

## ORIGINAL RESEARCH

# Analysis Of Heart Rate, Map, O2 Saturation And Vas Score In Femoral Nerve Block And Facia Iliaca Block For Hip Fractures

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## ABSTRACT

**Background:** femoral nerve block and facia iliaca block are the mainstay of anaesthesia in hip fractures surgery. Femoral nerve block (FNB) is effective in providing analgesia for femur fractures. A fascia iliaca compartment block (FICB) is a modification of the femoral nerve block

**Aim of the Study:** Evaluating various hemodynamic parameters (heart rate, mean arterial pressure, oxygen saturation) and visual analog scale score in femoral nerve block and facia iliaca block in hip surgery patients

**Methods:** A total of 60 patients were randomly allocated to two groups (30 in each group). One group received femoral nerve block (FNB) and second group received fascia iliaca block (FIB) for postoperative pain relief. These blocks were ultrasound guided. All Patients' hemodynamic parameters like heart rate, mean arterial pressure, oxygen saturation and pain was evaluated by Visual Analogue Scale (VAS) analysed and compared in both the group.

**Results:** In our study most of the participant were male with older age group (>60 year). There are no statistically significant difference were found in respect to age distribution, gender, BMI, ASA grade, hemodynamic status (heart rate, MAP, O<sub>2</sub> saturation and VAS score for pain (p>0.05) among FIB and FNB group.

**Conclusion:** Facia iliaca block and femoral nerve block both are equally effective and no significant difference in vitals and post operative analgesia.

**Key words:** VAS score, Heart rate, mean arterial pressure, Oxygen saturation, FNB, FIB

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## INTRODUCTION

Hip fractures are extremely painful and associated with significant morbidity and mortality [1-2]. Hip arthroplasty is the main orthopedic emergency surgical treatment for femoral neck fractures in the elderly, numerous studies have shown that hip arthroplasty can cause severe pain in the perioperative period, which can lead to a series of related complications, which not only increases the perioperative risk but also is detrimental to the long-term prognosis of patients. Fore, optimal perioperative analgesia can greatly facilitate patients post operative recovery [3-4]. Regional anesthesia is preferred during surgery in these patients. However, the

severe pain associated with these injuries makes appropriate positioning difficult for the regional anesthesia, thus altering their overall success rate [5-6]. Femoral nerve block (FNB) is effective in providing analgesia for femur fractures. A fascia iliaca compartment block (FICB) is a modification of the femoral nerve block. It is performed by application of local anaesthetic beneath the fascia iliaca and provides a block of femoral nerve and lateral femoral cutaneous nerve and rarely of obturator nerve [7-8]. A study compared visual analogue score during positioning, quality of patient position, rescue analgesia and duration of procedure. They concluded that ultrasound

guided femoral nerve block was more effective than intravenous fentanyl for reducing pain in patients with proximal femur fracture before spinal anaesthesia [9].

### AIM & OBJECTIVE

Assessment of various vitals parameters (heart rate, map, o<sub>2</sub> saturation) and visual analog scale score in femoral nerve block and fascia iliaca block in hip surgery patients.

### MATERIALS AND METHODS

This is a Prospective Randomized clinical study carried out in the department of Anesthesiology in Institute of Anesthesiology and Critical Care, Madras Medical College, Chennai. Duration of the study was eight months from September 2019 to April 2020. A total of 60 patients were enrolled in our study and randomly divided into two groups (30 in each group); Group A: Ultrasound guided femoral nerve block using 40ml of 0.25% Bupivacaine Group B: Ultrasound guided fascia iliaca block using 40ml of 0.25% Bupivacaine

### INCLUSION CRITERIA

15-65 years age group of patients with both sex, elective hip surgery, ASA I, II and patients who have given valid informed consent were included in current study.

