COMPARISON BETWEEN ERECTOR SPINAE PLANE BLOCK VERSUS QUADRATUS LUMBORUM PLANE BLOCK FOR ANALGESIA IN PEDIATRIC LOWER ABDOMINAL SURGERY

Faten Abdelhameed Sayed Ahmed [1], Prof. Dr. Wafaa Gaber Ahmed [2], Dr. Suzan Mohamed Abdelkareem [3]

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Background: the pediatri postoperative analgesia can be effectively controlled using regional analgesic techniques. both quadratus lumborum block (QLB) and erector spinae plan block (ESPB) have been used to achieve adequate postoperative analgesia in children. We compared the efficacy of both in postoperative pain management after lower abdominal surgery. **Patients and methods:** 60 patients with lower abdominal surgery received either bilateral -ultrasound guided -QLB (transmuscular anterior approach) or ESPB at the level of T8 transverse process with 0.5 ml/kg of 0.25% bupivacaine to achieve adequate postoperative analgesia. FLACC score was used to assess pain score after surgery and the need for rescue opioid analgesia. **Results:** The average dose of narcotic was lower and the time to the first dose required analgesic was after longer time in QLB group when compared to ESPB group. In addition, FLACC scores were lower in QLB group in comparison to ESPB group at the 2hrs., 4 hrs.', 6 hrs., 12 hrs, 18 hrs. and 24 hrs. **Conclusion:** In pediatrics undergoing lower abdominal surgeries, the US guided QLB had higher analgesic efficacy than ESPB as it decreased opioid consumption and pain score with better hemodynamics and parents' satisfaction and comparable complications.

Keywords: *Erectrospine Plane Block, Quadratus Lumborum Block, pediatric, regional analgesia, abdominal operation.*

1. Faten Abdelhameed Sayed Ahmed *Faculty of Medicine – Mansoura University*
2. Prof. Dr. Wafaa Gaber Ahmed *Professor of Anesthesiology, Intensive Care, and Pain management Faculty of Medicine for Girls in Cairo Al-Azhar University*
3. *Dr. Suzan Mohamed Abdelkareem lecturer of Anesthesiology, intensive Care, and Pain Management Faculty of Medicine for Girls in Cairo Al-Azhar University*

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Introduction One of the most frequent operations in pediatric surgery practice is lower abdominal surgery, particularly inguinal hernia repairs. ***(Safa et al., 2023)***. Since these are often day case operations, it's crucial to maintain appropriate analgesia and mobilize patients as part of perioperative care. ***(Chen et al., 2021)***. In order to prevent the feeling of pain in the future and the emergence of chronic pain in the ensuing time, it is also crucial to provide pediatric patients the proper postoperative analgesia. ***(Friedrichsdorf and Goubert, 2020)***.

A multimodal strategy that includes opioids, NSAIDs, and localized analgesic methods may be used to manage pain. **(*Schwenk and Mariano, 2018)***. Children may benefit from lumbar epidural catheterization, caudal blocks, or peripheral nerve blocks like erector spinae plane block (ESPB) or quadratus lumborum block (QLB). ***(Aksu et al., 2019)***. Compared to peripheral nerve blocks, neuraxial blocks often carry a greater risk of side impacts and complications. **(*Kent and Bollag, 2010)***. However, compared to a peripheral nerve block, the caudal block lasts 4 to 6 hours shorter. ***(Wiegele et al., 2019)***. When it comes to lower abdominal procedures, peripheral nerve blocks are safer and more effective overall than caudal blocks. **(*Mahrous et al., 2022*)**.

When it comes to postoperative analgesia in this patient's group after abdominal procedures, the Quadratratus Lumborum Block (QLB) has been shown to be more effective than the Transversus Abdominis Plane (TAP) block since Blanco et al. initially reported it in 2007. ***(Öksüz et al., 2017)***. Dam et al. **(*Dam et al., 2016)*** outlined this block's transmuscular approach (QL-TM). The QL-TM method has been used for a number of reasons, such as the treatment of inguinal hernias. ***(Aksu and Gürkan, 2018)***. For lumbar plexus blocks, the

Shamrock approach offers a broad view of the paraspinal anatomic components. This block may be used effectively and securely for a variety of indicators when using "Shamrock view." ***(Gürkan et al., 2017)***.

The literature shows that QLB may be successfully used in an ambulatory situation with little to no sedation and no side effects like nausea or vomiting that might cause a delay in discharge. ***(Ontivero et al., 2022)***.

Quadrates lamborum Block can be classified to QLB1(lateral) QLB2(posterior)QLB3 (transmuscular anterior approach) and QLB4(intermuscular) ***(Aksu et al., 2019, Taman et al., 2022).*** ,here, in this study we perform the block by the 3rd type: transmuscular anterior approach i.e. QLB3.

Since Forrero et al. ***(Forero et al., 2016)*** After the ESPB was initially defined, the block's therapeutic applications and indications for various surgical procedures have expanded. ***(Tsui et al., 2019)***. ESPB is an interfascial plane block, but anatomical research suggests that it may also extend to the paravertebral and epidural spaces, which might contribute to some of its therapeutic benefits. ***(Ivanusic etal, 2018, Adhikary et al., 2018)***. Reports have also shown that it is used in juvenile abdominal operations. ***(Aksu et al., 2019, Taman et al., 2022)***.

There is an ongoing debate on the best way to provide analgesia after children lower abdominal surgeries. Thus, the current study's goal is to assess how well ESPB and QLB work as analgesics after juvenile lower abdominal procedures.

Objectives In this prospective randomized controlled research, children having lower abdominal procedures under general anesthesia will be compared for the analgesic effectiveness of US-guided quadratus lumborum plane block against US-guided erector spinae plane block.

Patients and Methods

Study type: This investigation is a prospective, randomized study, conducted in the Department of Anesthesia, at Al-Zahraa University hospital, Al-Azhar university.

Study Setting *Al- Zahraa University hospital and Abu Khalifa Emergency Hospital in al-Ismailia.*

Ethical consideration The patient's parents were asked to provide formal informed permission. Each parent was given a code number and a description of the study's objectives. The outcomes of the research were applied to science.

