - Rotation



Stage I



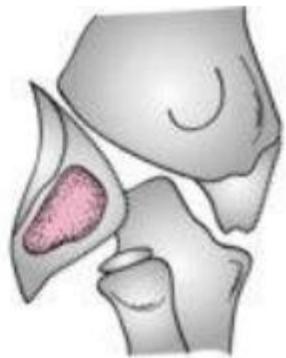
Stage II



Stage III



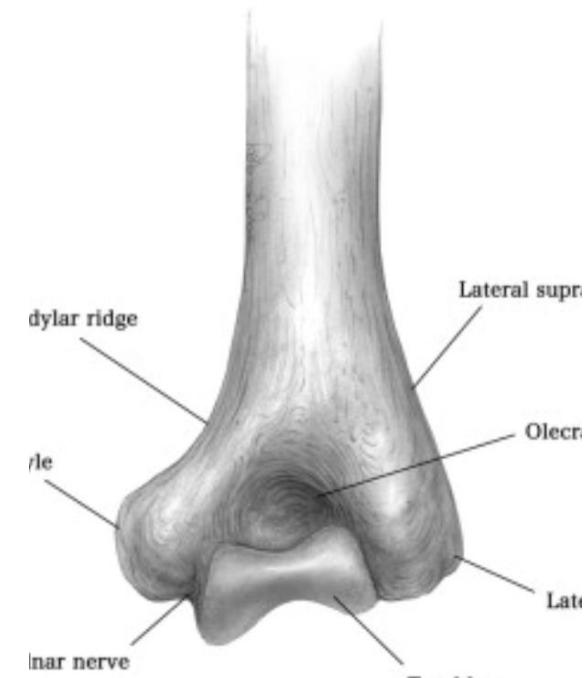
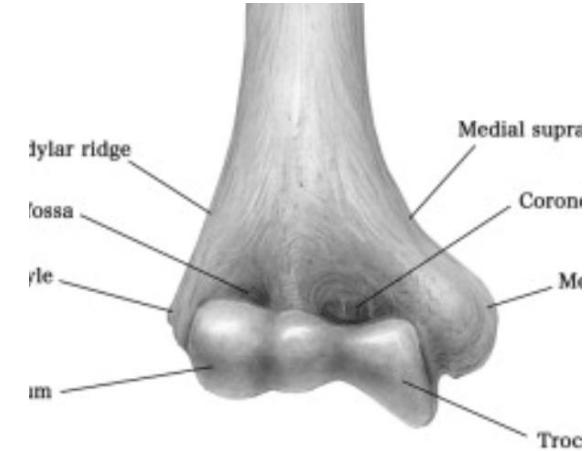
Stage IV



