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Original Research Article

# USG Guided Fascia Iliaca Block vs '3 In 1' Block in Patients Undergoing Neck Femur Surgeries: A Randomized Clinical Study

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**Conflict of interest: Nil**

**Abstract:**

**Background:** Regional analgesia is popular technique to achieve post operative pain relief. Both Fascia iliaca compartment block (FICB) and '3 in 1' nerve block are two regional anaesthetic technique for intraoperative and post-operative pain relief in neck femur surgeries. Use of a single injection in '3in 1' block necessitates special skill and nerve sparing. FICB is placed more laterally thereby improving safety and has emerged as a viable alternative. Here we used USG guided method. This study intends to compare the analgesic effects of these two blocks in patients undergoing lower limb surgeries.

**Methods:** In this study, 78 patients with ASA I and II were randomly allocated to 2 groups, GROUP F and GROUP B. GROUP F patients received Fascia illiaca compartment block and GROUP B received '3in1' block. Patient observed in the post-operative period to determine the duration of effective analgesia from the end of surgery.

**Results:** On comparison, it was found that duration of analgesia was significantly higher in FICB compared to '3in1' block. Although comparison of the total dose of rescue analgesic required in the first 24 hour post-operative period showed no significant difference among two groups.

**Conclusion:** From this study we would like to suggest Fascia iliaca block as a safer and more effective alternative to '3in1' block for post-operative analgesia in neck femur surgeries.

**Keywords:** post-operative analgesia, Fascia illiaca block, '3 in 1' nerve block, ultrasonography.



## Introduction

Major lower limb surgery is often painful and requires aggressive management. Postoperative pain relief can be achieved by a variety of techniques, including parenteral NSAIDs, neuraxial local analgesics and narcotics, epidural analgesia, peripheral nerve block, wound infiltration and patient-controlled IV analgesia with opioids.

The fascia iliaca compartment block (FICB) was first described [1] by Dalens and colleagues in 1989. It remains a popular regional anaesthetic technique for surgical procedures involving the hip joint and femur for intraoperative as well as post operative pain relief avoiding the side-effects of intravenous analgesics such as opioids. This can be particularly useful in patients having significant comorbidities such as severe respiratory and cardiovascular disease or morbid obesity and potential airway difficulties, chronic kidney diseases which may cause serious problem in patients post operatively in case of opioid and NSAIDS analgesia.

The Fascia iliaca compartment block (FICB) and "3 in 1 block" are a popular and effective mode of analgesia for various surgery of lower limb particularly involving hip and femur. FICB may be thought of as an anterior approach to the lumbar plexus where local anaesthetic (LA) is injected proximally beneath the fascia iliaca, with the aim of blocking the femoral nerve (FN), obturator nerve (ON), and lateral cutaneous nerve of thigh (LCNT) simultaneously. Unlike the FN block, the needle is not directed to lie adjacent to the FN, thus reducing the risk of neuropraxia. Fascia illiaca invests the illiopsoas muscle and femoral nerve. Classically the block was performed by a 'Double pop' technique where the first pop was for the piercing the fascia lata and second pop was for fascia iliaca. Double pop technique lead to inadvertent placement of local anaesthetic above the fascia iliaca layer beneath the fascia lata or intramuscularly, leading failure of block. Ultrasound guidance eliminates this problem and allows real time placement of needle beneath the fascia iliaca and hence proper spread of local

anesthetic in the fascia iliaca compartment thus improving the quality of block and also the duration of post operative analgesia.

While in '3 in 1' nerve block, uses a single injection to block the femoral, lateral femoral cutaneous and obturator nerves simultaneously. These three nerves provide major sensation to the lower extremity, and the ability to inhibit the individual distribution allows for successful analgesia and anesthesia for lower limb surgeries [2,3,6]. Providing three in one block to the patients can be difficult and it often requires assistance of peripheral nerve stimulation, necessitating the development of special skill. This block can also result in anesthesia sparing to the obturator nerve and lateral femoral cutaneous nerve, thereby leading to increased dissatisfaction among patients.

As an alternative to '3 in 1' block, fascia iliaca compartment block (FICB) was originally described for use in pediatric patients. FICB is placed more laterally than three in one block, thereby decreasing potential for an intravascular or intraneural injection. This block reported consistent capture of the three major nerves innervating the lower extremity, combined with the anatomical safety profile and the ease in placing the block, has made the FICB a viable alternative to three in one block [6].

This study intends to compare the analgesic effects of these two blocks in patients undergoing neck femur surgeries.

**Materials and Methods**

In this Open label parallel group Randomised control trial study, 78 patients were included in the study leaving out those that did not fulfill the inclusion criteria. The Study was done in ORTHOPAEDICS OT COMPEX of a tertiary care teaching hospital, IPGME&R. and SSKM Hospital.

Patients were randomly allocated to 2 groups, GROUP F and GROUP B. GROUP F patients received Fascia illiaca block and GROUP B received '3 in 1' block. After proper pre anaesthesia checkup patient was taken up in operation room and after taking a record of the preop vitals, patients were given general anesthesia. All patients were premedicated on the day of operation with oral midazolam 0.05mg/kg. General anesthesia was induced with iv thiopental 3-5 mg/kg, iv fentanyl 2mcg/kg. Muscle relaxation was achieved with iv atracurium 0.5 mg/kg and orotracheal intubation done with ET tube of appropriate size and type. Intraoperative analgesia was maintained with iv fentanyl infusion @ 0.05/kg/min. General anesthesia was maintained with N2O: O2(3:2) and isoflurane (0.2 -1 vol %) titrated dose. Intraoperative fentanyl infusion stopped 30 min prior to the end of operation. After the operation was done, patient was prepared for administering the block according to the pre assigned group. After successfully administration of the block patient was extubated and observed in the post operative recovery room.

