DOI: https://doi.org/10.53350/pjmhs211582525

ORIGINAL ARTICLE

Efficacy of Ultrasound Guided Fascia Iliaca Block for Pain Management Compared to Conventional Pain Killers; A Comparative Study

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ABSTRACT

Objective: The aim of this study is to determine the efficacy of ultrasound guided fascia iliaca block for pain management compared to conventional pain killers.

Study Design:

Place and Duration: The study was conducted at the emergency department of Lady Reading Hospital Peshawar for duration of six months i.e June 2019 to December 2019.

Methods: Total 80 patients of both genders underwent for arthroplasty were presented in this study. Patients were aged between 40-80 years. Patients detailed demographics age, sex, weight and body mass index were recorded after taking informed written consent. Patients were divided into 2-groups. Group I had 40 patients and received fascia iliaca block while group II received conventional pain killers with 40 patients. Postoperative outcomes reduction in pain score was assessed by visual analog scale (VAS). Postoperatively complications and patients satisfaction was also observed and compared among both groups. Complete data was analyzed by SPSS 26.0version.

Results: There were 22 (55%) male and 18 (45%) female patients in group I while in group II male patients were 21 (52.5%) and 19 (47.5%) were females. Mean age in group I was 57.17±10.21 years with mean BMI 26.64±3.54 kg/m^2 and in group II mean age was 58.25±9.66 years with mean BMI 26.48±3.45 kg/m^2. 25 (62.5%) patients had ASA I and 15 (37.5%) had II in group I but in group II 24 (60%) had ASA I and 16 (40%) had II. Post-operative after 48hrs pain score in group I was 2.03±3.18 lower as compared to group II 4.08±7.81. Frequency of complications was higher in group II 23 (57.5%) as compared to group I 8 (20%). Satisfaction among patients of group I was 34 (85%) higher as compared to group II 19 (47.5%).

Conclusion: We concluded in this study that the use of anesthesia fascia iliaca block was effective in terms of pain reduction and fewer complications than conventional pain killers after arthroplasty. Except this satisfaction rate was also higher among patients who received FICB.

Keywords: Fascia iliaca block, Pain killer, Arthroplasty, Pain, Complications

INTRODUCTION

Hip fracture is one of the most prevalent types of fractures in adults. It's a serious problem that takes up a lot of hospital beds and has a high fatality rate. [1] They are frequently elderly and have low cardiac and pulmonary reserves, which makes them good candidates for total hip prosthesis. It is common for patients to have severe pain in the days following surgery. This increases their sensitivity to medications and their side effects as well. Drugs and procedures with fewer side effects and better tolerance are the best for postoperative analgesia. [2,3]

Facial iliaca compartment blocks were discovered by accident when trying to block a femoral cutaneous nerve lateral branch, and via assessment of anatomical configuration of fascia iliaca that encircles and protects this nerve and its branches (FICB).[4,5]

If you're interested in learning more about fascia iliaca compartment block (FICB), please contact us at . Only 35 to 47 percent of patients were successful with the pop approach using fascial click, according to research. [6,7] With real-time ultrasound guidance, the success rate of FICB increased to 82 percent-87 percent, which boosted interest in FICB as a postoperative analgesic alternative after joint replacement surgery. [7,8]

Analgesic effects were observed with the FICB in individuals with femur fractures, according to several investigations. 48 patients with acute hip fractures underwent FICB in a double-blind randomized research by Foss et al[9]. This group received a placebo intramuscular injection of isotonic saline along with FICB with 1.0 percent mepivacaine, whereas the other group received placebo FICB with 0.9% saline and an intramuscular injection of 0.1 mg/kg of morphine. The FICB group experienced the most pain relief. They concluded that the FICB reduced opioid usage and was a simple and effective process to master. FICB has been shown to reduce preoperative pain and opiate usage in individuals with femur fractures in various studies. [10,11]

Additional studies have shown that when spinal anesthesia was done on patients with hip fracture, FICB gave better quality of position, a shorter time to execute the

spinal anesthesia, and less opioid intake on the first postoperative day.[12,13]