### EXCLUSION CRITERIA

Patients who not fulfill the inclusion criteria, Skin and soft tissue infection, Bleeding disorders, spinal deformity, drug allergy, prolong surgery duration (> 3 hour), BMI >35 and patents who provide consent were excluded from our study. All patients were shifted inside the operation theatre and ASA standard monitors (ECG, Non-invasive blood pressure, pulse oximetry) were connected. Baseline heart rate, oxygen saturation, means arterial pressure was

recorded. Patients in group A received ultrasound guided femoral nerve block with 40ml 0.25% Bupivacaine. Patients in Group B received ultrasound guided fascia iliaca compartment block with 40ml of 0.25% Bupivacaine Vitals – heart rate, oxygen saturation, mean arterial pressure, VAS were recorded at zero time, 5 minutes, 15 minutes, 30 minutes, 1st hour, 4th hour, 6th hour, 8th hour, 12th hour, 16th hour and 24th hour. Duration of postoperative analgesia is defined as time interval between 0 minute in postoperative period and time at VAS more than or equal to 4. Patients with VAS more than or equal to 4 have received rescue analgesics. intramuscular diclofenac was given as rescue analgesia.

### STATISTICAL ANALYSIS

Data was analysed by using a SPSS version. 17.0, analysis student unpaired t-test, student paired test, and chi-square test. P values less than 0.05 were considered as significant.

### RESULTS

Sixty patients were randomly divided into two groups (30 in each group) enrolled and analyzed in present study. The socio-demographic variables between two groups are compared in table: 1. In both the groups majority of the cases were above 60 years of age and statistically insignificant with respect to the age distribution ( $P > 0.05$ ). Majority of the cases were male in both the groups, but statistically not significant ( $p > 0.05$ ). Both the groups indicated that majority cases had normal weight, statistically insignificant with respect to the BMI distribution ( $p > 0.05$ ). Majority of the cases belonged to ASA II in both the groups, not significant difference observed ( $p > 0.05$ ).

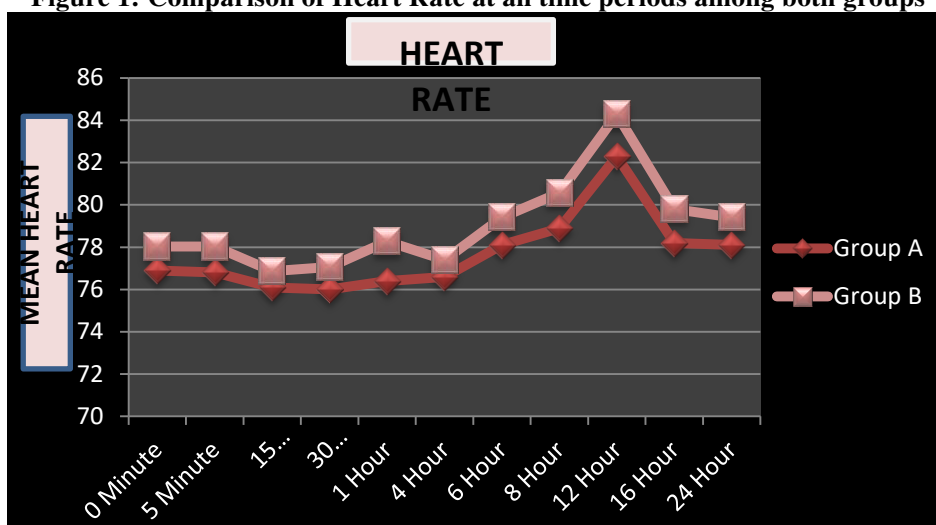
**Table 1: Socio-demographic variables of the study participants**

Socio-demographic variables	Group A	Group B	T/ $\chi^2$ -Test	P value
<b>Age group</b>				
< 30 Years	3 (10%)	1 (3.3%)	T= 8.992	0.438
31 - 45 Years	7 (23.3%)	3 (10%)		
31 - 45 Years	8 (26.7%)	12 (40%)		
> 60 Years	12 (40%)	14 (40.7%)		
<b>Gender</b>				
Male	18 (60%)	20 (66.7%)	$\chi^2 = 2.50$	0.253
Female	12 (40%)	10 (33.3%)		
<b>BMI</b>				
< 24.99	25 (83.3%)	22 (73.3%)	$\chi^2 = 2.182$	0.336
25 – 29.9	5 (16.7%)	7 (23.3%)		
30 – 34.5	0 (00%)	1 (3.6%)		
<b>ASA class</b>				
ASA I	14 (46.7%)	13 (43.3%)	$\chi^2 = 0.002$	0.961
ASA II	16 (53.3%)	17 (56.7%)		