Before administering the block standard antiseptic dressing and draping were done and strict sterility maintained. For Fascia Illiaca Block, under USG guidance the femoral nerve is localized just lateral to the pulsatile femoral artery as triangular, round or oval in shape, at the level of inguinal crease. With patient in supine position, a high frequency linear array transducer of 8 – 12 MHz (a depth of 3 -4 cm is usually adequate to visualize the nerve) is chosen. The USG probe is placed @90 degree perpendicular to the skin parallel to the inguinal crease. Pulsatile hypoechoic noncompressible femoral artery located with the femoral vein, compressible structure just medial to the artery. Femoral nerve, a hyperechoic structure localized just lateral to the artery, fasialata and fascia illiaca are seen as hyperechoic structures traversing from medial to lateral perpendicular to the short axis of the artery. Fascia lata is the superficial structure, as the fascia illiaca courses medially, it thickens to become the illiopectineal ligament and is deep to the femoral artery and femoral vein. A 22-gauge stimulating needle is attached to LA syringe. Target neural structure is kept at the middle of the screen. The needle is introduced along the lateral border of the transducer in- plane to the USG beam. The recommended perineural target is needle placement just deep to the fascia illiaca, lateral to the nerve. At this point LA is injected and La distribution deep to the fascia illiaca around the femoral nerve is observed. Bupivacaine 0.5 % at 3mg/kg + 0.9 % normal saline to make a volume of 30 ml is administered.

For '3 in 1' the inguinal ligament is noted as a linear hyperechoic structure, and as the probe is slid caudad, the large femoral vein and the non-compressible femoral artery was identified. Lateral to these structures, the femoral nerve sheath was visualized and appears as a hyperechoic triangular structure. A small skin wheal over the target site with LA is made. The injection is made using a 21-gauge spinal needle attached to a syringe with 20 ml of 0.125% bupivacaine, which is inserted 2 cm distal to the inguinal ligament in a lateral to medial direction at a 30-degree angle. Once the needle comes into view on the US monitor, the tip is positioned as close as possible to the femoral nerve and aspiration can be done to insure there is no infiltration into a vessel. Local anesthetic injection Bupivacaine 0.125 % 25 ml is injected at the target with the help of an assistant. The anesthetic is spread in a cephalad direction and appears as an expanding hypoechoic area within the fascial space surrounding the nerve sheath. The following thigh nerves are anesthetized: femoral, obturator and

lateral cutaneous. Distal pressure is applied during and shortly after injection.

- PRIMARY Objective- to determine the duration of effective analgesia from the end of surgery.
- Secondary outcome – to determine the total consumption of tramadol as rescue analgesia in 24 hour post operative period.

**Results**

**Statistical Analysis:** Sample size for the study is calculated on the basis of time to first rescue analgesic as the primary outcome measure. This time was taken as the time from end of surgery till the first dose of on-demand rescue analgesic or till the time when VAS score for pain is first noted to be 4 cm or above (and hence requiring rescue analgesia). It is calculated that 35 subjects should be required per group in order to detect difference of 30 min in time to first rescue analgesia between groups with 80% power&5 % probability of Type 1 error.

This calculation assumes SD of 45 min for this parameter and two-sided testing. Keeping a margin of 10% of drop outs, the recruitment target is being kept at 39 subjects per group. Sample size calculation is done by nMaster/software 2.0 (Department of Biostatistics, Christian medical College, Vellore; 2011) software

**Results**

**Consort Flow Diagram for the Study:** In the study population 78 patients were assessed for eligibility in which 8 patients were excluded and 70 patients randomisely allocated in two groups comprised of 35 patients each as shown in [ Table/Fig -1]