Stage V

- Elbow instability

- crista of the trochlea
- posterolateral subluxation



Nonoperative

Minimally displaced <2 mm

- stability
 - MRI
 - arthrography
 - stress maneuvers



- 40%
- Radiographs
 - 3 weeks

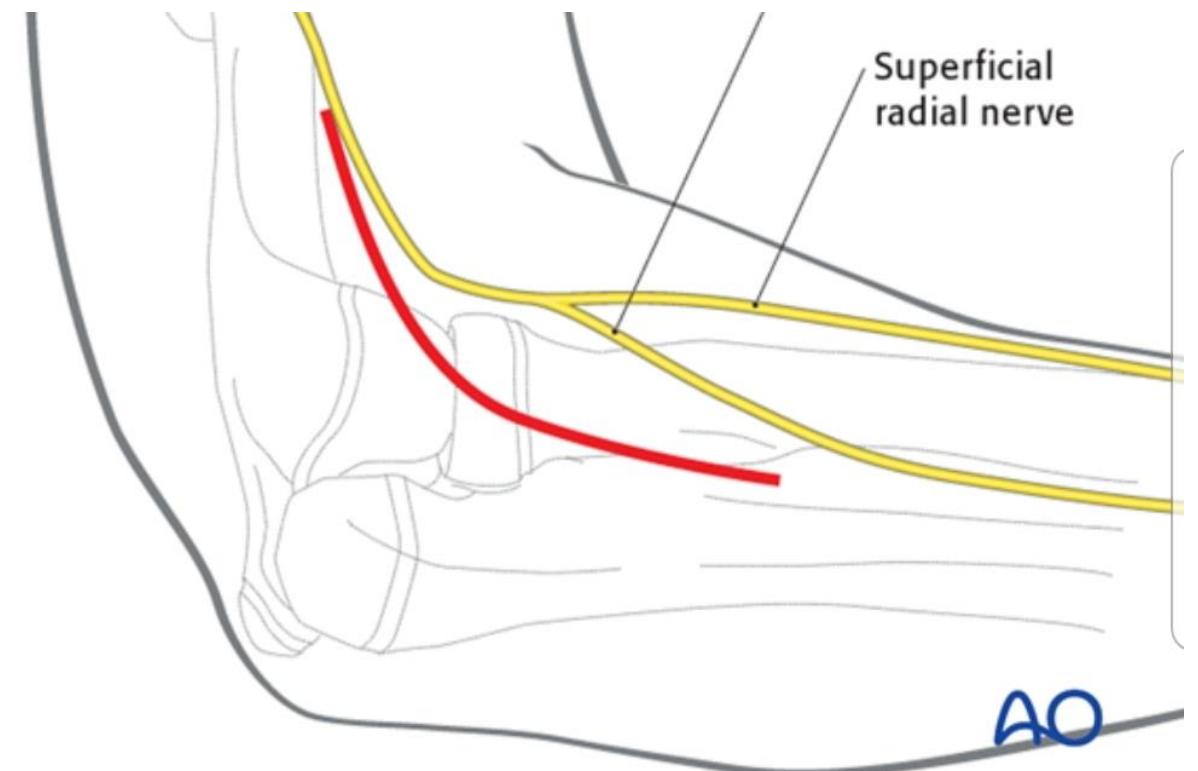


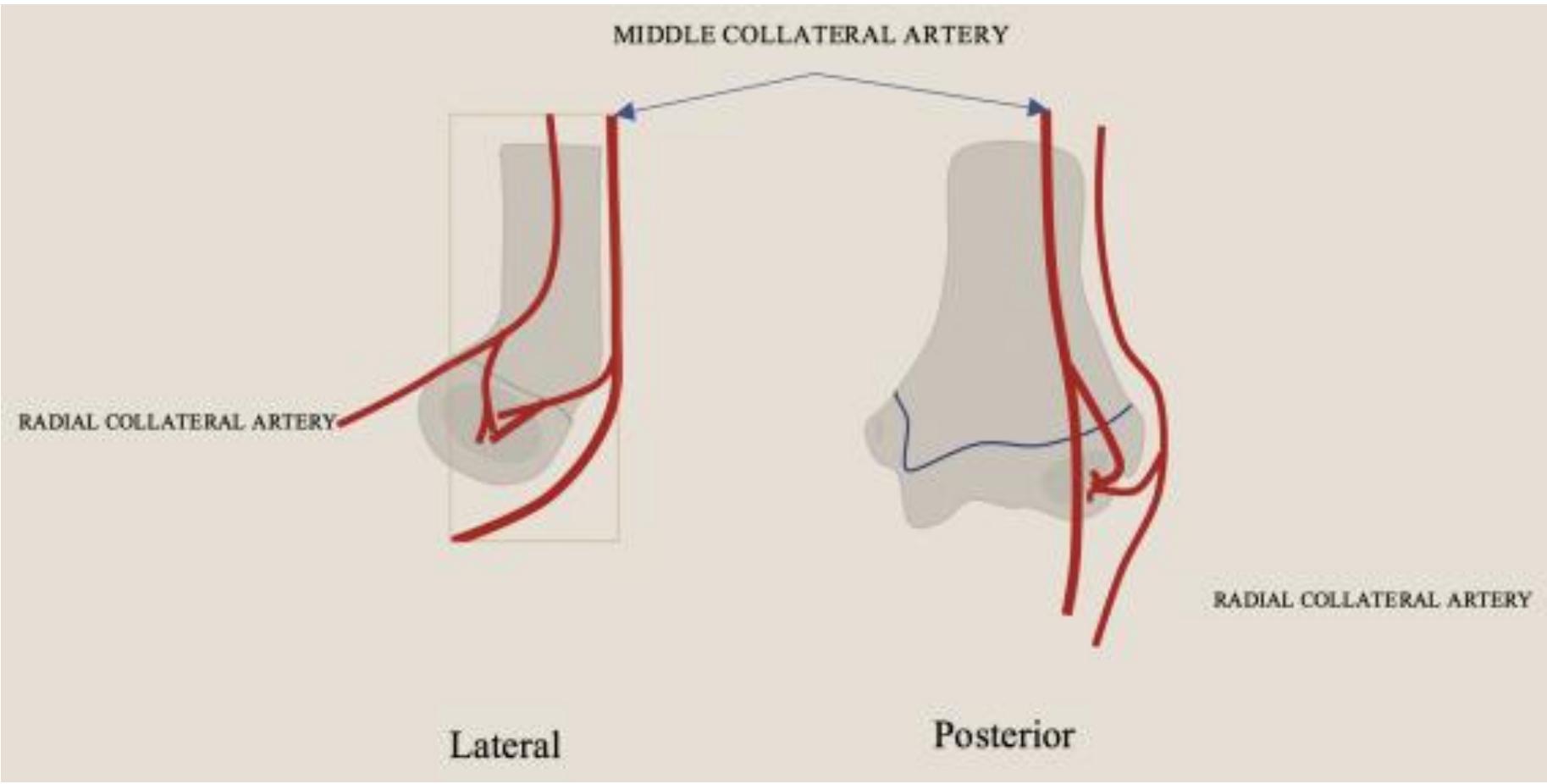
- Percutaneous Pinning
- stage II
 - displacement (2 to 4 mm)

