BLOCK GuRU - Upper Limb

INTERSCALENE

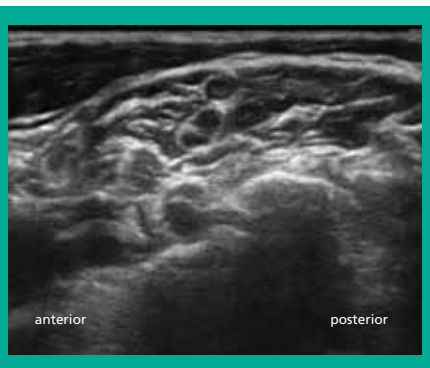
Interscalene - shoulder, proximal humerus surgery

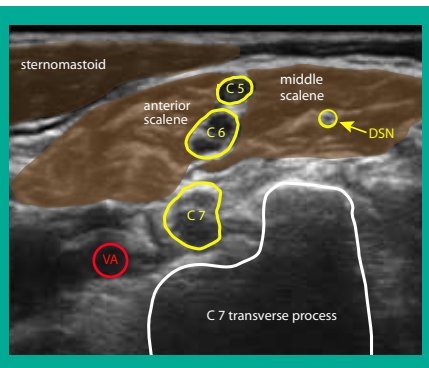
Identify: 2-3 roots in a vertical alignment between anterior and middle scalene muscles; identify C5 & C6 nerve roots; use doppler to check for vascular structures

Target: Using an in-plane approach from the posterior end of the probe aim for the interscalene groove between the C5 and C6 roots

Tips: An easy way to locate the interscalene site is to scan up from the supraclavicular region; the distinctive morphology of the transverse processes helps to identify the correct level (symmetrical tubercles at C5, larger anterior tubercle at C6, no anterior tubercle at C7)

Avoid: The dorsal scapular nerve (DSN) lies in the middle scalene muscle - avoid direct needle trauma; the vertebral artery lies deeper but within needle range; large volume injections increase the risk of phrenic nerve, sympathetic blockade (Horner's syndrome) or epidural spread





SUPRACLAVICULAR

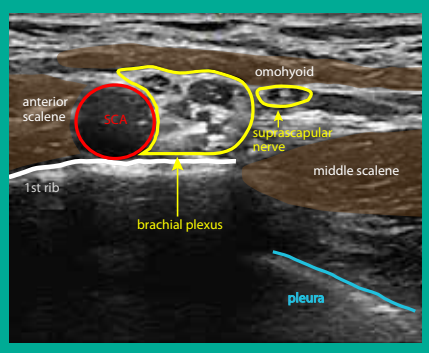
Supraclavicular - humerus, elbow, hand surgery

Identify: The subclavian artery lying on the first rib with underlying pleura. The brachial plexus appears as a honeycombed structure lateral and superficial to the artery

Target: Using an in-plane needle approach from the lateral end of the probe. You may need to make 2-3 injections in the brachial plexus sheath to ensure LA spread to all components including the "corner pocket" between the artery and rib

Tips: Rotate the lateral end of the probe a little posteriorly to optimise the image; keep the 1st rib in view beyond the needle tip to protect against pneumothorax

Avoid: Pneumothorax: avoid needle tip penetrating beyond the first rib - it is vital to keep the tip in view throughout



INFRACLAVICULAR

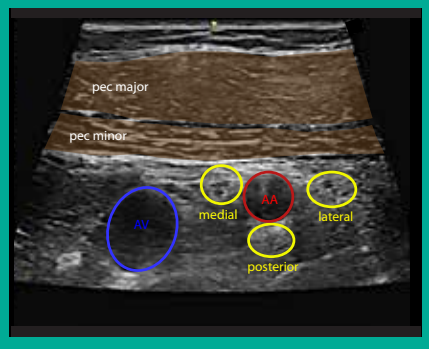
Infraclavicular - humerus, elbow, hand surgery

Identify: The pectoralis major & minor muscles, the axillary artery and vein, the 3 cords arranged around the artery