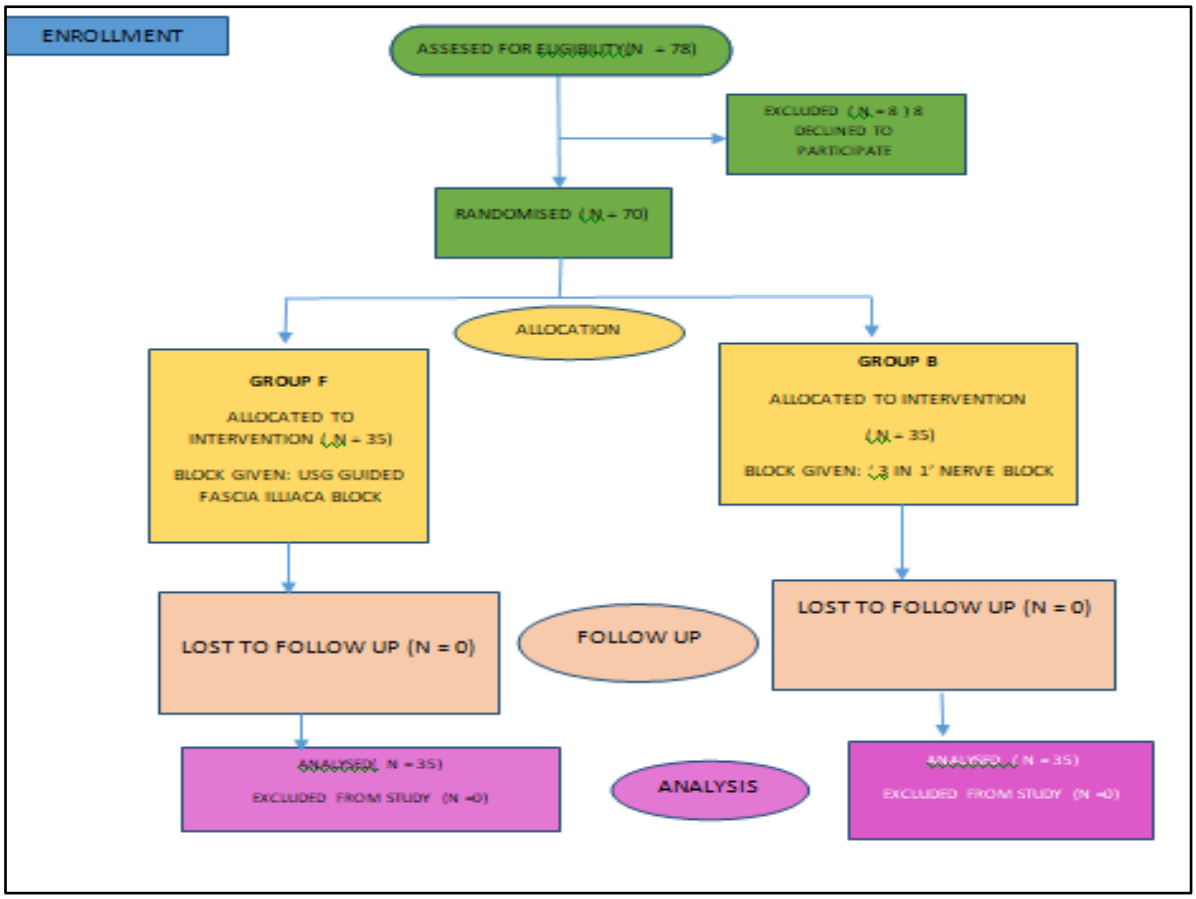


**Figure 1: Flow of the patients in the study as per CONSORT guidelines.**

Group F: Fascia iliaca block, Group B: 3'2'1 Block

The two groups were similar with regards to Age [Table/ Figure - 2]

**Table 1: Comparison of age (in years) between the two groups**

| Groups | Number | Mean | Std. Dev | Level of Significance |
|---|---|---|---|---|
| Group F | 35 | 39.57 | 5.049 | 0.854 |
| Group B | 35 | 39.34 | 5.313 | |

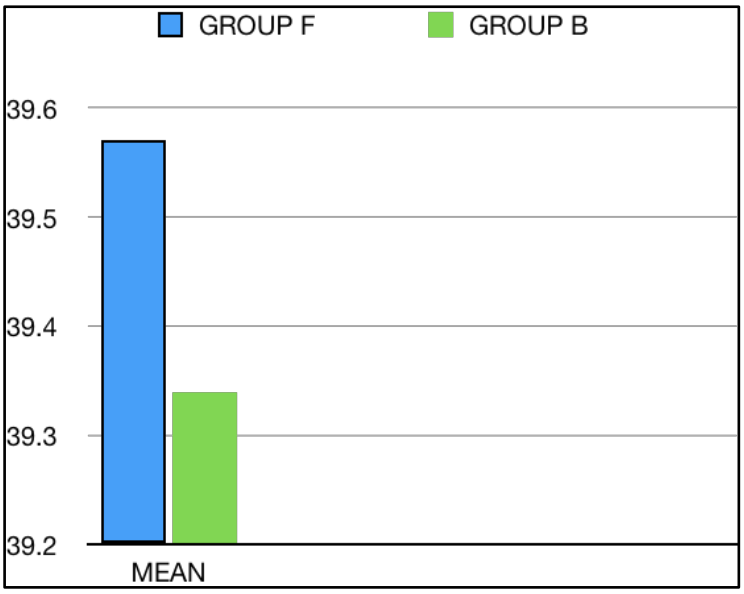


**Figure 2: Comparison of age (in years) between the two groups**

**Table 2: The two groups were similar with regards to bodyweight [Table - 3]**

| Groups | Number | Mean | Std. Deviation | Level Of Significance |
|---|---|---|---|---|
| Group F | 35 | 67.26 | 4.52 | 0.702 |
| Group B | 35 | 67.66 | 4.19 | |

[Table -3]: comparison of body weight (in kg) between two groups

**Table 3: The two groups were similar in comparison of their height in cm [Table - 4]**

| Groups | Number | Mean | Std. Deviation | Level Of Significance |
|---|---|---|---|---|
| Group F | 35 | 163.30 | 8.86 | 0.945 |
| Group B | 35 | 163.34 | 8.33 | |

[Table- 4]: summarizes the height (in cm) of the two groups B and F.

**Table 4: The two groups had no statistical significance in comparisons of BMI of the two groups [Table-5]**

| Groups | Number | Mean | Std Deviation | Level Of Significance |
|---|---|---|---|---|
| Group F | 35 | 24.374 | 2.021 | 0.838 |
| Group B | 35 | 24.274 | 2.056 | |

[Table -5] summarizes the comparisons of B.M.I of the two groups B and F.

There was statistically significant difference between two groups in the time of 1st rescue analgesia in the post operative period as compared by Mann-Whitney test (p value <0.05)

**Table 5: Depicts the duration of analgesia in 2 groups from time to first dose of rescue anlgesia in the post-operative period.**

| Parameters | Groups | Number | Mean | Std. Deviation | Median | Iq Range | Level Of Significance |
|---|---|---|---|---|---|---|---|
| Initial_Ra_Time | Group F | 35 | 11.31 | 0.963 | 10 | 2 | 0.00 |
| | Group B | 35 | 9.71 | 0.860 | | | |

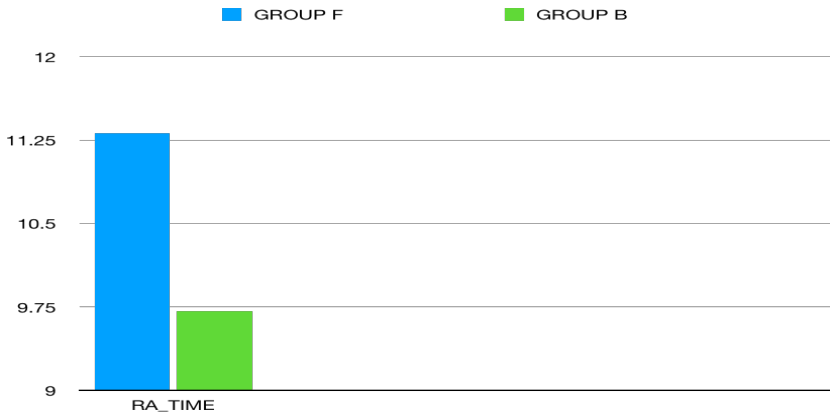


**Figure 3: Depicts the duration of analgesia in 2 groups from time to first dose of rescue anlgesia in the post-operative period.**

The vas score compared by independent –t test between group F and B. Vas score at 2 , 4 and 24 hour was significantly higher in group b and vas score was significantly higher in 12 hour in group f. In the rest of the period there was no significant difference of mean value of vas score.

