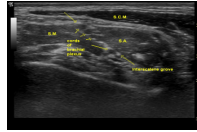


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Median nerve block

General difficulty rating: Easy-moderate

Equipment:

- High frequency probe (13-10MHz) as the nerve is usually 1-2cm deep to the skin
- 2-5mls of 1% lignocaine should be sufficient for 1-2 hours anaesthesia with a 5 minute onset
- The use of a 19G or 20G needle with a blunt tip

Median nerve block

Anatomy

The median nerve arises from the brachial plexus and is formed by branches of the lateral and medial cords. The nerve travels into the arm initially lateral to the brachial artery but subsequently crosses to the medial side of the artery in the antecubital fossa. It passes into the forearm by passing between the two heads of pronator teres and gives off the anterior interosseous nerve. It passes distally in the forearm between flexor digitorum profundus (FDP) and flexor digitorum superficialis (FDS). In the wrist, it lies under palmaris longus, lateral to the tendon of flexor digitorum superficialis, medial to flexor carpi radialis and gives off a palmar branch before passing under the flexor retinaculum.

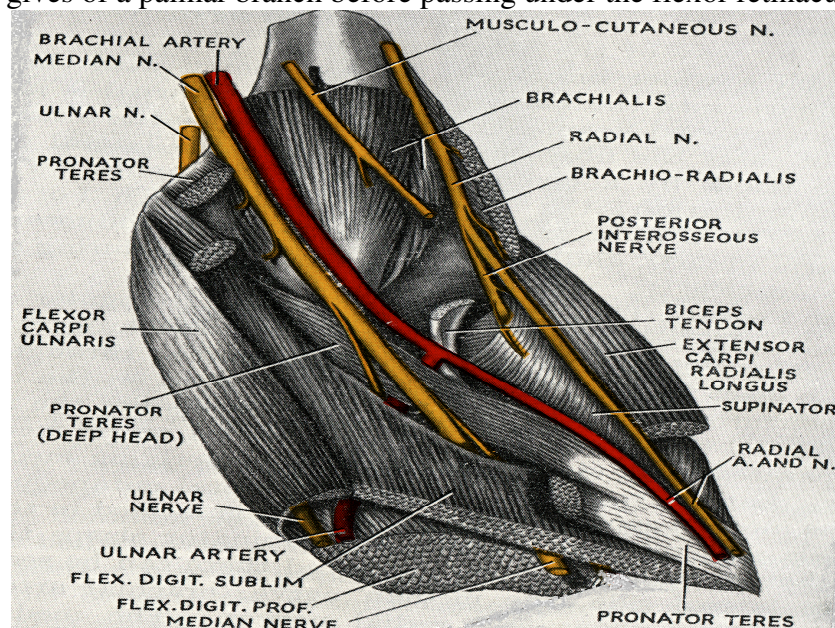
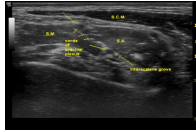


Figure 1: Flexor compartment at elbow dissected to show the relationships of the ulnar, radial, median and musculocutaneous nerves in the floor of the antecubital fossa.

Figure adapted from Lasts anatomy 4th edition page 116 figure77

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The median nerve supplies:

- Sensation to skin of radial half of the palm and extensor 3 ½ fingers including the finger tips and nail beds
- Elbow joint
- All superficial flexor muscles of forearm except flexor carpi ulnaris muscle(ulnar)
- All thenar muscles except adductor pollicis
- 1st and 2nd (i.e lateral) lumbricals
- Via the anterior interosseous branch (branches just below the elbow)
 - Supplies the wrist joint, distal radioulnar joint and the carpus
 - Flexor pollicis longus
 - Pronator quartaus
 - Lateral half of flexor digitorum profundus

Indications for median nerve block

Minor procedures involving the little finger and ulnar aspect of the hand (e.g. treatment of soft tissue injuries, reduction of finger / hand fractures such as boxer's fracture).

