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OPEN PEER REVIEW

Enhanced Postoperative Pain Management: A Comparative Analysis of Ultrasound-Guided Quadratus Lumborum Block Versus Intraperitoneal and Periportal Bupivacaine Infiltration Following Laparoscopic Cholecystectomy: A Randomized Double-Blind Study

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1 Original submission

5 comments · 14 Jan 2025 – 25 Jan 2025

Referee 1 Reviewer

MINOR REVISION 14 Jan 2025

Hi, thanks for your valuable study. My opinions are as follows:
1. In line 61 of the Methods section, ... age of 21 and(?) 60 ... Is this correct? In the abstract, you mentioned 20 to 60. Correct this.
2. In line 87 of the Methods section, ... 20 cc of 0.25% bupivacaine injected intraperitoneally from total volume of 40 ml; please explain whether you injected intraperitoneally or periperitoneally. Explain this more clearly.
3. What type of QLB did you perform?
4. The methods for group A should be explained more clearly.
Best wishes

Referee 2 Reviewer

MINOR REVISION 15 Jan 2025

Dear AE,
Thanks for your invitation. The article addresses a critical area in perioperative care—effective postoperative pain management—which is essential for patient outcomes and recovery. Its focus on comparing QL blocks and bupivacaine infiltration fills a knowledge gap.
By addressing the flaws below, the study can improve its reliability, relevance, and impact on clinical practice.

-Some sentences lack references. All sentences quoted from other articles must have references at the end. For example, this sentence:
"A critical aspect of postoperative care is the implementation of effective pain management, especially following operations like laparoscopic cholecystectomy, which may induce both visceral and somatic pain."

-The study states that patients were randomly recruited but does not clarify whether the recruitment process was stratified to ensure balanced representation across subgroups (e.g., age, sex). This can lead to selection bias.

-P-values are provided, but confidence intervals for primary outcomes (e.g., VAS differences, morphine consumption) are missing. These intervals would give a clearer picture of the precision and clinical significance of findings.

-While QL block may improve analgesia, the discussion ignores the additional cost implications of specialized equipment, training, and time required for ultrasound-guided blocks compared to simpler techniques like local infiltration. While QL block may improve analgesia, the discussion ignores the additional cost implications of specialized equipment, training, and time required for ultrasound-guided blocks compared to simpler techniques like local infiltration.

Fatemeh Moftakhar Reviewer

MINOR REVISION 20 Jan 2025

Dear Author
Thank you for your study. I suggest paying attention to the following points:

- The method of blinding should be explained.
- Study limitations and suggestions for future studies should be mentioned.

Associate Editor

MAJOR REVISION 25 Jan 2025

Dear EIC,
Thanks to the authors and appreciation to the researchers. The manuscript presents valuable research. But some revisions are needed. The authors should revise it based on the comments. Also, a minor change should be made in the abstract:
The study design should be mentioned in the first line of the methods section of the ABSTRACT.

Editor-in-Chief

MAJOR REVISION 25 Jan 2025

Dear Author,
Thank you for submitting the article. It needs some revision. Please revise it based on the reviewers' and AE's comments.

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Reviewer1

1. In line 61, methods part,... age of 21 and(?) 60 ...,is it true? In abstract you were mentioned 20 to 60. Correct this.

Answer: corrected

2- In line 87, methods part,... 20 cc of 0.25% bupivacaine injected intraperitoneally from total volume of 40 ml; please explain that you intraperitoneally or periperitoneally? Explain this more clearly

Answer: explained and modified as follow:

At the end of operation, before the probes were removed, 20 ml of 0.25% bupivacaine was injected intraperitoneally (above the gallbladder, adjacent to and above the hepato-duodenal ligament, and into the hepato-diaphragmatic region). Another 20 ml of 0.25% bupivacaine were given in a divided manner to infiltrate the four trocar sites (7 mL for each of the two 10-mm trocar site, and 3 mL for each of the two 5-mm trocar site).

3- What type of QLB did you perform?

lateral QLB (mentioned in patients and methods)

4. Methods part in group A should be explained more clearly.

Answer: explained and modified as follow:

At the end of operation, before the probes were removed, 20 ml of 0.25% bupivacaine was injected intraperitoneally (above the gallbladder, adjacent to and above the hepato-duodenal ligament, and into the hepato-diaphragmatic region). Another 20 ml of 0.25% bupivacaine were given in a divided manner to infiltrate the four trocar sites (7 mL for each of the two 10-mm trocar site, and 3 mL for each of the two 5-mm trocar site).

