US of the Hand and Wrist

Andrej Lyshchik, M.D., Ph.D
Department of Radiology
Thomas Jefferson University Hospital

Educational Objectives

- Following the presentation, participant should be able to:
  - Identify wrist anatomy on US
  - Describe common wrist pathologies seen on US

Outline

- Inflammatory disorders
- Trauma
- Nerve entrapment
- Masses

Inflammatory disorders

- Tenosynovitis
- Synovitis
- Erosions

Dorsal Wrist

First Extensor Compartment
Distal intersection syndrome

Pulley anatomy

Trigger Finger

A1 pulley
Trigger Finger

Trauma

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

Normal flexor tendons

FDP rupture

Gamekeeper thumb
Gamekeeper thumb

Gamekeeper thumb - Stener 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**
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