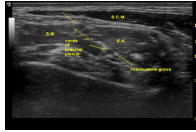
Ultrasound guided technique

The median nerve can be blocked at various points along its course:

- at brachial plexus
- mid-humeral
- **at elbow**
- **in forearm**
- **at wrist**

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Elbow

The median nerve lies medial to the brachial artery in a groove between biceps brachii and brachialis.

Positioning: place the probe on the medial surface of the arm just above the elbow.

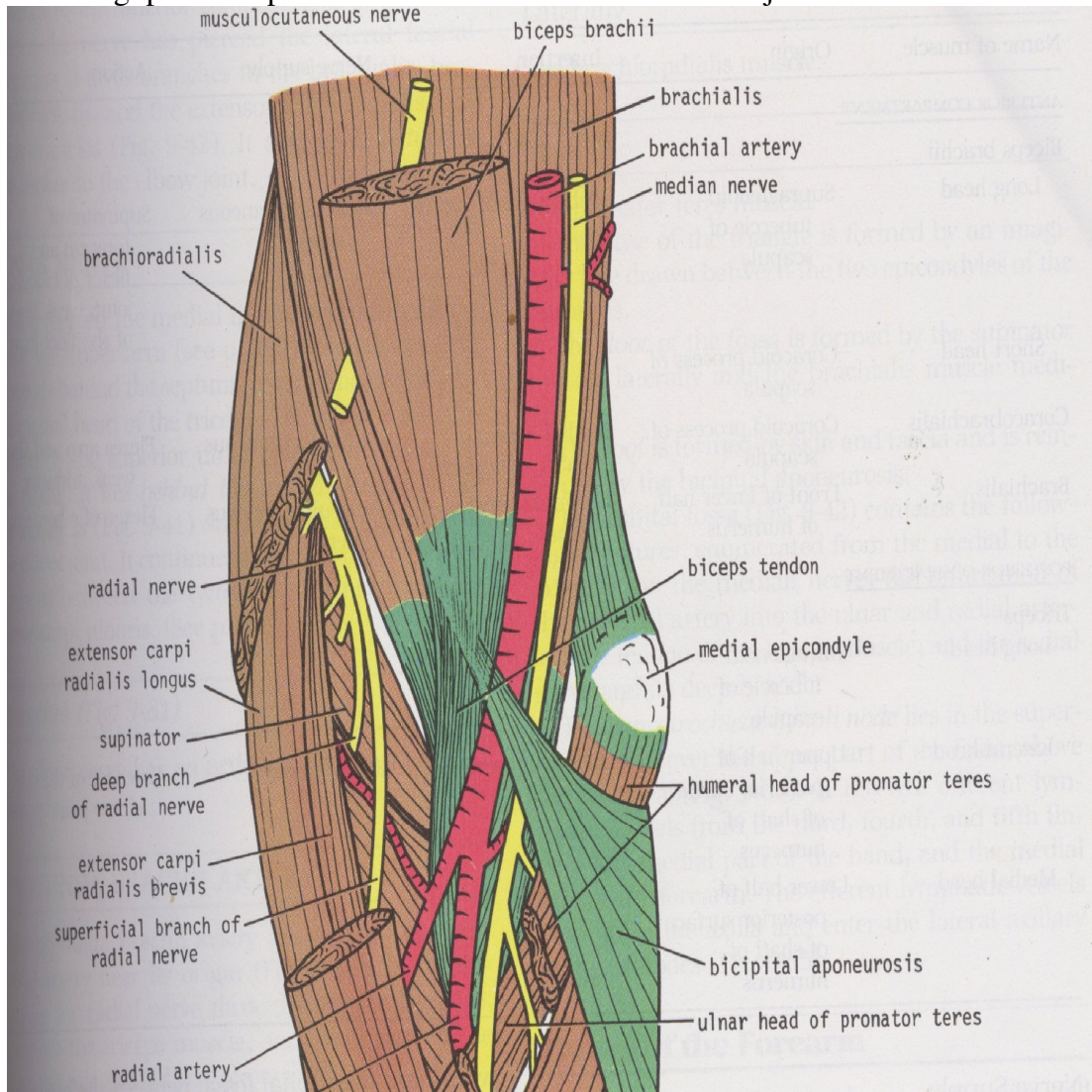
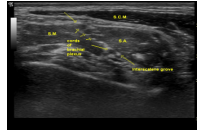


