



A CASE SERIES ON ULTRASOUND GUIDED FASCIA ILIACA COMPARTMENT BLOCK FOR POSTOPERATIVE ANALGESIA IN PATIENTS UNDERGOING TOTAL HIP ARTHROPLASTY.

Anaesthesiology

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ABSTRACT

Background: Fascia iliaca compartment block (FICB) is increasingly used for Anaesthesia and Analgesia of Hip and Thigh surgeries. We hypothesised that FICB provides the effective adjunctive analgesia for total hip arthroplasty (THA). **Aim:** is to assess post operative analgesic efficacy using ultrasound guided FICB for patients undergoing THA. **Methods:** As a case series study, 15 patients (≤ 75 years old) with THA were received ultrasound guided FICB with 40 ml of 0.2% ropivacaine and 4mg dexamethasone for postoperative analgesia. Intravenous Tramadol was administered as a rescue analgesic when Numeric rating scale (NRS) ≥ 4 , pain score (NRS) was recorded from the initiation of the block every 2hr for 24hr. Time to first rescue analgesia, total duration of analgesia and analgesic consumption, and patient satisfaction score were noted. **Results:** postoperative median pain score (NRS) is 2 among all the cases in first 12 hours which represents mild pain. Mean total duration of analgesia was 556 ± 83.7 mins. Mean dose of total rescue analgesic consumption was 100 ± 48.2 mg. around 60% of patients reported good satisfactory score. **Conclusion:** The FICB results in good postoperative analgesia in first 12 hours of immediate postoperative period in total hip arthroplasty.

KEYWORDS

Fascial Iliaca compartment block, Analgesia, Total Hip Arthroplasty, Numeric Rating Scale, Ropivacaine.

INTRODUCTION:

Total hip arthroplasty surgeries are associated with severe postoperative pain which requires more analgesic consumption, prolonged immobilisation and longer hospital stay.¹⁻⁴ hence requires parenteral or central neuraxial techniques such as continuous epidural analgesia for postoperative analgesia in arthroplasty surgeries, these two modalities causes adverse effects like hemodynamic imbalance, drowsiness, motor block which may affect early rehabilitation.^{5,6} Therefore, the need for adequate postoperative pain control after THA is crucial for early ambulation and patient satisfaction.

Fascia iliaca compartment block involves injecting local anaesthetic under the fascia of the iliacus muscle in a plane containing the femoral nerve and lateral femoral cutaneous nerve.^{7,8} FICB is performed using two methods either ultrasound guided or with loss of resistance technique.

In this study we have used dexamethasone as additive to 40 ml of 0.2% ropivacaine in FICB. We have hypothesised that FICB provides better postoperative analgesia in patients undergoing THA. The primary objective of this study is to assess the total duration of analgesia of FICB. Secondary objectives are assessment of pain intensity, patient satisfaction and total amount of analgesic consumption in 24hrs postoperatively.

MATERIALS AND METHODS:

This study was approved by the Institutional Ethics Committee, the current study was a case series including 15 patients of ASA I and II undergoing total hip arthroplasty under combined spinal and epidural anaesthesia. Exclusion criteria included patients refusal, coagulopathy, allergy to local anaesthetic drugs. All the patients received combined spinal epidural anaesthesia with 3ml of 0.5% hyperbaric bupivacaine with 30mcg buprenorphine intrathecally in sitting position, adequacy of spinal block was checked by sensory and motor examination. Epidural anaesthesia was initiated only in patients who were in need for prolongation of anaesthesia intraoperatively and hence was not continued in any of the patients post operatively.

FICB was performed in post operative period soon after the patient is recovered from spinal motor block, supra inguinal approach of FICB was given using ultrasound with 5-13MHz linear transducer (SII Ultrasound System FUJIFILM SonoSite, Inc. 21919 30th Drive SE Bothell, WA 98021 USA) and echoplex+ 20gauge, L.120-mm block needle was advanced in-plane method to puncture fascia iliaca with needle tip just below the fascia iliaca, location was confirmed using

2ml local anaesthetic, 40ml of 0.2% ropivacaine with 4mg of dexamethasone as adjuvant to local anaesthetic was injected superficial to iliacus muscle and deep to the fascia iliaca. All patients received 1gm paracetamol intravenously 8hourly postoperatively. Intravenous tramadol was used as rescue analgesia when NRS score ≥ 4 within 24hrs. pain scores assessed using NRS postoperatively every 2 hours till 24hours. NRS is a pain assessment tool indicating pain severity on a scale of 0 to 10, where 0 indicates 'no pain', 1 to 3 'mild pain', 4 to 6 indicates 'moderate pain', 7 to 9 indicates 'severe pain' and 10 indicates 'worst possible pain'. Duration of analgesia is defined as the time from administration of block to the time of the first rescue analgesic request, patient satisfaction score measured by asking the patient to rate their satisfaction using smiley survey tool in post operative period. Complaints of nausea, vomiting and shivering were noted.

Data were described in terms of range, mean $\pm$ standard deviation (SD), Median, frequencies (no of cases) and relative frequencies (%) (percentage) as appropriate.