Target: Using an in-plane approach from the cephalad end of the probe aim for the posterior cord deep to the artery and check LA spread, inject around the lateral cord on needle withdrawal, redirect the needle over the artery to the medial cord if necessary

Tips: Arm abduction and external rotation improves the view and needle access below the clavicle but is not essential; the pectoral muscles help to anchor nerve catheters at this site

Avoid: Pneumothorax, blood vessel puncture (check for the cephalic vein joining the axillary vein)



AXILLARY

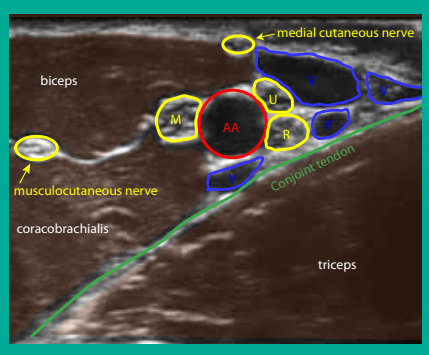
Axillary - elbow, forearm, hand surgery

Identify: The axillary artery and veins (often multiple). The conjoint tendon of teres major and latissimus dorsi is important: the four target nerves (musculocutaneous, median, ulnar, radial) will lie above that tendon. The medial cutaneous n of the forearm lies between median and ulnar just beneath the deep fascia

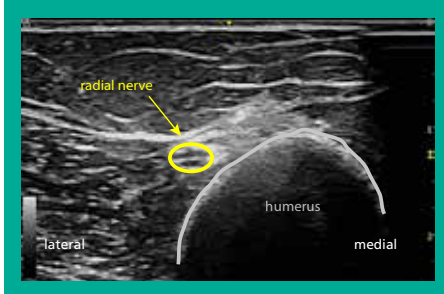
Target: Using an in-plane approach from the lateral end of the probe target each nerve in turn (we block them in order: MC, R, U, M to preserve the ultrasound view)

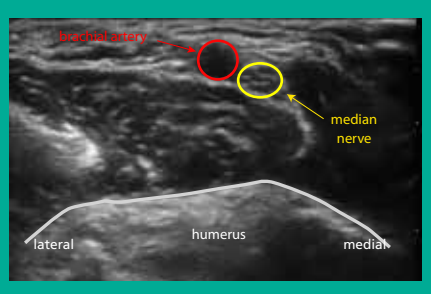
Tips: Scan distally to confirm each nerve identity (median n stays with brachial artery, ulnar n moves medially and superficially to the cubital tunnel, radial n dives deep towards the medial border of humerus with the profunda brachii artery); a nerve stimulator can be used to confirm nerve identity; expect variation in the position of nerves

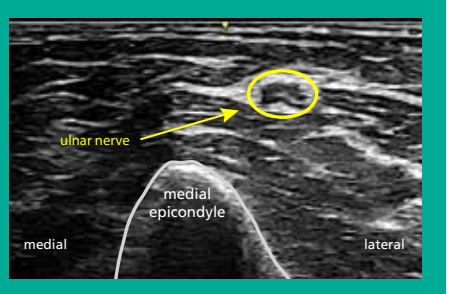
Avoid: Intravascular injection (multiple vessels) - watch the ultrasound for injectate spread with each injection; avoid intrafascicular nerve trauma



PERIPHERAL NERVES







Proximal Flex the elbow, place the probe over the lower 1/3 of the humerus in an axial plane, look for the rounded appearance of the nerve looping around the distal humerus

RADIAL

Distal Extend the elbow, place the probe over the lateral half of the elbow crease. The radial nerve here has a characteristic spindle shape (2 components + artery)

Proximal Extend the elbow, the nerve lies medial to the brachial artery just above the elbow skin crease

