Efficacy of Fascia Iliaca Block for Pain Management in Hip Fracture Patients

Haider Mohammed Mahdi [1*]

Abstract

Background: Hip fractures are a major concern for older adults, leading to high mortality rates and significant healthcare costs. Effective pain management is critical for improving outcomes. This study evaluates the implementation of the Fascia Iliaca Compartment Block (FICB) as a standard procedure for preoperative pain relief in hip fracture patients. Methods: A continuous audit of FICB implementation was conducted over two years, encompassing three review cycles. Patients with hip fractures received FICB within four hours of admission. Pain scores and opioid requirements were monitored, and clinical outcomes such as length of stay and mortality rates were analyzed. Results: The study included 434 patients, with 326 receiving FICB. FICB uptake improved from 62% to 84% over the cycles. Pain scores significantly decreased, and opioid use was reduced in the FICB group compared to the control group. Mortality rates decreased from 15% to 5.5%, and the length of hospital stay reduced from 15 to 10 days on average. Conclusion: The implementation of FICB in hip fracture patients significantly improves pain management, reduces opioid requirements, and enhances clinical outcomes. Wider adoption of FICB could lead to better patient care and reduced healthcare costs.

Significance | Enhances hip fracture pain relief, reduces opioid use, shortens hospital stays, improves patient outcomes and satisfaction.

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1.Introduction

Hip fractures are a prevalent and significant injury among older adults, being the leading cause of trauma-related deaths in this demographic and necessitating emergency sedation and surgical procedures. This type of injury affects both genders equally but increases markedly with age, with an incidence rate of approximately 4.6 per 1,000 individuals over the age of 50. In the United Kingdom, hip fractures account for over 1 in 45 hospital beds in England and Northern Ireland and about 1 in 33 in Wales. The mortality rates associated with hip fractures are notably high, with a 10% death rate within the first month and a range of 20% to 35% within one year after the injury (Mouzopoulos et al., 2009). The vast majority of individuals who suffer a hip fracture do not regain their pre-injury functionality; instead, most become dependent on long-term care. This dependency incurs significant financial costs for the NHS, amounting to approximately £1 billion annually, which represents around 1% of the total NHS budget (Sieber et al., 2011). On a global scale, hip fractures are among the most expensive medical issues, with an estimated annual cost of $20 billion USD (Perrier et al., 2010). In the United States, the cost of medical expenses for a hip fracture patient can reach up to $40,000 in the first year following the injury, with nearly $5,000 in subsequent years (Dalens et al., 1989). The standardized mortality ratios indicate that death rates following a hip fracture are significantly higher compared to the general population of the same age, and this elevated risk continues for several years (Gökhan et al., 2023). This persistently high mortality rate may reflect ongoing health issues or

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greater vulnerability among hip fracture patients compared to their peers (Dolan et al., 2008).

In the immediate aftermath of a hip fracture, patients often report severe to extremely severe pain, with 50-70% experiencing high levels of discomfort within the first 24 hours (Yun et al., 2009). The intense pain, coupled with the body's neuroendocrine stress responses, significantly limits mobility and negatively impacts overall recovery outcomes (McEachin et al., 2002). Additionally, uncontrolled pain can lead to impaired respiratory and cardiovascular function, potentially exacerbating pre-existing comorbidities (Foss et al., 2007). Due to high demand on orthopedic trauma services at many hospitals, patients with hip fractures frequently face delays in surgery, leading to repeated movements for imaging, bed transfers, and pressure area care, which further exacerbates their suffering (Mansouri, 2023; Mouzopoulos et al., 2009). To address these issues, the British Orthopedic Association Standards for Trauma (BOAST) guidelines recommend offering immediate and regular analgesia upon hospital presentation and ensuring that pain management is adequate to facilitate necessary movements for investigations, nursing care, and rehabilitation (Sieber et al., 2011).

1.1 Significance of Hip Fractures

Hip fractures are a prevalent orthopedic issue, particularly among older adults, and represent one of the most frequent fractures encountered in clinical settings. While these fractures can occur at any age, individuals over 65 are disproportionately affected due to age-related decreases in bone density and an increased risk of falls. The severity of hip fractures can be profound, often leading to significant repercussions for those affected. For elderly individuals, a hip fracture can severely impact their quality of life, necessitating hospitalization, surgery, and extended periods of rehabilitation.

The pain associated with hip fractures is typically excruciating and debilitating. This intense discomfort can severely limit the person's ability to move and bear weight on the affected limb, adversely affecting both physical health and psychological well-being. The resulting immobility often means that individuals lose the ability to walk or perform basic daily tasks, which can lead to secondary health issues such as muscle weakness, joint stiffness, and pressure sores. Additionally, immobility increases the risk of complications like blood clots and pneumonia.

The overall quality of life for those with hip fractures can be significantly and permanently diminished. The loss of independence and the increased need for assistance with daily activities can cause considerable mental distress. This situation can strain relationships with family members and caregivers, who are often called upon to provide additional support. The emotional and physical burden placed on both the individual and their support network can exacerbate the impact of the injury, making recovery more challenging and complex (Perrier et al., 2010).

1.2 Regional Anesthesia's Function

Effective pain management is critical in the treatment of hip fractures, given the intense pain these injuries often cause. Traditionally, opioid medications have been the mainstay for managing pain in such cases. However, the use of opioids has raised significant concerns due to their side effects, potential for addiction, and variable efficacy. This has led healthcare professionals to explore alternative pain management strategies that could mitigate these issues while providing adequate relief.

