Anatomy of Brachial Plexus

The brachial plexus is divided into:

- **Roots**
- **Trunks**
- **Devisions**
- **Cords**
- **Branches**

The Brachial Plexus is made up of anterior primary rami of C5, C6, C7, C8 and T1 with variable contributions from C4 and T2.

- After leaving their intervertebral foramina these nerves course between the anterior and middle scalene muscles.
- Between the scalene muscles the nerves unite to form three trunks. The superior (C5, C6), middle (C7) and inferior (C8 and T1).
**Interscalene Nerve Block**

- Principal indication for interscalene block is shoulder/proximal humerus surgery
- Also good for distal clavicle ORIF
- This block is typically not performed for forearm and hand surgery because the inferior trunk (C8—T1) is often incomplete

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**Ultrasound guided Interscalene**

![Ultrasound guided Interscalene](image)

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**Ultrasound Anatomy**

![Ultrasound Anatomy](image)

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**Scan Medial to Lateral Or Inferior to Superior**

![Scan Medial to Lateral Or Inferior to Superior](image)

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**Ultrasound Guided Interscalene**

![Ultrasound Guided Interscalene](image)

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**Ultrasound image of Interscalene**

- Yellow Arrows—Likely C5, C6a, C6b nerve roots
- Green Arrow=C7 nerve root

![Ultrasound image of Interscalene](image)
**Needle Placement**

- Find ideal Ultrasound view
  - depth 1-3cm
- In plane – Posterior to Anterior
- Go through Middle scalene muscle

**Medications for Interscalene**

- Typically 15-20 mL of 0.5% bupivacaine or 0.5% ropivacaine
  - Mass of drug is what matters
  - Many dose ranging studies have shown that only 5-10mL of local is required for maximal brachial plexus blockade
- Additives
  - Both alpha-2 agonists and steroids have shown to prolong this block when using Rop/Bup
  - 50-100mcg of clonidine
  - Data for dexamethasone may suggest that intravenous is comparable to perineural

**Complications of Interscalene**

- Ipsilateral phrenic nerve resulting in diaphragmatic paresis occurs in 100% of patients undergoing interscalene blockade
  - However, recent studies have shown decreased volumes may alleviate some of this blockade
  - This results in 25% reduction in pulmonary function

  b) The phrenic nerve is blocked because of its location overlying the anterior scalene muscle

**Complications, cont.**

- A cervical sympathetic block occurs frequently: (Horner’s syndrome)
  a) miosis
  b) anhydrosis
  c) ptosis
  d) vasodilation
- Incidence is approximately 50% and always predictive of phrenic nerve blockade
- Recurrent laryngeal nerve block can occur resulting in hoarseness

**Three Pearls: Interscalene**

- Phrenic blockade: 100% (lower FRC!)
- Find Trunks between scalene muscles
- See needle throughout! PTX is still a risk!