

CASE REPORT

Ultrasound-guided femoral and sciatic nerve block as an option for below-knee amputation in an elderly patient: A case report

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Abstract

Peripheral nerve blocks can be a very safe option in elderly patients with multiple comorbidities where spinal or general anesthesia may be associated with increased risks. We present a 67 years male taking antiplatelet drugs with deranged coagulation profile with bilateral pneumonia with diabetic foot with wet gangrene planned for emergency below knee amputation under ultrasound guided femoral and sciatic nerve block.

KEYWORDS

below-knee amputation, femoral nerve block, sciatic nerve block

1 | INTRODUCTION

With increasing age, patients are more likely to have multiple comorbidities along with a decrease in the cardiac and pulmonary reserve and reduced function of other organs as well which predispose them to increased risk of perioperative complications and prolonged length of hospital stay thereby increasing the perioperative morbidity and mortality.¹ Lower limb surgeries are usually performed under regional anesthesia, mostly subarachnoid or epidural blocks or general anesthesia.² Hemodynamic and respiratory physiological changes associated with increasing age may lead to an exaggerated response to spinal or general anesthesia in such patients. So, local anesthesia in the form of peripheral nerve block can be an attractive option in such patients.³ Peripheral nerve blocks (PNBs) are known to be advantageous compared with spinal and general anesthetic techniques due to lesser hemodynamic changes and no motor impairment. Moreover, early ambulation and better pain control facilitate enhanced recovery

after surgery for patients with lower limb surgeries under peripheral nerve blocks.⁴

The nerve supply of the lower limb (below knee) primarily comes from the femoral and sciatic nerve. Femoral nerve primarily supplies the anteromedial leg and sciatic nerve supplies the lateral and posterior leg. Therefore, blocking these nerves with the use of local anesthetics can be an option to perform below-knee amputations. For sciatic nerve block, the patient is placed in lateral decubitus position with operative side upward and exposed. The sciatic nerve is blocked by subgluteal approach in above-knee amputation with curvilinear and at popliteal fossa in below-knee amputation with a linear probe. For femoral nerve block, the patient is placed in the supine position. The preliminary scan is done at the inguinal crease to locate the nerve, artery, and vein. After taking aseptic measures, femoral nerve is approached through a nerve block needle with the linear ultrasound probe.⁵

We aim to present a case of 67 years male with multiple comorbidities with deranged coagulation and

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taking antiplatelet drugs scheduled for emergency below-knee amputation for wet gangrene of left foot under ultrasound-guided femoral and subgluteal sciatic nerve block.

2 | CASE REPORT

A 67-year-old male with a history of ischemic stroke with chronic kidney disease with type II diabetes mellitus with hypertension under multiple medications with wet gangrene of the left foot was planned for emergency below-knee amputation. On preanesthetic evaluation, he had a history of cough on and off and on auscultation, crepitation was noted in bilateral lung fields. His oxygen saturation at room air was 90%–92% with no evidence of respiratory distress. His chest X-ray revealed bilateral pneumonia. His laboratory investigations revealed elevated white blood cell count and deranged coagulation profile (INR 1.6). He was taking aspirin (150 mg) for the ischemic stroke for 10 years. The rest of the investigations was within normal limits.

After a thorough discussion with patient party and surgeons, we decided to proceed with the surgery under the peripheral nerve block in order to avoid the possible risk of hypotension associated with spinal anesthesia and the slightly elevated INR. Since auscultation and chest X-ray revealed bilateral pneumonia, we decided not to proceed with the case under general anesthesia. Informed written and high-risk consent was taken for the surgery.

The patient was shifted to the operating room, monitors were attached and baseline vitals were recorded. Under all aseptic precautions, ultrasound-guided left subgluteal sciatic nerve block (Figure 1) was given in lateral decubitus position with 20 mL of 0.2% plain bupivacaine using a 2–5 MHz LOGIQ e curvilinear probe.



FIGURE 1 Ultrasound image of the subgluteal sciatic nerve (white arrow points to the sciatic nerve).

After this, the patient was kept in the supine position and with the help of same probe (linear probe not available), under all aseptic precautions, ultrasound-guided left femoral nerve block (Figure 2) was given using a 20 mL of 0.2% plain bupivacaine.

