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# A study of the results related to the effect of FICB with LMA on femoral fracture surgery in primary and middle school children in Iraq

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**Abstract**

**Introduction:** Hip fracture or proximal femur fracture is a very frequent operation in people all over the world. Occupation assumes 20-25% of trauma service beds in the world. It is responsible for disability, loss of quality of life and health, economic and social costs, and has a greater impact than other chronic diseases that afflict our population as different professionals are involved in the care of these patients, so coordination between different levels of care is key to the continuity of care. In addition, more than 85% of hip fractures occur in people over 35 years of age, and the incidence is increasing in the Spanish country; these fractures have increased continuously in the past two decades. **Objective:** This paper aims to study of the results related to the effect of FICB with LMA on femoral fracture surgery in primary and middle school children in Iraq. **Patients and Methods:** In this study, a descriptive cross-sectional study was applied to a study of the results related to the effect of FICB with LMA on femoral fracture surgery in primary and middle school children in Iraq from 6$^{th}$ July 2021 to 13$^{th}$ October 2022. Data were collected for 100 patients in hospitals in different hospitals in Iraq, where the patients were divided into two groups; the first group of patients, which was FICB with LMA group, which included (55), and the second group, RA group, which include (45) patients. A statistical study was conducted for fracture surgery in primary and middle school children patients using the SPSS program. **Results and Discussion:** The most common cause of agitation is pain or discomfort. Femoral nerve block, lumbar plexus block, spinal anaesthesia, and epidural anaesthesia have all been advocated as analgesic methods for lower extremities surgery. Each of these procedures has disadvantages, such as femoral nerve damage, haemorrhage, Dural puncture headache, and so on. With the advancement of peripheral nerve block technology, FICB has become commonly utilized for postoperative analgesia in patients having hip, femur, and knee surgery. The lateral femoral cutaneous nerve and the obturator nerve have a good success rate. **Conclusion:** Our study found that the (FICB) and laryngeal mask airway (LMA) anesthesia are more affected than RA anesthesia, where had shown according to VAS and

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Quality of Life assessment as well as this study found that the patients under RA anesthesia have injured more complications than patients under (FICB) and laryngeal mask airway (LMA) anesthesia.

**Keywords:** (LMA) anesthesia; FICB anesthesia; RA anesthesia; Hip fracture; HR; and SBP.

## Introduction

Hip fracture or proximal femur fracture is a very frequent operation in people all over the world. Occupation assumes 20-25% of trauma service beds in the world. It is responsible for disability, loss of quality of life and health, economic and social costs, and has a greater impact than other chronic diseases that afflict our population as different professionals are involved in the care of these patients, so coordination between different levels of care is key to the continuity of care [1,2]. In addition, more than 85% of hip fractures occur in people over 35 years of age, and the incidence is increasing in the Spanish country; these fractures have increased continuously in the past two decades [3]. In absolute numbers, and according to the latest report from the National Health System, the number of hospital discharges, for this reason, increased from 34,876 in 1997 to 47,308 in 2008, representing an increase of 35.65%, with an average annual growth of 2.81% [4,5]. Based on French studies, the incidence rate in 2008 was 103.76 cases per 100,000 population, and the average age of affected patients was 80.46 years (82.13 in women and 75.71 in men). It occurred in Italy [6]. According to previous data, it is close to 500 / 100,000 inhabitants. The incidence increases exponentially with age (>90% are over 65 years of age) [7]. Although age-corrected rates appear to have stabilized or even decreased slightly in some countries as the absolute number of patients with femur fractures [8]. According to German studies, aging on a global scale has placed great economic and social demands on all countries [9]. However, the group of people aged 65 and over is growing relatively faster than all other age groups worldwide [10]. In 2010, the population aged 65 and over was 600 million, and it is estimated that by 2025, this demographic group will increase to 1,200 million, reaching 2,000 million before 2050. In fact, this fact is a major concern for countries advanced. Spain is one of the countries in Europe and in the world with the highest life expectancy at birth [11]. In 2010, the number of centenarians in Spain accounted for 16.9% (7,931,134) of the total population (47,021,031). It is estimated that, by 2021, this percentage will reach 20.3% (9,276,980) [12]. As the Spanish population continues to age, the demand for health by this group of people increases because, together, they accumulate a greater risk of developing chronic diseases associated with it [13]. This increases the cost of medical and social assistance, as well as important public health consequences. Spain currently has 9% more elderly people than other countries in the European Union (EU), although it still presents a negative difference in social protection expenditures (21.6% of GDP) with respect to the community average (27.7%) and above all, with countries such as Sweden, Denmark or France that spend almost one in three monetary units of GDP on social protection expenditures [14]. Currently, in the European community, it is estimated that there will be a 135% increase in hip fractures in the next 50 years, and by 2050, according to the International Osteoporosis Foundation (IOF), more than 6 million such fractures are expected worldwide. The world and although the increase will have a special impact on the Asian and African continents, more than a million is expected in Europe that year [15]. The main cause of the emerging disorder is pain or discomfort. For lower extremity surgery, analgesic techniques such as femoral nerve block, lumbar plexus nerve block, spinal anesthesia, and epidural anesthesia are recommended. Both procedures have drawbacks, such as femoral nerve damage, bleeding, headache after dural puncture, etc. FICB has become commonly used for postoperative analgesia in patients undergoing hip, femur, and knee surgeries since the advent of the peripheral nerve block. Dalen et al. [16]. FICB was originally proposed in 1989. With a high level of safety and efficacy, this regional block approach has been used to block the lateral femoral cutaneous nerve of the thigh and the obturator nerve. LMA has been widely used for breathing with general anesthesia, and it has a low incidence of airway-related problems after surgery. There have been few clinical investigations using FICB in conjunction with LMA general anesthesia [17]. This paper aims to study of the results related to the effect of FICB with LMA on femoral fracture surgery in primary and middle school children in Iraq.