**Table 6: Comparison of vas score between 2 groups in various post-operative period.**

| Vas SCORE | Groups | Number | Mean | Std. Deviation | Level of Significance |
|---|---|---|---|---|---|
| VAS_IPO | Group F | 35 | 1.63 | 0.646 | 0.693 |
| | Group B | 35 | 1.57 | 0.558 | |
| VAS_2HRS | Group F | 35 | 1.69 | 0.676 | 0.000 |
| | Group B | 35 | 2.29 | 0.519 | |
| VAS_4HRS | Group F | 35 | 2.06 | 0.684 | 0.000 |
| | Group B | 35 | 2.77 | 0.490 | |
| VAS_6HRS | Group F | 35 | 2.63 | 0.490 | 0.116 |
| | Group B | 35 | 2.80 | 0.406 | |
| VAS_8HRS | Group F | 35 | 2.91 | 0.284 | 0.011 |
| | Group B | 35 | 3.14 | 0.430 | |
| VAS_10HRS | Group F | 35 | 3.34 | 0.482 | 0.068 |
| | Group B | 35 | 3.63 | 0.770 | |
| VAS_12HRS | Group F | 35 | 3.31 | 0.963 | 0.000 |
| | Group B | 35 | 2.06 | 0.338 | |
| VAS_16HRS | Group F | 35 | 2.43 | 0.655 | 0.684 |
| | Group B | 35 | 2.49 | 0.507 | |
| VAS_20HRS | Group F | 35 | 3.80 | 0.406 | 0.114 |
| | Group B | 35 | 3.94 | 0.338 | |
| VAS_24HRS | Group F | 35 | 2.89 | 0.796 | 0.000 |
| | Group B | 35 | 2.03 | 0.169 | |

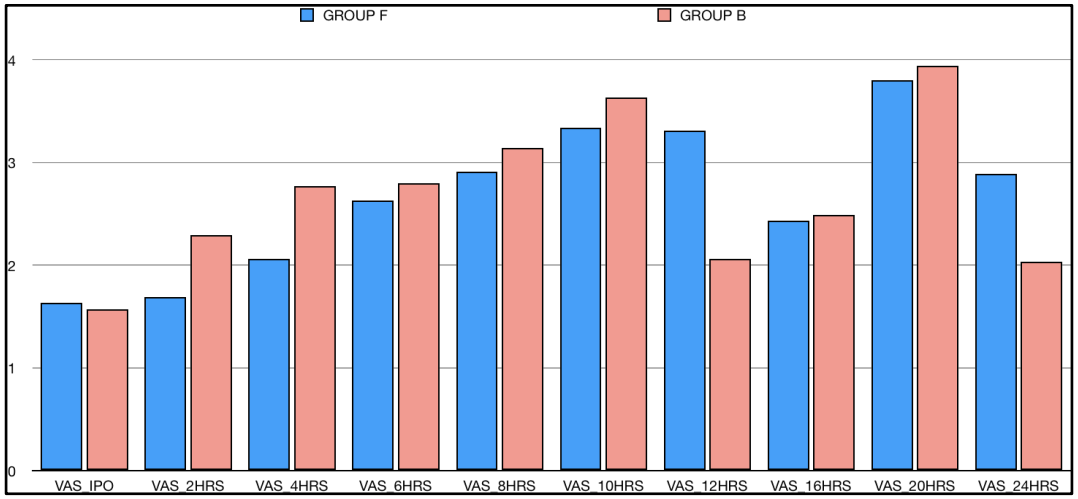


**Figure 4: Comparison of vas score between 2 groups in various post-operative period.**

The Frequency of rescue analgesia dose compared by Mann-Whitney test (inj tramadol 50 mg I.M.) in the post operative period in Group F and Group B. There was statistically insignificant difference between two groups as (p value>0.05) [Table- 8]

**Table 7: comparisons the Frequency of rescue analgesia dose (inj tramadol 50 mg I.M.) in the post operative period in Group F and Group B**

| Parameters | Groups | Number | Mean | Std. Deviation | Median | IQ Range | Level of Significance |
|---|---|---|---|---|---|---|---|
| Rescue Tot (Tab Tramadol 75mg) | Group F | 35 | 1.87 | 0.355 | 2 | 0 | 0.090 |
| | Group B | 35 | 1.97 | 0.169 | | | |

The Duration of surgery in Group F and Group B compared by Mann-Whitney test. There was no statistically significant difference (p value>0.05)

**Table 8: comparisons the Duration of surgery in Group F and Group B.**

| Parameters | Groups | Number | Median | IQ Range | Level Of Significance |
|---|---|---|---|---|---|
| Duration of Surgery | Group F | 35 | 134 | 47 | 0.439 |
| | Group B | 35 | 134 | | |

The study compares the change of heart rate in post operative period. Heart rate was found to be significantly higher in group B at initial post operative interval, 2 hours, 10 hours and 20 hours post operatively. Heart rate was found to be higher in group F at 2 hours and 6 hours post-operatively. In rest of the periods heart rate had no significant variations between two groups.

**Table 9: Comparison of heart rate (per min) between Group F and B.**

| Parameters | Groups | Number | Mean | Std. Deviation | Level of Significance |
|---|---|---|---|---|---|
| HR_IPO | Group F | 35 | 77.03 | 3.92 | 0.002 |
| | Group B | 35 | 81.94 | 8.22 | |
| HR_2HRS | Group F | 35 | 80.26 | 3.28 | 0.033 |
| | Group B | 35 | 78.97 | 1.01 | |
| HR_4HRS | Group F | 35 | 78.94 | 2.65 | 0.766 |
| | Group B | 35 | 78.80 | 0.96 | |
| HR_6HRS | Group F | 35 | 80.57 | 2.800 | 0.000 |
| | Group B | 35 | 78.40 | 1.73 | |
| HR_8HRS | Group F | 35 | 80.54 | 3.966 | 0.002 |
| | Group B | 35 | 85.66 | 8.554 | |
| HR_10HRS | Group F | 35 | 87.94 | 6.082 | 0.022 |
| | Group B | 35 | 91.37 | 6.10 | |
| HR_12HRS | Group F | 35 | 87.71 | 9.29 | 0.887 |
| | Group B | 35 | 87.43 | 7.28 | |
| HR_16HRS | Group F | 35 | 78.80 | 3.40 | 0.093 |
| | Group B | 35 | 77.31 | 3.87 | |
| HR_20HRS | Group F | 35 | 88.34 | 7.82 | 0.000 |
| | Group B | 35 | 96.11 | 1.93 | |
| HR_24HRS | Group F | 35 | 80.91 | 7.23 | 0.342 |
| | Group B | 35 | 82.46 | 6.23 | |