1.2.1 The Role of Regional Anesthesia

Regional anesthesia has emerged as a valuable alternative to opioids in managing hip fracture pain. This approach involves administering local anesthetic agents to block or numb specific nerves responsible for transmitting pain signals from the affected area. Among the various regional anesthesia techniques, nerve blocks have shown particular promise in effectively controlling pain while minimizing the reliance on systemic medications.

1.2.2 Fascia Iliaca Block

A notable example of a regional anesthetic technique is the fascia iliaca block. This procedure targets the nerves in the hip and thigh region by injecting a local anesthetic—such as lidocaine or bupivacaine—into the fascia iliaca compartment. This anatomical space is located near the hip joint and contains critical nerves, including the femoral, obturator, and lateral femoral cutaneous nerves. The fascia iliaca block works by interrupting the pain signals transmitted through these nerves, thereby providing targeted pain relief.

1.2.3 Benefits of the Fascia Iliaca Block

Effective Pain Relief: One of the primary advantages of the fascia iliaca block is its ability to provide rapid and effective pain relief. By inducing numbness in the hip and thigh area, this technique can significantly alleviate or even eliminate discomfort associated with hip fractures.

Reduced Opioid Use: The effectiveness of the fascia iliaca block in managing pain can lead to a substantial reduction in the need for opioid medications. This is particularly beneficial given the risks associated with opioid use, such as addiction, gastrointestinal issues, and other adverse effects.

Improved Early Mobility: Effective pain control through regional anesthesia, such as the fascia iliaca block, promotes early mobility and engagement in physical therapy. Patients who experience less pain are more likely to participate in rehabilitation activities, which can lead to improved recovery outcomes and shorter hospital stays.

Reduced Complications: By alleviating pain and facilitating early movement, the fascia iliaca block can help reduce complications associated with immobility. These complications include muscle atrophy, joint stiffness, and respiratory problems, which can negatively impact the overall recovery process.

1.2.4 Safety and Patient Satisfaction

Regional anesthetic techniques, including the fascia iliaca block, are generally well-tolerated by patients and can enhance overall satisfaction by effectively managing pain. When performed by trained healthcare professionals under appropriate conditions, these procedures are considered safe and effective. They provide a valuable alternative to traditional opioid-based pain management, offering a means to achieve better patient outcomes while minimizing the risks and side effects associated with opioid use.

2. Review of litreature

In 1989, Dalen et al. conducted a study involving 120 young patients undergoing lower limb surgeries to compare two anesthesia techniques: the Fascia Iliaca Compartment Block (FICB) and the 3-in-1 block. In the FICB group, the technique involved administering a local anesthetic behind the fascia iliaca to simultaneously block the femoral, lateral femoral cutaneous nerve (LFCN), and obturator nerves. This method proved to be straightforward, efficient, and easy to perform. Conversely, the traditional 3-in-1 block was used in the other group and showed a significantly higher failure rate. The results indicated that FICB provided effective and reliable nerve blockage by targeting the fascia iliaca compartment.

Capdevila et al. (1998) later examined 100 patients scheduled for lower limb surgeries, randomly assigning them to either a 3-in-1 block or FICB. Both techniques were found to provide reliable postoperative analgesia. However, FICB demonstrated a quicker and more consistent sensory blockade of the LFCN, attributed to the effective spread of the local anesthetic under the fascia iliaca.

In 2003, Lopez et al. investigated the analgesic efficacy of FICB versus the 3-in-1 block in a prehospital setting with patients suffering from femur fractures. The FICB was performed using 20 cc of 1.5% lidocaine with epinephrine, and pain severity was assessed using a simplified verbal scale. The study concluded that FICB was an effective prehospital analgesic technique for femur fractures, with early sensory blockade in the inner thigh indicating optimal pain relief.

Yun et al. (2009) and McEachin et al. (2002) compared the efficacy of FICB versus the 3-in-1 block in 80 patients undergoing hip or knee replacement surgeries. Patients were randomly assigned to receive either FICB using the loss of resistance technique or ultrasound-guided FICB. Sensory and motor blocks were evaluated before and after the procedure. Dolan et al. (2008) found that ultrasound-guided FICB led to increased sensory loss in the medial thigh and a higher incidence of femoral and obturator nerve motor block compared to the loss of resistance technique.

Yun MJ et al. (2009) compared the analgesic efficacy of FICB with ropivacaine to intravenous alfentanil administration for improved positioning during a subarachnoid block. The study, involving 40 patients, found that FICB resulted in significantly lower Visual Analog Scale (VAS) scores for pain, improved positioning quality, and better patient acceptance compared to intravenous alfentanil. FICB also facilitated patient positioning for the subarachnoid block without the need for additional sedatives or narcotics.

Elizebeth Dulaney-Cripe et al. (2012) investigated continuous FICB with ultrasound guidance for hip fracture patients. One group received a catheter placed over the needle for extended analgesia. After confirming the placement in the fascia iliaca compartment, 50-60 cc of local anesthetic was injected. Following a 60 mL bolus of 0.5% ropivacaine, a continuous infusion of 0.2% ropivacaine was administered at a rate of 10 mL/hr for 1-2 days post-surgery. The study showed that continuous FICB reduced hospital stays, decreased narcotic use, and allowed earlier patient mobilization compared to other analgesic regimens.