joystick



- ORIF
 - Kocher approach
 - blood supp
 - cast 4 to 6 weeks

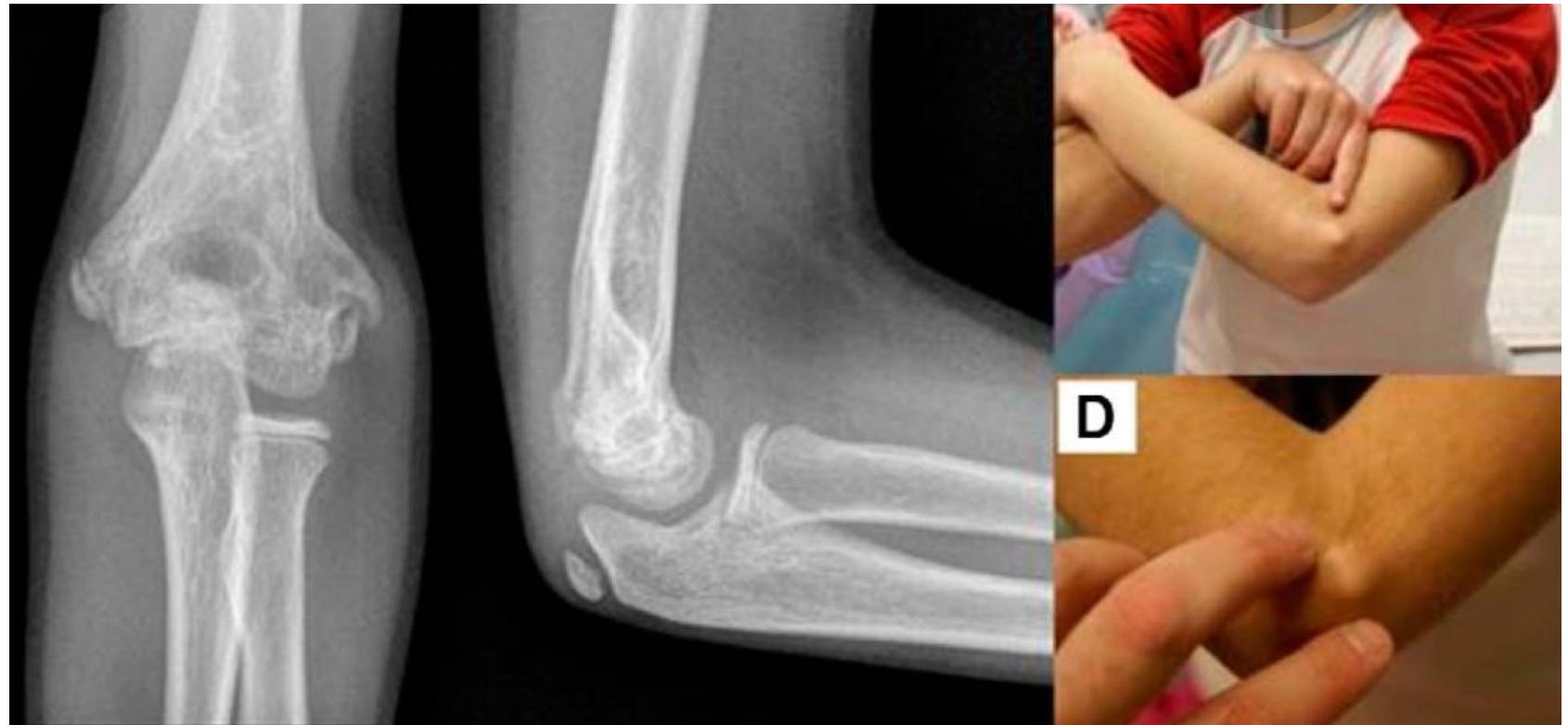




Complications

Lateral Spur Formation

- 75%



- pseudovarus
- displacement
- periosteal flap
- 1 to 2 years.



