

A Study Comparing the Efficacy of Postoperative Analgesia with Fascia-Iliaca Compartmental Block vs IV Tramadol In Surgeries Around Hip

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Abstract: *Background:* Various drugs like Non-steroidal anti-inflammatory drugs, opioids like midazolam, ketamine, tramadol, fentanyl have been in use to reduce the pain postoperatively. Nerve blocks have come up as an effective and a safe alternative to provide pain relief. This study was designed to compare the efficacy of post operative analgesia with fascia-iliaca compartmental block vs intravenous Tramadol. *Methods:* A total of 60 patients satisfying the inclusion criteria were included in the study and randomly allocated to two groups of 30 each, Group F : were administered Fascia Iliaca Compartment Block postoperatively. Group T : were administered intravenous Tramadol postoperatively. Hemodynamic variables like heart rate, non invasive blood pressure, saturation of oxygen, respiratory rate, nausea and vomiting were recorded after the block/ iv Tramadol at regular intervals. The analgesia provided by either of the modes (fascia iliaca compartmental block vs iv tramadol) was assessed by using Visual analogue scale scores at regular intervals. *Results:* The difference observed was statistically significant ($p < 0.05$) showing Fascia Iliaca Compartment Block provided superior analgesia compared to intravenous Tramadol for postoperative analgesia, Side effects like Nausea, Vomiting were significantly lower in Fascia Iliaca Compartment Block group than in Tramadol group.

Keywords: Tramadol, Bupivacaine, Block

1. Introduction

Regional anaesthesia is the most widely used anaesthetic technique for orthopaedic procedures in lower limbs¹. Regional anaesthesia has many advantages over general anaesthesia as it provides a good perioperative pain relief, reduces systemic analgesic requirements, decreases poly pharmacy, avoids unnecessary airway manipulation, permits early ambulation and decreases chances of deep vein thrombosis².

Fracture Femur is a common orthopaedic injury which causes severe pain and distress to the patient. Anaesthesia for femur surgeries is usually provided by subarachnoid block.

Various drugs like Non-steroidal anti-inflammatory drugs, opioids like midazolam, ketamine, tramadol, fentanyl have been in use to reduce the pain postoperatively. Nerve blocks have come up as an effective and a safe alternative to provide pain relief without the side effects of use of excessive analgesic. Nerve blocks like the 3 in 1 block, femoral nerve block, fasciailiaca compartment block have all come up as an alternative approach to provide pain relief and improve positioning in these patients.³

Different techniques have been used to identify and block nerve fibres. Blockade of peripheral nerves have evolved a long way from blind approaches eliciting paresthesia initially, to the use of ultrasound in the present era. Earlier, nerve blocks were performed using landmark techniques and by eliciting paraesthesia. Nerve stimulators were invented for higher success rates and to decrease the complications. It ensured a better blockade than conventional paraesthesia

technique. But both these methods can cause neurovascular injuries leading to permanent nerve damage.

Regional analgesic technique, Fascia iliaca compartment block (FICB) was first described by **Dalens et al** in 1989, with the original understanding that it was used in pediatric patients... It blocks the femoral, lateral femoral cutaneous nerve and sometimes the obturator nerve. Also, since the injection is done away from the artery and nerve, there are minimal chances of neurovascular injury.⁴ This study was designed to compare Fascia Iliaca Compartment Block vs intravenous tramadol for postoperative analgesia for surgeries around hip.

2. Methods

A total of 60 patients satisfying the inclusion criteria with ASA Grade I, II and III, either sex, age group of 18-85 were included in the study after obtaining informed consent and randomly allocated to two groups of 30 each.

Group F: were administered Fascia Iliaca Compartment Block postoperatively.

Group T: were administered intravenous Tramadol postoperatively.