Jerrol et al. (2012) studied 60 patients scheduled for knee arthroscopy, comparing FICB administered using the double pop technique to the 3-in-1 block. Both groups received 40 mL of 0.5% ropivacaine with 1:400,000 epinephrine and 100 µg of clonidine. The study assessed block onset time, duration of analgesia (measured by VAS score), postoperative analgesic requirements, and patient satisfaction. While the 3-in-1 block had a faster onset, FICB provided longer-lasting postoperative analgesia.

3. Materials and Methods

3.1 Study Design

In October 2010, an anesthetist trained by Proficient Training Practically Ltd. (Manchester, UK) began performing Fascia Iliaca Compartment Blocks (FICB) for preoperative hip fracture patients (Foss et al., 2007). The decision to adopt FICB as a standard procedure followed promising results from preliminary trials. Emergency departments, which are typically responsible for managing these cases, provided training, updates on safety protocols, and equipment for the procedure. Center-grade specialists in emergency medicine and orthopedic care received both formal and informal training as part of this implementation. To align with the availability of specialist expertise, FICB was conducted outside of regular business hours.

Starting in November 2010, the protocol mandated that patients with radiologically confirmed hip fractures receive FICB within 4 hours of presentation. Data collection spanned two years, during which a continuous review process assessed the procedure's implementation and its clinical effects. The study was divided into three distinct phases, each reflecting overall progress and personal adjustments based on ongoing feedback (Godoy et al., 2010).

Data collection was continuous and prospective throughout these phases, including weekly updates and feedback from practitioners. The trauma center was identified as the ideal setting for FICB administration, particularly suitable for acute ward settings in cases of delayed admission (Elkhodair et al., 2011). Both the trauma center and acute ward were equipped with protocols for managing adverse local anesthetic reactions.

3.2 Participant Selection

Ethical approval for the study was obtained from the Caldicott Review Board. The study included patients with hip fractures, irrespective of whether they received FICB or alternative analgesia. Exclusion criteria for FICB included staff inexperience, non-cooperative or aggressive patients, superficial groin infections, femoral artery aneurysm, inguinal hernia, or blood return during needle placement. Use of warfarin and high BMI were not considered contraindications for FICB administration (Srikantharajah et al., 2007).

3.3 Intervention

The standardized FICB technique was developed based on consultations with anesthetists, trauma center staff, and existing research (Juma et al., 2023). Training materials included procedural guides, an instructional video available on the trust intranet, and supplementary reference information.

Patients provided verbal consent for the procedure. FICB was administered to patients deemed fit and willing based on their clinical condition. The procedure was performed with the patient in a supine position to ensure proper exposure of the abdomen, groin, and proximal leg. A patent peripheral venous cannula was inserted as a precaution against adverse reactions (Høg et al., 2008). The skin was prepared aseptically using 2% chlorhexidine in alcohol.

A 50 mL syringe was used to draw up 0.25% levobupivacaine, with an additional 20 mL of sterile saline to increase the volume of the local anesthetic to fill the fascia iliaca compartment adequately. Training emphasized the importance of precise anatomical landmarks: a line connecting the pubic tubercle and the anterior superior iliac spine, and the location of the femoral pulse. The FICB entry point was marked one-third from the lateral edge and 2 cm inferior to the line connecting these landmarks (i.e., from the anterior superior iliac spine).

Before inserting an 18 G Tuohy needle, 1 mL of 1% lignocaine was administered subcutaneously. The needle was advanced in a cephalad and sagittal plane at an angle of approximately 60°. Using the Loss of Resistance (LOR) technique, the Tuohy needle's curved tip was guided to locate the fascia lata and then the fascia iliaca. Aspiration was performed to avoid major blood vessels. Levobupivacaine was administered in 5 mL increments until the desired effect was achieved.

3.4 Methods and Measurements

The study was structured into three review cycles, during which various procedural adjustments were made based on observations and feedback. Changes in the hip fracture induction protocol, equipment supply, staff expertise, and attitudes towards FICB were systematically documented.

The protocol required that FICB be administered to each hip fracture patient within four hours of admission. Documentation included the FICB procedure in patient records and medication charts. Any adverse procedural or medication reactions were recorded, and pain scores were assessed before and after FICB administration. According to the WHO analgesic ladder, additional analgesia, including intravenous opioids, was provided as necessary (Godoy et al., 2007).

Patient data included demographics, comorbidities, injury patterns, and surgery dates. Local anesthetic toxicity was monitored. A benchmark group of 100 patients (50 from each institution) was selected for comparative analysis with the FICB group. This benchmark group received standard care before the FICB protocol was implemented in October 2010. Both the FICB and benchmark groups followed similar treatment protocols, including expedited trauma ward admission, early surgery (within 24 hours), orthogeriatric review within 48 hours, and adherence to a prescribed analgesic regimen. Both hospitals and groups had similar discharge procedures and access to treatment facilities.

Pain levels were recorded using a Numerical Rating Scale (NRS) ranging from 0 to 10, with 10 indicating the most severe pain. Nurses and healthcare assistants documented NRS scores and general observations in the trauma ward up until the time of surgery. Patients with missing pain score data or cognitive impairments were excluded from the analysis due to the lack of objectivity in their pain assessments. NRS scores were not blinded. Further analgesia was provided for severe pain as required.

