Scanning Technique: Wrist and Hand

Jon A. Jacobson, M.D.
Professor of Radiology
Director, Division of Musculoskeletal Radiology
University of Michigan

Disclosures:
• Consultant: Bioclinica
• Advisory Board: Philips
• Book Royalties: Elsevier
• None relevant to this lecture

Note: all images from the textbook
Fundamentals of Musculoskeletal Ultrasound are copyrighted by Elsevier Inc.

Technique: volar
• Median nerve
• Flexor tendons
  – Flexor carpi radialis and radial artery
  – Occult ganglia
• Volar joint recesses

Normal Peripheral Nerve
• Ultrasound appearance:
  – Hypoechoic nerve fascicles
  – Hyperechoic connective tissue
• Transverse:
  – Honeycomb appearance


Carpal Tunnel: boundaries

Proximal
Scaphoid
Lunate
Trapezium
Hamate
Distal
Median Nerve
Note: transverse carpal ligament (white arrows) and median nerve (yellow arrows)

Median Nerve
• Palmar cutaneous branch
• Outside of carpal tunnel and retinaculum (white arrowheads)
• Adjacent to flexor carpi radialis

Tagliafico et al. AJR 2008; 197:107
Volar Wrist: joint recesses

- Sagittal T1w Long Axis
- Radius
- Lunate
- Capitate

Technique: volar
- Median nerve
- Flexor tendons
- Volar joint recesses
- Guyon canal
  - Ulnar artery and nerve

Volar Wrist: Guyon's canal

- Axial T1w Short Axis
- Ulnar Artery
- Pisiform

Volar Wrist: ulnar nerve

- Sagittal T1w Long Axis
- Hamate Hook

Ulnar Nerve
- At hook of hamate
- Sensory branch:
  - Superficial to hook
  - One or two trunks
  - White arrows
- Motor branch:
  - Ulnar side of hook
  - Yellow arrow

Technique: volar
- Median nerve
- Flexor tendons
- Volar joint recess
- Guyon canal
- Scaphoid and flexor carpi radialis
Volar Wrist: scaphoid and FCR

Technique: dorsal
- Extensor tendons

Dorsal Wrist

Dorsal Wrist: 4th and 5th compartments

Dorsal Wrist: 6th compartment

Technique: dorsal
- Extensor tendons
- Dorsal joint recesses

Note: normal hypoechoic cleft
Dorsal Wrist: joint recesses

Technique: dorsal
- Extensor tendons
- Dorsal joint recesses
- Scapholunate ligament

Dorsal Wrist: scapholunate ligament

Technique: dorsal
- Extensor tendons
- Dorsal joint recesses
- Scapholunate ligament
- Triangular fibrocartilage complex

Dorsal Wrist: TFCC

Technique: digits
- Flexor tendons
- Pulley system
- Extensor tendons
- Joints
Digit Pulley System

Flexor Tendons: short axis

Ulnar Collateral Ligament: thumb

Note: sliding of adductor aponeurosis with isolated interphalangeal joint flexion

E-mail: jjacobsn@umich.edu
Twitter handle: @jjacobsn