Patients who had hip surgery, including hemiarthroplasty and complete arthroplasty, experienced less postoperative discomfort compared to those who had suffered a femoral neck fracture, because the degree and location of tissue trauma were vastly different. Moreover, hemiarthroplasty and total hip arthroplasty are the most common surgical therapies for displaced femoral neck fractures (THA). [14] It is unclear whether FICB is a helpful therapy for postoperative analgesia in THA despite the fact that there are a few randomized research on it. [15-17]

It was our goal to assess the postoperative analgesic efficacy of ultrasound-guided fascia iliaca compartment block and pain medications in patients who underwent hip surgery after suffering from a hip fracture in this research study.

MATERIAL AND METHODS

This comparative study was conducted at the emergency department of Lady Reading Hospital Peshawar for duration of six months i.e June 2019 to December 2019 and comprised of 80 patients. Patients' detailed demographics including age, sex, and body mass index were recorded after taking informed written consent. Patients less than 18 years of age, weight less than 40 kg and those did not give written consent were excluded from this study.

Patients were aged between 18-75 years underwent for arthroplasty. Patients were divided into 2-groups. Group I had 40 patients and received fascia iliaca block while group II received conventional pain killers with 40 patients. In FICB group, GE Medical Systems Solingen Germany used the linear ultrasound probe (12L-RS, 7-11MHz) from the LOGQ Book XP Ultrasound (GE Medical Systems). Injection of 0.25 percent bupivacaine (1 mg kg-1) was performed 30 minutes before surgery, after asepsis, and after local anesthetic with 2 percent prilocaine. The peripheral nerve stimulator (Plexivygon, Vygon®, France) needle was 50 mm/22 G and blunt-ended. Using ultrasound, the spread of the local anesthetic may be monitored. General anesthetic was then administered as per usual. Group II underwent for standard general anesthesia without nerve block. Postoperative outcomes reduction in pain score was assessed by visual analog scale (VAS). Postoperatively complications and patients satisfaction was also observed and compared among both groups. We did categorical data 2 tests to determine whether there were any significant differences between the groups (ASA, sex). Complete data was analyzed by SPSS 26.0version. Mean±standard deviation (SD) was used to present the data.

RESULTS

There were 22 (55%) male and 18 (45%) female patients in group I while in group II male patients were 21 (52.5%) and 19 (47.5%) were females. Mean age in group I was 57.17±10.21 years with mean BMI 26.64±3.54 kg/m^2 and in group II mean age was 58.25±9.66 years with mean BMI 26.48±3.45 kg/m^2. 25 (62.5%) patients had ASA I and 15 (37.5%) had II in group I but in group II 24 (60%) had ASA I and 16 (40%) had II.(table 1)

Table 1: Baseline detailed demographics of enrolled cases

Variables	Group I (n=40)	Group II (n=40)
Mean age (years)	57.17±10.21	58.25±9.66
Mean BMI	26.64±3.54	26.48±3.45
Gender		
Male	22 (55%)	21 (52.5%)
Female	18 (45%)	19 (47.5%)
ASA		
I	25 (62.5%)	24 (60%)
II	15 (37.5%)	16 (40%)

Post-operative after 6hrs mean pain score in group I was 6.14±7.64 and in group II 6.88±4.88, after 12hrs pain score was 4.51±5.22 and 5.99±4.95, after 24hrs pain score was 3.44±9.34 and 4.88±6.16 and after 48hrs pain score in group I was 2.03±3.18 lower as compared to group II 4.08±7.81.(table 2)

Table 2: Post-operative comparison of pain score by using (VAS) among both groups

Variables	Group I	Group II
VAS score		
After 6hrs	6.14±7.64	6.88±4.88
After 12hrs	4.51±5.22	5.99±4.95
After 24hrs	3.44±9.34	4.88±6.16
After 48hrs	2.03±3.18	4.08±7.81

Frequency of complications was higher in group II 23 (57.5%) as compared to group I 8 (20%).(table 3)

