

Ultrasound guided popliteal sciatic and femoral nerve block for below knee surgeries

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Abstract

Many patients with older age group and co morbidities face multiple problems to undergo surgeries of the lower limb patients with cardiac co-morbidities have limitations with anaesthesia techniques as spinal anaesthesia is contraindicated in patients having low ejection fraction. Patients having infective pathologies with raised total leucocyte count also cannot be given spinal anaesthesia. Thus in these patients general anaesthesia is preferred over spinal anaesthesia. This makes the patient undergo a wide range of shortcomings like ventilatory support, desaturation, prolonged hospital stay, Increased cost of the ICU stay etc. We aimed at reducing all these short comings in 3 patients undergoing below knee surgeries by giving them ultrasound guided popliteal sciatic nerve block and femoral nerve block for intra operative anaesthesia.

Key Words: popliteal sciatic, femoral nerve block.

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CASE PRESENTATION

3 patients were selected of the following age groups- 73years, 80years and 63years of age. Each patient had co morbidities with a higher age group. All the patients had peripheral arterial disease of lower limb with critical ischaemia and gangrene. The patients were given ultrasound guided popliteal sciatic nerve block along with femoral nerve block for intra operative anaesthesia for below knee surgeries.⁴

Technique: The skin of the lower limb was disinfected with 5% betadine and spirit the transducer was positioned to identify the sciatic nerve in the popliteal fossa and drug was injected into it⁴. For the first patient of age 73yrs (female) popliteal sciatic nerve block was given with injection ropivacaine (0.5%) 20ml. For the second patient of age 63 years (female) popliteal sciatic nerve block was given with injection ropivacaine (0.5%) 20ml and for the third patient of age 80years (male) popliteal sciatic nerve block was given with injection ropivacaine (0.5%) 20ml with 10cm stimuplex needle. Along with the popliteal sciatic nerve block these patients were also given ultrasound guided femoral nerve blocks for additional anaesthesia up to mid thigh region⁴. For the first patient of age 73 years (female) femoral nerve block was given with injection lignocaine with adrenaline 10ml with 10cm stimuplex needle. For the second patient of age 63 years (female) femoral nerve block was given with injection lignocaine with adrenaline 10 ml. For the third patient of age 80 years (male) the block was given with injection lignocaine with adrenaline 10ml with 10cm stimuplex needle.