Cubitus Varus

- 40%
- reduction
- growth stimulation



Cubitus Valgus

- not nonunion
less common



Physeal Arrest

- 20% of humeral growth
 - valgus
 - fishtail deformity in some patie

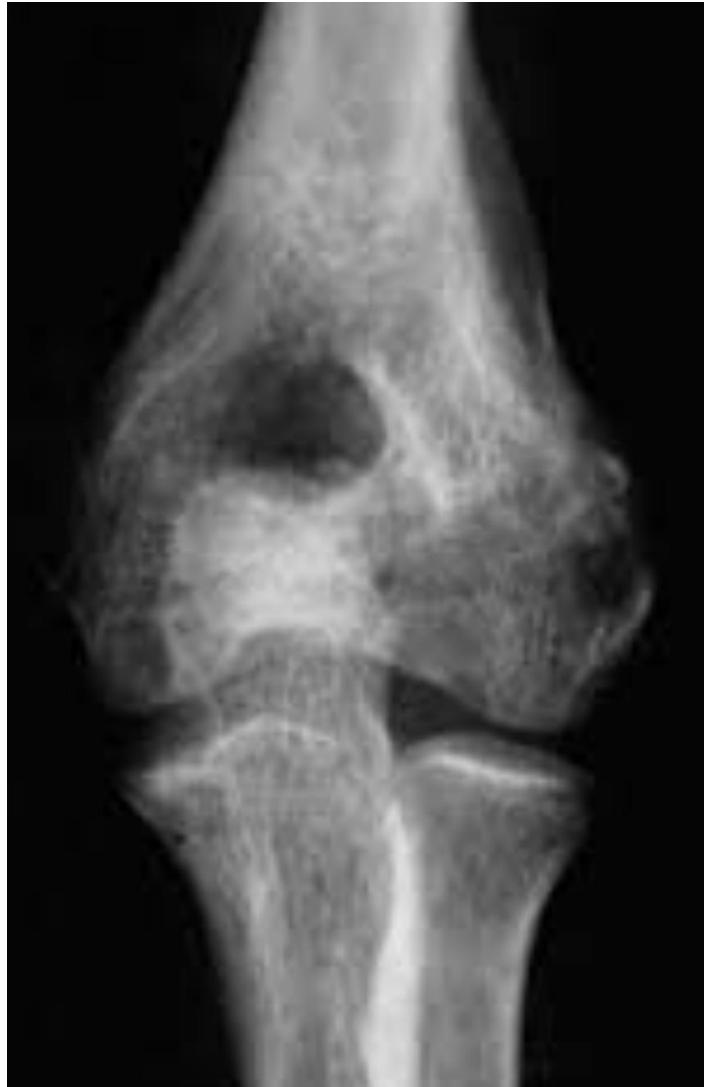


Fishtail Deformity

- Two types
 - more common
 - sharp-angled wedge
 - Crista



- second type
 - smooth curve
 - larger growth arrest



- Osteonecrosis
 - iatrogenic
 - the time of injury
- Partial
 - osteochondritis dissecans



