

## Ultrasound Evaluation of Upper Limb Entrapment Neuropathies (non-CTS)

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## Brachial Plexus and Thoracic Outlet Syndrome

- Traumatic Brachial Plexopathy
- Non-traumatic Brachial Plexopathy
  - Post-radiation
  - Malignant Infiltration
- Thoracic Outlet Syndrome
- Neuralgia Amyotrophy

## Learning Objectives

- Review the Basis Anatomy and Echogenic Appearance of Commonly Evaluated Nerve Structures and Surrounding Musculoskeletal and Vascular Landmarks in the Upper Limb.
- Identify Common Indications for Using High Frequency Ultrasound to Evaluate Upper Limb Entrapment Neuropathies.
- Learn the Relative Utility of Using High Frequency Ultrasound in Upper Limb Entrapment Neuropathies.
- Review Common Musculoskeletal Indications for High Frequency Ultrasound in the Shoulder and Elbow

## Other Nerves about the Neck and Shoulder

- Spinal Accessory
- Phrenic
- Suprascapular
- Axillary
- Musculocutaneous

## Common Indications for Ultrasound of the Upper Limb

- Soft tissue injuries
- Tendon pathology (tendonopathy, tenosynovitis and tears)
- Arthritis
- Soft tissue masses or swelling
- Nerve entrapment
- Effusion
- Bone Injury
- Ligament Injury

<http://www.aium.org/publications/guidelines/musculoskeletal.pdf>

## Shoulder Checklist

- Biceps brachii long head
- Subscapularis, biceps tendon dislocation
- AC Joint
- Infraspinatus, Teres Minor, Post Labrum
- Supraspinatus

## Elbow Examination


- FOUR Quadrant exam:
- Anterior
- -Biceps tendon
- -Joints
- Lateral (epicondylitis)
- - Common extensor tendon
- - Radial collateral ligament (RCL/Annular)
- Medial (epicondylitis)
- - Common flexor tendon
- - Ulnar collateral ligament (UCL)
- - Ulnar nerve
- Posterior
- - Triceps tendon
- - Joint effusions
- - Olecranon bursitis

## Radial Nerve at Arm

## Nerves

- Radial
- Ulnar
- Median
  - Anterior Interosseus

## Radial Nerve Below Elbow



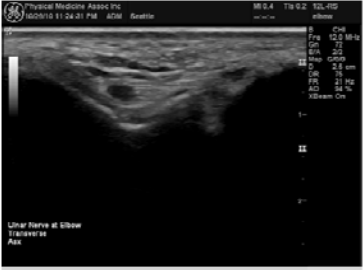
## Radial Nerve - Short Axis

HC

RH

RN

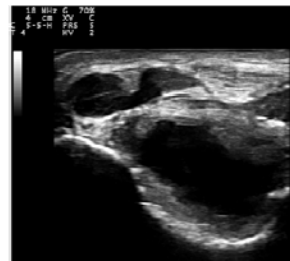
## Ulnar Nerve at the Elbow



## Ulnar Nerve - Longitudinal



## Posterior Elbow Effusion



## Ulnar Neuropathy



Figure 24-22. Ulnar nerve compression. The ulnar nerve is shown to be compressed at the proximal edge of the cubital tunnel beneath the arcuate ligament with subsequent bulging of the nerve. (From Osborne GV. Compression neuritis of the ulnar nerve at the

## Anterior Interosseus Nerve

## PM&R Resident with Occasional Ulnar Paresthesias

## Case

- 64yo woman with bilateral median nerve distribution numbness bilaterally. Presents for EDX after no improvement.



### Case: Post-Surgical Ulnar Nerve

- 60 year old with chronic hand numbness
- Prior left ulnar transposition with no perceived benefit 2 years ago.
- EDx shows generalized polyneuropathy including severe ulnar neuropathy at both elbows.

### Post-Surgical Elbow cont.

### Post-Surgical Ulnar Nerve cont.

### General References

- Blanch S, Martini C. *Ultrasound of the Musculoskeletal System*. Springer, New York.
- Martini C, et al. Tendons and nerve sonography. *Radiol Clin North Am*. 1998;37:891-911.
- Jacobson J. *Fundamentals of Musculoskeletal Ultrasound*. Saunders-Elsevier, Philadelphia.
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### Post-Surgical Elbow cont.