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**Patients and Methods**

In this study, a descriptive cross-sectional study was applied to a study of the results related to the effect of FICB with LMA on femoral fracture surgery in primary and middle school children in Iraq from 6th July 2021 to 13th October 2022. Data were collected for 100 patients in hospitals different hospitals in Iraq, where the patients were divided into two groups, the first group of patients, which FICB with LMA group, which included (55), and the second group, RA group, which include (45) patients. A statistical study was conducted for fracture surgery in primary and middle school children patients using the SPSS program. In this study, a study of the demographic results between FICB with LMA group and RA group, which specialized in age and determined between 6-14 years of age and gender, BMI, economic level of parents, low, middle, high, educational level of parents, low, middle, high, PH, and the causes resulting from the occurrence of the fracture of the femur, consisting of the fall, Trauma resulting from a car accident, A direct hit is caused by physical contact as shown in Table 1. As for Figure 1, this study determined the Duration of anaesthesia between the FICB with LMA group and RA group for both groups, as the study was expanded for both groups by presenting the duration of surgery between the FICB with LMA group and RA group and Emergence time between the FICB with LMA group and RA group as shown in Figure 2 and Figure 3. To follow up on this, this study was planned to evaluate overall results according to complications, which included high SBP, increase HR, urinary tract infection (UTI), Dizziness, Delirium, and Hospital stays. This study was carried out by statistically evaluating both patients who took the two types of anaesthesia, as can be followed up in Table 2. Otherwise, a comprehensive evaluation was carried out for both patients who took anaesthesia for both groups through evaluation of postoperative VAS pain scores based on the movement where rated patients after the first day, after three days, and after one week, as presented in Table 3. As for Table 4, the Evaluation of Harris's hip score was also based on both periods after the first day, after three days, and after one week. Finally, a comprehensive study was carried out for both patients who underwent anaesthesia (FICB with LMA anaesthesia and RA anaesthesia). Assessment of quality-life of patients.