All patients' cumulative analgesic use up to surgery was documented, including doses administered by paramedics if applicable. The primary outcome measures were analgesic requirements and NRS pain scores. Secondary measures included protocol compliance, incidence of adverse events, and effects on hospital stay duration and mortality.

3.5 Analysis

Statistical analysis was performed using GraphPad Prism version 5.3. Analysis of variance (ANOVA) was used to compare narcotic use and pain scores between groups. Other outcome measures were assessed using Fisher's exact test (Yashir et al., 2023).

4. Results

In contrast to the initial cohort of 100 patients from Spring and April 2010, the expanded study from October 2010 involved 434 patients examined as part of the Femoral Intercostal Block (FICB) implementation initiative (Table 1). This broader dataset provided a more comprehensive view of the FICB's impact. Among the 434 patients, 326 were administered the FICB, reflecting an increased uptake compared to earlier data.

Table 2 illustrates a significant improvement in the adoption of FICB, which increased from 62% to 84% over three review cycles

(Bijur et al., 2003). The reasons for not administering the FICB evolved over time. In Cycle 1, 25% of cases missed the FICB due to inadequate clinician expertise. By Cycle 3, this issue was resolved, with expertise no longer a barrier, and missed cases due to lack of equipment decreased from 5.8% to 1.9%.

Additionally, there was an issue with eight patients who were not eligible for FICB because they were not admitted through the trauma center. This problem was addressed after Cycle 2, and from then on, all referrals to the unit received the FICB. Notably, patients who presented after the initial data collection were included in the analysis, reflecting the broader uptake of FICB across both hospitals. The exact number of clinicians administering the FICB could not be determined due to inconsistencies in documentation and high turnover among junior staff. However, it is estimated that over 40 different clinicians were involved in delivering the FICB at either hospital. The procedure effectively managed pain for at least 18 hours.

Patients receiving the FICB experienced a notable reduction in narcotic use within the first 24 hours (ANOVA, $p < 0.0001$). Furthermore, Table 3 reports a reduction in mortality from 15% to 5.5% (Fisher's exact test, $p = 0.0024$) following the implementation of FICB. The average length of hospital stay also decreased from 15 days to 10 days (Blackford et al., 2009).

4.1 Implementation

Table 1 and Figure 1, 4 detail the implementation rates of FICB across the three review cycles and among both hospitals. Data from the control group and the three cycles (Cycles 1, 2, and 3) encompass a total of 400 participants. The gender distribution across these cycles included 172 males and 228 females, indicating some variability in gender representation over time.

In terms of injury mechanisms, slips, trips, and falls were the most common causes, with their frequency varying across cycles. Other causes, such as activity-related and intoxicated injuries, remained relatively stable. Intracapsular fractures were the most prevalent type of fracture. The choice of medical treatments varied, with nonoperative methods and cannulated screws being commonly used. These variations suggest shifts in patient demographics and evolving medical practices.

Throughout the three cycles, 120 cases did not receive FICB, leaving 280 cases where the procedure was administered. While FICB was properly documented in 120 cases, 160 cases lacked sufficient documentation. Reasons for not administering FICB included insufficient staff training, lack of equipment, patient resistance, and patients going directly to surgery (Figure 6). In some cases, FICB was deemed hazardous due to patient violence or perceived medical ineptitude. A significant number of cases lacked supporting evidence. This variability highlights the need for improved documentation and training to enhance the reliability and efficiency of FICB administration(Figure 7,8).

4.2 Analgesia Scores

Figure 8 illustrates the differences in pain scores between patients who received FICB and those in the control group, showcasing the effectiveness of FICB in pain management.

4.3 Analgesia Requirements

Figure 8 further compares the narcotic requirements between the FICB group and the control group, demonstrating the reduced need for narcotics among patients who received FICB.

4.4 Clinical Outcomes

Table 3 provides data on length of stay, discharge locations, and inpatient mortality. Across all groups, the average total length of stay was consistently 30 days, indicating stable hospitalization durations. However, there were variations in the length of stay in the Orthopedic ward and Rehabilitation units across different cycles and the control group, suggesting potential changes in patient care practices over time.

The FICB data show that 120 patients were discharged from the hospital, with 60 discharged home, 80 sent to rehabilitation centers, and 140 discharged to care facilities. These outcomes highlight the diverse post-operative needs of patients and the importance of ongoing care and rehabilitation (Figure 9, 10).

4.5 Complications

Among the 326 FICBs administered, three significant complications were noted (0.9% of cases), all occurring within the first six months. These included one instance of tachyarrhythmia and bronchospasm, which was not clearly linked to the FICB, one case of seizures likely due to local anesthetic toxicity, and one case of chest pain of unknown origin within the first hour post-FICB. Importantly, FICB was not associated with femoral nerve damage, femoral vascular compromise, or mortality.

5. Discussion

Implementing the Femoral Intercostal Block (FICB) across the two hospital sites required a comprehensive, multidisciplinary approach. Successful execution of FICB necessitated collaboration among various departments, including the trauma center, the Division of Injury and Musculoskeletal Health, as well as sedation and nursing experts. Coordination among these groups was essential to ensure high levels of adherence to the new protocol and to achieve consistent outcomes across the trust (Hjazi et al., 2023; Lavanya et al., 2024; Aliyari, 2024; Susilowati & Wahyudi, 2019; Al-Hawary et al., 2023; Gupta et al., 2023).