- metaphyseal

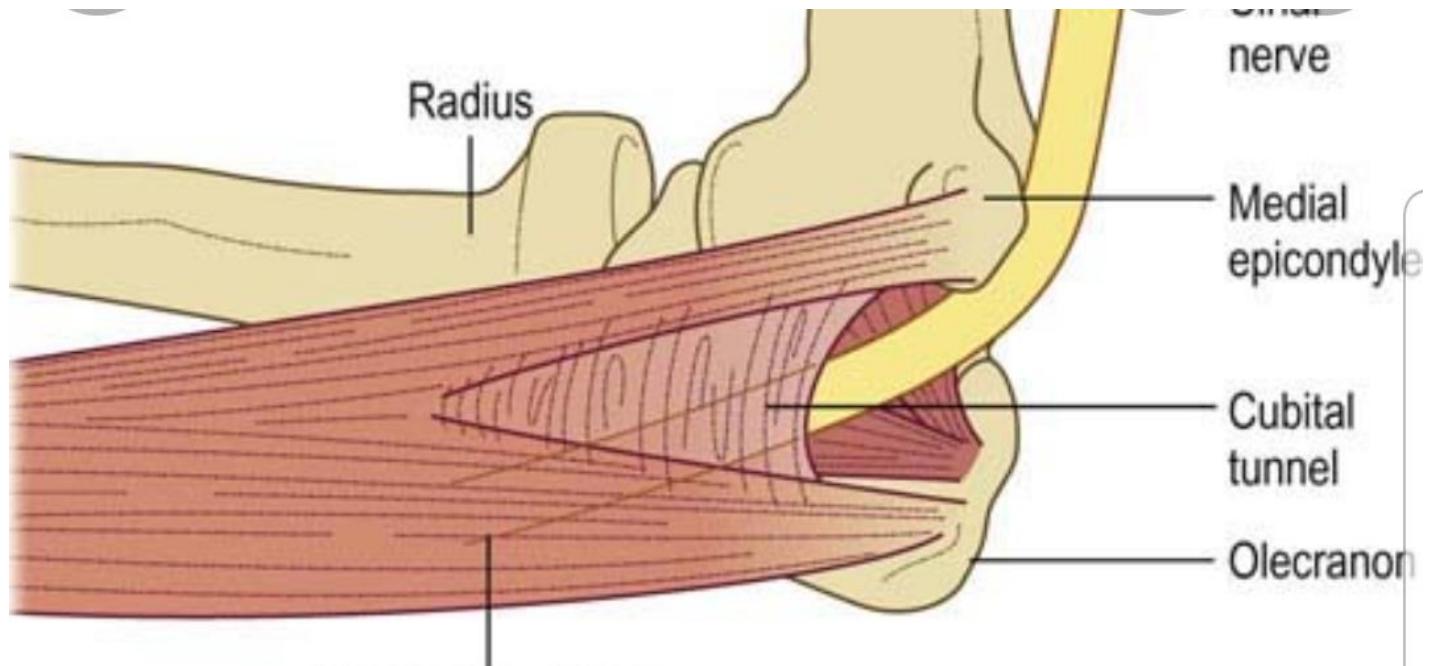


- Central
 - Impingement
 - osteochondral injury
 - loss of motion
 - pain

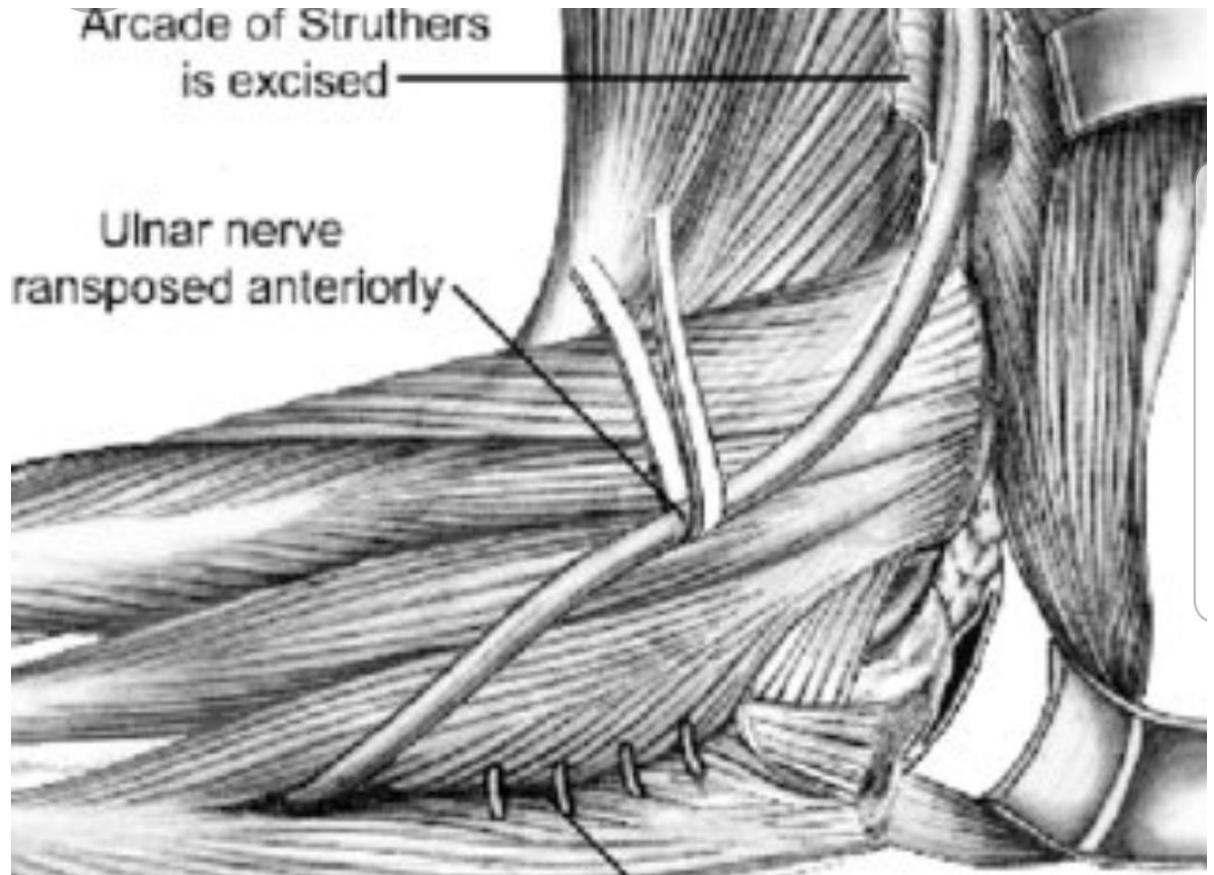


Neurologic Complications

- acute
- tardy ulnar nerve palsy



- cubitus valgus
- Motor loss first
- anterior transposition



Malunion

- valgus
- bifid lateral condy



Delayed Union

- circulation
- articular fluid
- extensor musculature
- displacement >1 mm
- Delayed reduction > 3 weeks



Nonunion

12 weeks

not displaced

minimal dissection

screw fixation

laterally placed bone graft.