**Results**

**Table 1-** The demographic results between FICB with LMA group and RA group.

| **ITEMS** | **RA GROUP (N= 55)** | **FICB WITH LMA GROUP (N=45)** | **P-value** |
|---|---|---|---|
| **AGE** | | | |
| 6-8 | 12 (21.82%) | 10 (22.22%) | 0.0495 |
| 9-11 | 19 (34.55%) | 15 (33.33%) | 0.0492 |
| 12-14 | 24 (43.64%) | 20 (44.44%) | 0.0492 |
| **SEX** | | | |
| MALE | 24 (43.64%) | 19 (42.22%) | 0.0493 |
| FEMALE | 31 (56.36%) | 26 (57.78%) | 0.0493 |
| **BMI** | | | |
| 22-24 | 23 (41.82%) | 18 (40%) | 0.0489 |
| 25-27 | 32 (58.18%) | 27 (60%) | 0.0478 |
| **ECONOMIC LEVEL OF PARENTS** | | | |
| LOW | 22 (40%) | 12 (31%) | 0.038 |
| MIDDLE | 17 (30.91%) | 14 (31.11%) | 0.0452 |
| HIGH | 16 (29.09%) | 19 (42.22%) | 0.0335 |
| **EDUCATIONAL LEVEL OF PARENTS** | | | |
| LOW | 26 (47.27%) | 21 (46.67%) | 0.0492 |
| MIDDLE | 17 (30.91%) | 13 (28.89%) | 0.0487 |
| HIGH | 12 (21.82%) | 11 (24.44%) | 0.0437 |
| **PH** | 6.88±1.02 | 7.22±3.14 | 0.0488 |

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| REASONS | | | |
|---|---|---|---|
| The fall | 14 (25.45%) | 11 (24.44%) | 0.0492 |
| Trauma resulting from a car accident | 23 (41.82%) | 21 (46.67%) | 0.0468 |
| A direct hit is caused by physical contact | 18 (32.73%) | 13 (28.89%) | 0.04722 |

