



Ep 12 - Supracondylar Humerus Fractures - Dr. Weiss



(Ebmconsult.com)

History/Physical

Most common elbow fxs seen in children

- Age range commonly is bt **5-7 yo**
- Boys > Girls
- Often non dominant side

MOI: Fall on Outstretched arm

Extension type most common (98%) vs Flexion type

- Often presents with Pain and Refusal to move the elbow
- Limited active Elbow ROM



- Must evaluate the full extremity to rule out any forearm fx (Compartment syndrome risk increased)
- Look for swelling, ecchymosis, and **skin puckering** (could represent proximal segment piercing brachialis muscle), r/o open fx
- **Vascular assessment**
- **Palpate/ Doppler Radial pulse**
 - **Class 1 - Warm and Red (Hand well perfused w/ radial pulse present)**
 - **Class 2 - Warm red (Hand well perfused w/ radial pulse absent)**
 - **Class 3 - Cool and blue or blanched (Hand poorly perfused and the radial pulse is absent)**

Careful Neuro Exam must be recorded

- **AIN MC injured w/ extension type** (paralysis of flexors of IP and DIP of thumb and index finger respectively)
- Ulnar nerve palsy seen in flexion type injury
- Media nerve palsy

Imaging

- True AP of distal humerus and True Lateral of the elbow
- Posterior fat pad sign
- **Anterior humeral line should cross the capitellum through its middle third**
(Extension Type- Capitellum is posterior to this line)
 - May be different in kids <4y/o
- Baumann Angle
 - angle between the long axis of the humeral shaft and the physis of the lateral condyle (Normal 9-26 degrees)
 - May be different in kids <4y/o

(Examples on next page)



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Classification

Classification

Gartland Classification

Type 1:

- Nondisplaced or minimally displaced
- Intact anterior humeral line
- +/- posterior fat pad sign
- Stable fractures

Type 2:

- Displaced
- Posterior cortex intact, Posterior hinge intact
- No Rotational Deformity
- Deformity only in the sagittal plane
- Ant humeral line does not go through middle third of the capitellum



Type 3

- Displaced
- Minimal cortical contact
- Usually displaced in extension in the sagittal plane, Rotation in the frontal plane

Type 4

- complete periosteal disruption
- Unstable in both Flexion and Extension
- Usually determined during exam under anesthesia
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Treatment

Gartland Type 1

- long arm cast immobilization- elbow at 90, forearm neutral
 - also for + posterior fat pad sign
 - Serial radiographs to monitor. rtc in 1 week
- Gartland Type 2
 - IIA- closed reduction + casting. Observe for reduction loss
 - IIB- closed reduction and pinning
- Gartland Type III
 - Closed reduction and pinning- can do semi-sterile.
 - Then splint in 60-80 of flexion
 - Xrays 1 week post op- good reduction> overwrap w/ fiberglass
 - 3-4 weeks- remove K wires, remain in sling 1-2wk
- Gartland type IV
 - Modified pinning technique- fluoro- pre-place K-wires into distal fragment before reduction
 - ORIF- if cant close reduce or open fx. Anterior approach



- Pink, pulseless hand
 - cap refill but no radial pulse
 - reduce + pin in OR.. if after
 - hand has good cap refill- plaster in 40-60 flexion
 - if no go cap refill- vasc exam performed, possible vessel repair- prophylactic fasciotomies
 - no arteriography cause it delays reduction and causes vasospasm
- Ok to delay type III supracondylar fx to 12-18 hours from injury

- Pin configuration
 - two crossed pins- greatest resistance to rotation thru mediolateral crossed-pinning configuration
 - lateral pin- proximal to capitellum in metaphysis
 - one pin anterior to ulnar groove in medial epicondyle. Cross fx site in middle of humerus
 - two lateral pins + one crossed pin

Complications

Compartment syndrome

Cubitus Varus

Pin Track Infections

Nailed It Ortho podcast episode

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