displaced : staged

ulnar nerve transposition

bone grafting and fixation in situ

osteotomy



Capitellar Fractures

rare



Classification

more common



A

Type I



B

Type II



C

Type III



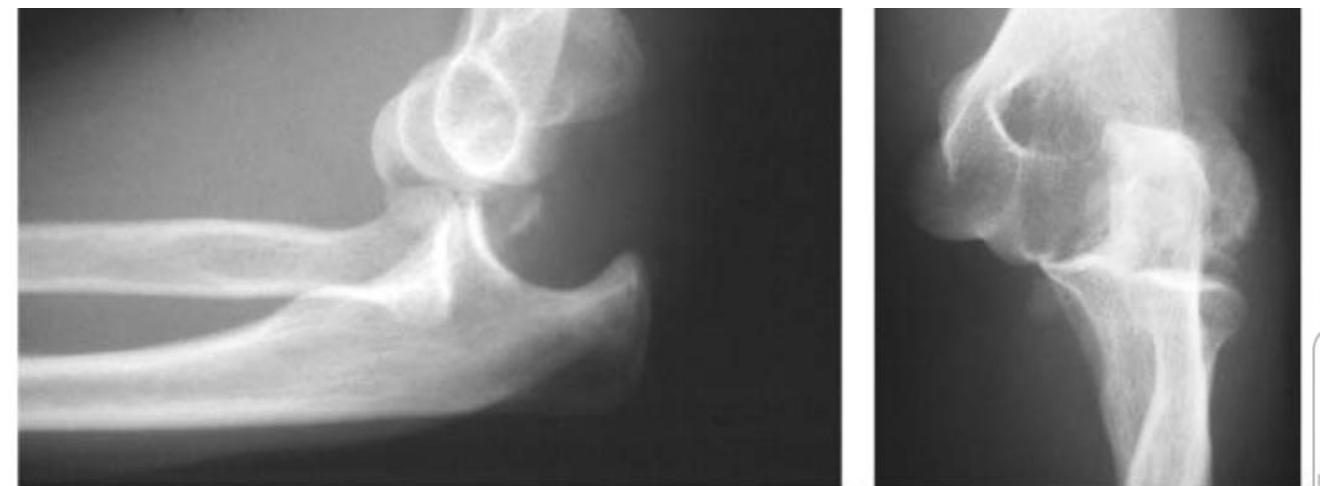
D

Type IV

Mechanism

- type I (anterior shear)
- type II (posterior shear), elbow dislocations

most common



Diagnosis

- AP
Oblique



- younger
- arthrography
- MRI
- CT



Treatment

nondisplaced

- Closed

large

limited bone

- from anterior



- Old
- Comminution
- little bone .
- excise the fragment
- early motion

