The Hand Exam: Tips and Tricks

Nikki Strauss Schroeder, MD
Assistant Clinical Professor, UCSF Department of Orthopaedic Surgery
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Outline

- Hand Anatomy
- Exam
- Management of ER/traumatic injuries

Surface Anatomy
- hyponychium
- Sterile matrix
- Germinal matrix
- eponychium
- lunula
- paronychium

- Distal Phalanx
- Middle Phalanx
- Proximal Phalanx

- Hand Radiograph
- Metacarpals
- Carpals

- Wrist radiograph
  - Trapezoid
  - Hamate
  - Capitate
  - Trapezium
  - Pisiform
  - Scaphoid
  - Triquetrum
  - Lunate
  - So Long To Pinky, Here Comes the Thumb

- Finger Radiographs
Hand Motion

Abduction
Adduction

Supination Pronation

Radial, ulnar

Allen's Test

Digital Allen's test

Doppler

Vascular exam

Clinical appearance

Radial

Allen

Diplopia

Dorsal

Thumb Motion

Extension Flexion

Opposing thumb to finger

Anteposition (opposition)

Retroposition

Radial abduction

Palmar abduction

Adduction

Allen’s Test

Retroposition

Anteposition (opposition)
What nerves provide sensation to the hand?

- **Median**
  - Palmar cutaneous branch
  - Digital nerves to thumb, index, and middle and radial half of ring fingers
- **Ulnar**
  - Dorsal and palmar cutaneous branches
  - Digital nerves the small, ulnar half of ring finger
- **Radial**
  - Sensory branch

Sensation: quick and dirty
Sensory exam: 2-point discrimination

- Normal = 2.5-6 mm
- In kids, see if hand wrinkles when placed in water

Motor exam

- Median
  - Anterior Interosseous
  - Recurrent motor branch
- Radial
  - Posterior Interosseous
- Ulnar

Motor exam: quick and dirty

- Median - thumb palmar abduction (touch tip of small finger)
- AIN - OK sign
- Ulnar - spread index and long finger apart (peace sign)
- Radial/PIN - retropulse thumb (palm flat on table, extend thumb)
Specific Tests- FDS/ FDP

ER Cases...

ER Management
- Patient Stabilization
- Evaluation for other injuries
- Complete but brief assessment
- Tetanus, Antibiotics, Irrigation
- History
- Physical Exam
- Imaging

The ER Hand Exam
ER History
- Age, Hand Dominance, Occupation
- Mechanism of Injury
- Onset/Location/Duration
- Exam

The ER Hand Exam
- Inspect
  - Document wound location (finger, volar/dorsal, radial/ulnar), size
- Sensory Exam
  - 2PD
  - It's OK to do a digital block after sensory exam is done!!
- Motor exam
  - FDP/FDS, extensors, EPL
  - Range of motion/Rotation
- Vascular
  - Digital Allen’s, Doppler

Imaging
- Is there a fracture?
- Is there a dislocation?
Choosing the right imaging…

Case 1

Case 2

Case 3
Hand Emergencies

- Replants
- Revascularizations
- Flexor Tenosynovitis
- Compartment Syndrome
- Acute Carpal Tunnel Syndrome

Amputations: Field E&M

- Control with
  - Direct pressure
  - Rare tourniquet (temporary use only)
  - No clamps
  - Elevate arm

Field E&M

- Save all parts!!!
- Place parts in moist (Ringers) gauze and into a plastic bag
- Bag is placed on ice. NO dry ice!
- Urgent transfer to ED- Surgical emergency

ER Management

- Patient Stabilization
- Evaluation for other injuries
- Complete but brief assessment
- Tetanus, Antibiotics, Irrigation
- History
- Physical Exam
- Imaging

The bleeding arm that won’t stop

- Please LET THE TOURNIQUET DOWN and assess the wound
- Direct pressure stops bleeding MUCH better

Hand Emergencies: Revascularizations

Hand Emergencies: Flexor Tenosynovitis
**Flexor Tenosynovitis: Kanavel Signs**
- Flexed resting position of the digit
- Fusiform swelling
- Tenderness to palpation of the flexor tendon sheath
- Pain on passive digital extension

**Hand Emergencies: Compartment Syndrome**
- Rare entity
- Does not include flexor tenosynovitis
- 10 compartments of the hand
  - Dorsal and palmar IO
  - Thenar, hypothenar
  - Adductor
  - Carpal Tunnel

**Acute Carpal Tunnel Syndrome**
- 1-10% incidence with distal radius fractures
- Typically high-energy injury
  - Peri-lunate, lunate dislocations
- Document 2PD prior to reduction and post-reduction
- Elevate, check again within 1-hour after reduction

**High Pressure Injection Injuries**
What about the artery that just won’t stop bleeding?

- Ex: Isolated ulnar or radial artery
- In a perfused hand:
  - Direct pressure…. Up to 1 hour of compression
  - Likely a shear injury to vessel
  - If doesn’t stop, OR to ligate vs repair

Conclusions

- Hand Anatomy
- Radiographs
- Physical Exam
- Specific ER Cases
  - Obtain the correct radiographs
  - Do sensory exam first, then OK to do a block!

Thank You

- Nikki Schroeder
- schroedern@orthosurg.ucsf.edu