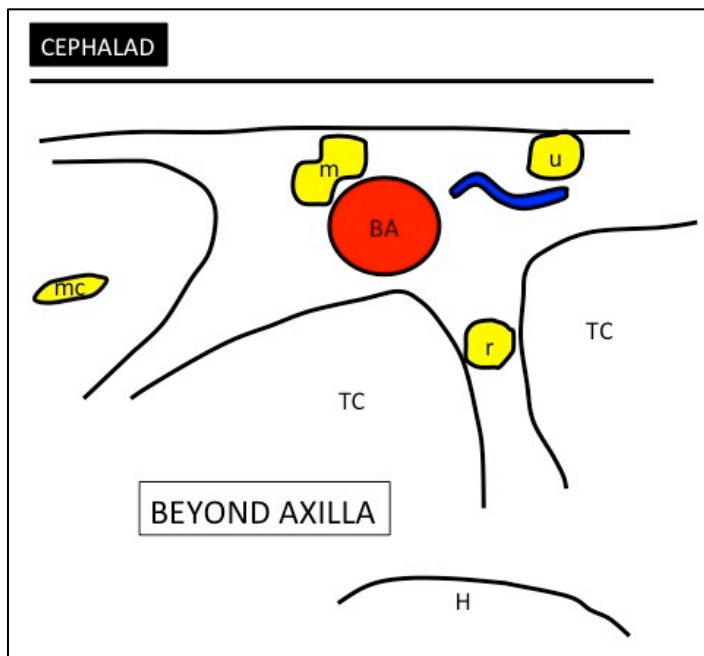
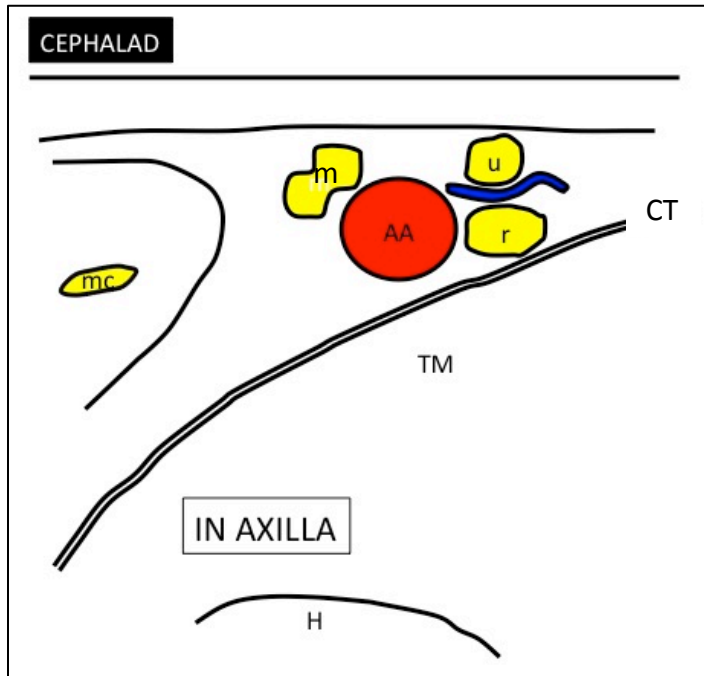


AXILLARY

D. Wong
M. Barrington

Toolbox: online modules 16; RAP lecture 3; hands-on module 6



Sonogram changes when transducer moves from axilla to just distal to the axilla. This is because the conjoined tendon (CT) and teres major (TM) are only imaged with transducer in the axilla. The radial nerve (R) has a close relationship with conjoined tendon proximally, but is located between triceps (TC) heads, more distally. The median nerve (M) maintains a close relationship to the brachial artery (BA) from axilla to antecubital fossa. The ulnar nerve (U) stays close to the superficial fascia of the arm. Veins are often close to the ulnar nerve. The musculocutaneous nerve (MC) is often seen within the coracobrachialis.

KEY STRUCTURES TO IMAGE

- AXILLARY/BRACHIAL VESSELS
- BICEPS/CORACOBRAHIALIS, TRICEPS
- CONJOINED TENDON OF THE LATISSIMUS DORSI AND TERES MAJOR
- HUMERUS
- TERMINAL BRANCHES OF BRACHIAL PLEXUS

