



ORIGINAL RESEARCH PAPER

Anaesthesiology

“A COMPARATIVE STUDY OF FEMORAL NERVE BLOCK AND INTRAVENOUS FENTANYL ADMINISTRATION IN PATIENTS FOR SITTING POSITION FOR SPINAL ANAESTHESIA FOR SURGERY IN FRACTURE FEMUR SHAFT.”

KEY WORDS:

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INTRODUCTION

The femur, also called as the thighbone, is the longest, largest and the strongest bone of the body. The fracture of the femur is caused by high impact trauma and large amount of force is required. It can also be caused by low energy trauma as well. It is most commonly associated with multiple bone fractures.

The fracture femur shaft is most commonly treated operatively, the only exception being children below the age of 4 years. Closed Reduction and Internal Fixation with nailing is the method of choice nowadays.

The nerve supply of the periosteum is mostly from the nerves of the overlying skin, while the motor branches to nearby muscles provide the deeper supply. The main nerve supply is from the femoral nerve supplying the quadriceps femoris muscles.

Spinal and epidural anaesthesia is usually applied to such patients for surgery. However, sometimes the over-riding of the fractured ends is very painful and the positioning of the patient for the anaesthesia procedure becomes difficult.

The femoral nerve block has been used successfully in adults for pre-operative analgesia or in the emergency department.

The present study was undertaken to study the efficacy of **femoral nerve block** performed by using an ultrasound machine as compared to the use of intravenous opioid **Fentanyl** in achieving pain relief while performing spinal anaesthesia.

AIMS AND OBJECTIVES

AIM:

The aim of this study is to compare the femoral nerve block using ultrasound machine and intravenous fentanyl for relieving pain and achieving optimum position before giving spinal block.

OBJECTIVES:

- To compare feasibility of femoral block in a group of patients.
- To compare the analgesic effect of femoral nerve block to Intravenous Fentanyl administration before giving spinal anaesthesia.
- To compare pain score by VAS method in both groups.
- To study performance time of spinal anaesthesia in both groups of patients.

MATERIALS AND METHODS

- A randomized prospective study was conducted after obtaining prior permission from the ethics committee of the hospital in 20 patients.

INCLUSION CRITERIA:

- It was within the age groups of 18-60 years.
- Both male and female genders were selected.
- It was done in patients suffering from isolated femur shaft

fractures.

- Patients belong to ASA I and II .
- All patients were randomly divided into two groups of 10 each.
- Group IVF received Inj. Fentanyl 2 µg/kg.
- Group FNB received femoral nerve block with 1.5% Lignocaine 3 mg/kg.

EXCLUSION CRITERIA:

- Patients with spinal deformity.
- Patients with known or suspected haemorrhagic diathesis.
- Patients with peripheral neuropathy.
- Patients with known or suspected allergy to amide local anaesthetics or narcotics.
- Patient with mental disorders and who are unable to comprehend pain scores.
- ASA III and IV.

• Pre-operatively all patients were thoroughly evaluated and the following investigations were done:

1. Complete blood count
2. Random Blood Sugar
3. BT/CT
4. Chest X-Ray
5. Electrocardiogram in patients >35 years of age
6. BUN/Serum Creatinine
7. LFT

- On arrival in the waiting room of operation theatre, a visual analog score (VAS) (0 = No pain to 10 = maximal pain) was clearly explained to the patients.
- Adequate starvation and separate consent was confirmed.
- IV line was secured with 20 G cannula, and slow Ringer Lactate was started.
- Baseline heart line, blood pressure and VAS score was recorded, and oxygen saturation was monitored.
- No premedication was given.
- Skeletal traction was maintained throughout the anaesthesia procedure.