Figure 2 Anterior aspect of the elbow showing the median and radial nerves
Adapted from Snell 'Clinical anatomy for medical students' 3rd edition page 474 figure 9-47

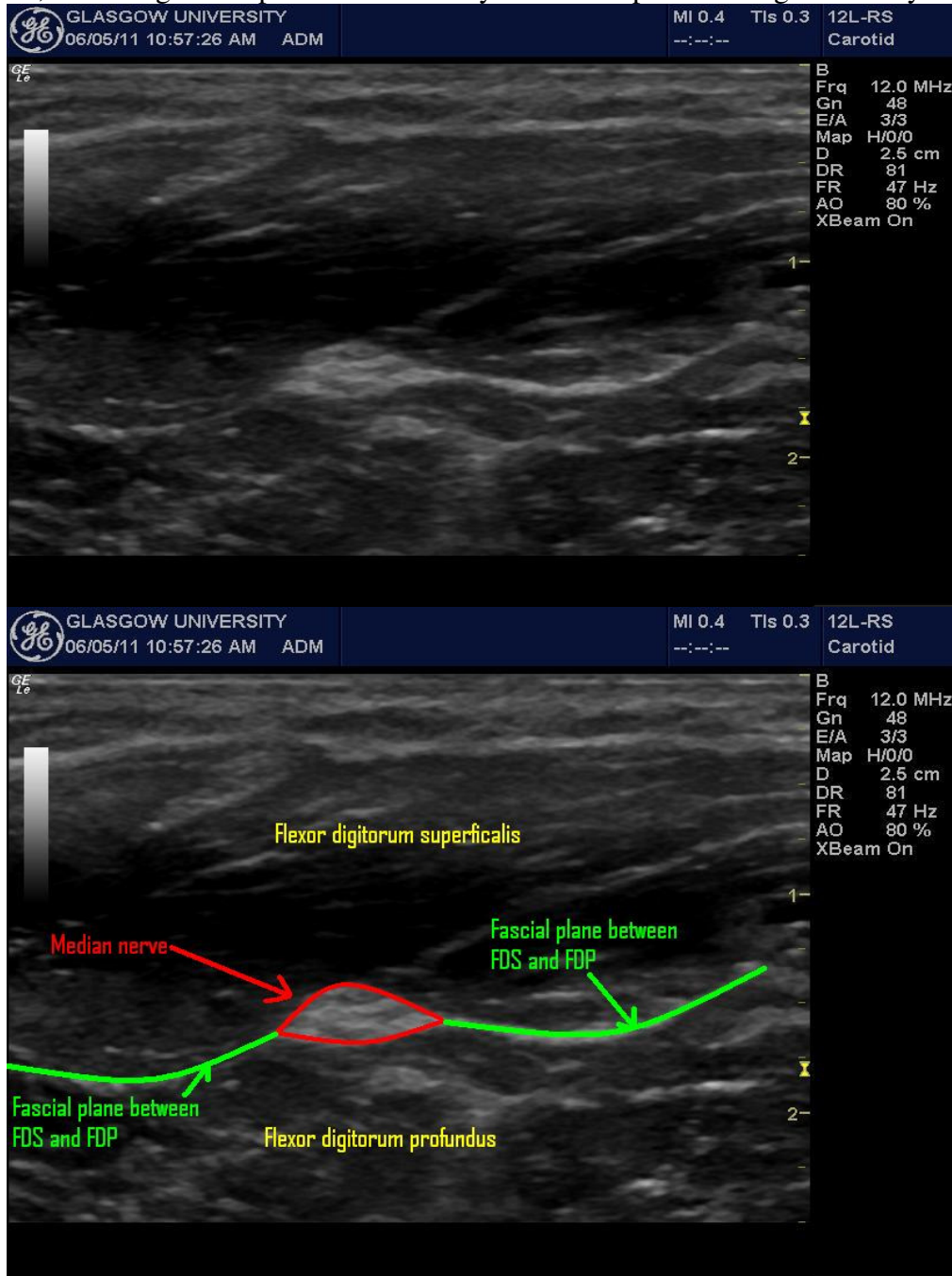
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Forearm

