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Case Report

Suprainguinal fascia iliaca plane block for surgical anesthesia of thigh: A case report for excision of a giant mass

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ABSTRACT

Suprainguinal plane block was defined by Hebbard in 2009 for postoperative analgesia purposes. It is aimed to block the femoral nerve, lateral femoral cutanaeus nerve and obturator nerve. In this case, we presented the successful surgical management of suprainguinal block in excision of a mass in the thigh. During the surgery, which lasted 80 minutes, additional analgesic was needed only during the femur curettage. Postoperative pain scores were low and the patient was discharged the next day.

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1. Introduction

The suprainguinal fascia iliaca plane block, introduced as an analgesic method in 2009 by Hebbard et al., serves as an alternative to femoral nerve and lumbar plexus blocks for achieving postoperative analgesia in anterior thigh, knee and hip surgeries [1]. The primary goal is to block the femoral, obturator, and lateral femoral cutaneous nerves [2]. Although this block has been applied for postoperative analgesia in many surgeries, there are not enough publications in the literature reporting that it is applied for surgical anesthesia.

This case report focuses on the surgical removal of a liposarcoma from the thigh, using a suprainguinal fascia iliaca block to produce surgical anesthesia.

2. Case Report

A Written consent was obtained from the patient for the publication of this article. A 45-year-old male with no systemic diseases presented with a mass measuring 17x10 x4 cm in the diaphyseal region of the thigh. Fig. 1(a) shows the anterior 2/3 of the femur intraoperative surgical area, Fig. 1(b) for the excised mass, Fig. 1(c) for the sonoanatomical image, and Fig. 1(d) for the MRI image of the mass. The patient did not accept general anesthesia or neuraxial anesthesia. Considering the mass location, dermatome, myotome and osteotomes, we decided to perform a suprainguinal block since the mass is located in an area that includes the innervation of the femoral nerve, LFCN and obtoratory nerve. The ultrasound transducer was prepared aseptically, and the skin was sterilized. The linear ultrasound transducer was positioned along the inguinal ligament and moved inferomedially until the bow-tie sign formed by the sartorius, iliacus, and abdominal muscles was visualized. Fig. 1(c) shows the deep circumflex iliac artery was identified, and subsequently, a 100 mm needle was advanced caudally to cranially until reaching the fascia iliaca, creating a space where the needle could be advanced cranially using hydro dissection to separate the fascia iliaca from the

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iliacus muscle. Cranial spread of local anesthetic (25 ml 0.5% bupivacaine, 25 ml 2% lidocaine, 1/200.000 adrenaline, 10 ml isotonic; totally 60 ml) was observed until the point where the iliacus muscle separated from the abdominal muscles. Approximately 20 minutes later, adequate anesthesia of the sensory dermatomes of the femoral nerve, obturator nerve and lateral femoral cutaneous nerve was confirmed by cold testing. The motor block was assessed using the Bromage score, recorded as 2. The surgical procedure started 30 minutes after the block procedure. 2 mg midazolam was administered to reduce anxiety and increase patient compliance. Propofol infusion (50 mcg/kg/h) was continued throughout the surgery. Pain response at the incision site and during the surgery was assessed with hemodynamic parameters. Ketamine (0.35 mg/kg) was administered during femur curettage in response to pain. The procedure had a duration of approximately 80 minutes. Postoperatively, the regimen includes IV paracetamol every 6 h. After the surgery, pain assessment was made with VAS score. The maximum Visual Analog Scale (VAS) score in the postoperative period did not exceed 3 within 24 hours. The patient was discharged smoothly the following day, no complications were observed.