Study population: Inclusion criteria is: 60 patients of both sexes, ages 7 to 10, whose physical status ratings on the American Society of Anesthesiologists (ASA) ranged from I to II, were planned for lower abdomen surgery. Excluded children were those with known allergies to opioids and local anesthetics, those having additional surgery or bilateral surgery at different surgical sites, those with skin infections at the needle puncture site, patients with significant cardiac, renal, hepatic, or respiratory disorders, patients with coagulopathy disorders, patients with abnormal body weight, and parents refusing to participate in the treatment.

Method: Patients recruited in the trial if they satisfy the prior requirements. 60 child contributed in this study, they were divided into two equal groups at random, with thirty patients in each group.

- Group ESB (n=30): after stabilization of the airway before starting surgery, at L1 a unilateral US-guided ESB block was performed. Bupivacaine 0.5 ml/kg, 0.25% bupivacaine, with a 20 ml maximum dosage,
- Group QLB (n=30): after stabilization of the airway before starting surgery, at L1 a unilateral US-guided QLB was performed. Bupivacaine 0.5 ml/kg, 0.25% bupivacaine, with a 20 ml maximum dosage,
- **Anesthetic Technique:**

Preoperatively Medical and surgical history of the patients will be taken, clinical examination of the patients was performed and routine laboratory investigations as CBC, coagulation studies, renal function and liver function was done. Intraoperatively All patients hooked up to standard ASA monitoring as soon as they reach the operation room. This monitoring consists of electrocardiography (ECG), non-invasive arterial blood pressure (NIBP), pulse oximetry, temperature probe, and capnogram. **a**ll children premedicated using IV midazolam (0.05mg/kg). 50% air in oxygen and 8% sevoflurane used to produce anesthesia. After inserting a 24-gauge intravenous (IV) cannula, fentanyl 1 μg/kg was given to induce anesthesia. A laryngeal mask airway employed for securing the airway.

Anesthesia maintenance was with sevoflurane 2% in 50% oxygen& air.

Hemodynamic Parameters: Before block performance, at baseline, and every ten minutes throughout the procedure, [MAP (in mmHg) and HR (beats per minute)] measured. Before the procedure begins, the airway will be secured and both blocks carried out.

Technique:

1) ESP Block

The patients positioned laterally, then, at the sacral level, locate the probe in plane, to identify the erector spinae muscle ESM go upward from the sacrum to the L1 level ,then 1-2 cm latral to the transverse process. To achieve block performance, a deep injection of 0.25% bupivacaine at a predetermined dosage of 0.5 ml/kg, with a maximum dose of 20 ml, was administered***. (Aksu et al., 2019)***.

2) Quadratus lumborum:

The patients positioned laterally, then, The probe positioned transversely to the flanks. Hence, you can identify the transverse process, psoas muscle (PM), and quadratus lumborum muscle (QLM) ,"Shamrock view", ***(Sauter et al., 2015).*** To achieve block performance, the needle placed starting from the probe's edge and going deeper into the fascia between the PM and QLM. and a deep transmuscular anterior injection of 0.25% bupivacaine at a predetermined dosage of 0.5 ml/kg, with a maximum dose of 20 ml, was administered. ***(Børglum et al., 2013).***

All injections - in both types- preceded by 5ml saline to insure accurate site.

3)Postoperative follow-up:

Face, Legs, Cry, Activity, and Consolability (FLACC) ratings used to assess pain in the postoperative recovery area as well as on the ward. Following surgery, FLACC scores will be noted at 0, 2, 4, 6, 12, 18, and 24 hours. The patients' FLACC ratings used to design the rescue analgesia.

FLACC scale:

It is one of the most popular and extensively utilized behavioral observation pain measures for assessing pain in children between the ages of two months and seven years old, as well as in people who are unable to verbalize their pain, is the Face, Legs, Activity, Cry, and Consolability (FLACC) scale. A total score between "0" and "10" is obtained by assigning a numerical value rating of "0" to "2" to each observation's degree of reaction, where "0" denotes the least uncomfortable and painless situation and "2" the most painful. It has also been discovered that the FLACC scale is reliable when used to people in intensive care units (ICUs) who can't communicate as a result of intubation. The Checklist of Nonverbal Pain Indicators scale, which is utilized in intensive care units, and the FLACC scale provided an equivalent assessment of pain. Table (1) ***(Merkel et al., 1997).***

Table 1. FLACC pain scale (Merkel et al., 1997)

Criteria	Score 0	Score 1	Score 2
Face	Not a certain look or grin	sporadic scowl or grimace, distant, indifferent	Often with a tight jaw and a trembling chin
Legs	relaxed or in a normal posture	tense, restless, and uneasy	kicking or raising one's legs
Activity	lying calmly, in a regular posture, and with ease	wriggling, adjusting, oscillating, and tensed	jerky, stiff, or curved
Cry	Nothing to weep (asleep or awake)	Whimpers or moans; infrequent grumbling	Constantly crying, screaming or sobbing, and complaining a lot
Consolability	Satisfied and at ease	Occasionally touched, hugged, or conversed with, providing comfort; easily distracted	arduous to soothe or console

Typically, analgesia with acetaminophen 15 mg/kg IV every 6 hours is used. Fentanyl 1 µg/kg intravenously as a rescue analgesic when FLACC scores are more than 3.

Records kept on the amount of analgesic needed in the first 24hrs after surgery, the time it took to take the first dose, and how satisfied the parents were with the painkiller.

- A 5-point Likert scale used to gauge how satisfied parents are **(*Joshi et al., 2015*)**: (0 = severely dissatisfied; 1 = unsatisfied; 2 = neither satisfied nor unhappy; and 3 = satisfied, 4 = highly pleased).

