CHAPTER 134
Supraclavicular Block

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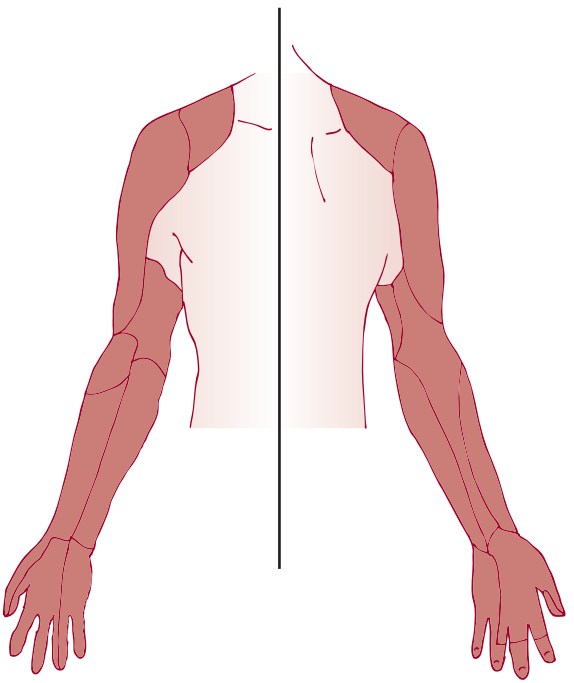
SUPRACLAVICULAR BLOCK COVERAGE

Level of blockade	Coverage distribution (Figure 134-1)
Divisions of the brachial plexus	Whole of the brachial plexus Depending on the volume and the anatomy, theoretical risk of missing the suprascapular nerve (innervating supraspinatus, infraspinatus, and posterior 70% of glenohumeral joint) Depending on volume, possible blockade of phrenic nerve

FIGURE 134-1. Distribution of blockade



Indications:

Surgery of the whole upper extremity, from clavicle and shoulder to the hand.

Contraindications:

- Contralateral phrenic nerve palsy
- Severe respiratory disease (especially of contralateral lung)
- Contralateral vocal cord/recurrent laryngeal nerve palsy

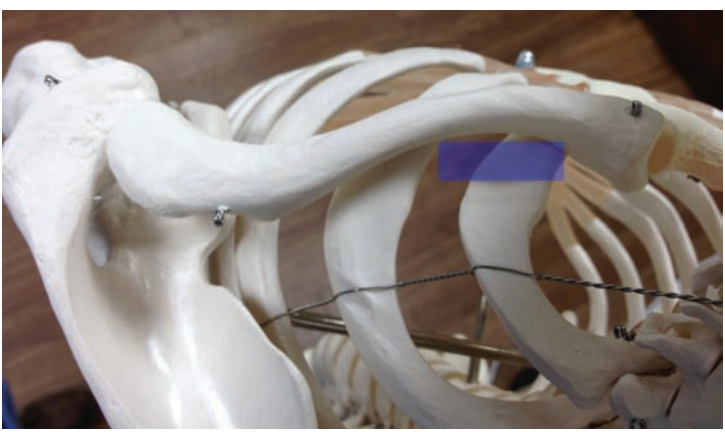
Technique using NS:

- Not recommended: high risk of pneumothorax

Technique using US (Figures 134-2 to 134-4):

- Position patient with head of bed slightly elevated (in order to lower the shoulder) and head turned to the contralateral side
- Place the probe just above the clavicle, aiming almost toward the feet; locate the subclavian artery, with the brachial plexus lying immediately lateral and superficial to the artery. The plexus can have only a few large nerves, or many smaller ones. Typically, the distal contingent, coming from C8 and T1, lies deeper and closer to the artery, with occasionally nerves between the artery and the first rib. The proximal contingent, coming from C5–6–7, lies more superficial and lateral
- Also identify the pleura (deeper; bright line, mobile with deep inspiration) and the subclavian vein (more medial)
- Use Doppler to identify vessels that can occasionally course between the nerves, such as the cervical transverse artery or the dorsal scapular artery, in order to avoid vascular injury and intravascular injection
- Prep the skin lateral to the probe, and introduce a 100-mm needle in plane. Because of the proximity of the pleura, it is paramount to *keep the needle tip in sight at all times*. The probe can be rocked medially in order to provide more space to maneuver the needle ("heel-up" maneuver)
- Direct the needle into the "corner pocket" of the angle between the subclavian artery and the rib, being careful to *avoid the nerves*. A "pop" is often felt and seen when entering the plexus "sheath." Do not contact the rib (periosteal contact is painful). Aspirate, and then inject local anesthetic solution
- Depending on the case, the needle may need to be repositioned two or three times in order to bathe all the visible nerves. Pay special attention to the nerves covering the area of surgery:
  - Proximal contingent if shoulder/upper humerus
  - Distal contingent if forearm/hand/wrist