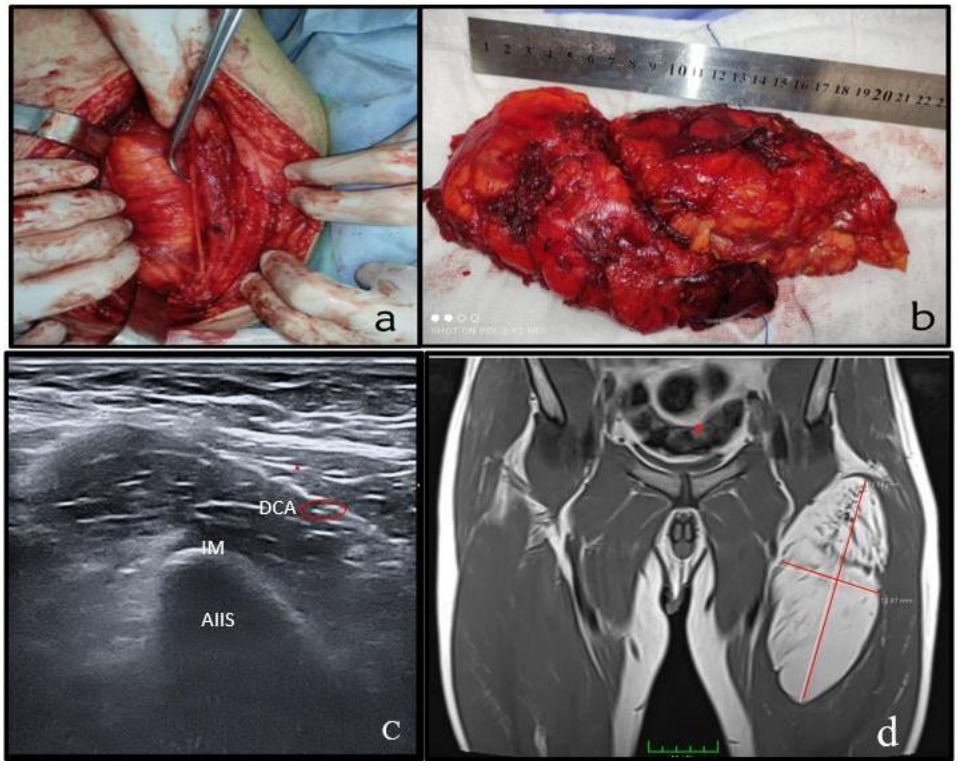

Fig. 1. (a) Anterior 2/3 of the femur intraoperative surgical area; (b)Excised mass; (c) Sonoanatomical image; (d) MRI image of the mass.

3. Discussion

Ultrasound-guided peripheral nerve blocks have gained popularity because of their decreased risk of complications, ability to provide excellent pain relief, and reduced need for opioids. Compared to neuraxial anesthesia, these blocks diminish motor deficits, promoting early ambulation and enhancing patient satisfaction. Nevertheless, clinicians should be cautious of the possible motor block, especially when initiating ambulation during the early hours after surgery. Moreover, targeted anesthetic approaches can be achieved by selectively blocking the extremity undergoing surgery [3].

Interfascial plane blocks aim to deliver local anesthetic to a potential area to affect one or more nerves in a fascial plane [4]. Plan blocks can be used for surgical anesthesia due to their ease of application and wide range of indications. Reports stating that it is used for surgical anesthesia, especially in abdominal, thoracic and extremity surgeries, have taken their place in the literature [5–7].

Suprainguinal fascia iliaca block (SIFIB), known as a technique that precisely targets specific components of the lumbar plexus, provides an anterior and more superficial approach to the lumbar plexus by blocking the obturator nerve together with the femoral nerve and lateral femoral cutaneous nerve. However, there is controversy about the effect of local anesthetic on the obturator nerve.

The preference of SIFIB can be attributed to its understanding of its superiority over traditional fascia iliac blocks and its ease of application. Due to its relatively superficial structure, SIFIB minimizes the risk of nerve or vascular injury during needle insertion. Additionally, one of the advantages of this block is that it can be applied in the supine position of the patient while maintaining a safe distance from important circulatory structures. These properties enable SIFIB to be used as a safe method of primary anesthesia with a relatively large amount of local anesthetic.

