

ULTRASOUND-GUIDED PERIPHERAL NERVE BLOCK FOR LOWER LIMB SURGERY IN A PATIENT WITH SEVERE LEFT VENTRICULAR DYSFUNCTION: A CASE REPORT

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Abstract

Background: Managing patients with markedly reduced cardiac ejection fraction for surgery poses significant anesthetic challenges, especially regarding hemodynamic stability. Ultrasound-guided nerve blocks represent a safe regional anesthesia alternative in such high-risk cases.

Case Presentation: We describe the perioperative management of a 53-year-old male with an ejection fraction of 28% who underwent a nodovenous shunt procedure for bilateral lower limb filariasis. Regional anesthesia using ultrasound-guided sacral plexus and saphenous nerve blocks was employed, resulting in stable intraoperative vital signs and an uneventful recovery.

Conclusions: Ultrasound-guided regional anesthesia can provide reliable intraoperative conditions and rapid postoperative recovery for patients with compromised cardiac function.

INTRODUCTION

Recent advances in regional anesthesia, driven by the integration of ultrasound imaging, have improved the precision and safety of peripheral nerve block procedures, particularly for individuals with significant comorbidities. Patients with severe left ventricular systolic dysfunction are especially susceptible to perioperative complications due to their limited cardiac reserve. For such patients, maintaining hemodynamic stability and avoiding myocardial depression are essential objectives during the perioperative period.

Case Report

A 53-year-old male (weight: 80 kg, height: 180 cm) with a history of type 2 diabetes mellitus and hypertension presented for surgical creation of a nodovenous shunt, indicated for bilateral lower limb filariasis. Chronic medical management included metformin and amlodipine. Preoperative investigations revealed left ventricular hypertrophy and an ejection fraction of 28% on echocardiogram, with additional findings of moderate wall motion abnormalities and mild valvular disease. The chest radiograph was compatible with mild cardiomegaly.

Due to the patient's low metabolic equivalents and elevated cardiac risk index, regional anesthesia was preferred over general anesthesia. After obtaining informed consent, the patient was positioned laterally. Under aseptic conditions, ultrasound guidance was used to deliver a sacral plexus block (administering a combination of lignocaine with adrenaline, bupivacaine, and distilled water) and a saphenous nerve block on the left side. No intravascular injection was detected during incremental anesthetic administration.

Intraoperative monitoring demonstrated stable hemodynamics: mean arterial pressure ranged from 75 to 90 mmHg, heart rate 80–104 bpm, and oxygen saturation 96–100%. Fluid administration was judicious and synchronized with ongoing blood loss, blood pressure, and urine output. The surgery proceeded without significant adverse events or conversion to general anesthesia. Postoperatively the patient remained hemodynamically stable and laboratory investigations on the first postoperative day were within acceptable ranges. He was discharged on the eighth postoperative day after optimization of comorbidities.

DISCUSSION

Perioperative management of patients with severely compromised cardiac function must emphasize maintaining stable hemodynamics and minimizing factors that might depress myocardial function or lead to volume overload. Regional anesthesia using ultrasound guidance enables individualized delivery of local anesthetic, reducing risks associated with general anesthesia or neuraxial block. This case demonstrates successful use of peripheral block as the sole anesthetic technique for lower limb vascular surgery in a patient with severe cardiac dysfunction, supporting existing evidence for neuraxial-sparing strategies in selected high-risk patients.

CONCLUSIONS

Ultrasound-guided peripheral nerve blocks are viable alternatives to general or neuraxial anesthesia for lower limb surgery in patients with low ejection fraction, offering favorable perioperative hemodynamic profiles and reduced complication risk.

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