

# Lower Extremity Nerve Blocks

International Standardized Techniques, 2nd Edition 2015®

Nerve Block

**Transducer Placement** 

**Ultrasound Image** 

Reverse Ultrasound Anatomy™

Anatomy

### **Femoral**

Indications: Surgery on femur, anterior thigh and knee, patella fracture, quadriceps tendon repair.

Analgesia for hip and femur fractures.

Patient position: Supine. Transducer: Linear.

Needle: 22G, 5-10cm short bevel. Common EMR obtained: Quadriceps

muscle contraction. LA: 10-20 ml.

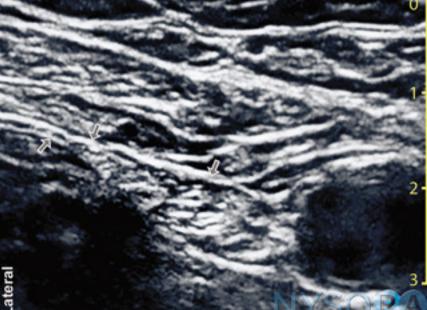
#### **ABBREVIATIONS**

emoral Artery

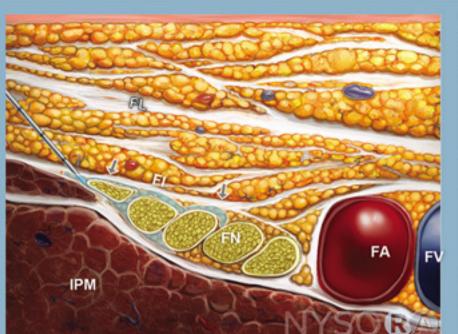
ASIS Anterior Superior Iliac Spine IPM Illiopsoas Muscle BORe Bolus Observe Reposition LA Local Anesthetic LFCN Lateral Femoral C **LFCN** Lateral Femoral Cutaneous SAIS Superior Anterior Iliac Spine SCA Superficial Circumflex Artery



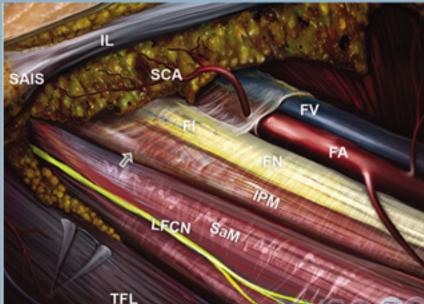
Initial transducer placement: Femoral crease, parallel and inferior to inguinal ligament, must find the common FA Initial depth setting: 4 cm.



Landmarks: Common femoral artery and fascia iliaca (arrows). Ideal view: Femoral nerve lateral to femoral artery, below fascia iliaca, above departure of profunda femoris artery.



Technique: Needle Insertion in plane, lateral to medial, alternatively out of plane. Ideal spread of LA: Under the fascia iliaca around the femoral nerve. Number of injections: One. BORe.



Tips: Obtain view proximal to bifurcation of the FA. Tilt the probe cranially/caudally to optimize the image of the nerve. Puncture the FI lateral to the edge of the FN. Beware: motor weakness of quadriceps muscles can occur; risk of falls.

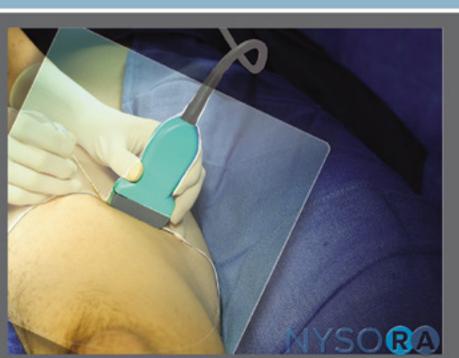
## **Saphenous**

Indications: Analgesia for knee surgery as a component of multimodal analgesia. In combination with sciatic nerve block for surgery below the knee.

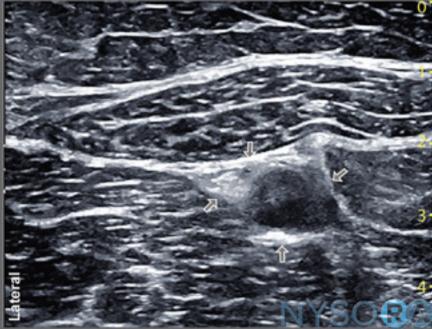
Patient position: supine with leg abducted and externally rotated Transducer: Linear.