The data presented in Figures 2 and 3 underline the effectiveness of FICB as a preoperative analgesic for hip fractures. The FICB group demonstrated a substantial reduction in both pain scores and narcotic requirements compared to the control group. Additionally, the average length of hospital stay decreased from 15 days in the control group to 10 days in the FICB group. This reduction in length of stay is significant and suggests improved

Table 1. Details on demographics, hip fracture trends, and surgical management

Category	Control group	Cycle 1	Cycle 2	Cycle 3	FICB combined
N	100	100	120	80	400
Sex					
Male	50	30	66	26	172
Female	60	42	71	55	228
Injury details					
Slip/trip	20	30	30	40	120
Collapse	40	40	10	10	100
Activity related	10	15	15	10	50
Slip on ice	10	5	15	10	40
Intoxicated	10	20	5	5	40
Fall in hospital	20	10	10	20	60
Assaulted	15	15	10	10	50
Unknown	20	20	10	30	80
Pathological	20	10	10	20	60
Fracture type					
Intracapsular	15	10	15	10	50
Extracapsular	20	10	10	10	50
Basi cervical	10	5	5	10	30
Per trochanteric	15	15	20	10	60
Subtrochanteric	20	10	20	30	80
Greater trochanter	30	50	20	30	130
Procedure					
Nonoperative	10	10	15	15	50
Cannulated screws	15	10	15	10	50
Dynamic hip screw	10	10	5	5	30
Intramedullary fixation	5	5	10	20	40
Cemented bipolar	20	10	10	10	60
Cemented hemiarthroplasty	15	15	10	10	50
Cemented THR	5	5	5	5	20

