Compartment Syndrome of the Hand

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Thanks to Green’s Operative Hand Surgery

Compartment Syndrome of the Upper Extremity

- Volkmann 1881
- Basic science developed in the 1970’s-80’s
- 8 hour muscle ischemia established
Compartment anatomy

Hand CS Etiology
- Blunt trauma
- Adjacent fractures
- Snake bite
- Burns-chemical/thermal
- Infections
- Hemorrhage
- IV infiltration
- Post viral rhabdomyolysis

- Red Flags on x-rays -
  - Across the board CMC fx/disloc (Index – small)
  - Severe distal radius fractures
  - Intercarpal dislocations-especially volar lunate dislocation

5 P’s of CS do not work so well
- No sensory nerves in most hand compartments so no “canary in the coal mine” (x CTS)
- Variable reliability of physical exam in the hand
- Hand CS rare- less experience

- Pain- of course!
- Paresthesias- not likely except if CTS also
- Paralysis- hard to identify with extrinsic flexor overlay
- Pulselessness
- Palor- not reliable
Best Diagnostic Tools

- High index of suspicion - hand looks like a toad
- Progressive and unusual pain
- Passive stretch of intrinsics (MP extension)
- Whitesides pressures (w/i 10-20mm Hg of diastolic)
- Low threshold for compartment release

Which compartments?

- 6 incisions gets them all - watch for sub compartments
- +/- CTR depending on median nerve

Post Op Management

- Splint is “safe position”
- Consider negative pressure dressing prn
- Close wounds as possible in a few days vs skin graft
- Get them into hand therapy ASAP to keep joints supple
Do not forget digital CS

- Mid axial incision
- Release Cleland’s and Grayson’s ligaments
- No muscle - can release beyond 24 hours

This is what to avoid

- RN gets her hand stuck in vacuum system at work for 20 minutes-on chemo for lymphoma
- Presents to me 1 week post injury
- 15 months later-intrinsic minus posture-MP extension/IP flexion

Functionally Useless
Hand CS Pearls

This is a Clinical diagnosis

Unreliable PE
+/- Whitesides pressure measurements
Early faciotomies- avoid decompression past 24 hours
Splint properly and start therapy soon