Measurements:

- **FLACC score for pain:** FLACC assessed after surgery over 24 hours using FLACC scale where (0 = no pain and 10 = severe pain) at (T0, 2, 4, 6, 12, 18, and 24 h) where T0 = time after surgery before discharging from the operation room to PACU.
- **The amount of fentanyl used overall (µg) in the first 24 hours after surgery.**
- **Duration (hours) from the first request for rescue analgesia** (time from end of surgery to first dose of fentanyl administrated).
- **Adverse effects :**as local anesthetic systemic toxicity (LAST), bradycardia, hypotension, respiratory depression, nausea, vomiting, or complications of the technique.
- **Statistical analysis:**

The data collected was assessed utilizing SPSS Inc.'s statistical program for social sciences, version 23.0 (Chicago, Illinois, USA). The quantitative values was shown as mean± SD and ranges for parametric (normal) distributions; the median with inter-quartile range (IQR) was used for non-parametric (non-normally distributed) variables. Numbers and percentages were also used to display quantitative information. Data were checked for normalcy utilizing the Shapiro-Wilk and Kolmogorov-Smirnov tests.

The following tests were done:

- When comparing two medians, **the independent-samples t-test** of relevance was utilized.
- ***Mann Whitney U test:*** utilized in non-parametric variables for two-group comparisons.
- By comparing groups utilizing qualitative data, **Fisher's exact test** was utilized instead of the **Chi-square test** when the anticipated count in any cell was lower than 5.
- The margin of error allowed was set at 5%, while **the confidence interval was set to 95%**. Thus, the following p-value was deemed considerable:
- Probability (P-value)
  - A P-value of less than 0.05 was deemed considerable.
  - P-value ≤0.001 was deemed as very considerable.
  - P-value more than0.05 was deemed insignificant.

RESULTS

In this research, we compared the analgesic effectiveness of US-guided ESPB vs US-guided QLB in children, having general anesthesia for lower abdomen operations.

The tables and figures below illustrate the current study's findings.

According to baseline data regarding Age "years", Sex , ASA, Operation Duration (min), Oxygen saturation, End tidal CO2 there was no statistical considerable distinction between Group ESB and Group QLB, with a p-value of less than 0.05.as shown in fig (1,2,3,4,5&6 respectively).

For hemodynamics changes, Heart rate; Table (2): showed that the lower mean value of heart rate "beat/min" in each group; the lower median value of heart rate in Group ESB than Group QLB at 90 min., with p-value ($p<0.05$); while the rest time have *insignificant* variation between groups, with p-value ($P>0.05$). which shown also in fig (7). For changes in mean arterial blood pressure (MABP), table (3) and fig (8) both revealed that the lower median value of MABP "mmHg" in each group, but the lower mean value of MABP in Group QLB than Group ESB at 40 min, 50 min and 90 min, with p-value ($p<0.05$); while the rest time have *insignificant* variation between groups, with p-value ($P>0.05$).

For pain assessment, Table (4) and fig.(9) show that the higher median of FLACC score in Group ESB comparing to Group QLB, at PACU, 2hrs., 4 hrs, 6 hrs., 12 hrs, 18 hrs. and 24 hrs., with p-value ($p<0.05$).

Need of analgesia was substantially faster in Group ESB compared to QLB Group according to 1st time for rescue analgesia (hrs.), with p-value ($p<0.001$).as shown in fig (10) &table (5).

table (6) & fig (11) revealed that the greater mean value of total fentanyl doses in 24 hrs. after surgery (mcg) in group ESB 69.67±32.96 comparing to group QLB was 37.67±25.01, with p-value ($p<0.001$).

There is no statistical considerable variations between Group ESB and Group QLB as regard complications, about bradycardia, hypotension, PONV and respiratory

depression, with p-value (p>0.05). As shown in Table (7) &Fig.(12)

A higher frequency of parent's satisfaction score 4 in Group QLB was 23 (76.7%) comparing to Group ESB was 9 (30%), with p-value (p<0.001), which is shown in table(8)&fig.(13).

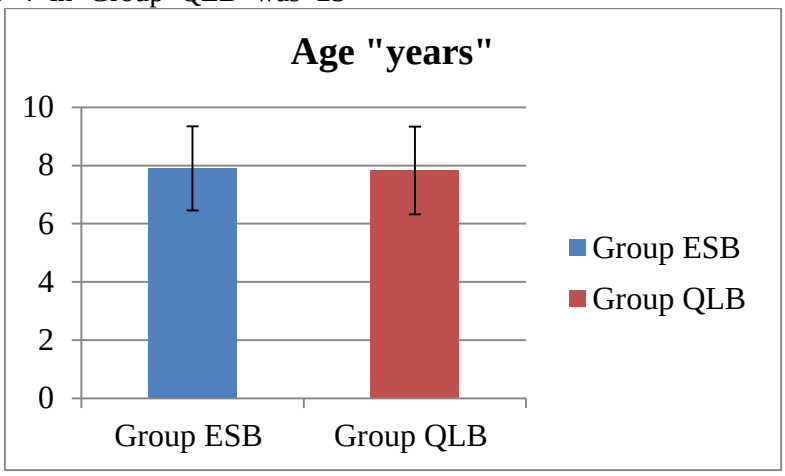

Fig. (1): Comparison of the age "years" between Group QLB and Group ESB.

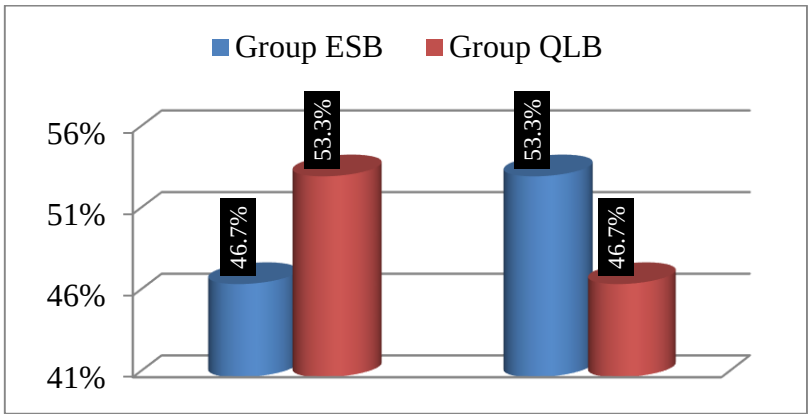

Fig. (2): Comparison between Group QLB vs Group ESB based on Sex .