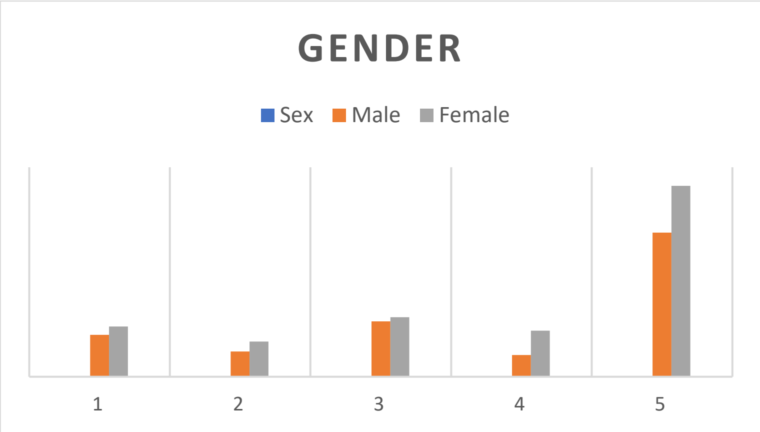

Figure 1. Gender of Respondent

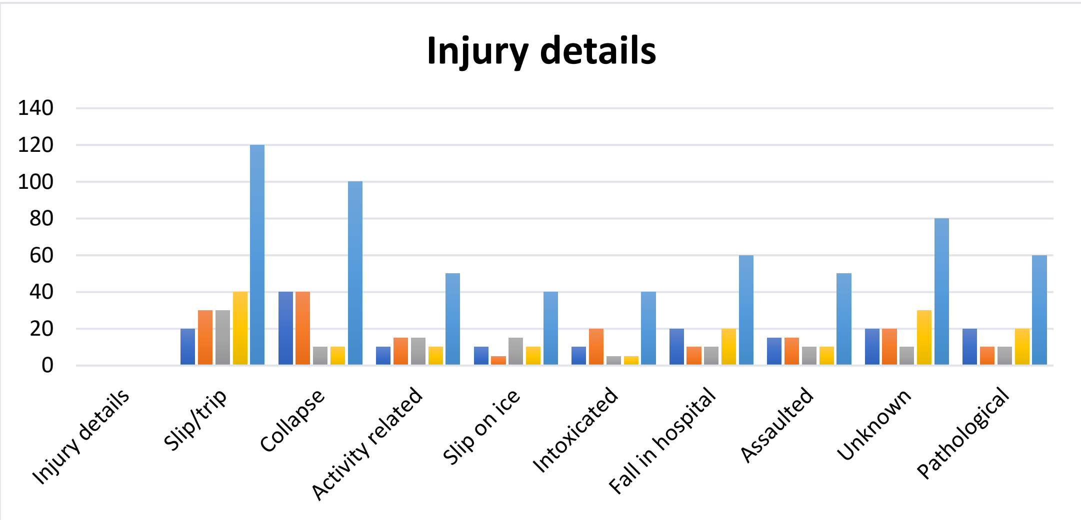

Figure 2. Injury Details

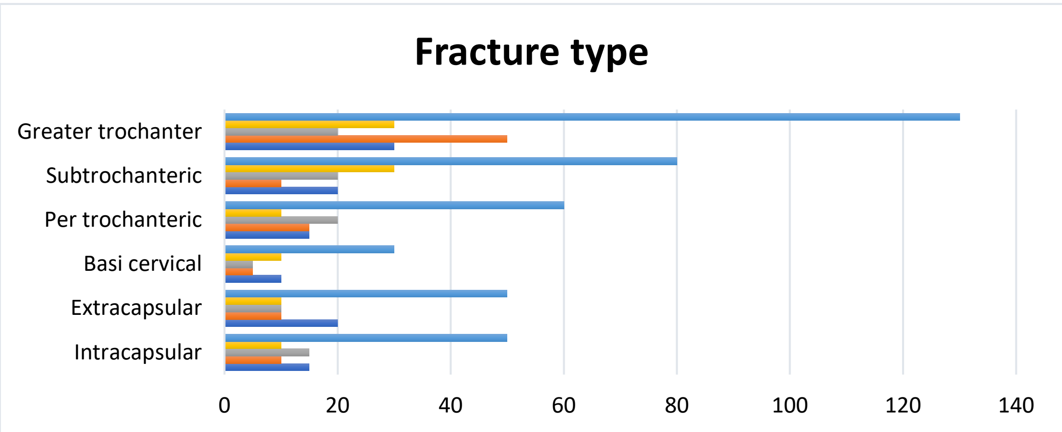

Figure 3. Fracture type

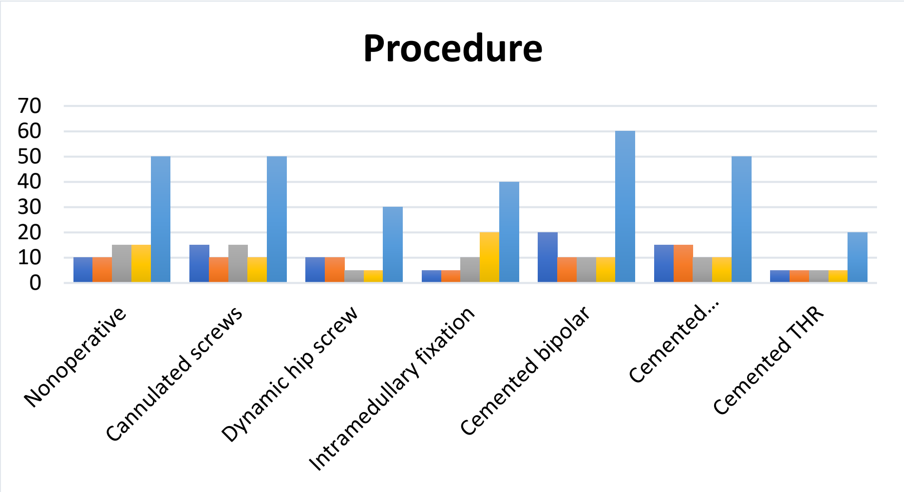

Figure 4. Procedure

Table 2. Record of implementation for each audit cycle

Category	Cycle 1	Cycle 2	Cycle 3	FCB Combined
N	200	100	100	400
FICB given?				
Yes	150	60	70	280
No	50	40	30	120
FICB properly documented?				
Yes	50	50	20	120
No	80	20	60	160
Reason FICB not given				
Staff not trained	5	5	10	20
Equipment not available	4	6	2	12
Patient refused	10	6	4	20
Patient going directly to theatre	2	3	5	10
Unsafe (patient violent)	6	6	8	20
Patient medically unfit	2	3	5	10
Ward transfer	2	2	6	10
Reason not documented	4	4	10	18

