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OPEN PEER REVIEW

Evaluation of Ultrasound-Guided Erector Spinae Plane Block Versus Oblique Subcostal Transversus Abdominis Plane Block in Laparoscopic Cholecystectomy: A Comparative Study

Moataz Salah Khalil, Michael Fayez Yousef Metias, Maged Salah Mohamed, Ahmed Abd Elmohsen Bedewy, Tarek I. Ismail

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Contents

1 **Original submission** Referee 1, Referee 2, Fatemeh Moftakhar, Associate Editor, Editor-in-Chief 2

2 **Revision 1** Referee 2, Referee 1, Fatemeh Moftakhar, Associate Editor, Editor-in-Chief 4

Authors' reply to reviewers 5

Reviewer and editor comments 10

1 Original submission

5 comments · 14 Nov 2024 – 18 Dec 2024

Referee 1 Reviewer

MINOR REVISION 14 Nov 2024

Hi, thanks for your valuable study. My opinions are as follows:
1. In the abstract, lines 7-9 were repeated twice (as objectives in lines 10-11) and should be deleted.
2. In the abstract, the methods part is too weak and should be explained in more detail.
3. Why did you perform these blocks after induction of general anesthesia?
4. What's your technique for needle advancement for ESPB? In-plane or out-of-plane?
5. Did you use ketorolac 30 mg and paracetamol 1 gr for all patients regardless of weight?
Best wishes

Referee 2 Reviewer

MINOR REVISION 2 Dec 2024

Dear Associate Editor
We thank the authors and express our appreciation to the researchers.
The study presents useful and relevant data comparing ESP block and OSTAP block for postoperative analgesia in laparoscopic cholecystectomy. However, there are several areas for improvement:
-Some sentences lack references. All sentences quoted from other articles must have references at the end.
For example:
Ultrasound (US) has enabled precise identification of fascial planes and the administration of local anaesthetics (LA) for the safe execution of the block.

-We would prefer to state the aim or the title of an article in the first line of the discussion. In the second and third lines, we must mention the main finding(s). In the rest of this section, any gaps, questions, or hypotheses should be stated, followed by references to other studies.
-It would be more transparent to mention the assumptions tested (e.g., normality, homogeneity of variance) before applying parametric tests such as the Student's t-test. The authors should also clarify why specific tests were chosen for various data types, such as when they used Chi-square tests or Fisher's exact test.
-The sample size calculation section references a specific source for the VAS scores in both groups but does not provide a clear justification for the chosen effect size or how the sample size might affect the statistical power.
-The authors should clarify the specific timing, frequency, and duration of standard analgesia administration. It would also be useful to specify how rescue morphine was administered (e.g., bolus doses, PCA pump) and whether patients were allowed to request analgesia.
-The authors should update the references and incorporate more recent studies that specifically focus on ESP and OSTAP blocks. Additionally, they should critically analyze the differences in block technique, dose, and site of injection, as these factors can contribute to varying results in different studies.
-The conclusion section should be revised.
-Please provide your "recommendations for future studies" at the end of the manuscript.

Fatemeh Moftakhar Reviewer

MAJOR REVISION 17 Dec 2024

Dear Author
Thank you for your study. I suggest that you address the following points:

1. The formula for calculating the sample size should be mentioned.
2. Explain the blinding method.
3. Explain how to measure the complications of the procedure and how to resolve them (nausea, vomiting, respiratory depression, etc.).
4. Many references are old and should be replaced with new ones (9, 10, 11, 17, 20).

Associate Editor MAJOR REVISION 18 Dec 2024

Dear EIC,
I thank the authors and express my appreciation to the researchers. The manuscript presents valuable research. But some revisions are needed. The authors should revise it based on the reviewers' comments.

Editor-in-Chief MAJOR REVISION 18 Dec 2024

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

2

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.

Reviewers' Comments:

Reviewer 1:

Hi, thanks for your valuable study. My opinions are as follows:

1. In abstract, line 7-9 were repeated two times (were repeated as objectives in line 10-11) and should be deleted.

- Deleted.