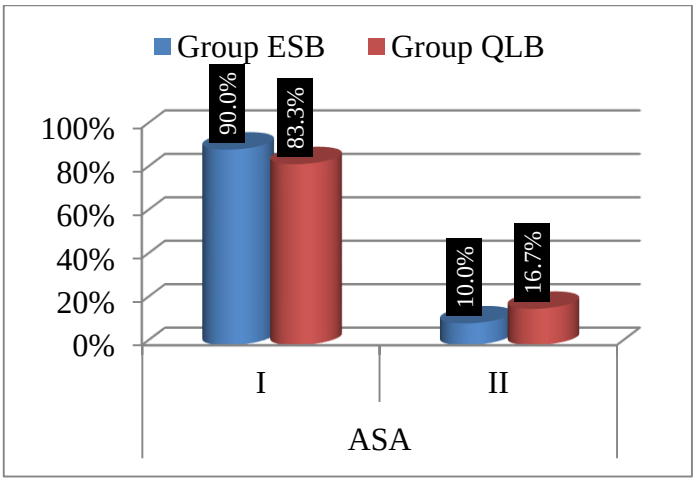

Fig. (3): Comparing Group QLB and Group ESB based on ASA.

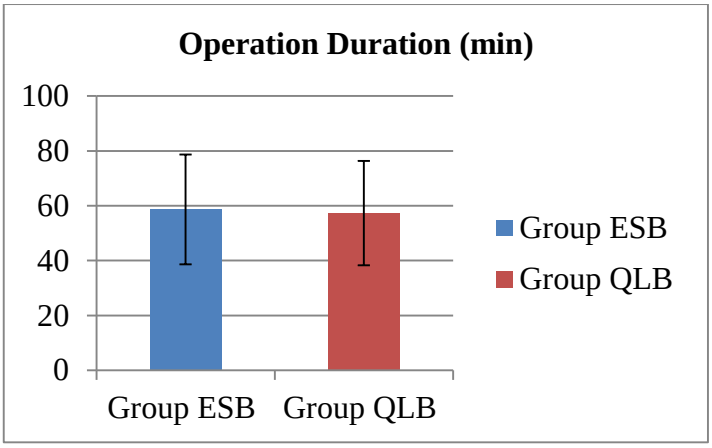

Fig.(4) Comparing Group QLB and Group ESB based duration of operation

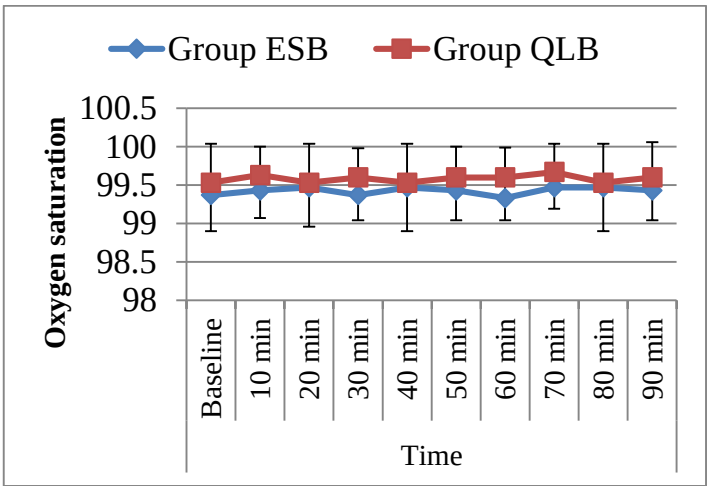

Fig. (5) Comparing between Group ESB and Group QLB according to Oxygen saturation.

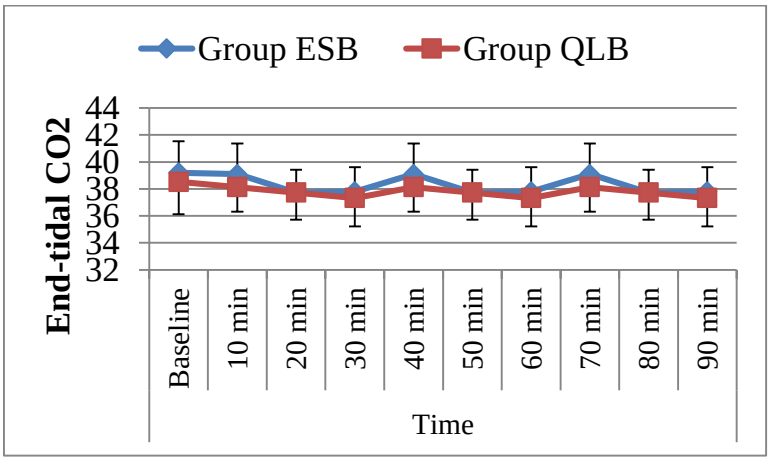

Fig. (6): Comparing between Group ESB and Group QLB according to End-tidal Co2.