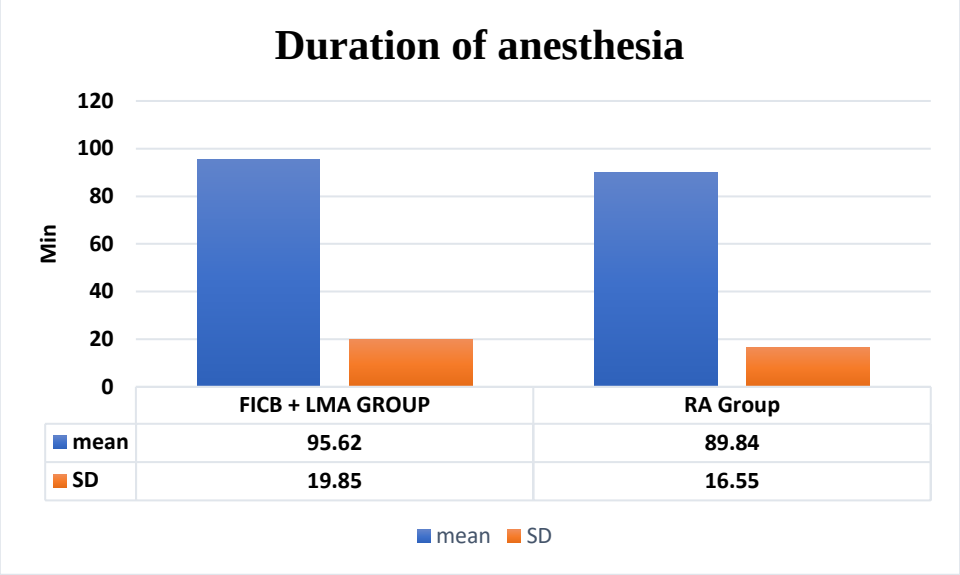


**Figure 1:** Duration of anaesthesia between the FICB with LMA group and RA group.

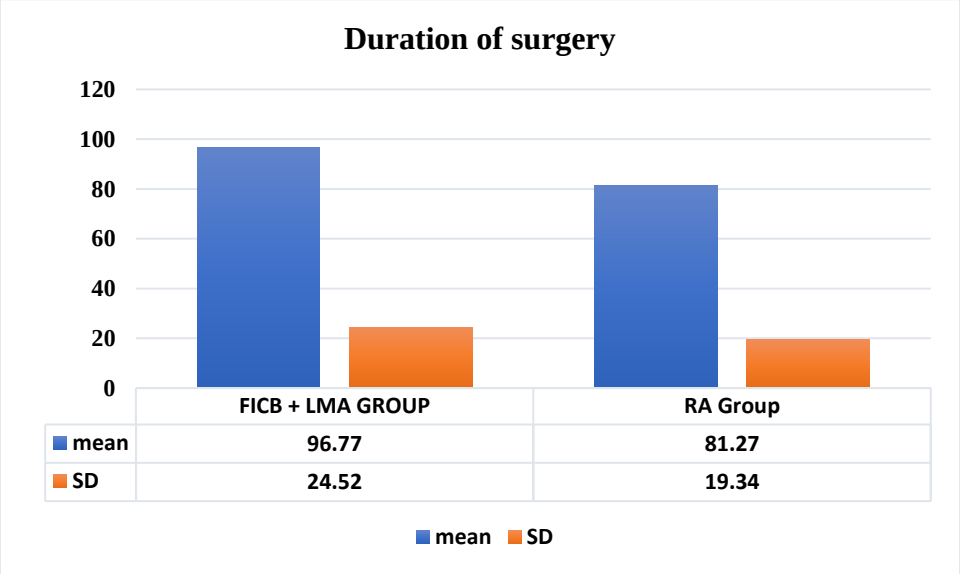


**Figure 2:** Duration of surgery between the FICB with LMA group and RA group.

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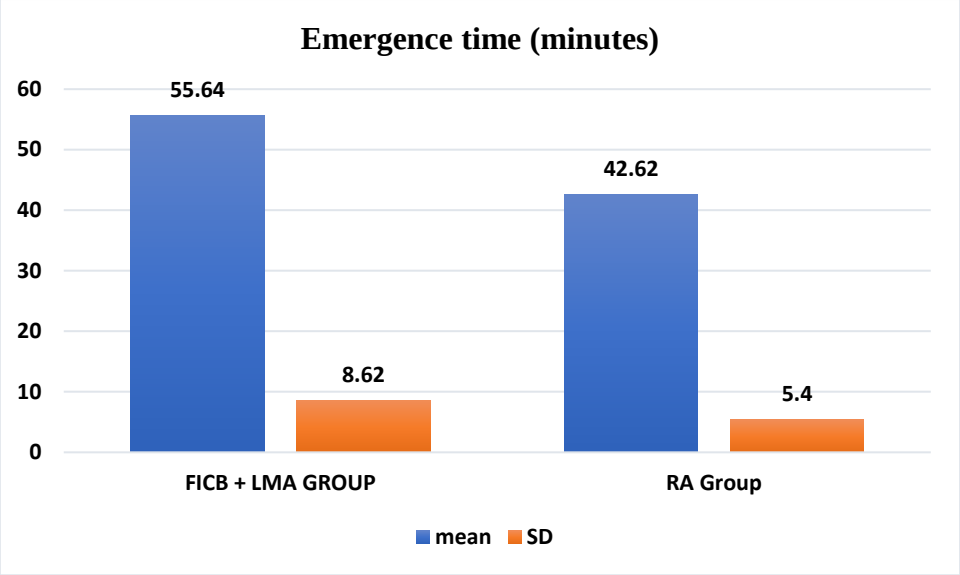


**Figure 3:** Emergence time between the FICB with LMA group and RA group.

**Table 2:** Evaluate overall results according to complications.

| ITEMS | RA GROUP (N= 55) | FICB WITH LMA GROUP (N=45) | P-value |
|---|---|---|---|
| High SBP | 4 (7.27%) | 3 (6.67%) | 0.0487 |
| Increase HR | 8 (14.55%) | 4 (8.89%) | 0.0277 |
| Urinary tract infection (UTI) | 2 (3.64%) | 1 (2.22%) | 0.0492 |
| Dizziness | 3 (5.45%) | 2 (4.44%) | 0.0491 |
| Delirium | 3 (5.45%) | 3 (6.67%) | 0.04914 |
| Hospital stays | 15±2.4 | 17.2±5.3 | 0.0482 |

**Table 3.** Evaluation of postoperative VAS pain scores based on the movement.

| ITEMS | RA GROUP (N= 55) | FICB WITH LMA GROUP (N=45) | P-VALUE |
|---|---|---|---|
| AFTER FIRST DAY | 8.57±0.75 | 5.64±0.66 | 0.0473 |
| AFTER THREE DAYS | 4.47±2.65 | 4.21±1.38 | 0.0487 |
| AFTER ONE WEEK | 3.53 | 2.61±1.11 | 0.0492 |

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**Table 4.** Evaluation of Harris hip scores.

| ITEMS | RA GROUP (N= 55) | FICB WITH LMA GROUP (N=45) | P-VALUE |
|---|---|---|---|
| AFTER FIRST DAY | 6.36±1.1 | 5.22±0.55 | 0.0482 |
| AFTER THREE DAYS | 4.62±0.78 | 3.63±0.23 | 0.0491 |
| AFTER ONE WEEK | 2.41±2.25 | 1.34±1.57 | 0.0494 |