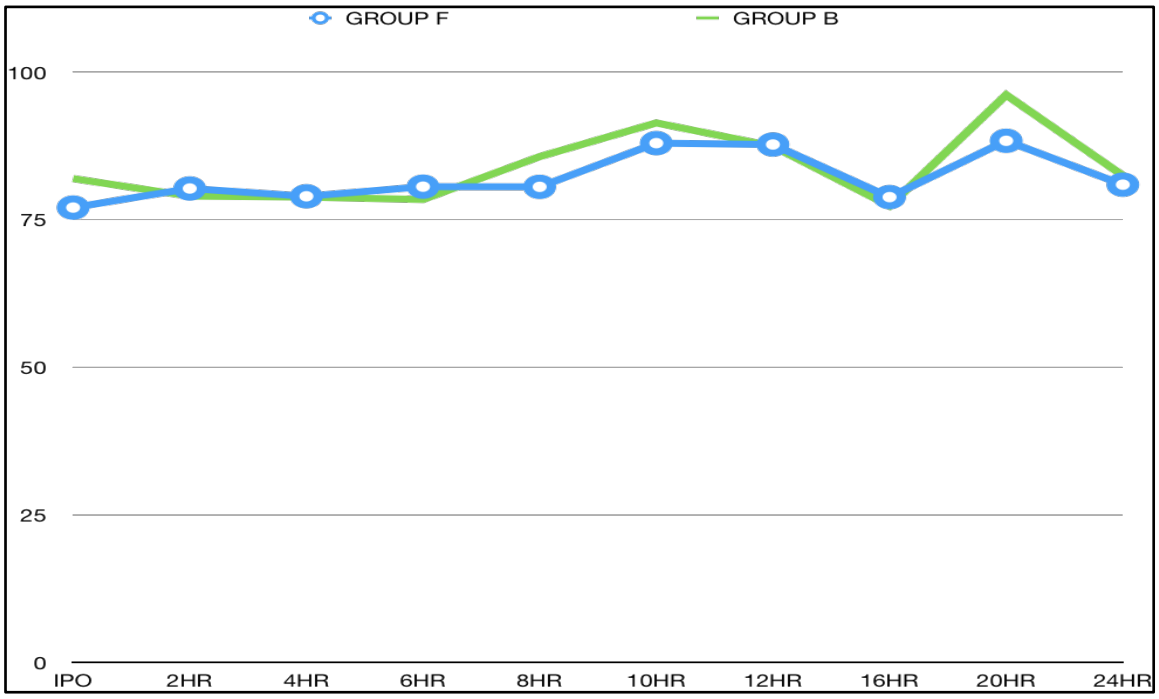


**Figure 5: Comparison of heart rate (per min) between Group F and B.**

In the study showing variation of mean systolic blood pressure between two groups in post operative period. Systolic blood pressure was significantly higher in group F in initial post operative period, 2hours and 4 hours and higher in group B in 6 hours post operative period. In rest of the post operative period there was no significant difference of systolic blood pressure between Group F and B [Table-11/Fig-6]

**Table 10: Comparison of SBP between group F and B.**

| Parameters | Groups | Number | Mean | Std. Deviation | Level of Significance |
|---|---|---|---|---|---|
| SBP_IPO | Group F | 35 | 134.97 | 4.48 | 0.012 |
| | Group B | 35 | 132.17 | 4.611 | |
| SBP_2HRS | Group F | 35 | 133.09 | 3.193 | 0.017 |
| | Group B | 35 | 131.37 | 2.647 | |
| SBP _4HRS | Group F | 35 | 132.54 | 3.04 | 0.011 |
| | Group B | 35 | 130.57 | 3.23 | |
| SBP _6HRS | Group F | 35 | 127.26 | 4.24 | 0.027 |
| | Group B | 35 | 129.77 | 5.006 | |
| SBP _8HRS | Group F | 35 | 130.11 | 5.17 | 0.334 |
| | Group B | 35 | 131.60 | 7.41 | |
| SBP _10HRS | Group F | 35 | 134.89 | 9.56 | 0.965 |
| | Group B | 35 | 134.80 | 6.43 | |
| SBP _12HRS | Group F | 35 | 140.89 | 5.04 | 0.983 |
| | Group B | 35 | 140.86 | 5.84 | |
| SBP _16HRS | Group F | 35 | 132.54 | 2.75 | 0.083 |
| | Group B | 35 | 131.49 | 2.241 | |
| SBP _20HRS | Group F | 35 | 141.00 | 7.084 | 0.715 |
| | Group B | 35 | 140.31 | 8.49 | |
| SBP _24HRS | Group F | 35 | 128.29 | 7.67 | 0.185 |
| | Group B | 35 | 130.80 | 8.047 | |

The Study showing_variation of mean diastolic blood pressure between two groups in post operative period between Group F and Group B. There was significant difference of DBP OF 2 Groups in 4 and 8 hour postoperative period. In the rest of post operative period there was no significant difference of mean DBP between group Fand Group B as compared by Man- whitney test [Table -12/Fig-7]

