



A CASE REPORT OF BELOW KNEE AMPUTATION IN PATIENT WITH VERY LOW EJECTION FRACTION UNDER ULTRASOUND GUIDED POPLITEAL SCIATIC AND FEMORAL NERVE BLOCK

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ABSTRACT

Spinal anaesthesia is the most established technique for lower limb surgeries. In cardiac patients, central neuraxial block and General anaesthesia can be catastrophic due to its deleterious effects. Use of peripheral nerve blocks provides better hemodynamic stability and pain management in high risk patients. We report a case of successful anaesthetic management of patient with very low ejection fraction and coronary artery disease posted for right below knee amputation under ultrasound guided nerve block.

Key words:

Very low ejection fraction, below knee amputation, ultrasound guided popliteal sciatic nerve block, femoral nerve block

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INTRODUCTION

Very low ejection fraction has a very high risk of developing dangerous arrhythmia and cardiac failure. In patients with significant cardiovascular disease, surgery stresses the cardiovascular system, general anaesthesia and central neuraxial block results in significant peri-operative morbidity and mortality [1,2]. Peripheral nerve blocks are safe in these patients [3,4]. we report a case of successful anaesthetic management of below knee amputation in coronary artery disease patient on anticoagulants with ultrasound guided popliteal sciatic and femoral nerve block.

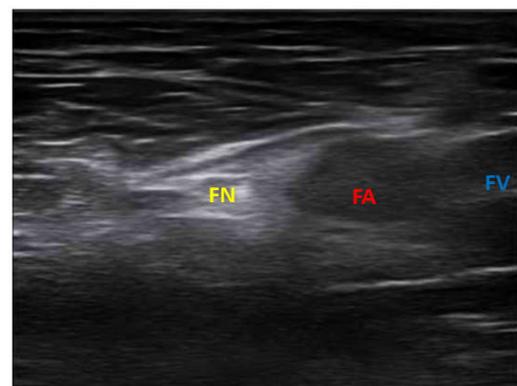
CASE REPORT

A 65 years old male was taken for emergency below knee amputation of right leg under ASA –IV. Patient was diabetic, hypertensive, known case of CAD, CABG done 11 years back, patient was on anticoagulant drugs-clopidogrel 75 mg and aspirin 75 mg. Patient had low hemoglobin, normal prothrombin time, INR and other blood investigations. ECHO showed EF-32%, severe left ventricle dysfunction, global hyperkinesia of left ventricle, aortic valve sclerosed with calcification, posterior mitral annular calcification, dilated left atrium. Baseline BP was 80/60 mmHg. Patient was shifted to operation theatre, monitors were connected, 18G iv line secured in right hand.

Under aseptic precaution, patient kept in supine position for femoral nerve block, high frequency linear probe placed over

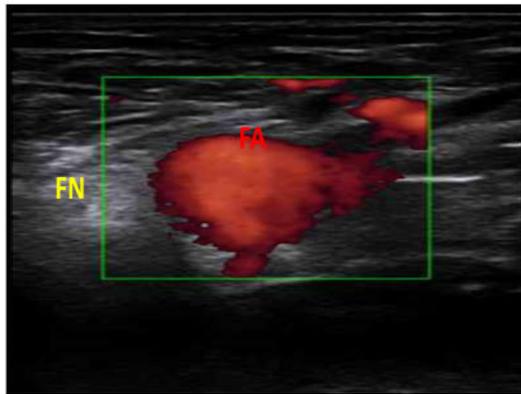
right inguinal region, femoral nerve identified deep to fascia iliaca, lateral to pulsatile femoral artery, 8ml of 0.25% Bupivacaine given perineurally using insulated needle and for popliteal sciatic nerve block, right knee is semi flexed with foot elevated with foot rest, transducer is placed over popliteal crease and moved proximally till the point where, sciatic nerve is divided into tibial and common peroneal nerve, Bupivacaine 0.25%, 20ml is injected at this point into vlock's sheath by in-plane technique. Patient received 0.03 mg/kg of intra-venous midazolam and oxygen was supplied by face mask throughout the procedure. Surgery started after 20 minutes with adequate sensory and motor blockade. Intra-operatively vitals were monitored and urine output was maintained >0.5ml/kg/hr with IV fluids. Patient was stable and procedure was uneventful.

Postoperatively pain was assessed with numeric rating scale and rescue analgesia was given with paracetamol IV infusion.



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FN-Femoral nerve, FA-Femoral artery, FV-Femoral vein

Fig 1 Ultrasonography image of femoral nerve (Right side)

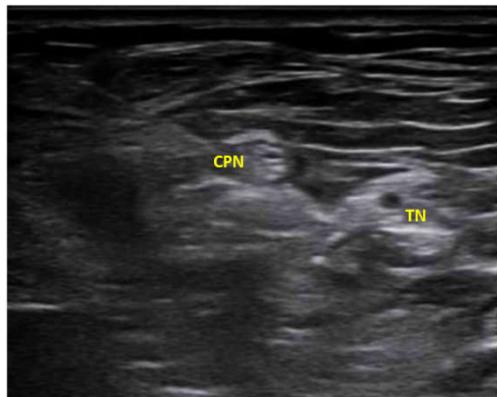


Fig 2 Ultrasonography image of popliteal sciatic nerve(Right side)

CPN-Common peroneal nerve, TN-Tibial nerve, SN-Sciatic nerve, PA-Popliteal artery

DISCUSSION

The goal of anaesthetic management in very low ejection fraction patients include avoidance of drug induced myocardial depression, arrhythmias and maintaining adequate cardiac output. Neuraxial blocks can cause unstable hemodynamic parameters and coagulopathy [5]. Hypotension due to sympathetic blockade and volume overload may precipitate myocardial ischemia owing to poor cardiac reserve. Anticoagulation imposes restrictions to classical regional anaesthetic techniques, administration of neuraxial anaesthesia in patients who have received anticoagulant therapy has risk of spinal hematoma and eventual paraplegia formation [6]. General anaesthesia can result in significant hypotension, myocardial depression and mechanical ventilation-related complications [7]. Direct laryngoscopy and tracheal intubation can cause tachycardia and hypertension due to sympathetic stimulation which will increase the myocardial

oxygen demand. Induction of anaesthesia increases risk of cardiac arrest in cardiomyopathy patients[8].

Peripheral nerve blocks are safe and has less peri-operative complication than general anaesthesia and central neuraxial blockade [9,10]. A small volume of local anaesthetic is safe in high risk patients as larger doses can cause myocardial toxicity, local anaesthesia induced systemic toxicity etc. Real time ultrasonography provides better visualisation and avoids risk of vascular damage. It is necessary to be proficient with ultrasonography anatomy and technique. In addition, peripheral nerve blocks provide adequate post-operative analgesia for several hours.

Best option for managing below knee surgeries with low cardiac reserve is popliteal sciatic and femoral nerve block.

Popliteal sciatic and femoral nerve block provides adequate anaesthesia for below knee surgeries. As popliteal block results in anaesthesia of distal two thirds of the lower extremity, with the exception of the medial aspect of the leg. Cutaneous innervation of the medial leg below the knee is provided by the saphenous nerve, a superficial terminal extension of the femoral nerve. Femoral nerve block results in anaesthesia of the anterior and medial thigh, including the knee, as well as skin on the medial leg and foot. It also innervates the hip, knee, and ankle joints.

CONCLUSION

Thus the patient with coronary artery disease and very low ejection fraction posted for below knee amputation was managed with ultrasound guided popliteal sciatic and femoral nerve block without any complication.

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