Compartment Syndrome of the Hand

Stephen McCollam M.D.

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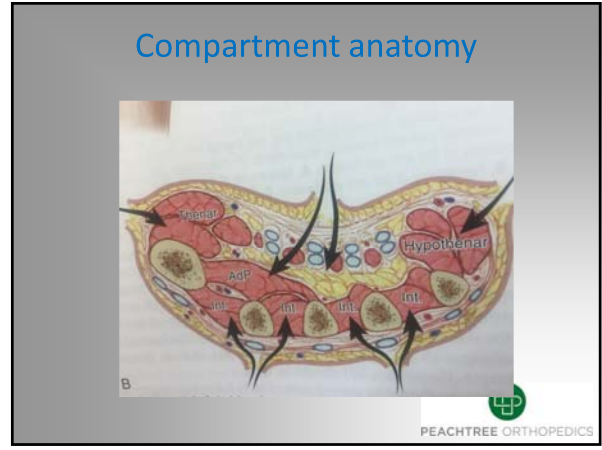
Thanks to Green's Operative Hand Surgery

PEACHTREE ORTHOPEDICS

Compartment Syndrome of the Upper Extremity

- Leversedge, et al. Journal of Hand Surgery 2011; 36A: 544-560
- Volkmann 1881
- Basic science developed in the 1970's-80's
- 8 hour muscle ischemia established

Compartment anatomy



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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

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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

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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

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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

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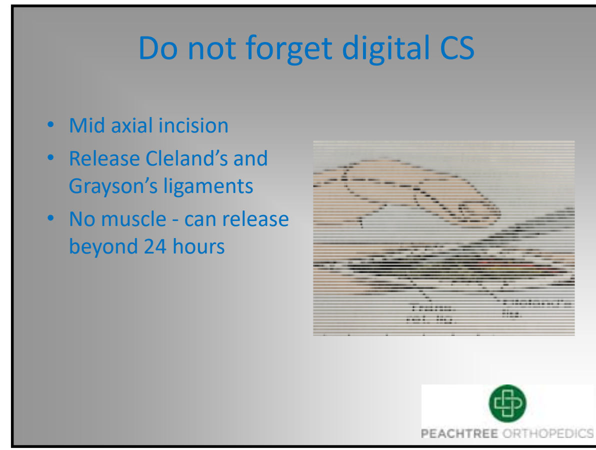
Do not forget digital CS
• Mid axial incision
• Release Cleland's and Grayson's ligaments
• No muscle - can release beyond 24 hours
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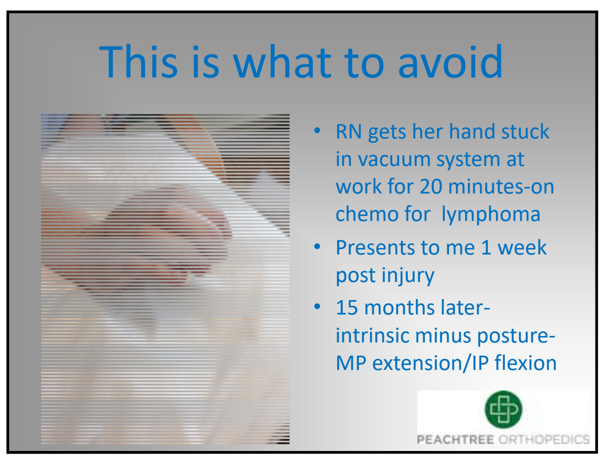
This is what to avoid
• RN gets her hand stuck in vacuum system at work for 20 minutes-on chemo for lymphoma
• Presents to me 1 week post injury
• 15 months later- intrinsic minus posture- MP extension/IP flexion
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Functionally Useless
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Hand 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

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