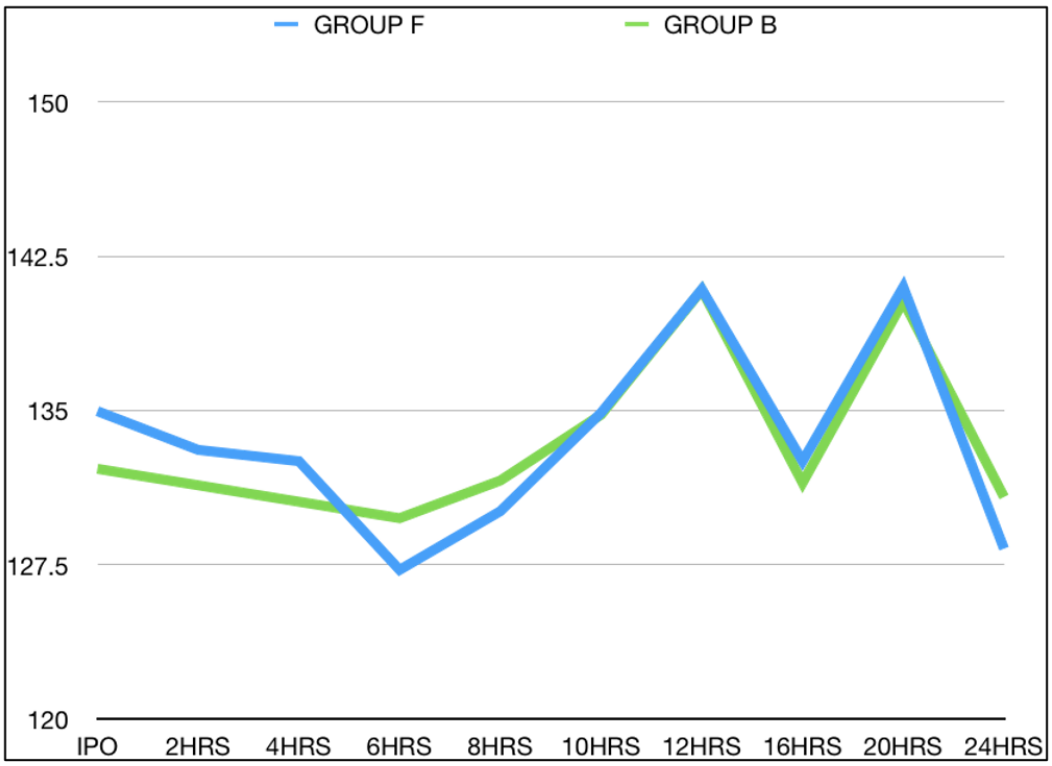


**Figure 6: Comparison of SBP between group F and B.**

**Table 11: Comparison of DBP between Group F and B**

| Parameter | Group | Number | Mean | Std. Deviation | Level Of Significance |
|---|---|---|---|---|---|
| DBP_IPO | Group F | 35 | 90.74 | 3.88 | 0.37 |
| | Group B | 35 | 88.40 | 5.220 | |
| DBP_2HRS | Group F | 35 | 88.11 | 2.988 | 0.99 |
| | Group B | 35 | 86.97 | 2.717 | |
| DBP_4HRS | Group F | 35 | 85.97 | 2.382 | 0.004 |
| | Group B | 35 | 84.51 | 1.634 | |
| DBP_6HRS | Group F | 35 | 84.00 | 4.419 | 0.806 |
| | Group B | 35 | 83.77 | 3.246 | |
| DBP_8HRS | Group F | 35 | 84.09 | 2.147 | 0.024 |
| | Group B | 35 | 85.60 | 3.201 | |
| DBP_10HRS | Group F | 35 | 88.51 | 4.154 | 0.551 |
| | Group B | 35 | 87.91 | 4.217 | |
| DBP_12HRS | Group F | 35 | 92.11 | 8.782 | 0.673 |
| | Group B | 35 | 91.29 | 7.529 | |
| DBP_16HRS | Group F | 35 | 85.49 | 3.338 | 0.283 |
| | Group B | 35 | 84.69 | 2.826 | |
| DBP_20HRS | Group F | 35 | 91.83 | 6.460 | 0.632 |
| | Group B | 35 | 91.03 | 7.410 | |
| DBP_24HRS | Group F | 35 | 85.97 | 5.393 | 0.910 |
| | Group B | 35 | 86.11 | 5.086 | |

The variation of mean arterial pressure in the post operative period. MAP was higher in Group F compared to Group B in initial, 2 hours and 4 hours post operative period. Th ere was no significant difference in MAP in 2 groups in rest of the post opeartive period. [ Table - 13/Fig-8]