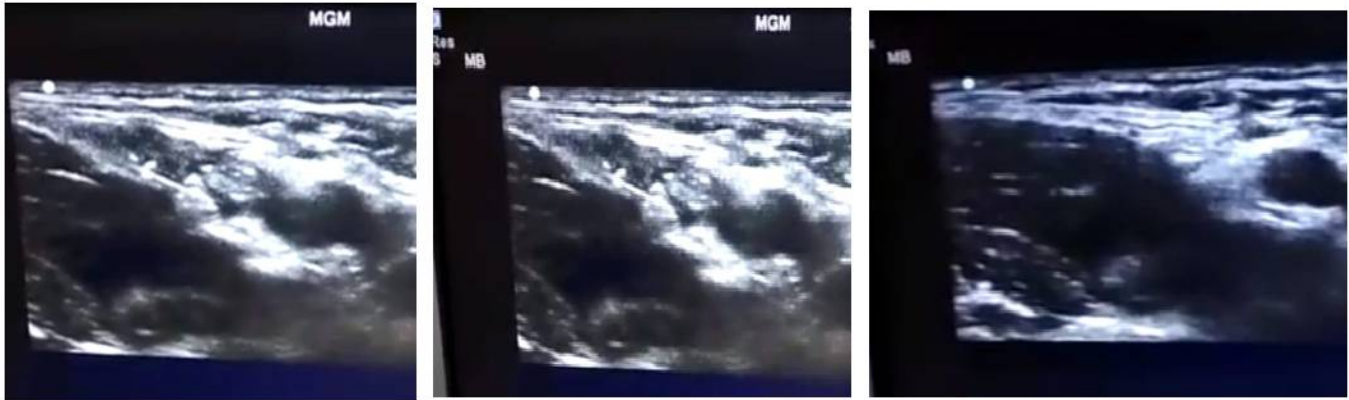


Figure 1: Femoral nerve block



Figure 2: Opliteal sciatic nerve block



Figure 3: Images of drug spread after giving the block

Introduction: Ultrasound guided popliteal sciatic nerve block along with femoral nerve block has wide range of advantages over general anaesthesia in patients with a compromised cardiac status and old age(4).It decreases the need of ventilatory support gives adequate amount of post operative analgesia, decreases the need for opioids and thus systemic toxicity associated with them, the hospital stay is decreased thus reducing the cost of stay,

decreases the risk of arrhythmias that occur as a result of hypoxaemia caused by general anaesthetic agents.

CASE REPORT

Case 1: The patient of age 73years female came with chief complaints of pain in the right lower limb with blackening of the foot. She was a k/c/o diabetes since 10years now. On investigating further her haemoglobin was 9.6 gm/dl, TLC count was 15,620cubic mm platelete

count was 4.66 lakhs, serum creatinine was 0.8, sodium-127 meq/l, potassium-2.9meq/l, sgot-22, sgpt-29 ECG showed changes of atrial fibrillation, 2-D echo showed ejection fraction of 42%, concentric LVH and atrial fibrillation. She was started on Injection Monocef 1 gm BD, Injection Pan 40mg OD, Injection Tramadol 50mg in 100ml NS, Injection Clexane 0.6ml S.C BD and Cap Ecosprin gold OD. She was posted for below knee amputation after Inj Clexane and Cap Ecosprin gold was withheld.

Case 2: patient of age-63years, female, came with chief complaints of pain in right foot with blackening of right second and third toe. Patient had history of varicose veins with EVLT done in 2016. On investigating patients haemoglobin was 8gm/dl, TLC was 3940, platelet count was 2.43 lakhs, T.bilirubin was 0.3, sgot-23, sgpt-24 inr-0.99, sodium-138meq/l, potassium-4.1meq/l On 2-D echo ejection fraction was 58% with mild concentric LVH, mild tricuspid regurgitation, Grade 1 diastolic dysfunction and mild pulmonary hypertension. Patient was started on injection clexane 0.6mg s.c bd, injection monocef 1.5mg bd, tab ultracet bd and cap ecosprin gold od She was posted for third toe amputation after injection Clexane and Ecosprin gold was withheld.

Proforma

AGE:	73years	63years	80years
Sex:	female	female	male
COMORBIDITIES-	PAD, AF	DM PAD, veins sepsis	varicose PAD, DM
SYMPTOMS-	pain in right foot, breathlessness, palpitations	pain in right leg, breathlessness.	blackening of foot, drowsy
2-D ECHO-	EF-42%, conc atrial fibrillation mild	LVH EF-58%, TR, grade 1 dd.	conc LVH EF-45%, mod MR, TR, grade 1 DD
INVESTIGATIONS-	HB-9.3 TLC-15, PLT COUNT-4.66lakhs	HB-8.0 620 TLC-3940 2.43lakhs	HB-8.5 TLC-32,070 4.91lakhs
Serum creatinine	0.8	0.5	2.1
SGOT -	22	23	31
PULSE-	122/min	88/min	110/min
B.P-	128/82mmhg	134/70mmhg	140/80mmhg
SPO2-	93%	98%	94%

*PAD-Peripheral arterial disease, *DM-Diabetes mellitus, *AF-Atrial fibrillation, *LVH-Left ventricular hypertrophy, *TR-Tricuspid regurgitation, *MR-Mitral regurgitation, *DD-Diastolic dysfunction.