The literature highlights the use of the suprainguinal fascia iliac plane block (SIFIB) for postoperative analgesia in hip and knee surgeries as an integral part of an important multimodal analgesic strategy. Additionally, there are studies showing the use of SIFIB as the main anesthesia method in certain patients. Azizoğlu et al. [8] reported that surgical anesthesia was successfully achieved in a high-risk patient with femur fracture; He explained that SIFIB is used together with sciatic nerve block for this purpose. Soulioti et al. [9] reported the use of SIFIB for surgical anesthesia in a patient undergoing emergency femoral thrombectomy.

4. Conclusions

Although this technique is a suitable alternative to traditional anesthesia methods, especially in high-risk patients, debate continues regarding the total volume of local anesthesia injected during application [10, 11]. Further randomized clinical studies, as well as cadaveric and radiological examinations, are mandatory to determine the effectiveness of suprainguinal block.

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Conflict of Interest

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Author Contributions

All of the authors made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; were involved in drafting the manuscript or revising it critically for important intellectual content; and gave final approval of the version to be published.

Data Availability

The datasets created and/or analyzed during the current study are not publicly available, but are available from the corresponding author upon reasonable request.

REFERENCES

1. Hebbard P, Ivanusic J, Sha S. Ultrasound-guided supra-inguinal fascia iliaca block: a cadaveric evaluation of a novel approach. *Anaesthesia*. **2011**; 66(4):300-5.
2. Desmet M, Vermeylen K, Van Herreweghe I, Carlier L, Soetens F, Lambrecht S, et al. A longitudinal supra- inguinal fascia iliaca compartment block reduces morphine consumption after total hip arthroplasty. *Reg Anesth Pain Med*. **2017**; 42(3):327-33.
3. Gürkan Y, Gedik CC, Darçın K, Manici M. Suprainguinal fascia iliaca block for distal femur tumor surgery. *Agri*. **2023**; 35(2):115-6.
4. De Cassai A, Costa F. Editorial: Interfascial plane blocks. *Front Med (Lausanne)*. **2022**; 9:962487.
5. Aydin ME, Medetoglu EN, Yazici K, Colak A, Ahiskalioglu A. A combination of serratus and transverse thoracic muscle plane blocks as the main anesthetic method for a high-risk patient with pericardial tamponade. *J Clin Anesth*. **2021**; 71:110204.
6. Gürbüz H. Ultrasonography-guided oblique subcostal transversus abdominis plane block in combination with ultrasonography-guided rectus sheath block for anaesthesia in abdominal wall surgery. *Turk J Anaesthesiol Reanim*. **2021**; 49(1):63-6.
7. Toscano A, Balzani E, Capuano P, Vaninetti A, Perrucci C, Simonato E, et al. Awake cardiac surgery using the novel pectoralis-intercostal-rectus sheath (PIRS) plane block and subxiphoid approach. *J Card Surg*. **2022**; 37(9):2923-6.
8. Azizoğlu M, Orekeci Temel G, Rumeli Atıcı Ş. Comparison of the effectiveness of suprainguinal fascia iliaca compartment block and patient-controlled analgesia for major hip surgeries in elderly patients. *Turk J Anaesthesiol Reanim*. **2020**; 48(6):460-6.
9. Soulioti ED, Antonopoulos DG, Manikis DE, Kakisis ID, Matsota PK. Applying the suprainguinal approach of fascia iliaca compartment block for surgical anesthesia in a patient undergoing emergency femoral thrombectomy: A case report. *Cureus*. **2023**; 15(8):e43605.
10. Genc C, Akdeniz S, Canikli S, Selcuk Kusderci H, Kefeli Celik H, Tulgar S. Ultrasound-guided suprainguinal fascia iliaca block as part of anesthesia management for lower extremity surgeries: A single-center retrospective cohort feasibility study. *Cureus*. **2023**; 15(10):e47795.
11. Koc K, Kucukorculu Kucuk B, Ferli RB, Yesilyurt B, Guzel N, Tulgar S, et al. Comparison of the postoperative analgesic efficacy of ultrasound-guided suprainguinal fascia iliaca block applied with two different concentrations of bupivacaine in patients undergoing hip surgery under spinal anesthesia. *Chall J Perioper Med*. **2023**; 1(1):2-5.