

Ultrasound Guided Lateral Infra-trochanteric Sciatic Nerve Blockade for Proximal Tibial Surgery: A Novel Technique

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Introduction

Sciatic nerve blockade (SNB) can be performed at several points along its anatomic course. Proximal SNB techniques described include the classic Labat, sacral (Mansur), infragluteal (Raj), and anterior approaches. Distal SNB techniques include the mid-femoral, posterior and lateral popliteal and mid-tibial approaches. The anatomic region of the lower extremity to be anesthetized will determine the appropriate SNB technique to use for the operative procedure.

Branches of the sciatic nerve located in the upper thigh region innervate the two heads of the biceps femoris, the semi-tendinosus and semi-membranosus muscles, and the posterior femoral cutaneous and sural nerves. Operative procedures in areas near the knee joint require these proximal sciatic nerve branches to be anesthetized in order to achieve adequate analgesia. Mid-femoral and popliteal SNB techniques for anesthesia of the proximal calf and upper tibial regions prove inadequate because the sensory nerve branches originate from the sciatic nerve at a more proximal point in the upper thigh. Proximal SNB techniques that anesthetize the knee region and distal structures such as the Labat and Mansur techniques require the patient to be in lateral decubitus or prone position. The Raj technique requires the thigh to be flexed and maintained at 90 degrees. Correct positioning for these proximal SNB techniques can be impossible to attain when patients present with extreme body habitus, pain, injury or limited joint mobility from arthritis and contractures. The anterior approach is an alternative proximal SNB technique but difficulty with ultrasound probe placement is common and continuous nerve blockade can risk infection at this site.

A mid-femoral approach to the sciatic nerve with nerve stimulator guidance has been described. We report a high lateral infra-trochanteric approach for SNB under ultrasound guidance. The indications and advantages of this technique for proximal SNB compared to other approaches are discussed.

Method

The patient lies supine with slight elevation of the leg to permit the ultrasound probe to be positioned on the posterior thigh near the hip joint. The greater trochanter is palpated and a point 5 to 10 cm distal from the apex of the greater trochanter and 5 cm posterior to the vertical line from the trochanter is identified. Using an in plane ultrasound approach the sciatic nerve is identified between the two heads of the biceps femoris muscle slightly posterior and lateral to the femoral shaft. The needle is advanced in a medial direction from the lateral skin surface to within close proximity of the sciatic nerve and local anesthetic is injected after negative aspiration for heme. A continuous nerve block catheter can be placed through the needle if indicated.

Discussion

Regional anesthetic techniques for operative procedures in the proximal tibial region include neuraxial anesthesia and lumbar plexus blockade with or without proximal SNB. Proximal SNB techniques requiring the patient in the lateral or prone position for nerve block placement may not be possible in the setting of acute trauma, fracture and back injury and neuraxial anesthesia is relatively contraindicated in this situation. The anterior SNB approach is technically