2. In abstract, methods part is too weak and should be explained more.

-Done. This randomized controlled single blinded clinical study had been performed on 50 individuals aged from 20 to 60 years old, both genders belonging to American Society of Anesthesiology (ASA) grade I and II physical status and undergoing LC. Subjects had been allocated by a computer-generated randomization table into 2 groups equally: Group A: obtained US-guided ESP block and Group B: obtained US-guided OSTAP block.

3. Why did you perform these blocks after induction of general anesthesia?

- For more pt satisfaction (avoid pain during block application), more accurate blocks application, help in participants blinding about the technique also, no need for block application before induction of general anesthesia.

4. What's your technique for needle advancement for ESPB? In-plane or out-of-plane?

- In-plane. The needle is then placed and advance in- plane from cephalad to caudad.

5. Did you use ketorolac 30mg and paracetamol 1gr for all patients with any weight?

- yes, according to demographic data of participants the mean weight for ESP block group was 73.52 +/- 7.91 and 69.07 +/- 10.29 in OSTAP block group so, we gave the commonly used average dose of mentioned drugs in previous studies with no risk on the participants or affection of results.

Reviewer 2:

Dear Associate Editor

Thanks to the authors and appreciation to the researchers.

The study presents useful and relevant data comparing ESP block and OSTAP block for postoperative analgesia in laparoscopic cholecystectomy. However, there are several areas for improvement:

1-Some sentences lack references. All sentences quoted from other articles must have references at the end of themselves.

For example:

Ultrasound (US) has enabled precise identification of fascial planes and the administration of local anaesthetics (LA) for the safe execution of the block.

- done. New references added (5, 7, 14) with update of others (13, 20, 23).

-We would rather to write the aim or the title of an article as the first line of discussion, and in the second and third lines we must mention the main(s) finding(s) and for the rest of this part, any gap, question, hypothesis should be declared and then allude to other studies.

- done. **Discussion:**

Managing postoperative pain after LC is a challenging task. This study aimed to evaluate the impact of using OSTAP block and ESP block as an element of multi-modal analgesics technique among individuals having LC. Our findings indicated that bilateral US-guided ESP block offers enhanced and prolonged postoperative analgesia while reducing morphine use compared to OSTAP block following LC.

-It would be more transparent to mention the assumptions tested (e.g., normality, homogeneity of variance) before applying parametric tests such as the student's t-test. The authors should also clarify why specific tests were chosen for various data types, such as when they used Chi-square tests or Fisher's exact test.

Shapiro-Wilks test and histograms were used to evaluate the normality of the distribution of data. Fisher's exact test used when one cell is less than 5.

-The sample size calculation section references a specific source for the VAS scores in both groups but does not provide a clear justification for the chosen effect size or how the sample size might affect the statistical power.

We used power 80% as minimal power for medical research as increased power will increase sample size.

-The authors should clarify the specific timing, frequency, and duration of standard analgesia administration. It would also be useful to specify how rescue morphine was administered (e.g., bolus doses, PCA pump) and whether patients were allowed to request analgesia.

-Done. After extubation and patient transfer to PACU, standard analgesia in the form of (ketorolac 30 mg and acetaminophen 1g) were given to all patients by intravenous infusion every 8 hrs for the 1st 24 hrs post operatively. Postoperatively, the VAS was utilised to evaluate postoperative pain at 30 minutes 2, 4, 6, 8, 12, 16, 20, 24 hours. When patients complain of pain equivalent to VAS score ≥ 3, rescue analgesia in form of morphine boluses were administrated at a dose of (0.05mg/kg) as needed

-The authors should update the references and incorporate more recent studies that specifically focus on ESP and OSTAP blocks. Additionally, they should critically analyze the differences in block technique, dose, and site of injection, as these factors can contribute to varying results in different studies.