**Table 5.** Assessment of quality-life of patients.

| ITEMS | RA GROUP (N= 55) | FICB WITH LMA GROUP (N=45) | P-VALUE |
|---|---|---|---|
| ANXIETY | 78±13.43 | 65±7.8 | 0.0367 |
| BLUES | 62±16.55 | 59±11.35 | 0.0385 |
| PHYSICAL PERFORMANCE | 55.47±21.34 | 49.33 | 0.0491 |
| PHYSICAL PAIN | 42±22.3 | 35.82 | 0.0483 |

**Discussion**

The most common cause of agitation is pain or discomfort. Femoral nerve block, lumbar plexus block, spinal anesthesia, and epidural anesthesia have all been advocated as analgesic methods for lower extremities surgery [18,19]. Each of these procedures has disadvantages, such as femoral nerve damage, hemorrhage, dural puncture headache, and so on. With the advancement of peripheral nerve block technology, FICB has become commonly utilized for postoperative analgesia in patients having hip, femur, and knee surgery [20]. The lateral femoral cutaneous nerve and the obturator nerve have a good success rate. In addition, LMA has been widely utilized for general anesthesia breathing and has a decreased risk of postoperative airway-related problems. Because the lower leg contains several nerves distributing to this region, achieving a complete analgesic effect with a single peripheral nerve block is challenging [21]. In lower limb surgery, however, FICB had a high success rate. In children having femoral surgery, we discovered that the FICB paired with RA anesthesia utilizing LMA may stabilize hemodynamic parameters, decrease emergence time, and lower the frequency of emergence agitation without causing extra adverse effects. After endotracheal intubation, SBP and HR varied rapidly in the control group, while hemodynamic parameters were reasonably steady in the FICB + LMA group. The LMA had minimal effect on dizziness and essentially no influence on hemodynamic measures after insertion. Because the lateral femoral cutaneous nerve of the thigh and the obturator nerve were blocked during surgery, blood pressure was more stable in the FICB + LMA group, and FICB successfully relieved pain in the surgical incision region [22].

There were substantial changes in SBP and HR across groups during surgery, which were related to the multi-nerve block in the lower leg. After three days, there were no significant variations in VAS values between the two groups. VAS values were less than 5 in both groups after three days postoperatively, although VAS values within the first postoperative day were more than 5, showing that FICB might provide long-term effective analgesia. The duration of FICB in our investigation was comparable to that of Hngh et al. [23]. However, our findings contradicted those of Kumie et al. and Yun et al. During the first 24 hours after surgery, VAS values in the FICB WITH LMA GROUP were lower than those in the RA group. This

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disparity might be attributed to the degree of postoperative pain induced by genetic variances as well as cultural and social influences.

Furthermore, children's pain tolerance is low. The VAS values were lower in the FICB + LMA group than in the RA GROUP after three days, but they were closer after 24 hours because the analgesic effects of FICB gradually faded in the FICB + LMA group, indicating that the FICB provided patients with long-lasting analgesia during the intraoperative and postoperative period. In our investigation, the incidence of the patient assessment of quality-of-life was lower in the FICB + LMA group than in the RA group [24]. Furthermore, there are several causes of problems, including the use of inhalation anaesthetics, quick recovery, surgical procedure type, postoperative discomfort, high SBP, and increased HR. High SBP and increased HR were less common in the FICB + LMA group than in the RA group. Because the needle puncture location for FICB was nowhere near blood arteries or the femoral nerve, there were no problems. As a result, there is unintentional vascular and nerve damage.

## Conclusion

In children, postoperative discomfort following RA anesthesia is a common consequence. However, the primary cause of emerging agitation is pain or discomfort. In this study, we looked at the effects of combining fascia iliac a compartment block (FICB) and laryngeal mask airway (LMA) anesthesia with RA anesthesia in children having femoral surgery. In conclusion. Our study found that the (FICB) and laryngeal mask airway (LMA) anesthesia are more affected than RA anesthesia, where had shown according to VAS and Quality of Life assessment as well. As this study found that patients under RA anesthesia have injured and more complications than patients under (FICB) and laryngeal mask airway (LMA) anesthesia.

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