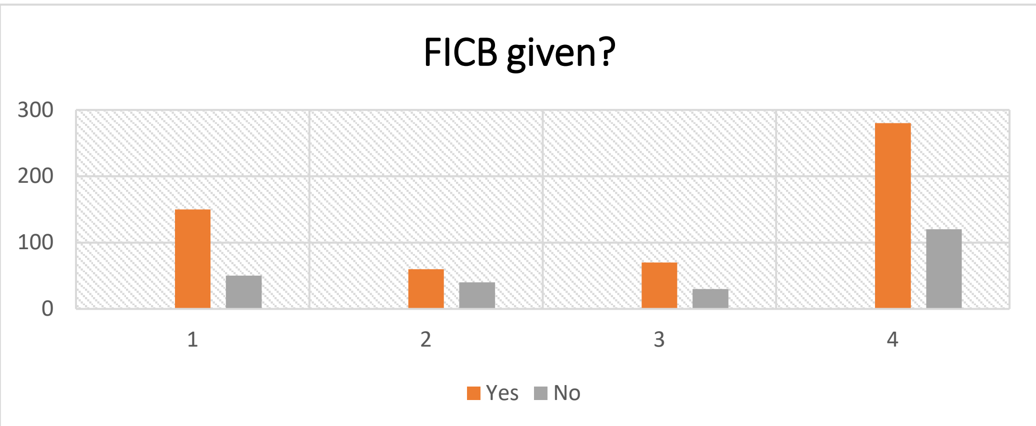

Figure 5. FICB given

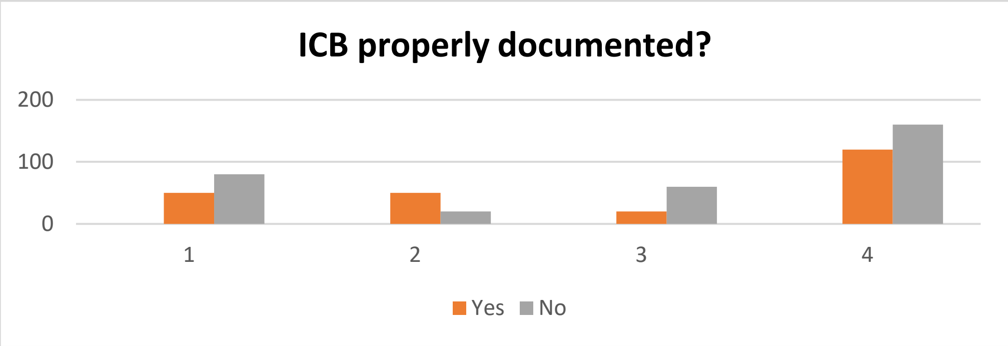

Figure 6. ICB properly documented

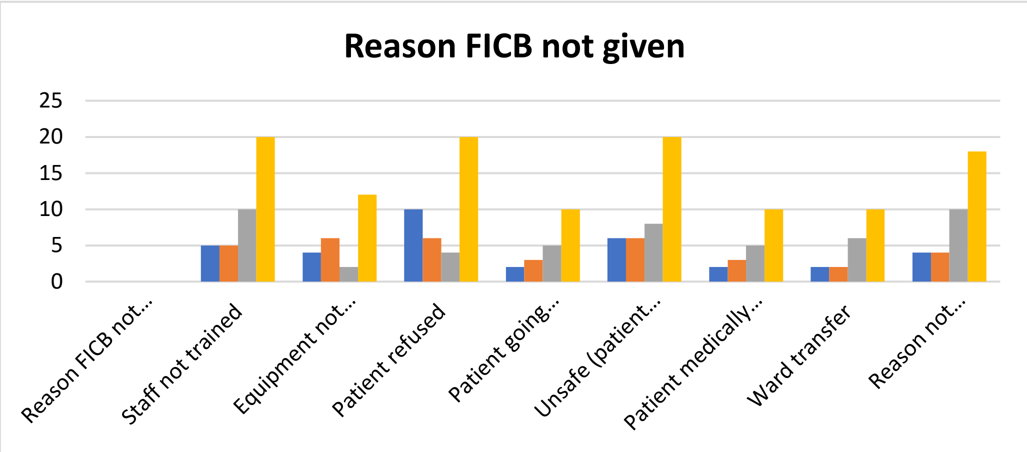

Figure 7. Reason FICB not given

Table 3. Hip fracture admissions Listed

FICB adoption in both hospitals	
Hospital 1	Hospital 2
2.6	3.5
3.4	2.4
4.5	4.6
5.6	5.8
7.1	4.9
6.2	5.6
6.5	6.8
4.8	7.1
6.7	8.3

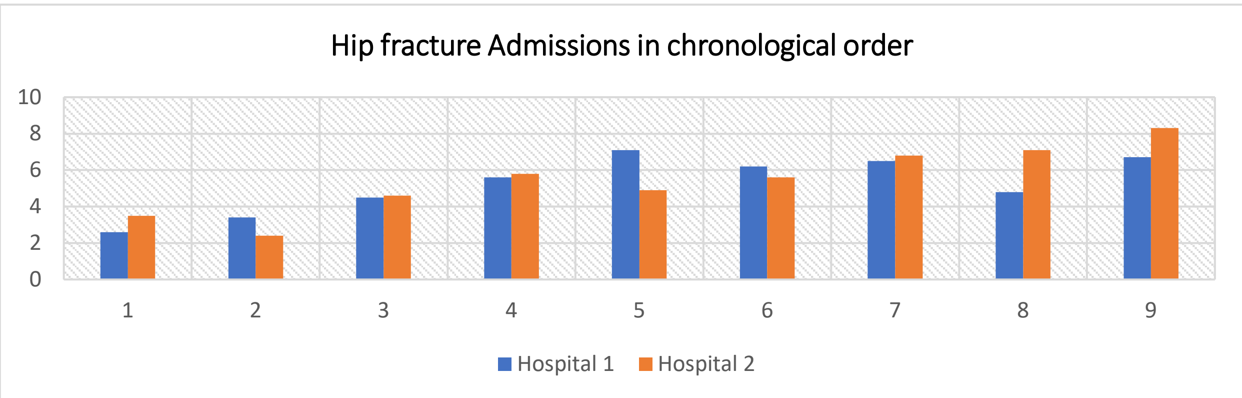

Figure 8. Hip fracture admissions Listed

Table 3. Length of stay discharge destination and inpatient mortality figures

Categories	Control group	Cycle 1	Cycle 2		FICB Combined
N	100	56	225	153	400
Length of Stay (mean, range) (days)					
Ortho ward	16	10	12	12	20
Rehab	16	18	15	20	16
Total stay	29	30	30	30	30
Discharge Destination					
Patient died	50	30	10	30	120
Own home	20	10	10	20	60
Rehab	20	10	20	30	80
Care home	20	20	40	50	140