- done. **Oblique subcostal transversus abdominis plane block technique**

With the patient in supine position the linear probe is placed transversely just below the costal margin to identify the rectus abdominis, the transversus abdominis and both external and internal oblique (EO& IO) muscles from medial to lateral along the costal margin.
At the lateral border of rectus abdominis, the needle is inserted in-plane from medial to lateral with subsequent administration of 20 ml of the LA combination into the fascial plane between the IO and transversus abdominis muscles along the oblique subcostal line. The blockage was replicated on the contrary side with similar volume.

- updated and newly added references (7, 13, 14, 20, 23)

-Conclusion part should be revised.

- done. **Conclusions:**

Bilateral US-guided ESP block offers enhanced and prolonged postoperative analgesia compared to OSTAP block following laparoscopic cholecystectomy. Also, the time of first rescue analgesia in form of morphine was significantly greater in ESP block comparing with OSTAP block group. Furthermore, the total amount of morphine used for postoperative analgesia was substantially lower in ESP block group compared to OSTAP block group.

-Please provide your “recommendations for future studies” at the end of the manuscript.

- done. **Recommendations for further studies:**

We recommend more investigations comparing the effect of two blocks on sensory sensation before induction of general anaesthesia that would help in comparing the effect of both blocks regarding intraoperative analgesia.

Reviewer 3:

Dear Author

Thank you for your study. I suggested attention to these points as follows:

1. The formula for calculating the sample size should be mentioned.

-

$$n = 2\left[\frac{(Z_{\alpha/2} + Z_{\beta}) * \sigma}{\mu_1 - \mu_2}\right]^2$$

n = sample size

Zα/2 = 1.96 (The critical value that divides the central 95% of the Z distribution from the 5% in the tail)

Zβ = 0.84 (The critical value that separates the lower 20% of the Z distribution from the upper 80%)

σ = the estimate of the standard deviation of VAS

μ1 = mean for ESP blockage group
μ2 = mean for OSTAP blockage group

Explain the blinding method.

- done. The blinding method was single blinded as only the participants were blind because they were under the effect of general anesthesia whereas, the researcher performing the block was aware of it.

3. Explain how to measure the complications of the procedure and how to resolve them (nausea, vomiting, respiratory depression, etc.)

- done. after surgery, in addition to morphine-related adverse impacts, such as the frequency of vomiting and nausea, respiratory depression (respiratory rate <10 in addition to decreased arterial oxygen saturation <90% or increased arterial carbon dioxide > 50), pruritus,

bradycardia (heart rate < 60 rpm) and urine retention in addition to adverse effects of LA like circumoral numbness, lightheadedness, paresthesia of the tongue, sleepiness, irritability, muscular twitching, convulsions, hypotension (decrease in blood pressure more than 20% of basal reading), bradycardia, cardiac arrest, and any indication of negative outcomes from the blockage procedures (local site infections, hematoma formation, bowel perforations, and pneumothorax). Complications identified by the researcher or reported by the patients were treated accordingly (eg, nausea and vomiting treated by giving intravenous ondansetron 4 mg once daily, respiratory depression by supportive oxygen therapy up to mechanical ventilation when needed, bradycardia by 0.01mg/kg intravenous atropine, hypotension by supportive intra venous crystalloid infusion with intravenous ephedrine 5 mg bolus when needed).

4. Many references are old and should be replaced with new ones. (9,10,11,17,20).

- done. Reference updated with addition of new ones. (5, 7, 11, 12, 13, 14, 20, 23).

2 Revision 1

5 comments · 13 Jan 2025 – 15 Jan 2025

Referee 2 Reviewer — ACCEPT 13 Jan 2025

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

Referee 1 Reviewer — ACCEPT 13 Jan 2025

Hi, thanks for your precise attention. I read the reviewers' comments. All of them have been addressed. I'd prefer to accept it.
Best wishes

Fatemeh Moftakhar Reviewer — ACCEPT 14 Jan 2025

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

Associate Editor — ACCEPT 15 Jan 2025

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

Editor-in-Chief — ACCEPT 15 Jan 2025

Dear AUTHORS,
Your revisions have significantly improved the article, and it is now deemed acceptable for publication.
Congratulations on your hard work and dedication to enhancing the quality of your work.