Table 3: Post-operative comparison of complications among both groups

Variables	Group I (n=40)	Group II (n=40)
Complications		
Nausea	3 (7.5%)	9 (22.5%)
vomiting	3 (7.5%)	8 (20%)
Pruritus	2 (5%)	6 (15%)
Total	8 (20%)	23 (57.5%)

Satisfaction among patients of group I was 34 (85%) higher as compared to group II 19 (47.5%).(table 4)

Table 4: Post-operative satisfaction rate among both groups

Variables	Group I (n=40)	Group II (n=40)
Satisfaction		
Yes	34 (85%)	19 (47.5%)
No	6 (15%)	21 (52.5%)

DISCUSSION

Importance of effective pain treatment in the acute phase of hip fractures in geriatric patients, which helps them move around in their beds, use a toilet and have their preoperative preparations done [18]. Opioids and nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used to relieve pain. NSAIDs, on the other hand, increase the risk of bleeding and can worsen underlying gastrointestinal problems in elderly people. Improper opioid use can also lead to a high risk of adverse effects, such as hypotension, sedation, and even respiratory depression [19]. Getting the right balance between appropriate pain control and minimal risk of adverse events remains a major problem for medical professionals. A current study found that the FICB approach was effective in reducing postoperative pain after arthroplasty.

In this comparative study total 80 patients of both genders underwent for arthroplasty were included. Patients were categorized into two groups. Mean age in group I was 57.17±10.21 years with mean BMI 26.64±3.54 kg/m^2 and in group II mean age was 58.25±9.66 years with mean BMI 26.48±3.45 kg/m^2. 25 (62.5%) patients had ASA I and 15 (37.5%) had II in group I but in group II 24 (60%) had ASA I and 16 (40%) had II. These findings were comparable to the previous studies.[20,21]

Group I received ultrasound guided fascia iliaca block and group II received conventional pain killers. Visual analog scale was used to calculate the pain score among both groups. Post-operative after 6hrs mean pain score in group I was 6.14±7.64 and in group II 6.88±4.88, after 12hrs pain score was 4.51±5.22 and 5.99±4.95, after 24hrs pain score was 3.44±9.34 and 4.88±6.16 and after 48hrs pain score in group I was 2.03±3.18 lower as compared to group II 4.08±7.81. Previous different researches also presented same results that the use of FICB was effective in reduction of the pain after surgery.[22,23] Helayel et al showed that the effective quantities of local anesthetics in the FICB capable of generating a block in 99 percent of patients were 36.6mL (34.3–40.5) using ropivacaine. Moreover, numerous other investigations used a considerable volume of 30 to 40mL for proximal spreading in the FICB. [24] FICB has been shown to give pain relief following hip surgery using the I-FICB or S-FICB approach [25-27].

Using the FICB in hemiarthroplasty, Bang et al observed that patients with the FICB had lower opioid consumption at 4, 8, and 12 hours postoperatively, as well as a lower overall fentanyl intake during the postoperative 24 hours.[28] Frequency of complications was higher in group II 23 (57.5%) as compared to FICB group 8 (20%). A small number of adverse effects, primarily nausea and vomiting, were reported by Paut, et al. in the FICB research.[29] Satisfaction among patients of group I was 34 (85%) higher as compared to group II 19 (47.5%). Patients' satisfaction with the block was evaluated after 24 hours, according to Yun et al. 45 patients (90%) were satisfied with the block, and 19 out of 20 patients accepted the FIC block.[30]

FICB with ultrasonic guidance has been found to be the safest method for reducing postoperative pain, especially in the first 24 hours after surgery, and to have fewer side effects, as documented by Haines et al. who found that the ultrasound guidance helped confirm that we avoided vascular structures and allowed us to visualize the correct placement of local anesthetic, as well as an increase in the success rate of the block.[31]

CONCLUSION

We concluded in this study that the use of anesthesia fascia iliaca block was effective in terms of pain reduction and fewer complications than conventional pain killers after arthroplasty. Except this satisfaction rate was also higher among patients who received FICB.

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