Needle: 22G, 5-10 cm short bevel. Common EMR obtained: If used. paresthesia of medial aspect of lower leg or vastus medialis twitch can be elicited. **LA**: 10-15 ml

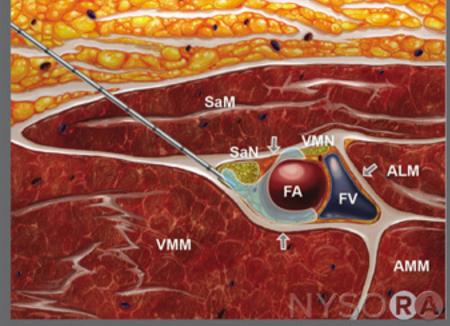
#### **ABBREVIATIONS**



Initial transducer placement:

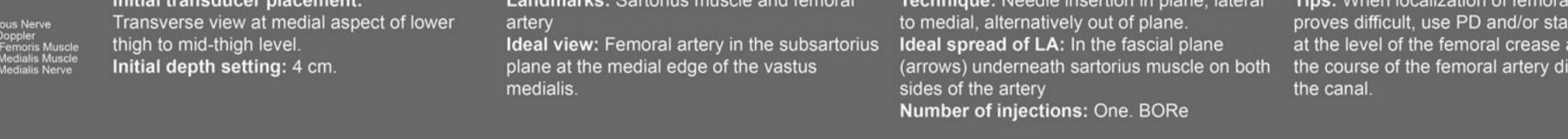


Landmarks: Sartorius muscle and femoral



Technique: Needle insertion in plane, lateral

**Tips:** When localization of femoral artery proves difficult, use PD and/or start scanning at the level of the femoral crease and follow the course of the femoral artery distally into



# **Sciatic** Subgluteal level

Indications: Anesthesia and analgesia for surgery on femur, at and below the knee. Patient position: Prone, lateral or oblique (shown).

Transducer: Linear or curved in larger patients

Needle: 22G, 8-10cm short bevel. Common EMR obtained: Twitch of calf or

foot LA: 15-20 ml.

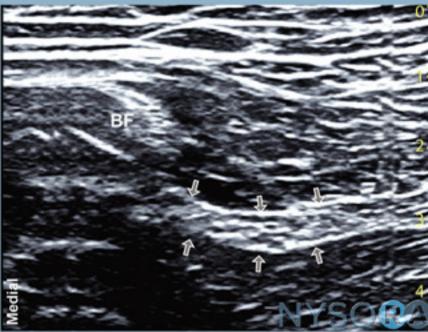
# **ABBREVIATIONS**

AMM Adductor Magnus Muscle BORe Bolus Observe Reposition EMR Evoked Motor Response Gluteus Maximus Muscle **Great Trochanter** 

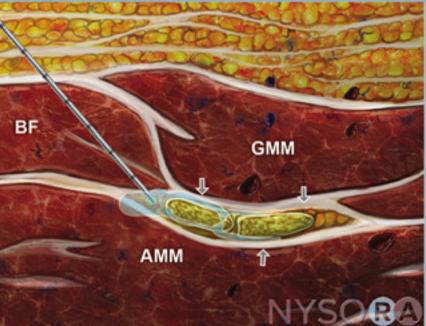
LCnN Lateral cluneal Nerves Local Anesthetic Sciatic Nerve



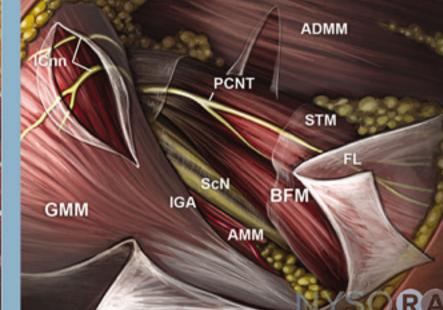
Initial transducer placement: Gluteal crease, scan cephalad-caudad until the best view of the oval-shaped sciatic nerve and the muscular tunnel in which it travels are visualized regardless of the level. Initial depth setting: 4-5 cm.



Landmarks: Sciatic nerve, gluteus maximus, fascia underneath gluteus maximus. Ideal view: Sciatic nerve in common connective tissue sheath (intermuscular tunnel).



Technique: Needle insertion in plane, lateral to medial, alternatively out of plane. Ideal spread of LA: Around the nerve, within the common connective tissue sheath. Number of injections: One. BORe.



Tips: Avoid inferior gluteal artery. Needle should enter the sheath of the ScN either at the lateral or medial aspect of the nerve. Transducer pressure and tilt often required to obtain the adequate view.

# Sciatic **Popliteal level**

Indications: Anesthesia and analgesia for surgery below the knee.

Patient position: Prone, oblique (shown) or supine with the knee flexed.

Transducer: Linear or curved in larger patients

Needle: 22G, 5-10 cm short bevel. Common EMR obtained: Twitch of calf. foot or toes **LA**: 20 ml.