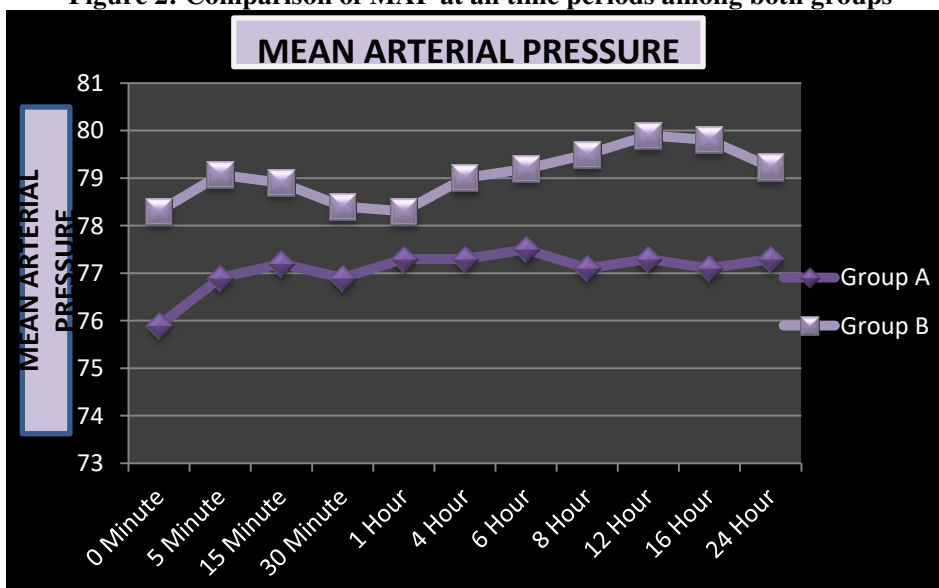
**Table 2: Comparison of duration of surgery among both groups**

Duration of Surgery (in hours)	Group A	Group B	t-test	P value
	N (%)	N (%)		
2:00	2 (6.7%)	1 (3.3%)	3.000	0.542
2:10	1 (3.3%)	2 (6.7%)		
2:15	1 (3.3%)	2 (6.7%)		
2:20	2 (6.7%)	1 (3.3%)		
2:25	0 (76.6%)	1 (3.3%)		
2:30	6 (20.0%)	4 (13.4%)		
2:35	2 (6.7%)	2 (6.7%)		
2:40	3 (10.0%)	3 (10.0%)		
2:45	5 (16.7%)	8 (26.7%)		
2.50	3 (10.0%)	2 (6.7%)		
3.00	5 (16.7%)	4 (13.4%)		

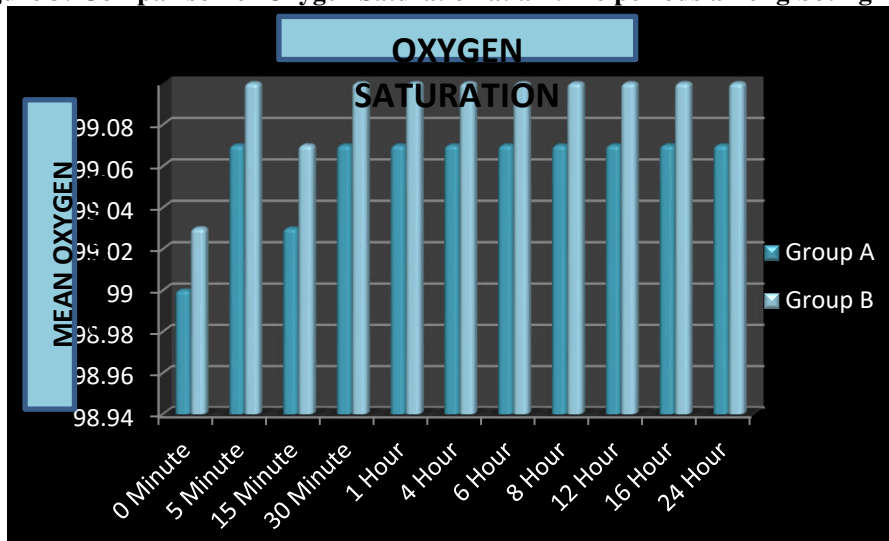
**Figure 1: Comparison of Heart Rate at all time periods among both groups**