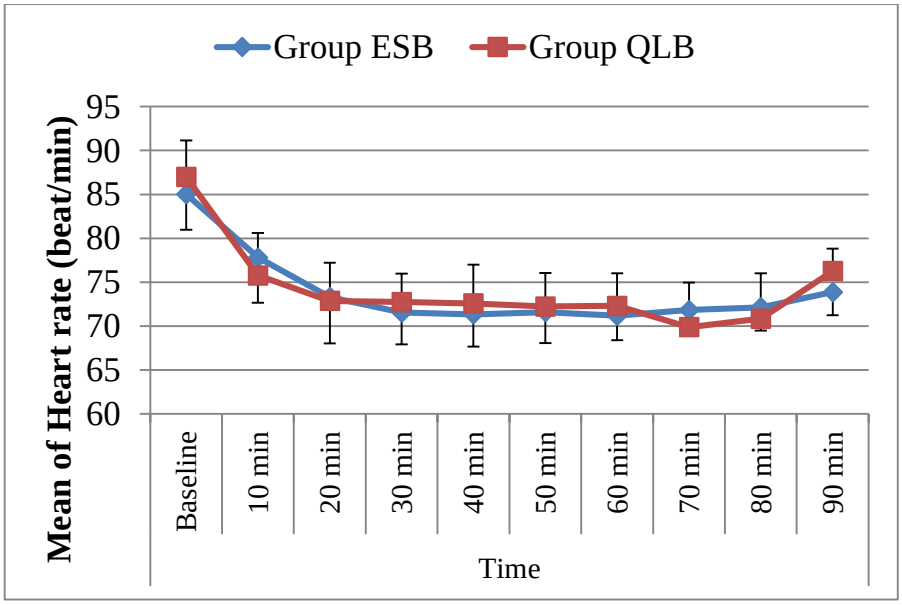

Fig. (7): Comparing between Group ESB and Group QLB regarding Heart rate (beat/min).

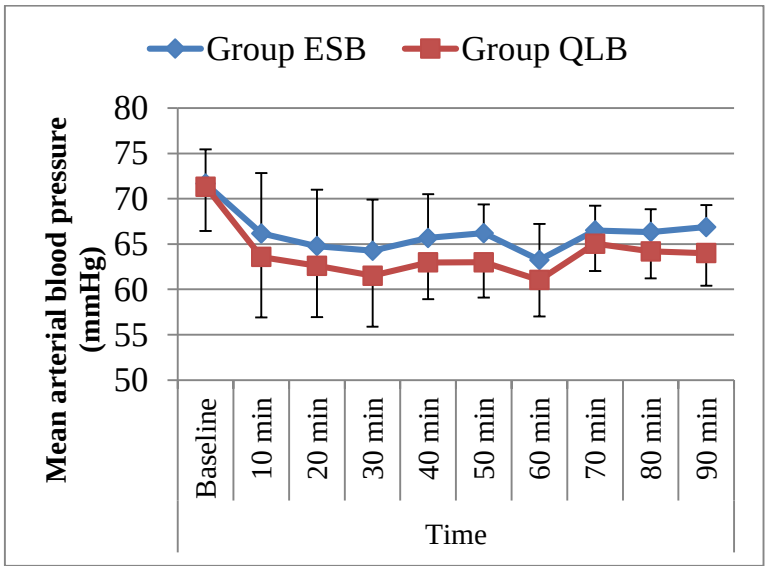

Fig. (8): Comparison of main arterial blood pressure (mmHg) between Groups ESB and QLB.

Table (2): Comparing between Group ESB and Group QLB according to Heart rate (beat/min).

Heart rate (beat/min)	Group ESB (n=30)	Group QLB (n=30)	Test value	p-value	Sig.
Baseline					
Mean±SD	85.03±4.05	87.00±4.15	-1.681	0.122	NS
Range	75-90	83-91			
10 min					
Mean±SD	77.80±5.14	75.77±4.84	1.543	0.122	NS
Range	69-92	63-82			
20 min					
Mean±SD	73.30±5.28	72.87±4.35	0.12	0.73	NS
Range	60-82	63-80			
30 min					
Mean±SD	71.53±3.61	72.73±3.24	-1.356	0.180	NS
Range	67-80	68-80			
40 min					
Mean±SD	71.33±3.66	72.57±4.44	1.378	0.245	NS
Range	65-80	60-80			
50 min					
Mean±SD	71.59±3.55	72.23±3.83	0.452	0.504	NS
Range	65-80	62-80			
60 min					
Mean±SD	71.17±2.78	72.29±3.72	-1.186	0.242	NS
Range	65-79	65-80			
70 min					
Mean±SD	71.83±2.44	69.88±5.07	0.393	0.534	NS
Range	68-77	69-81			
80 min					
Mean±SD	72.13±2.64	70.84±5.18	0.167	0.685	NS
Range	68-77	70-81			
90 min					
Mean±SD	73.87±2.64	76.25±2.57	-2.546	0.016	S
Range	70-80	73-81			

NS: Nonsignificant; S: Significant; HS: Highly significant

Table (3): Comparing between Group ESB and Group QLB regarding main arterial blood pressure (mmHg).

Median arterial blood pressure (mmHg)	Group ESB (n=30)	Group QLB (n=30)	Test value	p-value	Sig.
Baseline					
Mean±SD	71.67±3.77	71.33±4.88	0.088	0.768	NS
Range	65-80	63-80			
10 min					
Mean±SD	66.17±6.68	63.57±6.66	1.280	0.136	NS
Range	47-76	47-70			
20 min					
Mean±SD	64.77±6.24	62.60±5.67	1.980	0.165	NS
Range	48-72	48-70			
30 min					
Mean±SD	64.27±5.62	61.50±5.61	1.644	0.061	NS
Range	50-71	49-68			
40 min					
Mean±SD	65.67±4.85	62.97±4.05	2.479	0.023	S
Range	50-75	52-68			
50 min					
Mean±SD	66.20±3.16	63.00±3.90	4.190	0.001	HS
Range	59-73	55-68			
60 min					
Mean ±SD	63.23±4.19	61.03±5.16	0.102	0.751	NS
Range	58-75	54-70			
70 min					
Mean±SD	66.50±2.72	65.04±3.21	1.938	0.053	NS
Range	60-75	61-70			
80 min					
Mean± SD	66.33±2.53	64.20±4.20	1.926	0.067	NS
Range	60-74	60-70			
90 min					
Mean±SD	66.87±2.45	64.00±3.60	2.643	0.015	S
Range	62-71	56-70			

Table (4): Group ESB and Group QLB comparison based on FLACC scores.