# **ABBREVIATIONS**

BFM Biceps Femoris Muscle BORe Bolus Observe Reposition CPN Common Peroneal Nerve EMR Evoked Motor Response LA Local Anesthetic PA Popliteal Artery

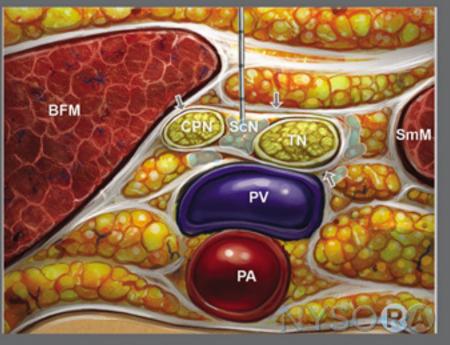
Yasuyuki Shibata (JPN).



Initial transducer placement: Transverse, 4-5 cm above the popliteal crease BFM. **Ideal view**: Sciatic nerve with TN and Initial depth setting: 4-5 cm.



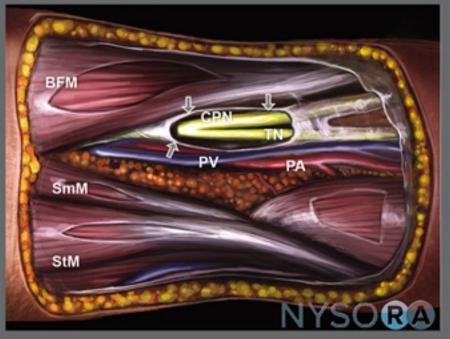
Landmarks: Popliteal artery and vein, femur. CPN slightly diverged within common connective tissue sheath of SN (arrows). Note: This image demonstrates separation of TN and CPN after successful injection.



**Technique:** Needle insertion in plane, lateral to medial, or out of plane. **Needle tip position:** Inside the common connective tissue sheath, between TN and

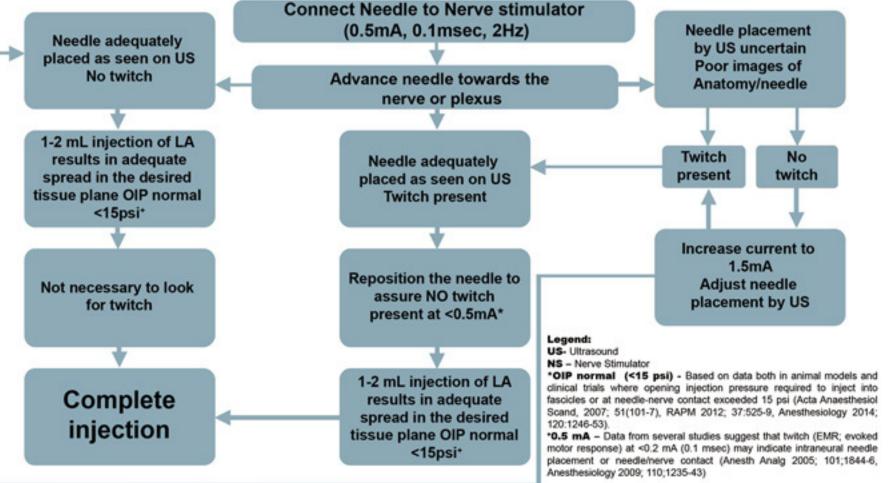
CPN. Ideal spread of LA: In between and around TN and CPN.

Number of injections: One. BORe.



**Tips:** If imaging the division of the ScN proves difficult, start scanning at the popliteal crease, where the tibial nerve is located postero lateral to the popliteal vein. After injection, scan proximally - distally to assure the LA spread around TN and CPN. Catheter is placed within the sheath.

## **Suggested Standard Monitoring For Nerve Blocks** Ultrasound + Nerve Stimulation + Opening Injection Pressure (OIP)

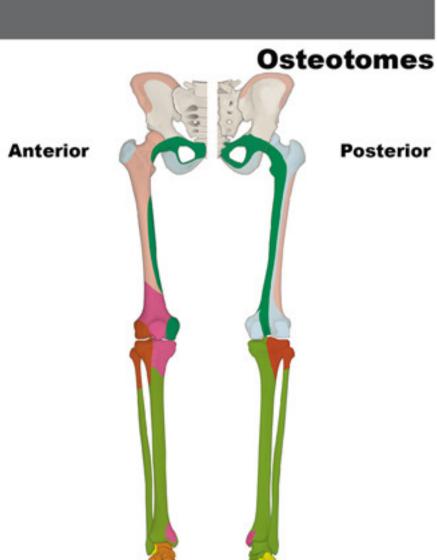


# **Dermatomes**



**Posterior** 

Subcostal T12 Ilioinguinal L1 lliohypogastric T12-L1 Lateral cutaneous nerve of the thigh L2-L3 Genitofemoral L1-L2 Obturator div post L2-L4 Femoral div ant de L2-L4 Saphenous L2-L4 Posterior cutaneous nerve of the thigh \$1-\$3 Sciatic L4-S3 Tibial L4-S3 Common peroneal L4-S3 Superficial peroneal L4-S2 Deep peroneal L4-52



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