In the mid-forearm the median nerve is a hyper echoic structure in a horizontal fascial plane with flexor digitorum superficialis superficially. The median nerve lies on two muscles; flexor digitorum profundus medially and flexor pollicis longus laterally.



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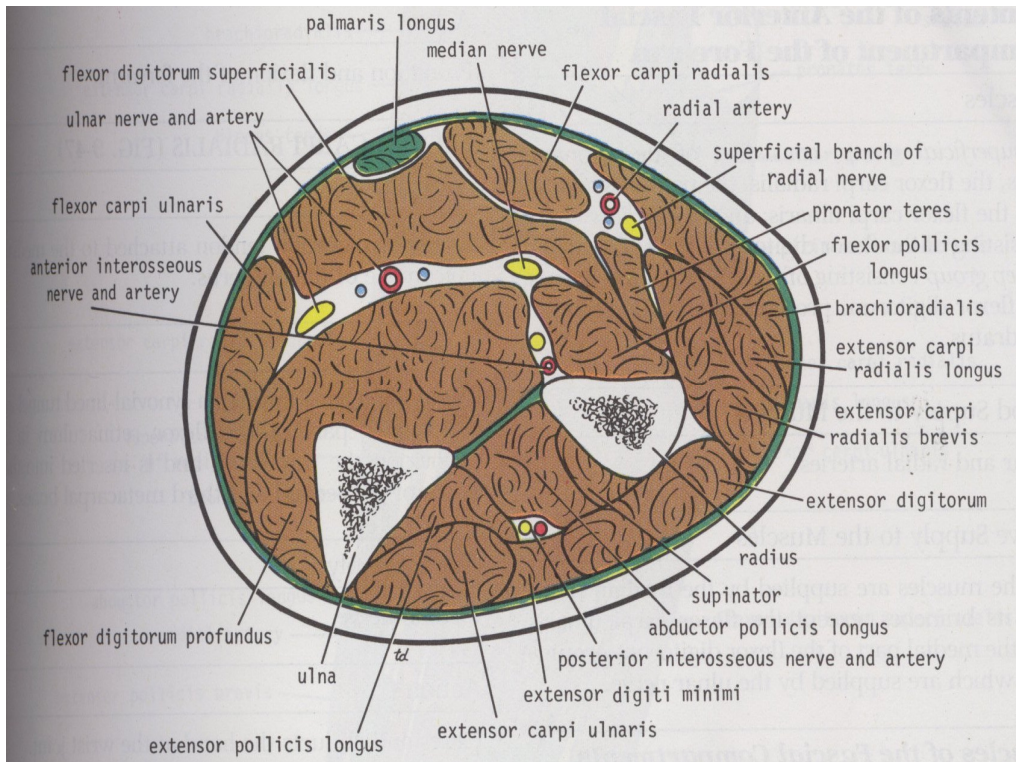
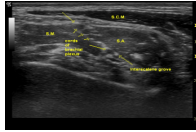
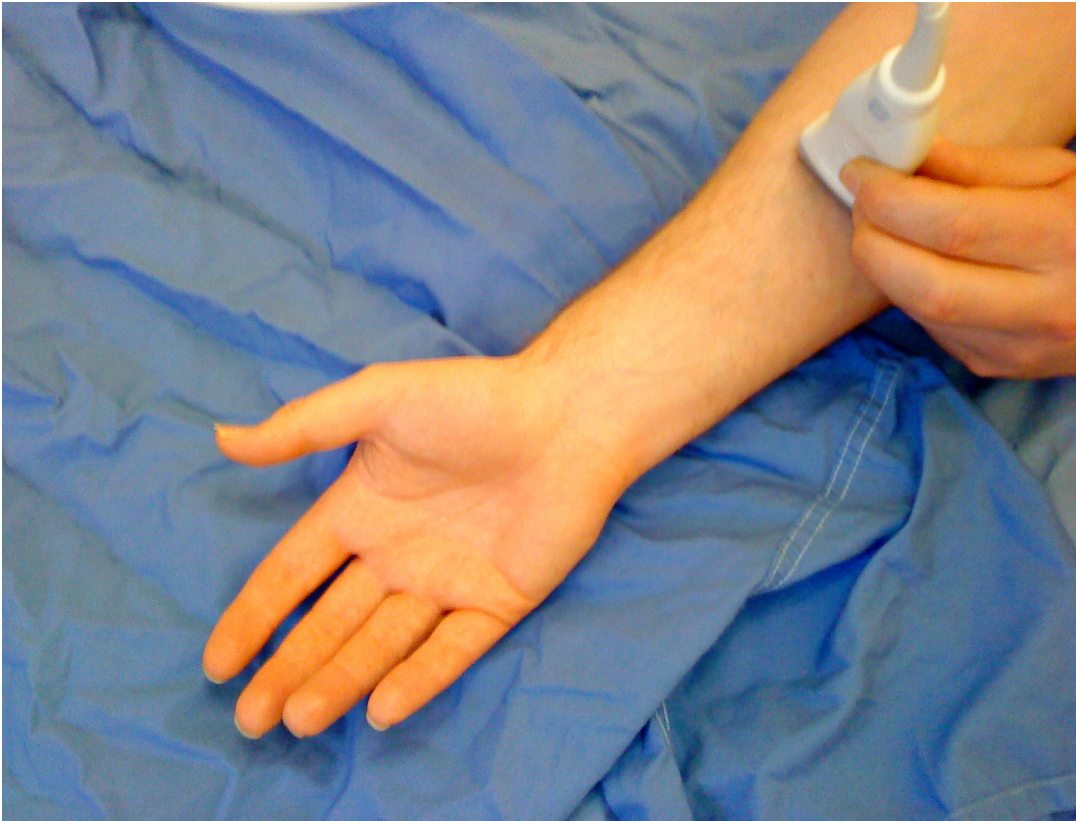
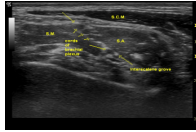


Figure 3: Cross section of forearm at mid forearm
Adapted from Snell 'Clinical anatomy for medical students' 3rd edition page 469 figure 9-46

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Wrist

The median nerve lies between the tendon of flexor carpi radialis laterally and the tendons of FDS medially with the tendon of palmaris longus superficially.

Clinical pearls

- The nerve can be confused with flexor tendons in the distal wrist. However, the tendons are flatter and move with wrist flexion
- Use a large syringe (10ml) to prevent the generation of high pressures during inadvertent intra-neuronal or intramuscular injection
- On local anaesthetic injection you should observe the median nerve 'floating' surrounded by local anaesthetic
- Aim for the fascial plane that the nerve lies in (not the nerve) i.e. between FDS and FDP
- Aim to 'open up' the fascial plane (between FDS and FDP) and advance the needle tip into the space you have created to surround the nerve with local anaesthetic
- If the patient complains of pain of injection 'stop' and check your image
Have you injected intraneuronally?