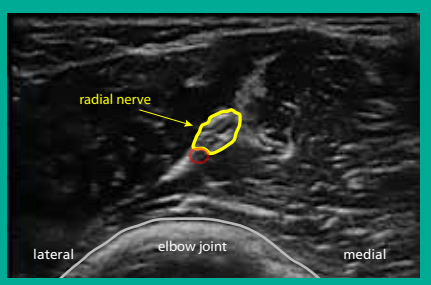
MEDIAN

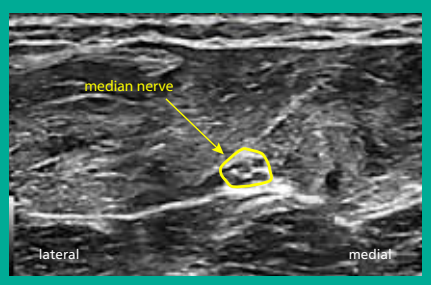
Distal At the mid-forearm level the nerve is a hyperechoic, honeycombed structure at the centre of 3 fascial planes. There may be an accompanying artery which should be avoided

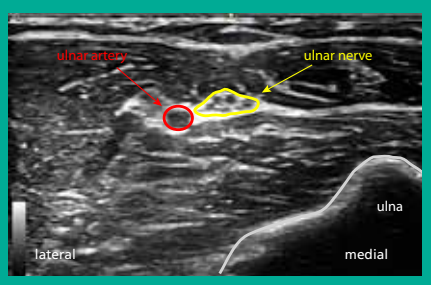
Proximal On the medial side of the distal humerus, above the medial epicondyle, locate the nerve before the nerve enters the cubital tunnel. Do not block the nerve in the tunnel itself

ULNAR

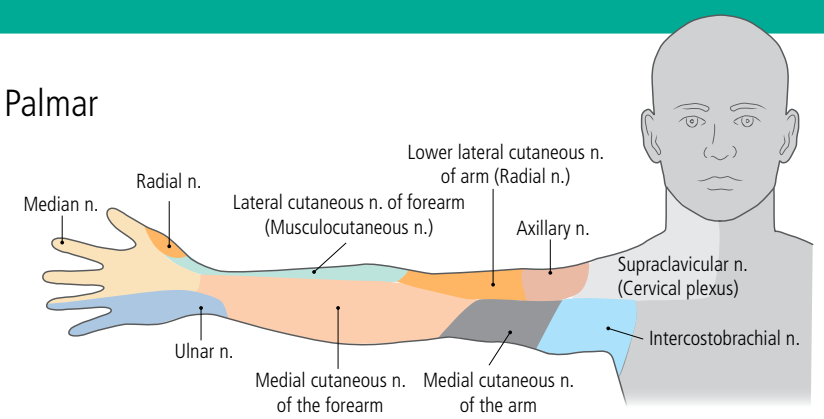
Distal Nerve lies on the medial side of the ulnar artery. Starting at the wrist, scan proximally until they separate



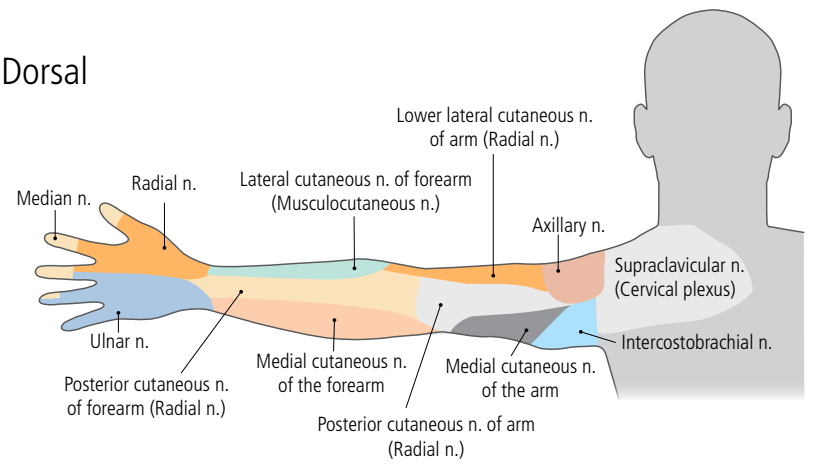




Palmar



Dorsal



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