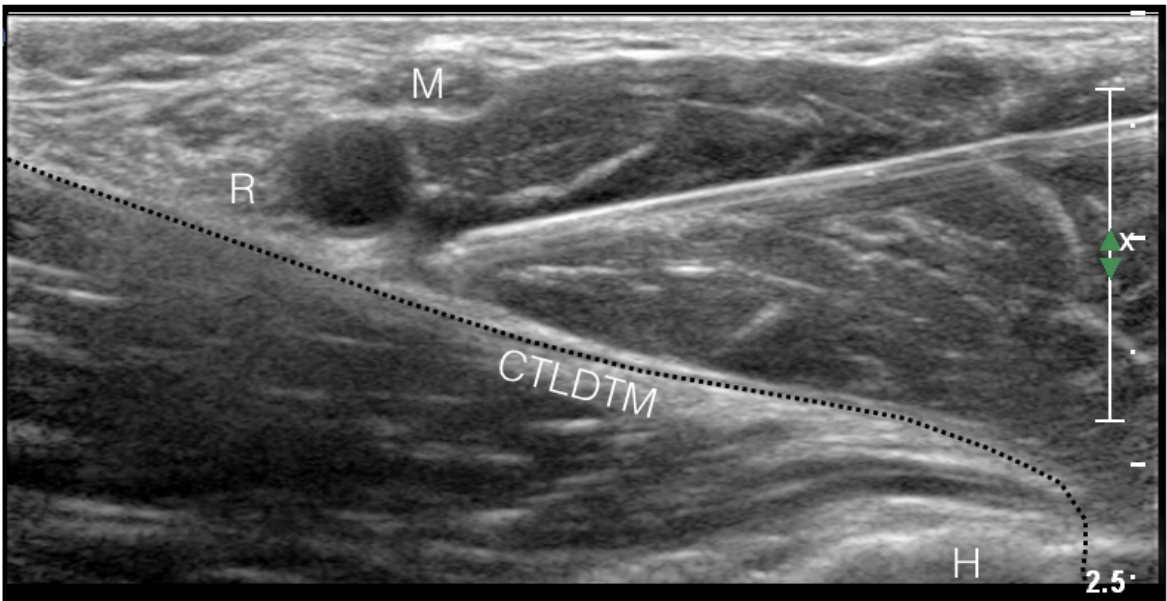
INDICATIONS

- Forearm surgery (e.g. ORIF radius and ulnar, ulnar shortening, wrist arthrodesis/arthroscopy)
- Carpal ORIF, carpectomy, metacarpal ORIF, proximal phalanx ORIF
- Fasciectomy hand, Dupuytren's contracture, A-V fistula, amputations, major tendon/nerve repair

Local anesthetic infiltration (rather than plexus blockade) is routinely used for minimally invasive and/or distal procedures of the hand/fingers (e.g. Carpal tunnel release, trigger finger release)

SUGGESTED LOCAL ANESTHETIC DOSAGES

- 20-30 mL 0.5 - 0.75% ropivacaine (surgical anaesthesia and analgesia). Consider 3-5 mL lignocaine or mepivacaine selectively applied to musculocutaneous nerve to allow earlier elbow flexion.
- 20-30 mL 1.5 - 2% lignocaine + adrenaline 1:200,000 or mepivacaine 1.5 – 2% (surgical anaesthesia only, e.g. renovascular access)
- Consider 0.2 - 0.375% ropivacaine for postoperative analgesia only, 0.2% ropivacaine, mepivacaine or lignocaine if early neurological assessment required



Sonogram adapted from Gray et al, 3rd ed. Atlas of Ultrasound-Guided Regional Anesthesia

H = humerus; CTLDTM, conjoined tendon of the latissimus dorsi and teres major muscles; R, radial nerve; M, median nerve