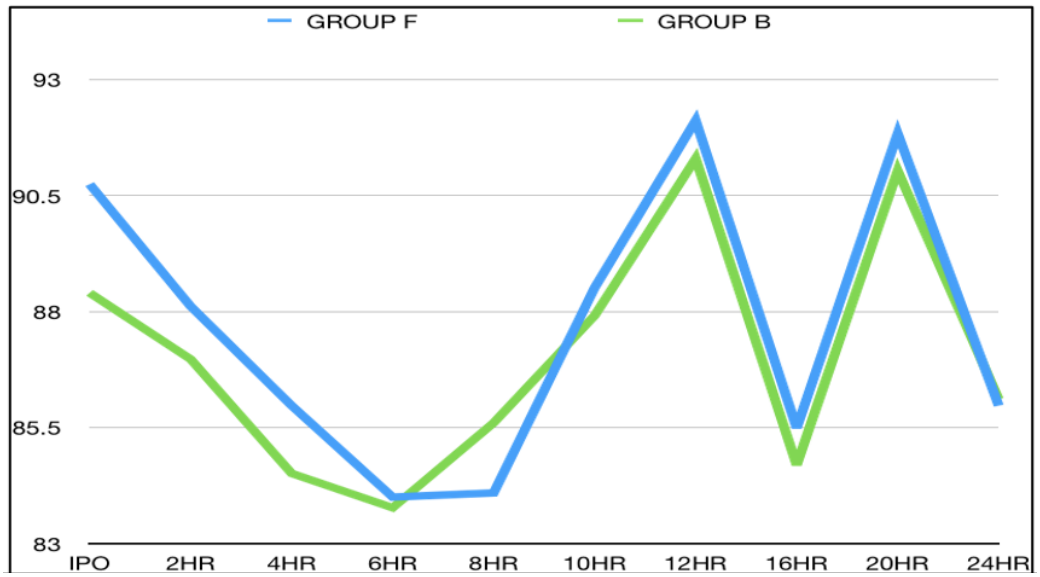


**Figure 7: Comparison of DBP between Group F and B**

**Table 12: Variation of MAP in 2 groups in post operative period**

| Parameter | Group | Number | Mean | Std. Deviation | Level of Significance |
|---|---|---|---|---|---|
| MAP_IPO | Group F | 35 | 105.78 | 3.55 | 0.014 |
| | Group B | 35 | 103.28 | 4.68 | |
| MAP_2HRS | Group F | 35 | 103.40 | 2.52 | 0.016 |
| | Group B | 35 | 102.06 | 1.94 | |
| MAP_4HRS | Group F | 35 | 101.80 | 2.07 | 0.001 |
| | Group B | 35 | 100.173 | 1.72 | |
| MAP_6HRS | Group F | 35 | 98.70 | 2.83 | 0.219 |
| | Group B | 35 | 99.411 | 1.79 | |
| MAP_8HRS | Group F | 35 | 99.73 | 2.46 | 0.094 |
| | Group B | 35 | 101.24 | 4.62 | |
| MAP_10HRS | Group F | 35 | 104.28 | 5.74 | 0.737 |
| | Group B | 35 | 103.855 | 4.75 | |
| MAP_12HRS | Group F | 35 | 108.69 | 7.29 | 0.741 |
| | Group B | 35 | 108.14 | 6.72 | |
| MAP_16HRS | Group F | 35 | 101.48 | 2.34 | 0.056 |
| | Group B | 35 | 100.59 | 1.33 | |
| MAP_20HRS | Group F | 35 | 108.54 | 6.33 | 0.642 |
| | Group B | 35 | 107.785 | 7.26 | |
| MAP_24HRS | Group F | 35 | 100.358 | 5.47 | 0.469 |
| | Group B | 35 | 101.307 | 5.42 | |

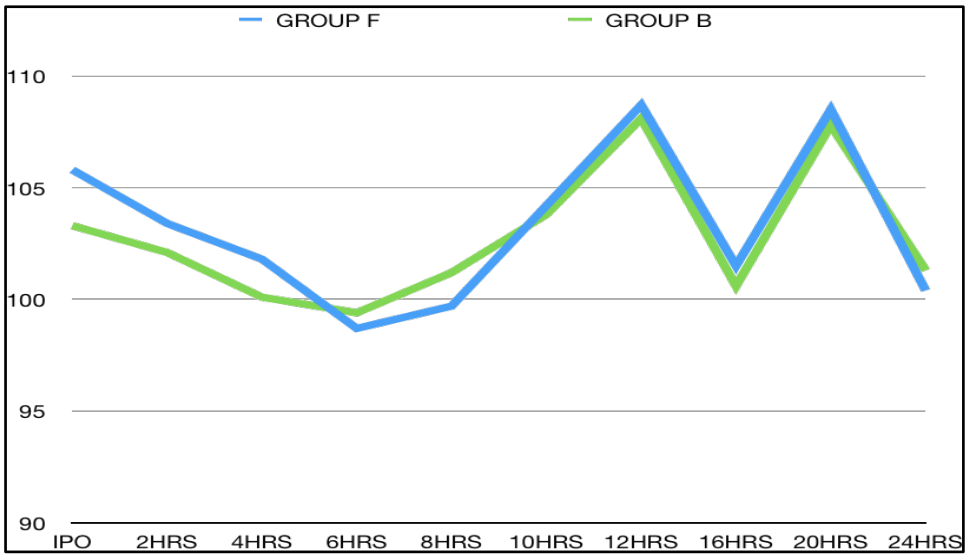


**Figure 8: Variation of MAP in 2 groups in post operative period**

[Table-14/Fig- 9]: in this study shows the variation of SPO2 among 2 groups in the post operative period. There was no significant difference of SPO2 in both the groups in the post operative period as compared with independent t test (p value>0.05)

**Table 13: Comparison of spo2 in both groups in the post operative period.**

| Parameter | Group | Number | Mean | Std. Deviation | Level Of Significance |
|---|---|---|---|---|---|
| SPO2_IPO | Group F | 35 | 98.94 | 0.998 | 0.903 |
| | Group B | 35 | 98.97 | 0.954 | |
| SPO2_2HRS | Group F | 35 | 99.69 | 0.631 | 0.851 |
| | Group B | 35 | 99.66 | 0.639 | |
| SPO2_4HRS | Group F | 35 | 99.89 | 0.404 | 0.119 |
| | Group B | 35 | 99.69 | 0.631 | |
| SPO2_6HRS | Group F | 35 | 100 | 0.00 | 0.120 |
| | Group B | 35 | 100 | 0.00 | |
| SPO2_8HRS | Group F | 35 | 100 | 0.00 | 0.562 |
| | Group B | 35 | 100 | 0.00 | |
| SPO2_10HRS | Group F | 35 | 100 | 0.00 | 0.148 |
| | Group B | 35 | 100 | 0.00 | |
| SPO2_12HRS | Group F | 35 | 99.97 | 0.169 | 0.150 |
| | Group B | 35 | 99.94 | 0.236 | |
| SPO2_16HRS | Group F | 35 | 99.86 | 0.430 | 0..656 |
| | Group B | 35 | 99.97 | 0.169 | |
| SPO2_20HRS | Group F | 35 | 99.97 | 0.169 | 0.331 |
| | Group B | 35 | 99.94 | 0.338 | |
| SPO2_24HRS | Group F | 35 | 100 | 0.00 | 0.469 |
| | Group B | 35 | 99.97 | 0.169 | |