FLACC scores	Group ESB (n=30)	Group QLB (n=30)	Test value	p-value	Sig.
PACU					
Median (IQR)	3 (2-3)	2 (2-3)	2.260	0.028	S
Range	1-4	1-4			
2h					
Median (IQR)	2 (2-3)	2 (1-2)	2.808	0.007	S
Range	1-5	1-5			
4h					
Median (IQR)	2 (2-3)	2 (1-2)	2.754	0.008	S
Range	1-6	1-3			
6h					
Median (IQR)	4 (3-4)	2 (2-3)	5.732	0.000	HS
Range	1-5	1-3			
12h					
Median (IQR)	4 (3-5)	2 (2-3)	6.204	0.000	HS
Range	3-5	1-5			
18h					
Median (IQR)	5 (5-6)	4 (3-5)	4.826	0.000	HS
Range	4-7	3-6			
24h					
Median (IQR)	7 (7-8)	6 (5-7)	4.379	0.000	HS
Range	5-9	5-8			

IQR: Interquartile range

Table (5): Comparing between Group ESB and Group QLB as regard 1st time for rescue analgesia (hrs.).

1st time for rescue analgesia (hrs.)	Group ESB (n=30)	Group QLB (n=30)	Test value	p-value	Sig.
Mean±SD	6.80±2.34	16.87±6.78	-5.941	0.000	HS
Range	0-18	0-24			

HS: Highly significant

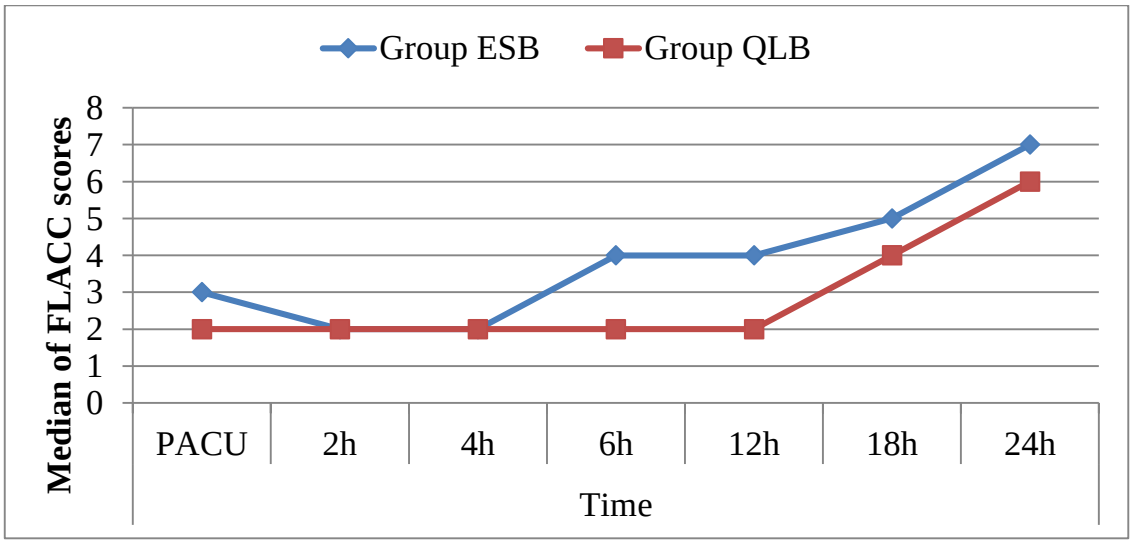

Fig. (9): Comparing between Group ESB and Group QLB according to FLACC scores.

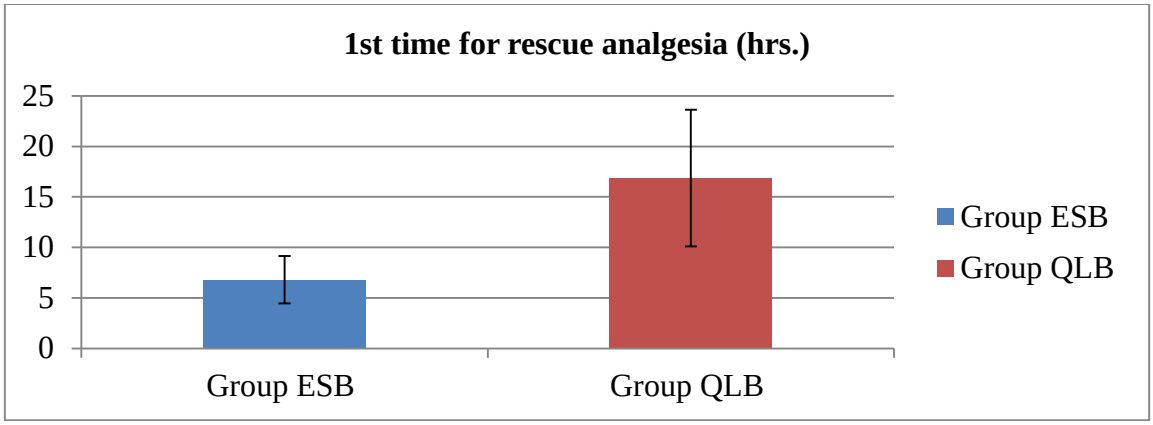

Fig. (10): Comparison between Group ESB and Group QLB according to1st time for rescue analgesia (hrs.).

Table (6): Comparison between Group ESB and Group QLB according to Total fentanyl dose in 24 hrs. after surgery (mcg).