FIGURE 134-2. Position of the probe relative to the clavicle and the first rib



- If nerves are seen between artery and rib, the needle might need to be advanced, after injecting local anesthetic to "open the space," until those nerves are bathed as well
- Typically, 15–20 mL of local anesthetic solution is sufficient

FIGURE 134-3. Position of the probe and needle insertion

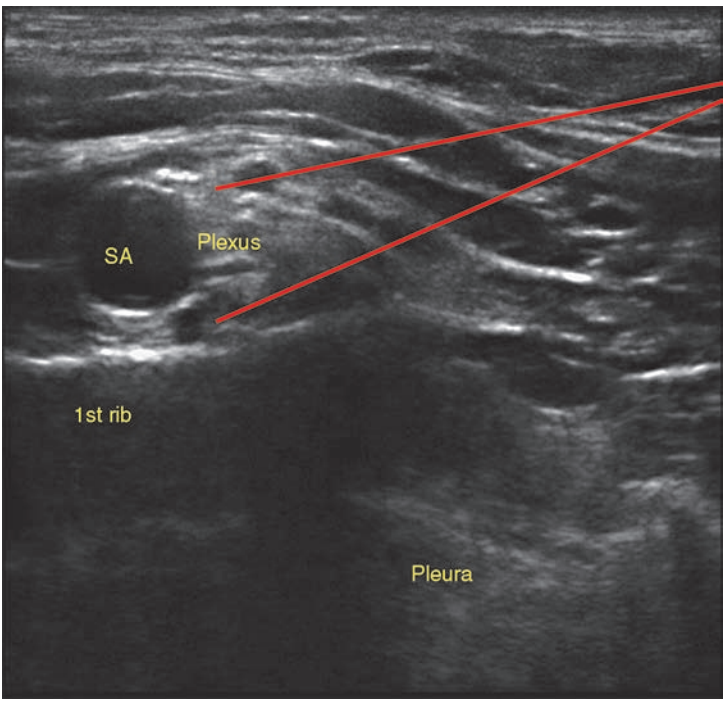
The blue rectangle indicates the position of the probe, just behind the clavicle, straddling the first rib.

Testing:

Nerve	Sensory	Motor
Axillary	Pinch lateral aspect of the shoulder	Deltoid: arm abduction
Musculocutaneous	Pinch lateral aspect of the forearm	Biceps
Radial	Pinch first dorsal web space (between thumb and index)	Triceps, extensor of fingers and wrist
Ulnar	Pinch pulp of fifth finger	First dorsal interossei (abduction of index finger)
Median	Pinch pulp of index finger	Thumb–fifth finger opposition

Complications/side effects:
- Pneumothorax is a risk; *keep needle tip in sight at all times*
- Vascular puncture of the subclavian artery is possible. As long as it is recognized and that intravascular injection is avoided, this is usually of no consequence
- Phrenic nerve palsy can occur even with small volumes, leading to respiratory distress in patients with borderline respiratory function

FIGURE 134-4. Ultrasound image



SA, subclavian artery; the red lines shows the paths of the needle to reach the "corner pocket", then to inject local anesthetic near the more superficial part of the plexus for a complete block.

PEARLS

- *Keep needle tip in sight at all times* to avoid pneumothorax
- Catheter insertion can be challenging at this level. Oftentimes, the easiest solution is to insert the catheter out-of-plane in the interscalene area and to thread it down to the supraclavicular level
- In the supraclavicular region, there is a close relationship between the brachial plexus and the subclavian artery, but also some collateral branches. The dorsal artery of the scapula usually takes its origin between the scalene muscles. In its cervical portion, it lies on the brachial plexus and passes either between C6 and C7 or between C7 and C8