**Lower Extremity Nerve Blocks**

### Femoral Nerve Block

**Indications:** Surgery on femur, anterior thigh, and knee

**Transducer Position:** Supine

**Transducer Orientation:** 5-10 MHz, linear array

**Transducer Placement:** Femoral crease, parallel and inferior to inguinal ligament

**Needle:** 22G 1.5 cm short bevel needle

**Nerve stimulation response:** Twitch of foot or toes

**Tips:**
- Injection pressure normal
- Motor response at ≤0.5 mA
- High resistance to injection: NO
- Motor response at <0.5 mA: NO
- Needle should enter the sheath of the SFN either at the lateral or medial aspect of nerve
- Significant amount of transducer pressure may be required to access the LA spread

**Documentation and Monitoring Check List:**
- Patient consent obtained
- Labeled checked
- Resuscitative equipment present
- Patient monitoring applied (BP, ECG, Pulse Oximetry)
- Anticipated duration
- Premedication administered (Suxamethonium, Propofol)
- Local anesthetic volume, type, concentration
- Injection monitoring
- Motor response at <0.5mV: NO
- Motor response at 0-0.5mV: YES
- High resistance to injection: NO
- Nerve block complete
- Injection pressure safe
- None

**TREATMENT OF LOCAL ANESTHETIC TOXICITY:**
- Airway, hyperventilation, 100% O₂
- Moisture, hyperventilation
- 1. Local anesthetic: type, volume(ml), concentration %
- 2. Patient monitoring applied (BP, ECG, Pulse Oximetry)
- 3. Premedication administered (Suxamethonium, Propofol)
- 4. Local anesthetic volume, type, concentration %
- 5. Injection monitoring
- 6. None

**Tips:**
- Consider alternative approach for out of plane
- Injection can be made more proximal at either medial or lateral aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca
- Beware: Risk of falls due to motor weakness of quadriceps

**Legend:**
- Injection pressure normal?‡
- Complete injection with the planned volume of LA
- No motor response to nerve stimulation
- Motor response at <0.5 mA: NO
- Motor response at <0.5 mA: YES
- Injection pressure safe
- None

**Common femoral vein (CFV)**
**Femoral artery (FA)**
**Saphenous nerve (SN)**

**Ultrasound Imaging**

**Cross-sectional Anatomy**

### Sciatic Nerve Block

**Indications:** Surgery at and below the knee

**Transducer Position:** Supine

**Transducer Orientation:** 5-10 MHz, linear array

**Transducer Placement:** Transverse view at the base of the popliteal fossa, 2-3 cm below popliteal crease

**Needle:** 22G 1.5 cm short bevel needle

**Nerve stimulation response:** Twitch of foot or toes

**Tips:**
- Injection can be made more proximally at either medial or lateral aspect of nerve
- Significant amount of transducer pressure may be required to access the LA spread
- Needle should enter the sheath of the SFN either at the lateral or medial aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca

**Documentation and Monitoring Check List:**
- Patient consent obtained
- Labeled checked
- Resuscitative equipment present
- Patient monitoring applied (BP, ECG, Pulse Oximetry)
- Anticipated duration
- Premedication administered (Suxamethonium, Propofol)
- Local anesthetic volume, type, concentration %
- Injection monitoring
- Motor response at <0.5mV: NO
- Motor response at 0-0.5mV: YES
- High resistance to injection: NO
- Nerve block complete
- Injection pressure safe
- None

**TREATMENT OF LOCAL ANESTHETIC TOXICITY:**
- Airway, hyperventilation, 100% O₂
- Moisture, hyperventilation
- 1. Local anesthetic: type, volume(ml), concentration %
- 2. Patient monitoring applied (BP, ECG, Pulse Oximetry)
- 3. Premedication administered (Suxamethonium, Propofol)
- 4. Local anesthetic volume, type, concentration %
- 5. Injection monitoring
- 6. None

**Tips:**
- Consider alternative approach for out of plane
- Injection can be made more proximally at either medial or lateral aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca
- Beware: Risk of falls due to motor weakness of quadriceps

**Legend:**
- Injection pressure normal?‡
- Complete injection with the planned volume of LA
- No motor response to nerve stimulation
- Motor response at <0.5 mA: NO
- Motor response at <0.5 mA: YES
- Injection pressure safe
- None

**Common femoral vein (CFV)**
**Femoral artery (FA)**
**Saphenous nerve (SN)**

**Ultrasound Imaging**

**Cross-sectional Anatomy**

### Popliteal Block

**Indications:** Surgery on ankle, achilles tendon, and foot

**Transducer Position:** Supine, oblique (lateral or posterior to popliteal fossa)

**Transducer Orientation:** 5-10 MHz, linear array

**Transducer Placement:** Transverse view at the base of the popliteal fossa, 2-3 cm below popliteal crease

**Needle:** 22G 1.5 cm short bevel needle

**Nerve stimulation response:** Twitch of foot or toes

**Tips:**
- Injection can be made more proximally at either medial or lateral aspect of nerve
- Significant amount of transducer pressure may be required to access the LA spread
- Needle should enter the sheath of the SFN either at the lateral or medial aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca

