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## Identifying the proximal sciatic nerve is better achieved through the pre-injection of saline at the sub-paraneural popliteal site

Sir,

The sciatic nerve, being the longest peripheral nerve in the body, has an extensive anatomical pathway through the posterior thigh. This characteristic allows for the possibility of blocking it at different levels to achieve surgical anesthesia and provide post-operative pain relief during lower limb surgery. Blockade at the proximal thigh level provides better motor blockade and pain control than blockade at the popliteal fossa. However, localizing the nerve at the

proximal level requires more remarkable skill due to its deep location, increasing the performance time and related complications.<sup>[1]</sup> Recently, ultrasound has become the norm for identifying the nerve and depositing local anesthetics around the nerve to achieve the blockade. Despite the use of ultrasound, identifying the sonoanatomy remains challenging in obese individuals.<sup>[2]</sup> Thus, we describe a saline pre-injection technique under ultrasound guidance where 5 ml of saline is given sub-paraneurally at the popliteal sciatic level. The

circumferential saline spread obtained at this level enhances the identification of the sciatic nerve in the proximal thigh.

The patient was a diabetic woman aged 55 years with a body mass index (BMI) of 32. She presented with right leg diabetic foot syndrome associated with a dislocated ankle joint and non-salvageable limb. She had anaemia with blood hemoglobin of 8 g/dl and serum creatinine of 1.9 mg/dl. She was optimized with intravenous fluids, insulin therapy, and antibiotics and posted for right-below-knee amputation. The anesthetic plan was ultrasound-guided combined femoral and sciatic nerve block.

In the operating room, after setting up standard monitors, an 18-gauge intravenous (IV) line was secured into the right upper limb, and 30 µg of IV fentanyl was administered. Following aseptic procedures, the patient was positioned in the prone position for an ultrasound-guided sciatic nerve block (X-Porte, FUJIFILM Sonosite, Inc., Bothel, USA). A high-frequency linear probe (HFL 15-6 MHz) was utilized to locate the sciatic nerve in conjunction with the popliteal vessels at the popliteal site. The nerve was systematically examined in rostral and caudal directions until the tibial and common peroneal nerve components were identified contiguously, presenting a bilobular appearance. At this point, 5 ml of saline was injected sub-paraneurally, and a circumferential saline spread was obtained [Figure 1]. After 5 minutes, the nerve was scanned proximally from the popliteal level, and a thin rim of saline around the sciatic nerve made its visualization easier at the mid-thigh level [Figure 2]. Following this enhanced visualization, 12 ml of 0.5% bupivacaine was administered at the mid-thigh level. In the supine position, the ultrasound-guided femoral block was completed. The surgical duration was 60 minutes, with a blood loss of 200 ml. She received one unit of packed red

blood cells intra-operatively and remained hemodynamically stable. Otherwise, her intra-operative and post-operative periods were uneventful.

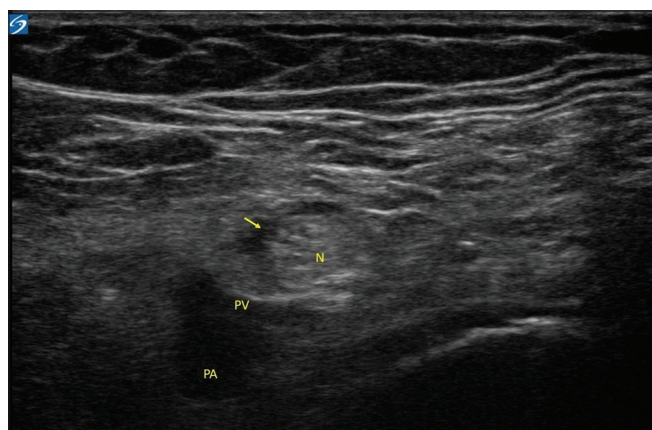
The ultrasound-guided popliteal sciatic nerve blockade combined with the femoral or saphenous nerve is an effective and well-established choice of anesthesia for below-knee amputation. However, in some instances, the proximal sciatic approach is preferred to obtain a wider range of pain control, better motor blockade, and surgeon satisfaction. In such cases, its deep location may affect the blockade at the proximal level. This can be further complicated in the presence of obesity and extensive edema secondary to the distal disease process. Often, ultrasound comes to our rescue with a low-frequency, curvilinear transducer (5–8 MHz). However, it requires the anesthetist's higher technical skill to localize the nerve and for needle manipulation.<sup>[3]</sup> A commonly employed clinical method involves incorporating adjacent anatomical structures, such as the popliteal artery in the popliteal fossa and retracing the nerve in the proximal thigh. However, using this approach, the nerve can be consistently identified only up to 5 cm proximal to the distal femoral condyles. Locating the nerve becomes challenging at more proximal points, especially in individuals with a higher body mass index, where its relationship to the artery becomes inconsistent.<sup>[4]</sup> Thus, we propose a method where saline pre-injection of 5–10 ml volume at the sub-paraneural popliteal sciatic level enhances its proximal visualisation under ultrasound and improves the ease of performance, even among beginners. The sub-paraneural injection at the point of divergence of the two nerves (bilobular pattern on ultrasound) is the optimal site as it facilitates the local anesthetic spread proximally and distally.<sup>[5]</sup>

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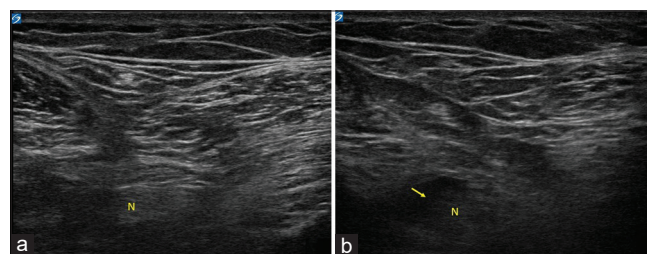
Nil.

#### Conflicts of interest

There are no conflicts of interest.



**Figure 1:** Ultrasound image of the popliteal sciatic nerve with pre-injected saline. N, sciatic nerve; PA, popliteal artery; PV, popliteal vein; arrow, pre-injected saline



**Figure 2:** Ultrasound image showing the sciatic nerve at the proximal level (mid-thigh). (a) Before saline pre-injection; (b) after saline pre-injection. N, sciatic nerve; arrow, pre-injected saline

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