DISCUSSION

Below knee amputation is a procedure done under spinal anaesthesia unless contraindicated. Indications of below knee amputation are:⁵

- An uncontrolled infection of the foot,
- A traumatic injury to the foot or lower leg that cannot be salvaged

Case 3: patient of age-80years, resident of parbhani came with presentation of drowsiness(? Septic encephalopathy) and blackening of foot On investigating patients haemoglobin count was 8.5 gm/dl, TLC-32,070, platelet count -4.91 lakhs, T.bilirubin-0.9, sgot-23, sgpt-23, serum creatinine-2.10, sodium-134meq/l, potassium-5.5meq/l ECG showed ventricular premature contractions along with ST elevation in V2-V3 and chest xray showed cardiomegaly. On 2-D echo ejection fraction was 45% with mildly dilated left atria/ventricle with global left ventricular hypokinesia and moderate mr, mild tr and grade 1 diastolic dysfunction Patient was posted for below knee amputation.

RESULTS

All the three patients recovered well and did not need any ventilatory support. the requirement of opioids for post operative analgesia was also reduced as the effect of the block lasted for 8-9 hours. case 1 was shifted to the ward from the ICU after 24 hours of monitoring. case 2 did not require ICU admission and case 3 was shifted to the ICU and required ICU stay for 4 days.-

- Loss of blood supply to the foot either from trauma or vascular disease
- A chronic foot or ankle deformity
- Birth defects or malignant bone tumours

Side effects of below knee amputation are;⁵

- Pain
- Wound infection,

- Muscle weakness,
- Phantom limb
- Neuroma
- Knee contracture

Blocks can be given for anaesthesia in various surgeries. Surgeries below knee can effectively be done under popliteal sciatic nerve block combined with femoral nerve block. Blocks are effective not only for giving intra operative anaesthesia but also effective in giving post operative analgesia.³ Even blocks have side effects like soreness at injection site, cardiac arrhythmias by intravascular infiltration, bleeding etc In this study we have given the patients ultrasound guided popliteal sciatic nerve block and femoral nerve block with injection roivacaine 0.5% 20cc and injection lignocaine with adrenaline 10cc. After giving the blocks visual analogue scale was done at 0,1,2,3,6,12, and 24 hours postoperatively. Round the clock analgesics were given to the patients (injection paracetamol 1gm). The duration of analgesia in case 1 was 7hours, in case 2 it was 6hours and in case 3 it was 10 hours. and the requirement of opioids was decreased in all the 3 patients. There were no side effects in them. early mobilisation was achieved in all the three patients.¹ Further studies are required to show anaesthetic and analgesic efficacy of ultasound guided polpiteal sciatic nerve block and femoral nerve block in various types of below knee surgeries using different local anaesthetics at different dosages.

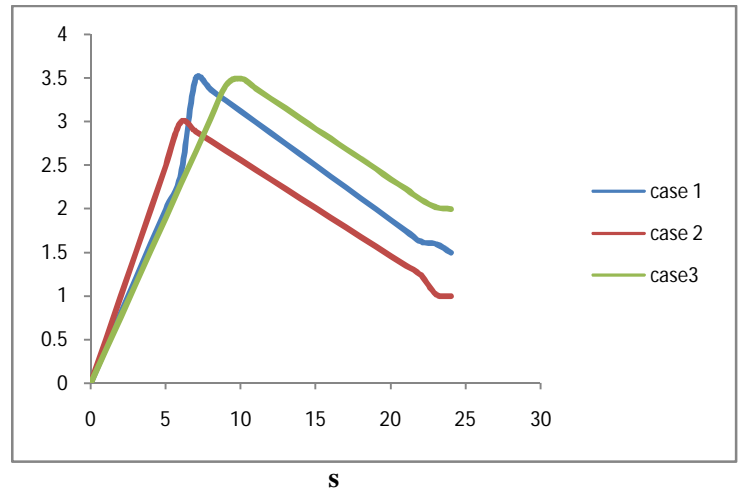


Figure 4: Y-axis=visual analogue scale, X-axis=hours

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