**Documentation and Monitoring Check List:**
- Patient consent obtained
- Labeled checked
- Resuscitative equipment present
- Patient monitoring applied (BP, ECG, Pulse Oximetry)
- Anticipated duration
- Premedication administered (Suxamethonium, Propofol)
- Local anesthetic volume, type, concentration %
- Injection monitoring
- Motor response at <0.5mV: NO
- Motor response at 0-0.5mV: YES
- High resistance to injection: NO
- Nerve block complete
- Injection pressure safe
- None

**TREATMENT OF LOCAL ANESTHETIC TOXICITY:**
- Airway, hyperventilation, 100% O₂
- Moisture, hyperventilation
- 1. Local anesthetic: type, volume(ml), concentration %
- 2. Patient monitoring applied (BP, ECG, Pulse Oximetry)
- 3. Premedication administered (Suxamethonium, Propofol)
- 4. Local anesthetic volume, type, concentration %
- 5. Injection monitoring
- 6. None

**Tips:**
- Consider alternative approach for out of plane
- Injection can be made more proximally at either medial or lateral aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca
- Beware: Risk of falls due to motor weakness of quadriceps

**Legend:**
- Injection pressure normal?‡
- Complete injection with the planned volume of LA
- No motor response to nerve stimulation
- Motor response at <0.5 mA: NO
- Motor response at <0.5 mA: YES
- Injection pressure safe
- None

**Common femoral vein (CFV)**
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### Saphenous Nerve Block

**Indications:** Supplement to popliteal or sciatic blocks for surgery below the knee

**Transducer Position:** Supine with leg abducted and externally rotated

**Transducer Orientation:** 5-10 MHz, linear array

**Transducer Placement:** Transverse view at medial aspect of lower leg, 2-3 cm above popliteal crease

**Needle:** 22G 1.5 cm short bevel needle

**Nerve stimulation response:** Twitch of foot or toes

**Tips:**
- Injection can be made more proximally at either medial or lateral aspect of nerve
- Significant amount of transducer pressure may be required to access the LA spread
- Needle should enter the sheath of the SFN either at the lateral or medial aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca

**Documentation and Monitoring Check List:**
- Patient consent obtained
- Labeled checked
- Resuscitative equipment present
- Patient monitoring applied (BP, ECG, Pulse Oximetry)
- Anticipated duration
- Premedication administered (Suxamethonium, Propofol)
- Local anesthetic volume, type, concentration %
- Injection monitoring
- Motor response at <0.5mV: NO
- Motor response at 0-0.5mV: YES
- High resistance to injection: NO
- Nerve block complete
- Injection pressure safe
- None

**TREATMENT OF LOCAL ANESTHETIC TOXICITY:**
- Airway, hyperventilation, 100% O₂
- Moisture, hyperventilation
- 1. Local anesthetic: type, volume(ml), concentration %
- 2. Patient monitoring applied (BP, ECG, Pulse Oximetry)
- 3. Premedication administered (Suxamethonium, Propofol)
- 4. Local anesthetic volume, type, concentration %
- 5. Injection monitoring
- 6. None

**Tips:**
- Consider alternative approach for out of plane
- Injection can be made more proximally at either medial or lateral aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca
- Beware: Risk of falls due to motor weakness of quadriceps

**Legend:**
- Injection pressure normal?‡
- Complete injection with the planned volume of LA
- No motor response to nerve stimulation
- Motor response at <0.5 mA: NO
- Motor response at <0.5 mA: YES
- Injection pressure safe
- None

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### Monitoring of Needle Placement and Injection During Nerve Blocks

**Combining Ultrasound + Nerve Stimulation + Resistance to Injection**

- Needle placement by nerve stimulation
- Needle placement by resistance to injection
- Needle placement by ultrasound

**Tips:**
- After injection, scan proximally-distally to assure the LA spread
- Significant amount of transducer pressure may be required to access the LA spread
- Consider alternative approach for out of plane
- Injection can be made more proximally at either medial or lateral aspect of nerve
- For analgesia, catheters may be placed underneath fascia iliaca
- Beware: Risk of falls due to motor weakness of quadriceps

**Legend:**
- Injection pressure normal?‡
- Complete injection with the planned volume of LA
- No motor response to nerve stimulation
- Motor response at <0.5 mA: NO
- Motor response at <0.5 mA: YES
- Injection pressure safe
- None

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