EQUIPMENT:

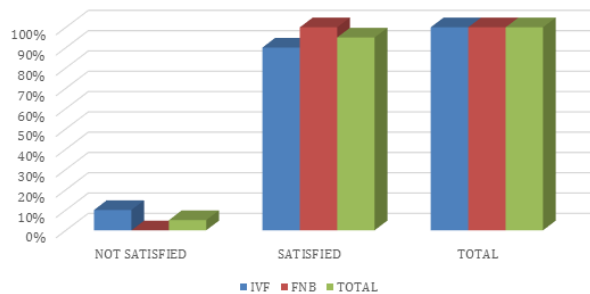
- 1) Sterile towels and 4" x 4" gauze packs
- 2) 20 mL syringes with local anaesthetic
- 3) Sterile gloves, marking pen
- 4) Ultrasound machine
- 5) 23G Spinal needle
- 6) 10 cm extension
- 7) 25G Spinal needle (Quincke's)
- 8) Lignocaine 1.5% vial
- 9) Bupivacaine Heavy

- Group FNB patients received a femoral nerve block using ultrasound.
- The needle was introduced in plane lateral to the femoral artery and 1.5 cm below the inguinal ligament after visualization on the ultrasound machine.
- Once the location is confirmed, an extension is attached to

the needle.

- Negative aspiration is confirmed.
- 3 mg/kg of 1.5% Lignocaine is given slowly according to the weight of the patient.
- Group IVF received intravenous Inj. Fentanyl 3 µg/kg.
- In both groups, the time when treatment drug was administered was considered as the starting point (T0).
- Five minutes after T0, the patient was placed in sitting position and spinal anaesthesia was performed by the anaesthesiologist unaware of the patient group.
- Local anaesthetic skin infiltration was not made.
- A median approach was used.
- The VAS scores and haemodynamic parameters during the performance of femoral nerve block and during placement into the sitting position were recorded.
- The performance time (defined as the time from beginning of patient positioning to the end of the performance of spinal anaesthesia) and the quality of patient position maintained for spinal anaesthetic block placement.
- (0 = not satisfactory, 1 = satisfactory, 2 = good, and 3 – optimal) were also recorded.
- The VAS score during patient positioning and the quality of patient position were recorded by the anaesthesiologist who performed the spinal block.
- Patient positioning for surgery was given after removal of traction.
- All surgeries were completed with spinal anaesthesia.
- Post operatively, the patient was shifted to recovery room and haemodynamic parameters were monitored.

Groupwise Distribution Of Subjects by their acceptance for the procedure



DISCUSSION

Routinely, spinal anaesthesia is mostly used for the surgical procedure of closed reduction and internal fixation and inserting an intramedullary nail in anterograde fashion. The position of these patients to perform spinal anaesthesia is often problematic because even a minimal overriding of the fracture causes intense pain to the patient. To reduce the pain and avoid further soft tissue trauma, we prefer to give a femoral nerve block, ultrasound guided to reduce the pain and allow the patient to sit while giving spinal anaesthesia. Despite this practice, administration of a substantial amount of intravenous analgesics is mandatory during the placement of a block. The femoral nerve block has been successfully used in adults posted for shaft femur fractures in the pre-operative period.

This prospective, randomized study demonstrates that femoral nerve block is more effective than intravenous administration of Inj. Fentanyl to facilitate the sitting position for spinal anaesthesia in patients undergoing surgery for femur shaft fractures. The choice of the anaesthesia management in patients with a fracture of the shaft of femur is greatly influenced by the surgical needs.

In our study, the feasibility and analgesic effect of femoral nerve block and intravenous Inj. Fentanyl were compared. A five minute interval between T0 and the performance of spinal

anaesthesia was chosen to maximize the analgesic effect of fentanyl. We found that a VAS score in FNB group decreased from 9.16 ± 0.85 to 3.16 ± 1.1 in five minutes after performing the block. Whereas in the IVF group decrease was noted from 8.68 ± 1.02 to 5.4 ± 0.86. Both techniques provided sufficient analgesia to perform spinal anaesthesia in the sitting position but the analgesic effect of Femoral nerve block was significantly better.

CONCLUSION

- Thus, we conclude that femoral nerve block is easy to perform and effective in providing adequate analgesia in patients with fracture shaft femur.
- Femoral nerve block is more advantageous than intravenous fentanyl to facilitate sitting position for patients undergoing surgery for fracture shaft of femur.