All patients were kept nil per oral for atleast 6 hours before the procedure. Patients were shifted inside the operation theatre half an hour before the scheduled procedure. Baseline vitals such as pulse rate, non-invasive blood pressure, saturation in room air, respiratory rate, ECG pattern were recorded. Intravenous access was obtained with 18G IV cannula and IV fluid started. Local anaesthetic test dose was given using 0.1 ml of Inj. Lignocaine 2%. All patients in the study including both F and T group received

standardised Sub arachnoid block in the sitting posture under strict aseptic precautions in the L3-L4 space using 25G Quincke needle with 3ml of 0.5% Bupivacaine (5mg/ml, hyperbaric, dextrose 80mg/ml)+0.3ml of Buprenorphine (90mcg). Patients were placed in supine position immediately following sub arachnoid block and height of block achieved was T10 which was assessed by loss of sensation to pin prick. Vitals were monitored throughout the procedure. Mean duration of surgery was approx 2-2.5 hrs in the study. After the surgical procedure. Group F patients were prepared for the block. The local anaesthetic solution was prepared with 15 mL of 0.5% bupivacaine and 15ml of distilled water and hence 30ml of 0.25% bupivacaine. After taking all aseptic precautions the inguinal ligament and the femoral pulse were identified and the length of the inguinal ligament is divided into thirds. A blunt tip needle was inserted 1cm distal to the junction between the middle and the outer thirds in a slightly cephalad direction and as the needle passes through fascia lata and iliaca, two "pops" were felt, after negative aspiration 30ml of 0.25% bupivacaine was injected.

Group T patients received titrated doses of Inj. Tramadol 2mg/kg I.V. repeated according to Visual analogue scale with first dose immediately following surgical procedure. Hemodynamic variables like heart rate, non invasive blood pressure, saturation of oxygen, respiratory rate, nausea and vomiting were recorded after the block/ iv Tramadol at regular intervals. The analgesia provided by either of the modes (fascia iliaca compartmental block vs iv tramadol) was assessed by using Visual analogue scale scores at regular intervals. Post-operative analgesia was standardized in all patients of both groups with Inj. Tramadol 2mg/kg I.V. 8th hourly; first dose was given whenever patient complained of pain repeated at regular intervals when required.

The collected data were recorded for further statistical analysis.

3. Results

Among the patients undergoing Fascia iliaca compartmental block and IV tramadol for postoperative analgesia in fracture femur surgery, there was no statistically significant difference in relation to age distribution between F group (mean=46.07, SD=10.76) and T group (mean=45.53, SD=9.27) with a p value of >0.05 as per unpaired t test. The two groups were comparable with respect to gender (p>0.05) and weight (p>0.05) thereby avoiding bias of these factors in our study. There was no statistically significant difference in relation to peripheral capillary oxygen saturation, mean arterial pressure and respiratory rate between Group F and Group T.

The mean heart rate was lower in Group T (intravenous tramadol) compared to Group F (fascia iliaca compartmental block) by a mean difference of 6 bpm (6% lower). This difference was significant with a lowest p-value of 0.0022 as per unpaired t-test.

The mean time of first postoperative analgesic need was significantly delayed in F group compared to T group by a

mean difference of 4 hours and 15 minutes (72% more delayed). This difference is significant with a p-value of <0.0001 as per unpaired t-test.

Table 1: First Rescue Analgesic Postoperative

First rescue analgesic Postoperative - Groups	F Group	%	T Group	%
≤ 3.00 hrs	0	0.00	30	100.00
3.01-5.00 hrs	3	10.00	0	0.00
5.01-7.00 hrs	26	86.67	0	0.00
7.01-9.00 hrs	1	3.33	0	0.00
Total	30	100	30	100

The mean time infrequency of dosing rescue analgesic in first 24hrs according to vas (number of times) was significantly higher in T group than F group by a mean difference of 1.40 times (48% more). This difference is significant with a p-value of <0.006 as per unpaired t-test.

There was a statistically significant difference in relation to side effects status between F group (yes=3.33%, no=96.67%) and T group (yes=76.67%, no=23.33%) with a p value of <0.05 as per unpaired t test.

Table 2: Side Effects

Side Effects (Nausea/ Vomiting) Yes/No:	T Group	%	F Group	%
Yes	29	96.67	23	76.67
No	1	3.33	7	23.33
Total	30	100	30	100
P value Fishers Exact Test			0.0284	

4. Conclusion

Fascia Iliaca Compartment Block provided superior analgesia compared to intravenous Tramadol for postoperative analgesia, patients receiving block needed less analgesic requirement. Side effects like Nausea Vomiting were significantly lower in Fascia Iliaca Compartment Block group than in Tramadol group. We conclude fascia iliaca compartmental block is a superior alternative to use of tramadol alone for postoperative analgesia in patients undergoing surgeries around hip.

References

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