Reviewer 2

1- **A critical aspect of postoperative care is the implementation of effective pain management, especially following operations like laparoscopic cholecystectomy, which may induce both visceral and somatic pain.**

Answer: the following reference was added to this paragraph

Bisgaard T, Klarskov B, Rosenberg J, Kehlet H. Characterisics and prediction of early pain after laparoscopic cholecystectomy. Pain. 2001;90:261–9.

2- **The study states that patients were randomly recruited but does not clarify whether the recruitment process was stratified to ensure balanced representation across subgroups (e.g., age, sex). This can lead to selection bias.**

Answer: the recruitment process in our study was stratified to ensure balanced representation across subgroups. The paragraph was modified in randomization section as follow:

This randomized double-blind study with a stratified recruitment process (to ensure balanced representation across subgroups) used computer-generated randomization and sealed envelopes to assign patients to two equal categories.

3- **P-values are provided, but confidence intervals for primary outcomes (e.g., VAS differences, morphine consumption) are missing. These intervals would give a clearer picture of the precision and clinical significance of findings.**

Answer: Confidence intervals were reported in the results section for VAS and morphine consumption.

At VAS 2, group A exhibited a median pain score of 3 [IQR 2-4], while group B recorded a median score of 2 [IQR 2-3]. Group B experienced much less discomfort with a median difference of 1, 95% confidence interval, 0 to 1; p-value 0.005. The pattern persisted at VAS 4, with group A exhibiting a median score of 4 [IQR 4-5.75] and group B a median score of 3 [IQR 2.25-3], median difference of 2, 95% confidence interval, 1 to 2; with a significant $p < 0.001$ suggests a

consistent reduction in pain among group B. The disparity continued at VAS 6, with group A exhibiting a median pain level of 5 [IQR 5-6] and group B 3 [IQR 3-5], median difference of 2, 95% confidence interval, 1 to 2; yielding a p-value of less than 0.001

The total morphine consumption by patients in both groups indicated that group A required more morphine (15.40±4.4) than group B (9.11±3.2); mean difference, 6.29; 95% confidence interval; 4.45 to 8.13, demonstrating a highly significant difference between the groups, $p < 0.001$.

4- **While QL block may improve analgesia, the discussion ignores the additional cost implications of specialized equipment, training, and time required for ultrasound-guided blocks compared to simpler techniques like local infiltration**

Answer: added to the discussion section as follow:

However, this is associated with additional cost implications of specialized equipment (ultrasound machine), training, and the time required for ultrasound-guided blocks compared to simpler techniques like local infiltration**.**

Reviewer 3

1- **The method of blinding should be explained.**

Answer: explained as follow:

Patients were blinded to the group assignment as the four trocars site and the potential sites of needle insertion for QL block were covered in all patients by a sterile dressing. Independent anesthesiologists performed the ultrasound guided QL block and they had no other role in the study. Surgeons who performed the intraperitoneal block had no role in outcome evaluation. Postoperative data and outcomes assessment were performed by researchers who didn't participate in the intraoperative anesthetic management and didn't know the group of patients.

2- **Study limitations and suggestions for future studies should be mentioned**

:Answer: added as follow

Our study had certain limitations such as being a single center study, lack or control group, and we didn't compare postoperative side effects like postoperative nausea and vomiting in both groups. Also, the analgesic procedure was initiated at the end of surgery, and further studies to evaluate the preemptive effect of different approaches .for QL block on different surgical procedures are recommended

:Associate Editor's Comments

Study design should be mentioned in first line of method section of ABSTRACT

Answer: done

2 Revision 1

5 comments · 17 Feb 2025 – 25 Feb 2025

Referee 2 Reviewer — ACCEPT 17 Feb 2025

Dear AE,
I reviewed the manuscript again. The great effort in improving the manuscript is highly appreciated.
The authors have addressed all comments.
Thank you

Referee 1 Reviewer — ACCEPT 20 Feb 2025

Hi, thanks for your invitation. I read the reviewers' comments. All of them were addressed.
I'd prefer to accept it.
Best wishes

Fatemeh Moftakhar Reviewer — ACCEPT 20 Feb 2025

Dear Author,
Thank you for your study. Your corrections are accepted.
Best Regards,

Associate Editor — ACCEPT 25 Feb 2025

Dear EIC.
Previous errors have been corrected, and there are no further recommendations.

Editor-in-Chief — ACCEPT 25 Feb 2025

Dear AUTHORS,
Thank you for your explanation. I find your manuscript acceptable.