US of the Hand and Wrist

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Outline

- Basic anatomy
- Tendinosis
- Inflammatory disorders
- Trauma
- Nerve entrapment
- Masses

Dorsal Wrist

First Extensor Compartment

DeQuervain’s Tenosynovitis

DeQuervain’s Tenosynovitis
DeQuervain’s Tenosynovitis

4th Extensor Compartment Tenosynovitis

Intersection syndromes

Proximal intersection syndrome

Distal intersection syndrome

Distal intersection syndrome
Trigger Finger

Trauma

- Tendon rupture
- Gamekeeper thumb
- Fracture
- Pulley injury
- Ligament tear

Normal flexor tendons

FDP rupture

Gamekeeper thumb

Gamekeeper thumb
Steiner lesion

Pulley rupture

Normal A2 Pulley

A2 Pulley injury

Ulnar Styloid Fracture

Normal Dorsal Scapholunate Ligament
Dorsal Scapholunate Ligament Tear

Triangular Fibrocartilage Complex

Peripheral TFCC Tear

Entrapment neuropathy
- Carpal tunnel
- Guyon tunnel

Carpal Tunnel

Carpal Tunnel Syndrome Criteria
- Cross-sectional area of median nerve at distal wrist crease
  - Up to 0.09 sq cm is normal
  - Greater than 0.12 sq cm is abnormal
  - 0.09 to 0.12 sq cm: “gray zone”
- Other signs
  - Thickening of flexor retinaculum
  - Flattening of median nerve within tunnel

Carpal Tunnel Syndrome Study
- 100 wrists in 68 patients
- Clinical/EMG gold standard
- Measure median nerve at proximal third of pronator quadratus (CSAP)
- Measure median nerve at carpal tunnel (CSAC)
- CSAC minus CSAP > 0.02 sq cm
  - 99% sensitive
  - 100% specific

Normal Median Nerve Measurement

Carpal Tunnel Syndrome

Secondary Carpal Tunnel Syndrome in RA

Bifid Median Nerve with Persistent Median Artery
Bifid Median Nerve with Persistent Median Artery

Volar Wrist Ganglion

Finger Ganglion

Finger Ganglion

Rheumatoid Nodule on Extensor Surface of Finger
RA in Wrist Lifting Radial Artery

Giant Cell Tumor of Tendon Sheath

Rheumatoid Nodule Color Doppler

Rheumatoid Nodule on Flexor Surface of Finger

Vascular Malformation

Glomus Tumor Not Seen on MRI
Retained foreign bodies

Hyperemia Around Foreign Body

Abscess

Conclusion

- US is useful in a wide variety of abnormalities in the hand and wrist
  - Inflammation
  - Trauma
  - Entrapment neuropathies
  - Masses
  - Foreign bodies