RESULTS:

The age range of patients in this case series was between 29 and 75 years old, mean age was 54.3 ± 15.3 years. Among 15 patients, 9(60%) were males while 6 (40%) females [Table:2]

Table 1: Demographic Parameters.

Patient No.	Age (yrs)	Gender(M/F)	ASA (I/II)
1	29	M	I
2	48	M	I
3	59	F	I
4	72	F	II
5	52	F	I
6	56	M	II
7	75	F	II
8	70	F	II
9	58	M	I
10	29	M	I
11	48	M	I
12	30	M	I
13	69	M	II
14	57	F	I
15	63	M	II

Table 2: Demographic profile

Parameters	Number	Percentage
Mean age (years)	54.3 ± 15.3	
Gender:		
Male	9	60.0
Female	6	40.0
ASA Grade:		
I	9	60.0
II	6	40.0

F: Female; M: Male; ASA: American Society of Anaesthesiologists.

Pain intensity was measured using NRS Score every 2nd hour for upto 24 hours postoperatively. Most of the patients reported NRS score of 2 in first 12hours representing mild pain and NRS score of 4 in next 12 hours in PACU. [Table:3]

Table 3: Post operative pain score

Time of NRS evaluation (hour)	Median score
2	2
4	2
6	2
12	2
24	4

NRS: Numeric Rating Scale

On evaluation, mean total duration of analgesia among 15 patients was 556±83.7 mins. Minimum total duration of analgesia was 445mins and maximum was 730mins. Mean dose of total rescue analgesic consumption was 100±48.2mg. [Table:4]

Table 4: Time for first analgesic rescue

Parameters	Mean ± SD
Total duration of analgesia (in min)	556 ± 83.7
Total amount of rescue analgesia (mg)	100 ± 48.2

Sixty percentage of patients reported good satisfactory score. Twenty-six percentage of patients reported Neutral response. [Table:5]

Table 5: Patient satisfaction scores

Patient satisfaction score	Number	Percentage
Extremely unsatisfied	0	0.0
Unsatisfied	2	13.3
Neutral	4	26.7
Satisfied	9	60.0
Extremely satisfied	0	0.0
Total	15	100.0

DISCUSSION:

FICB is effective in blocking the femoral, lateral femoral cutaneous nerve and obturator nerve by the spread of local anaesthetics.⁹ provides analgesia for fracture of proximal femur and hip joint. Since then it is used as a technique of analgesia in surgeries involving hip, femur, knee.

The efficacy of FICB over Non-steroid anti inflammatory drugs (NSAIDs), opioids, other nerve blocks have been studied.¹⁰

It is safer and more efficacious alternative compared to the 3 in 1 femoral block as explained in the study done by pandya & jhanwar.¹¹ where they have compared fascia iliaca block with 3 in 1 nerve block and reported better sensory blockade of lateral cutaneous nerve of thigh with FICB.

Aged patients with femur fracture are more prone to delirium because of pain and surgical stress hence adequate analgesia prevents delirium and also allows early mobilization and lesser hospital stay.¹²

Pain relief by femoral nerve blockade compared to that of epidural analgesia but has a lower incidence of hypotension.¹³⁻¹⁵

In our study, pain severity was measured using NRS score which were significantly lower among all the 15 patients around 2, which indicates mild pain not requiring analgesic requirement in first 12 hours of postoperative period, where as at the next 12 hour time interval NRS score was at 4 requiring single dose of rescue analgesic. Our finding correlate with study of Kumar et al¹⁶ who had used landmark method of FICB found significant reduction of pain at 6 hours postoperatively. (in

which VAS scores were assessed at 3,6,12 & 24 hours)

The average total rescue analgesic consumption among our study participants were mean dose of 100±48.2mg which is considered to be lesser during the first 24 hour postoperative period, similar study conducted by stevens et al¹⁷ which concluded that supra-inguinal FICB had 40% lower morphine consumption compared to sham block.

A higher reduction in analgesic consumption in our study may be due to the usage of ultrasound guided block administration which has higher success rate and precise deposition of local anaesthetic in correct fascial planes leading to better analgesic efficacy of block.

The use of dexamethasone as additive to ropivacaine in FICB was expected to prolong the duration of block. In a study conducted by suresh kumar N et al¹⁸ has been concluded that by adding dexamethasone to plain bupivacaine in FICB would significantly prolong postoperative analgesia.

On smiley survey tool, the patient satisfaction scores were reported as 60% of patients were satisfied with the postoperative analgesia and 26% patients response were found to be neutral. In another study done by Bansal et al¹⁹ had used five point likert scale where the patient satisfaction scores were seen to be significantly better with suprainguinal FICB, 50% of patients being very satisfied in S-FICB. (C.F to 19% in infrainguinal FICB approach)

Limitations Of The Study:

The limitation of our study was the assessor could not able to objectively quantify and evaluate post operative pain, because of being a subjective experience can be a major limiting factor in estimating the effectiveness of analgesia and patient satisfaction score.

CONCLUSION:

We concluded that ultrasound guided Fascia Iliaca compartment block has good analgesia efficacy in first 12hour postoperative period and better patient satisfaction scores in patients who underwent Total Hip Arthroplasty.

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