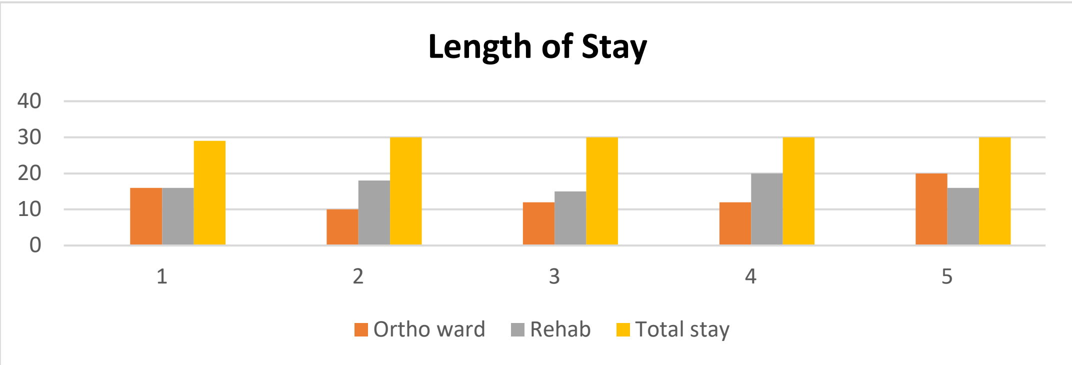

Figure 9. Length of Stay

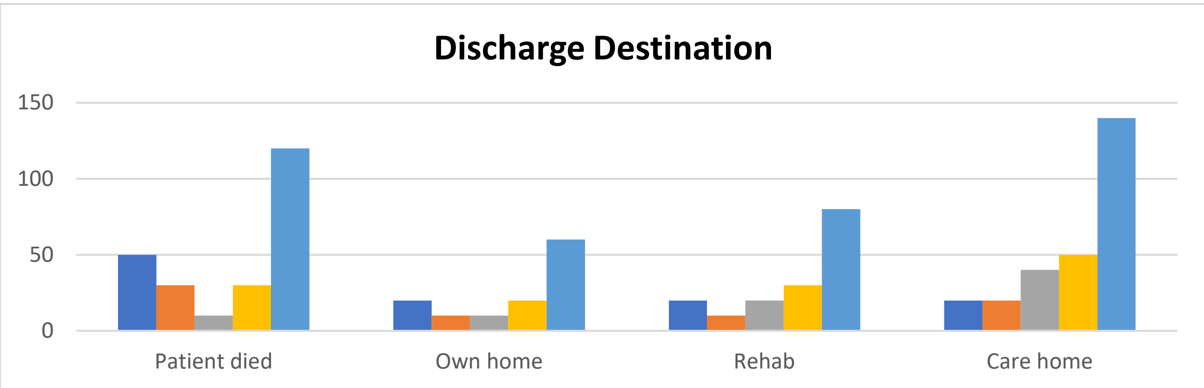

Figure 10. Discharge Destination

patient recovery and management efficiency with the FICB protocol. Furthermore, the implementation of FICB was associated with a notable decrease in mortality rates, from 15% in the control group to 5.5% in the FICB group (Fisher's exact test, p = 0.0024). This dramatic improvement highlights the potential of FICB to enhance patient outcomes significantly.

Several other factors likely influenced the observed improvements in length of stay and mortality rates. Increased interdisciplinary involvement, enhanced nutritional support, and the concurrent development of postoperative pain management protocols likely contributed to these outcomes. The integration of FICB with a broader strategy for managing hip fractures, including a robust organizational framework, may have amplified its benefits (Hjazi et al., 2023; Lavanya et al., 2024; Aliyari, 2024; Susilowati & Wahyudi, 2019; Al-Hawary et al., 2023; Gupta et al., 2023).

Comparative studies have shown that ultrasound-guided techniques for performing FICB are generally more effective than the Loss of Resistance (LOR) technique for blocking the femoral nerve (Hauritz et al., 2009). The ultrasound-guided approach provides a more precise block with potentially better pain relief; however, it requires a longer preparation time, higher costs, and additional training. Despite these drawbacks, the ultrasound-guided method offers significant advantages over traditional techniques, such as improved efficacy in achieving a complete sensory block of the anterior, medial, and thigh regions.

The LOR technique, which was used in this study, has demonstrated better pain relief compared to intravenous nonsteroidal anti-inflammatory drugs (NSAIDs) for hip fractures, particularly in elderly patients. While the ultrasound-guided approach is superior in terms of analgesia, the LOR technique remains a valuable alternative due to its lower cost and more accessible implementation in various clinical settings.

Overall, our findings strongly support the use of FICB as a more effective pain management strategy compared to conventional analgesia. Future research should aim to include randomized controlled trials comparing FICB with traditional analgesic methods to further validate these results and refine pain management protocols for hip fractures. Such studies could provide deeper insights into optimizing analgesic strategies and improving patient outcomes.

6. Conclusion

The Fascia Iliaca Compartment Block (FICB) has proven highly effective in managing hip fractures by significantly reducing pain and opioid use. Our study shows that FICB not only provides superior pain relief but also leads to a reduction in both hospital stay and mortality rates. Specifically, mortality dropped from 15% to 5.5%, and hospital stay decreased from 15 to 10 days. These improvements highlight FICB's efficacy over traditional methods, supporting its wider implementation and the need for further research to enhance hip fracture care.

Author contributions

H.M.M. was solely responsible for the conceptualization, methodology, formal analysis, data curation, software development, validation of results, resources acquisition, funding acquisition, project administration, and supervision. H.M.M. wrote the original draft of the manuscript, reviewed, and edited the final version.

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Competing financial interests

The authors have no conflict of interest.

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