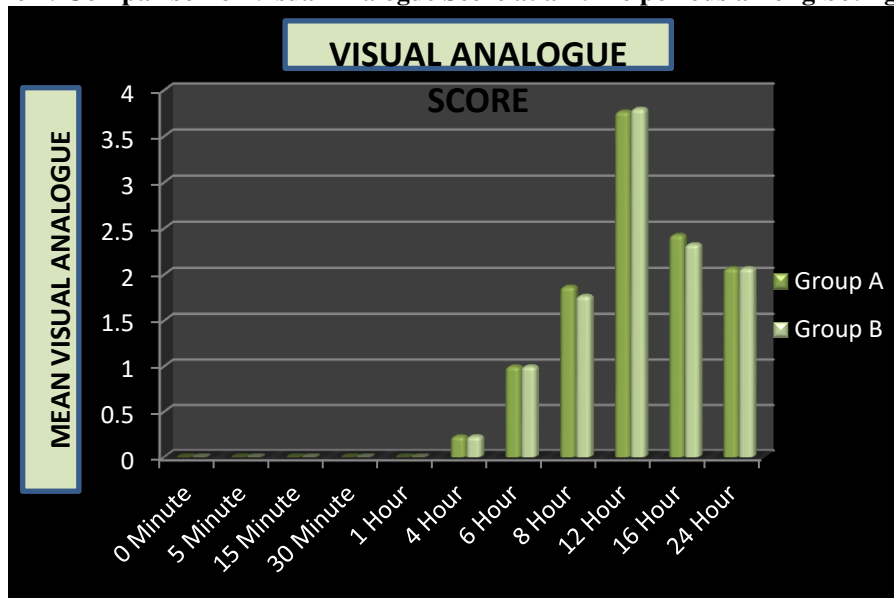
**Figure 2: Comparison of MAP at all time periods among both groups**



**Figure 3: Comparison of Oxygen Saturation at all time periods among both groups**



**Figure 4: Comparison of Visual Analogue Score at all time periods among both groups**



**DISCUSSION**

Fracture neck of femur is most common in elderly patients even as a result of trivial trauma and is the most common cause of admission and which often requires fixation by surgery. Since elderly patients are more prone to complications of systemic analgesia, we prefer using peripheral nerve block is attractive as an alternative choice of analgesia. Present study found most of the participants were older age group (>60 years) with normal body mass index (BMI< 24.99). Statistically no significant difference between both the groups in respect to age distribution, gender, BMI and ASA grade (p>0.05), our results are similar with the study conducted by Gupta M et al [10] and Krishnamurty, P et al [11]. In

our study no significant difference in duration of surgery among both the group (FNB and FINB), concordance with the Callear J et al [12] In this study also there was no significant difference in hemodynamic parameters (heart rate, mean arterial pressure and oxygen saturation) among both the groups, our finding are comparable with the other researchers:, Yu B et al [13] and cooper AL et al [14]. Shukla U et al [15] observed the mean arterial pressures increased in the control group, but this difference was not significant. Bergmann et al [16], studied the haemodynamic effects of peripheral nerve blocks and concluded that they provided more hemodynamic stability than general anaesthesia for ASA III patients. Present study compared

postoperative analgesia (VAS score) among patients undergoing hip surgery, we found that no statistically significant difference ( $p > 0.05$ ) in pain intensity among these two blocks, this is consistent with many other studies results like Farid et al [17], and Murgatroyd H et al [18], whereas Williams et al. [19] and Groot et al. [20], in their respective studies, showed that FICB was better as compared to intravenous analgesics. Sia et al. [21], in their study, concluded that the FNB given with the aid of a peripheral nerve stimulator, with 15 mL of 1.5% lignocaine, was successful at achieving a VAS score of  $0.5 \pm 0.5$ , 5 minutes after local anesthetic was dispensed, for spinal anesthesia positioning, as compared to an intravenous fentanyl group which had a VAS score of  $3.3 \pm 1.4$ .

## CONCLUSION

We conclude that both the FIB and the FNB are equally efficacious in terms of duration of postoperative analgesia, postoperative hemodynamic status (heart rate, mean arterial pressure and oxygen saturation), and postoperative visual analogue score in patients with hip fractures surgery. Ultrasound guided FICB can be an effective alternative to femoral nerve block, because of its relative simplicity in technique and less invasiveness

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