

## **An Educational Intervention for Trainees in Regional Anesthesia: Do Point of Care Teaching Aids Improve Technical Skills Acquisition?**

Rafael M. Richards, M.D, M.S.

*University of Louisville School of Medicine, Louisville, Kentucky*

**Learner audience:** Residents and Fellows

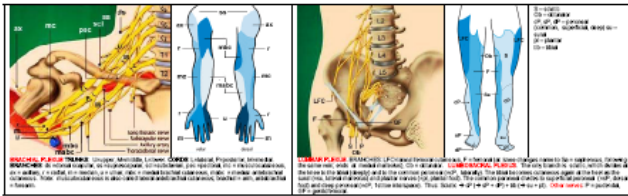
**Needs Assessment:** Standardization and improvement of training in regional anesthesia.

**Curriculum:** The printed curriculum in regional anesthesia at our institution includes seven basic techniques, ten intermediate techniques, and eleven advanced techniques. The resources available to learn these techniques include DVD videos, standard texts, and several websites. In reality, only a select subset of carefully chosen techniques is employed with any frequency by any of the attendings. Furthermore, there are not only differences between attendings in their repertoire of blocks, but also differences in their techniques doing the same block. The need, therefore, is to not only discern which (of the nearly thirty) techniques are relevant to learn during the one month rotation, but also to establish a standard method for doing a given block. To facilitate this, a one-page laminated card was prepared that summarizes, from head to toe, the most common blocks actually encountered on the rotation, as well as the textbook-standard technique for each of these blocks (see Figure 1). This laminated card is attached to the block cart, such that all residents on the service can quickly review the anatomy, landmarks, and all aspects of the technique at the point of care, immediately prior to performing any block. This laminated card provides not only an overview of all the blocks that will be taught during the month, but all the practical details of performing these. With this information, the resident can then do more directed reading with much more insight as to what is relevant, and therefore more efficiently acquire the cognitive and practical skills necessary to effectively practice regional anesthesia.

**Impact:** The junior residents surveyed who used this tool stated that this was very helpful in initially learning the blocks. Senior residents, and many attendings, also stated that this was also useful tool as a refresher when they have not done a block for a period of time. Future improvements of this will include more detailed information on the cards. Should this model of Point of Care teaching aids continue to prove successful, it would suggest that other areas of technical skills education, such as airway management or vascular access, are also appropriate areas for development of such teaching tools.

# Pain and Regional Nerve Blocks – Quick Reference

Rafael M. Richards, M.D., M.S.



## UPPER EXTREMITY BLOCKS (continued to distal)

<p><b>Brachial plexus</b></p> <p>The brachial plexus is formed by the ventral rami of the C5-C8 spinal nerves. It is the main nerve supply for the upper extremity.</p> <p><b>Indications:</b> Shoulder, elbow, forearm, and hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site, coagulopathy.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the axilla. 5. Aspirate for blood. 6. Inject 30-40ml of 0.5% bupivacaine.</p>	<p><b>Radial nerve</b></p> <p>The radial nerve is the most superficial nerve of the brachial plexus. It is located in the radial groove of the humerus.</p> <p><b>Indications:</b> Forearm and hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the radial groove of the humerus. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>	<p><b>Median nerve</b></p> <p>The median nerve is the most superficial nerve of the brachial plexus. It is located in the carpal tunnel.</p> <p><b>Indications:</b> Hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the carpal tunnel. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>	<p><b>Ulnar nerve</b></p> <p>The ulnar nerve is the most superficial nerve of the brachial plexus. It is located in the cubital tunnel.</p> <p><b>Indications:</b> Hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the cubital tunnel. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>
<p><b>Distal brachial plexus</b></p> <p>The distal brachial plexus is formed by the ventral rami of the C5-C8 spinal nerves. It is the main nerve supply for the upper extremity.</p> <p><b>Indications:</b> Shoulder, elbow, forearm, and hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site, coagulopathy.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the axilla. 5. Aspirate for blood. 6. Inject 30-40ml of 0.5% bupivacaine.</p>	<p><b>Radial nerve</b></p> <p>The radial nerve is the most superficial nerve of the brachial plexus. It is located in the radial groove of the humerus.</p> <p><b>Indications:</b> Forearm and hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the radial groove of the humerus. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>	<p><b>Median nerve</b></p> <p>The median nerve is the most superficial nerve of the brachial plexus. It is located in the carpal tunnel.</p> <p><b>Indications:</b> Hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the carpal tunnel. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>	<p><b>Ulnar nerve</b></p> <p>The ulnar nerve is the most superficial nerve of the brachial plexus. It is located in the cubital tunnel.</p> <p><b>Indications:</b> Hand surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the cubital tunnel. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>

## LOWER EXTREMITY BLOCKS (continued to distal)

<p><b>Femoral nerve</b></p> <p>The femoral nerve is the most superficial nerve of the lumbar plexus. It is located in the femoral sheath.</p> <p><b>Indications:</b> Hip, knee, and ankle surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site, coagulopathy.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the femoral sheath. 5. Aspirate for blood. 6. Inject 30-40ml of 0.5% bupivacaine.</p>	<p><b>Tibial nerve</b></p> <p>The tibial nerve is the most superficial nerve of the sacral plexus. It is located in the popliteal fossa.</p> <p><b>Indications:</b> Ankle and foot surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the popliteal fossa. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>
<p><b>Sciatic nerve</b></p> <p>The sciatic nerve is the most superficial nerve of the sacral plexus. It is located in the greater sciatic foramen.</p> <p><b>Indications:</b> Hip, knee, and ankle surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site, coagulopathy.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the greater sciatic foramen. 5. Aspirate for blood. 6. Inject 30-40ml of 0.5% bupivacaine.</p>	<p><b>Tibial nerve</b></p> <p>The tibial nerve is the most superficial nerve of the sacral plexus. It is located in the popliteal fossa.</p> <p><b>Indications:</b> Ankle and foot surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the popliteal fossa. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>

## TRUNK / ROOT BLOCKS

<p><b>Trunk / Root Blocks</b></p> <p>Trunk / root blocks are performed by injecting local anesthetic into the spinal nerve root. They are used for pain relief and anesthesia for surgery.</p> <p><b>Indications:</b> Pain relief, anesthesia for surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site, coagulopathy.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the spinal nerve root. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>	<p><b>Indications:</b> Pain relief, anesthesia for surgery.</p> <p><b>Contraindications:</b> Allergy to local anesthetic, infection at the site, coagulopathy.</p> <p><b>Procedure:</b> 1. Patient in supine position. 2. Skin prep. 3. Infiltrate 1-2% lidocaine. 4. Insert needle into the spinal nerve root. 5. Aspirate for blood. 6. Inject 10-15ml of 0.5% bupivacaine.</p>
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Figure 1: Regional Nerve Block – Quick Reference Sheet