Total fentanyle dose in 24 hrs. after surgery (Mcg)	Group ESB (n=30)	Group QLB (n=30)	Test value	p-value	Sig.
Mean±SD	69.67±32.96	37.67±25.01	4.237	0.000	HS
Range	20-120	20-120			

HS: Highly significant

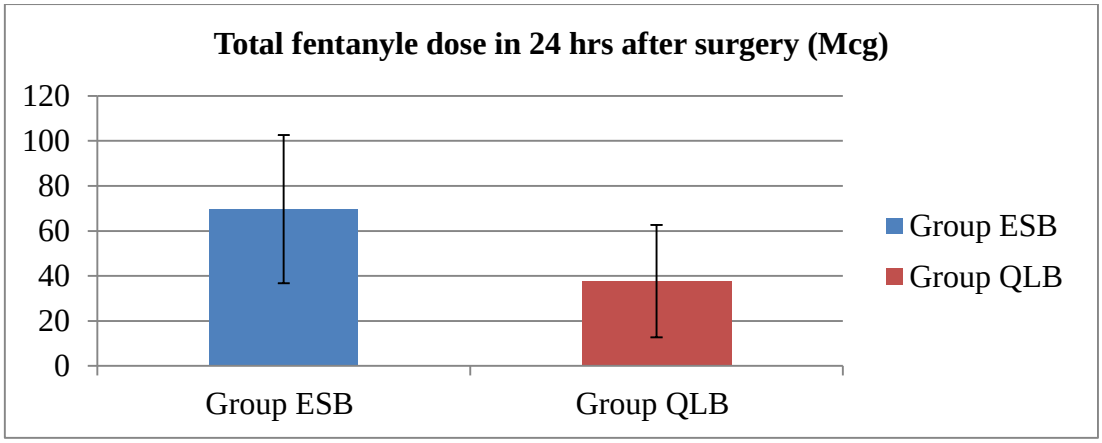

Fig. (11): Comparison between Group ESB and Group QLB regarding to total fentanyl dose in 24 hrs. after surgery (Mcg).

Table (8): Comparing Group QLB vs Group ESB based on Complication.

Complication	Group ESB (n=30)	Group QLB (n=30)	Test values	p-value	Sig.
Bradycardia					
No	22 (73.3%)	24 (80.0%)	0.373	0.542	NS
Yes	8 (26.7%)	6 (20.0%)			
Hypotension					
No	26 (86.7%)	25 (83.3%)	0.131	0.718	NS
Yes	4 (13.3%)	5 (16.7%)			
PONV					
No	23 (76.7%)	28 (93.3%)	3.268	0.071	NS
Yes	7 (23.3%)	2 (6.7%)			
Respiratory depression					
No	30 (100.0%)	30 (100.0%)	0.000	1.000	NS
Yes	0 (0.0%)	0 (0.0%)			

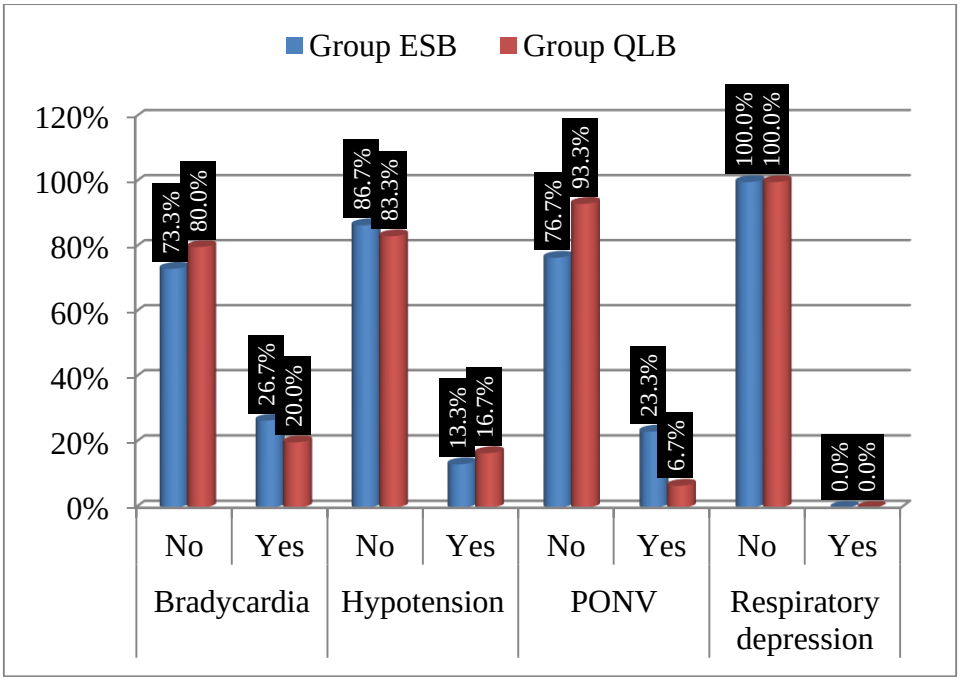

Fig. (12): Comparison between Group ESB and Group QLB according to Complication.

Table (9): Comparing between Group ESB and Group QLB according to Parents satisfaction.

Parents satisfaction	Group ESB (n=30)	Group QLB (n=30)	Test value	p-value	Sig.
0	7 (23.3%)	2 (6.7%)	17.846	0.001	HS
1	4 (13.3%)	1 (3.3%)			
2	7 (23.3%)	0 (0.0%)			
3	3 (10.0%)	4 (13.3%)			
4	9 (30.0%)	23 (76.7%)			