Photo credit: Dr Rowan Thomas

TIPS

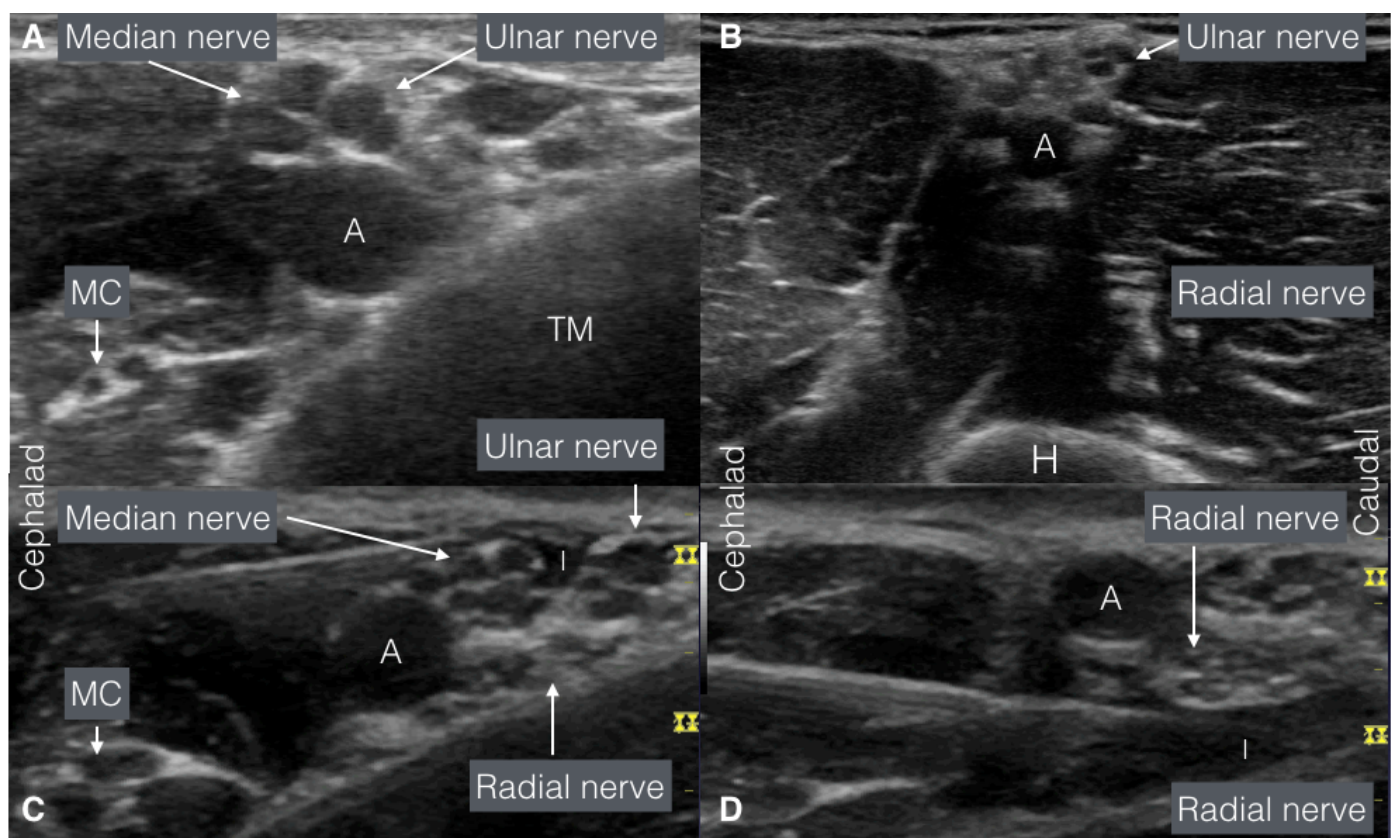
- Trace the nerves to elbow and return
- Consider deep target (radial) first

NEEDLE

50 – 100 mm

TRANSDUCER

- High or intermediate frequency linear transducer.



A = artery, axillary artery becomes brachial artery at inferior border of teres major; H, humerus; TM, teres major muscle; MC, musculocutaneous nerve. Identity of nerves can be confirmed by tracing the known course of nerves from axilla to elbow and reverse (best demonstrated on video). Image B captures still image of radial nerve during such a video, being traced from posterior humerus to the axilla. Images A and B are from same subject. Images C and D from same patient, demonstrate that nerves are more easily imaged following local anesthetic injection. Local anesthetic injectate, I (black on sonogram) is displacing the ulnar and median nerves apart and the radial nerve away from the conjoint tendon in images C and D respectively.

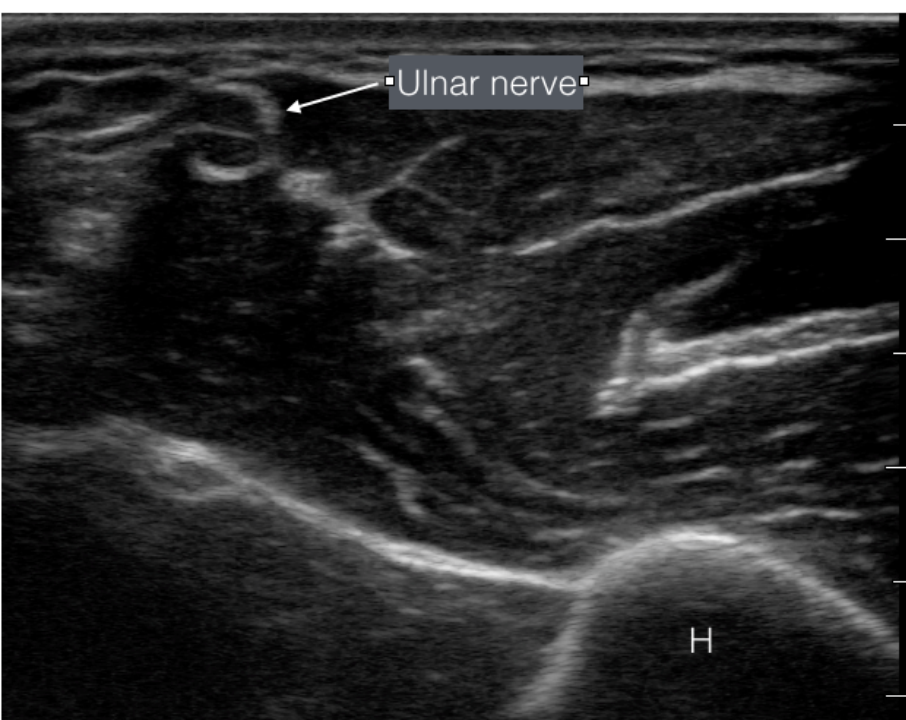


Image captures still image of ulnar nerve during video tracing ulnar nerve from medial epicondyle to the axilla