After the procedure, the patient was assessed for sensory and motor blockade every 5 min till the desired the level of block was achieved for surgery. Tourniquet was applied to the left thigh and he was comfortable. The patient was handed over to the surgeons. Benzodiazepine (injection midazolam 0.5 mg intravenous) was given for mild sedation to make him comfortable throughout the surgery. The intraoperative period was uneventful and he remained hemodynamically stable (Table 1) throughout (total time of surgery was 1 h).

He was shifted to a general ward after surgery with injection paracetamol 500 mg 6 hourly intravenous for postoperative pain management and injection pethidine 50 mg intramuscular as rescue analgesia. Rescue analgesia was given at 6 h postoperatively as he complained of pain at the surgical site even after giving paracetamol.

3 | DISCUSSION

Regional anesthesia for lower limb surgeries is always an excellent option because of superior postoperative pain control, lesser opioid consumption and reduced opioid-associated side effects, and lesser risks for hypoxia, respiratory depression, and no airway manipulation compared with general anesthesia.⁶ However, regional anesthesia in the form of neuraxial blocks is associated with increased risks in patients with coagulopathy.⁷ Use of peripheral nerve blocks for above- and below-knee amputation can be a very good option in patients with multiple comorbidities

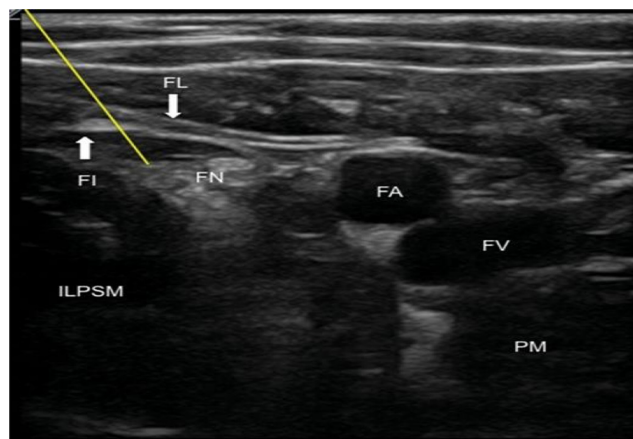


FIGURE 2 Ultrasound image of the femoral nerve (yellow line points to the femoral nerve).

TABLE 1 Intraoperative vitals.

Systolic blood pressure	110–130 mm Hg
Diastolic blood pressure	70–80 mm Hg
Heart rate	80–90 beats per minute
SpO ₂	90%–92% at room air

because of lesser hemodynamic changes and better pain management intra- and postoperatively.⁸ Furthermore, no motor impairment and better pain control may help in early ambulation.⁹

There are some studies that have highlighted the use of peripheral nerve blocks for lower limb surgeries as an excellent alternative to neuraxial or general anesthesia. In a case series published by Baddoo,¹⁰ 3 in 1 femoral nerve block and Labat's approach of sciatic nerve block using landmark technique was used for above-knee amputation but they encountered partial block failure in three cases. Similarly, combined femoral and sciatic nerve block was reported to be effective for above-knee amputation for right lower limb cellulitis by Kumar et al.¹¹ Akkaya et al.¹² also found peripheral nerve blocks to be a safe and effective method with lesser hemodynamic changes compared with spinal anesthesia in patients undergoing total knee arthroplasty.

Also, Mehourotra and Mehourotra¹³ compared 3 in 1 femoral with sciatic nerve block over GA in isolated lower limb surgery in the trauma patient and found nerve blocks to be a safe alternative with lesser hemodynamic fluctuations in trauma patients. Similarly, in a study conducted by Tantry et al.¹⁴ in patients taking antiplatelet and antithrombotic drugs with severe valvular heart disease who underwent lower limb surgeries under combined femoral and sciatic nerve block, no complications were noted intra- and postoperatively. Similarly, in our study, the elderly patient taking antiplatelet drugs with multiple comorbidities underwent surgery without any hemodynamic instability and bleeding thereby highlighting the use of peripheral nerve block as an effective alternative in such surgeries.

4 | CONCLUSION

Peripheral nerve blocks, combined femoral and sciatic nerve block can be a very safe option in patients undergoing below-knee amputation using tourniquet with multiple comorbidities where spinal or general anesthesia may be associated with multiple complications.

AUTHOR CONTRIBUTIONS

Sagar Devkota: Conceptualization; formal analysis; investigation; methodology. **Yubaraj Thapa:** Writing – original draft; writing – review and editing.

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No financial burden to the patient.

CONFLICT OF INTEREST STATEMENT

None.

DATA AVAILABILITY STATEMENT

None.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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