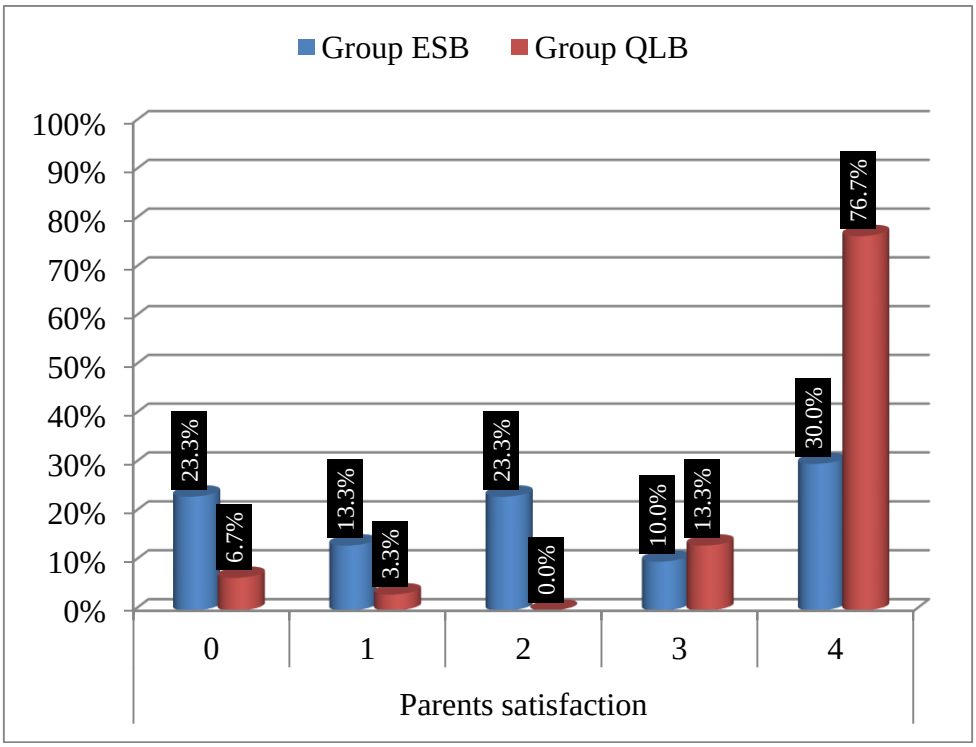

Fig. (13): Comparison between Group ESB and Group QLB regarding Parents satisfaction

Discussion

Lower abdominal surgeries are one of the most common surgeries in daily practice of pediatric surgeries ***(Safa et al., 2023).*** As these are a day case procedures, patient mobilization and good analgesia are cornerstone components of perioperative care ***(Chen et al., 2021).*** adequate postoperative analgesia in the pediatric age group is important in creating future pain perception and adult life chronic pain development ***(Friedrichsdorf and Goubert, 2020).***

There are a multimodal approach to control pain, eg, opioids, NSAIDs and regional analgesic techniques ***(Goel et al., 2023).*** in children it can be performed by lumbar epidural catheter, caudal block, or a peripheral nerve block including quadratus lumborum block (QLB) or erector spinae plane block (ESPB) ***(Paneque et al., 2023).*** In general, The peripheral nerve blocks have the advantage of greater overall safety and efficacy for lower abdominal surgeries than the caudal block ***(Mahrous et al., 2022)***. The debates of the best analgesic rout never to come to the end, as, The optimal method for analgesia following pediatric lower abdomen operations is still controversial. Therefore, the aim of the present study is to help to compare two methods of common regional analgesia "ESPB vs. QLB" in pediatric lower abdominal surgeries.

Quadrates lamborum Block can be classified to QLB1(lateral) QLB2(posterior)QLB3 (transmuscular anterior approach) and QLB4(intermuscular) ***(Aksu et al., 2019, Taman et al., 2022).*** ,here, in this study we perform the block by the 3rd type: transmuscular anterior approach i.e. QLB3.

The results of our study showed *no significant difference* in hemodynamic parameters between ESPB and QLB groups. Except that heart rate which was *lower* in ESPB group than in QLB group at 90 min, and Main arterial blood pressure was *significantly lower* in QLB group than in ESPB group at 50min to 90min.

This is supported by Ralte et al., (2023) & Elkotory et al., (2022) both conducted a prospective randomized controlled single blinded clinical studies on different age patients scheduled for an elective operatiens, They reported that HR was *not significantly different* between QLB group and ESPB group (Ralte et al.,2023) & (Elkotory et al., 2022).

As regards pain, In this study, FLACC score was *significantly higher* in ESPB group than in QLB group. Supporting our results, **Taman et al., (2022) and Ralte et al., (2023)** who both showed preferance for QLB than ESPB .Also **Park et al., (2024)** and **Wen-Li et al., (2021),** both showed preference for QLB than other methods of analgesia ,however, In disagreement with our results, **Aksu et al., (2019) and Aygun et al., (2020).** Both reported insignificant difference between ESPB group and QLB group. Inclusion of other age categories and different operations may explain the difference with our results.

In this current study, the need for analgesia in spite of being significantly faster in ESPB group than in QLB group according to 1st time for rescue analgesia, it was significantly higher in first required fentanyl does in ESPB group, this was agreed with **Park et al., 2023 Wen-Li et al., (2021) & Taman et al., (2022)** all reported the same result, which is refused by, **Ralte et al., (2023)& Aksu et al., (2019)** both showed that there was no significant difference in the does of 1st time for rescue analgesia between QLB group and other type of routs of analgesia Which may be explained by different age and type of operation . In QLB, it is believed that the analgesia is due, in part, to the local anesthetic (LA) spread along the thoracolumbar and endothoracic fascia into the paravertebral space. In ESPB, LA diffuses anteriorly to the ventral and dorsal rami of the spinal nerves and through the intertransverse connective tissue to enter the paravertebral space due to the discontinuity of the intercostal muscles. The difference of local anesthetic spread pattern between ESPB and QLB may explain the lower rescue dose of fentanyl and the longer time to the first dose of rescue analgesic and lower FLACC scores noted in QLB group when compared to ESPB group. ESPB is associated with a higher and more central spread of local anesthetic medications in comparison to QLB **(Tanaka et al., 2020).**

our results showed also that parents' satisfaction was significantly higher in QLB group than in ESPB group. **Öksüz G, Arslan M, Urfalıoğlu A, et al., (2020)** reported the same, but the different reported from, **Park et al., (2023), Wen-Li et al., (2021) &Taman et al., (2022) ,**Both documented that there were no significant differences in parental satisfaction between QLB and non-QLB groups. Which may be explained by larger sample in the formers and different level of injection in the third.

For complication, In the present study, there was no significant difference in complications between ESPB group and QLB group, which is supported by many studies **Wen-Li et al., (2021) Park et al., (2023), Hetta et al., (2023)& (Ralte et al., 2023),** all showed insignificant difference in postoperative nausea/vomiting.

Conclusion:

In pediatrics undergoing lower abdominal surgeries, the US guided QLB had higher analgesic efficacy than ESPB as it decreased opioid consumption and pain score with better hemodynamics and parents' satisfaction and comparable complications.

Limitations

- The research only included one center.
- The sample size was relatively small.
- follow up was for a short time.

Conflict of interest: No conflict of interest

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