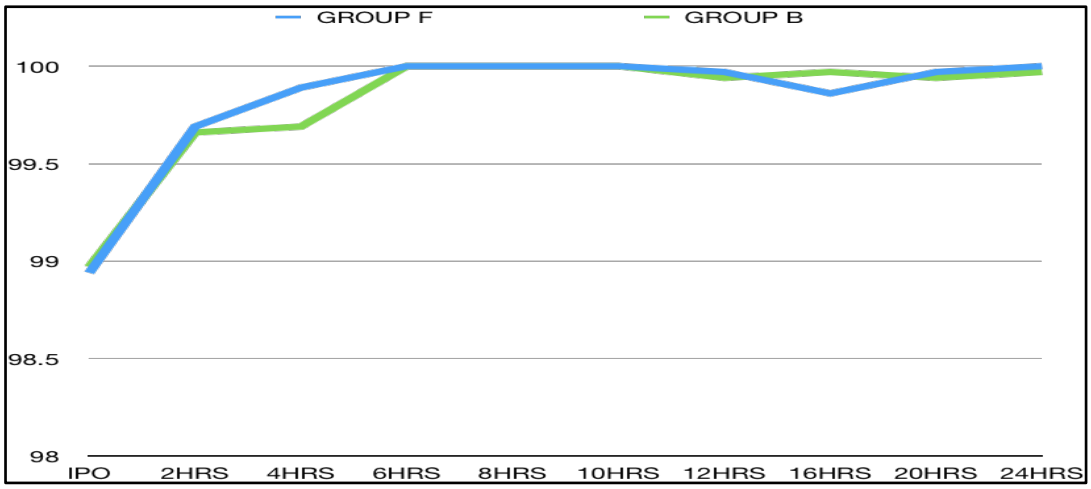


**Figure 9: Comparison of spo2 in both groups in the post operative period.**

## Discussion

Postsurgical pain is a complex response to trauma during surgery that stimulates the central nervous system and cardiovascular system, raises the possibility of complications, cost of medical care and healing recovery. [24] Most patients who undergo surgical procedures experience acute postoperative pain, but evidence suggests that less than half report adequate postoperative pain relief [25].

Inadequately controlled pain negatively affects quality of life, function, and functional recovery, the risk of post-surgical complications, and the risk of persistent postsurgical pain [27]. Even though opioids are commonly used for relief of post-operative pain, their role is sometimes questioned because of their well-known side effects of nausea, vomiting, sedation, dizziness, respiratory depression and substance dependence [28]. Regional anaesthesia is an effective method of post-operative pain control and reduces opioid requirements in the immediate post-operative period.

In this study 78 patients were chosen. Of these 8 patients did not agree to participate in the study. So, 70 patients were randomly allocated to 2 groups, Group F and Group B. Patients in Group F received fascia illiaca block and patients in Group B received '3 in 1' block.

On analysis, there was not significant difference in patient's age, sex B.M.I, ASA status among both the groups. VAS score was compared at various time interval in the postoperative period

Duration of post operative analgesia was monitored and assessed from the time when first rescue analgesia was given or post-operative VAS score was greater than equal to 4. On comparison with 2 groups, it was found that duration of analgesia was significantly higher in Fascia illiaca block compared to '3 in 1' nerve block. Fascia illiaca block is a compartment block where the local anasthetic is deposited in the compartment beneath the fascia illiaca as compared to ' 3 in 1' nerve block where the local anasthetic is deposited through through a single injection and hence the chance of complete block of femoral, obturator and lateral femoral cutaneous nerve is higher in fascia illiaca block and hence the higher duration of post operative analgesia among group of Fascia illiaca block as compared to '3 in 1' nerve block. This finding is similar to the finding of Malti Pandy. et. al who found that FICB to be more useful compared to '3 in 1 'nerve block during active physiotherapy in the postop period. [75] The completeness of LFC, femoral nerve and obturator nerve block in FICB provided higher degree of postop analgesia on passive movement and hence recommended as an alternative to '3 in 1' nerve Block for treatment of lower limb surgeries. Meta-analysis from Zang et al [29] and Sternberg et al [30] also showed similar superiority of FICB as compare to '3 in 1 'nerve block for providing analgesia of lower limb fractures. One study by Paul Reavley showed no significant difference in reduction of VAS score at 60 minutes in FICB compared to '3 in 1' nerve block but in that study the patients were followed up at 60-minute post block for reduction of VAS score [32]. In our study longer post operative follow-up of 24 hour maybe one of the causes for overall significantly better postoperative analgesia for FICB compared to '3 in 1' nerve block.

Although Fascia illiaca block showed better duration of analgesia, comparison of the total dose of rescue analgesic (inj tramadol 50 mg I.M) required in the first 24-hour post-operative did not show any significant difference among two groups. This is consistent with the finding of Malti Pandya et al and paulreavley et al who did not find any significant difference in post op rescue analgesia drug requirement.

Among these two groups VAS score was significantly higher in Group B in 2, 4, 24 hour and

significantly higher in group B in 12 hours. In the rest of the period there was no significant difference of VAS score between 2 groups. Although statistically significant difference exists in vas score in 2, 4, and 24 hours but the difference of mean between 2 groups is less than 1 scale and hence clinical significance of this finding is doubtful. Mean difference of vas score in 12 hour post operative period is greater than 1 and hence mean VAS score between Group F and Group B in 12hour post operative period is clinically as well as statistically significant.

Comparing the hemodynamic status of the patient in the post operative period among the 2 groups it was found that heart rate was significantly higher in '3 in 1' block group at initial post-operative interval, 2hours 10 hours and 20 hours post-operatively and significantly higher in Fascia illiaca group at 2 hours and 6 hours post operatively. In the rest of the period there was no statistically significant difference of mean heart rate between 2 groups. Analysis of systolic blood pressure between 2 groups revealed that SBP was higher in fascia illiaca group which was statistically significant in initial post operative period as well as at 2 hour, 4 hour post operatively and same for '3 in 1' nerve block in 6 hour post operatively. For rest of the period there was no statistically significant difference of SBP found among 2 groups. For the diastolic blood pressure, there was statistically significant difference of DBP among 2 groups found only in 4 and 8 hours post-operatively. There was no significant difference in SPO2 level among the two groups. Also, in the post operative period there was no significant changes of E.C. Gamong both the groups.

There were no major neurological or cardiovascular side effects among both the groups. Although there 1 case of excessive nausea and vomiting in fascia illiaca block group and 5 cases of nausea & vomiting in '3 in 1' nerve block group.

Overall patients were more comfortable when Fascia illiaca block was given for post operative analgesia as compared to '3 in 1' nerve block.

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