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Comparison of Spinal Anesthesia Bupivacaine Plus Epinephrine and Spinal Anesthesia Bupivacaine Plus, Fentanyl in the Duration of Anesthesia, Complications, and Hemodynamic Changes

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

3 comments · 21 Jul 2025 – 21 Jul 2025

Referee 1 Reviewer

MINOR REVISION 21 Jul 2025

The study compares two adjuvants (epinephrine and fentanyl) for spinal anesthesia, providing new insights into their efficacy and safety in orthopedic surgeries, which adds to existing literature.
- The title clearly states the comparison of bupivacaine with epinephrine versus fentanyl, covering duration, complications, and hemodynamic changes, which are the study's main focuses.
- The objectives are clearly stated: to compare efficacy, safety, and clinical outcomes of epinephrine versus fentanyl as adjuvants.
- Inclusion/exclusion criteria (ASA I–III adults, elective femur/tibia surgeries) and randomization are well described.
- The quasi-experimental design, randomization, and blinding are explained, though full blinding details could be expanded.
- Sample size is calculated using G*Power with referenced parameters.
- The anesthetic technique (doses, volumes, monitoring) is reproducible.
- Criteria are detailed, including ASA status and exclusions like opioid dependence.
- Tables are clear, but Figures 1 (pain scores) are referenced but not provided in the text, which is a limitation.
- Data on anesthesia duration, pain scores, and complications support the conclusions.
-

Associate Editor

MINOR REVISION 21 Jul 2025

Dear EIC,
I thank the authors and express my appreciation to the researchers. The manuscript is a valuable piece of research. But some revisions are needed. Authors should revise it based on the reviewers' comments. Also, minor changes should be made in TEXT:
*-A summary of the statistical analysis results should be mentioned in the results section of ABSTRACT.

*While the data are robust, the clinical relevance of the hemodynamic changes (e.g., SBP/DBP differences of 3–5 mmHg) is not discussed.
*Numerous grammatical and syntactic errors reduce clarity.
Example: “fentanyl improves both intraoperative and early postoperative pain control but may lead to respiratory depression and hemodynamic fluctuations” → consider splitting for clarity.

Editor-in-Chief

MINOR REVISION 21 Jul 2025

Dear Author,
Thank you for submitting the article. It needs some revision. Please revise it based on the reviewers’ and AE’s comments.
I encourage you to carefully address each of the reviewers’ comments and submit a revised version of your manuscript.
Please include a point-by-point response to the reviewers’ comments, detailing the changes you have made.

Once the revisions are complete, submit your revised manuscript through the online submission system. We will evaluate the revised version to ensure all concerns have been adequately addressed.

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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.

Response to Referee Comments

Reviewer 0:
*The study compares two adjuvants (epinephrine and fentanyl) for spinal anesthesia, providing new insights into their efficacy and safety in orthopedic surgeries, which adds to existing literature.*We sincerely appreciate the referee's thorough review and constructive feedback on our manuscript. Below, we address each comment and have revised the manuscript accordingly:

*- The title clearly states the comparison of bupivacaine with epinephrine versus fentanyl, covering duration, complications, and hemodynamic changes, which are the study's main focuses.*We appreciate the reviewer's positive assessment of the study's rationale, title clarity, and objectives. We have ensured throughout the manuscript that the objectives remain clearly stated and aligned with the study aims.

*Q1: The objectives are clearly stated: to compare efficacy, safety, and clinical outcomes of epinephrine versus fentanyl as adjuvants.***Revised Abstract Results Section**
A1: "The combination of bupivacaine with epinephrine resulted in a significantly longer duration of anesthesia (222.38 ± 17.48 minutes vs. 169.88 ± 15.57 minutes; $p = 0.001$) and higher rates of complete muscle relaxation (84% vs. 46%; $p < 0.001$). However, this group showed increased incidences of hypotension (16% vs. 0%; $p < 0.001$) and bradycardia (10% vs. 0%; $p < 0.001$). The bupivacaine-fentanyl group reported lower pain scores at all time points (e.g., 1.0 ± 0.0 vs. 1.3 ± 0.73 at 30 minutes; $p = 0.005$) but had higher pruritus rates (14% vs. 0%; $p = 0.001$)." (page 2)

Q2: Inclusion/exclusion criteria (ASA I–III adults, elective femur/tibia surgeries) and randomization are well-described.

A2: We thank the reviewer and have expanded the blinding description in the Methods section as follows (added in highlight in the Word file, page 5):

"Blinding was maintained by ensuring that patients, data collectors, and the clinicians administering postoperative assessments were unaware of the group assignments. The anesthesiologist preparing the anesthetic solutions was not involved in patient care or data analysis, thus preserving allocation concealment."

Q3: The quasi-experimental design, randomization, and blinding are explained, though full blinding details could be expanded. A3: We thank the reviewer and have expanded the blinding description in the Methods section as follows (added in highlight in the Word file, page 5):

*Q4: Sample size is calculated using G*Power with referenced parametersA4:* We confirm that the sample size calculation using G*Power was performed based on expected effect sizes and study power, and the details are clearly noted in the Methods (highlight in the Word file, page 5).

Q5: The anesthetic technique (doses, volumes, monitoring) is reproducible. Criteria are detailed, including ASA status and exclusions like opioid dependence.A5: Thank you. We have maintained detailed descriptions of techniques and criteria for inclusion/exclusion to ensure reproducibility.

Q6: Tables are clear, but Figures 1 (pain scores) are referenced but not provided in the text, which is a limitationA6: We have removed the reference to Figure 1 in the revised manuscript since the figure was unavailable and instead included the pain score data summary in the results section, highlighted in red:

"Postoperative pain scores differed significantly between groups at all time points, with the fentanyl group showing consistently lower scores for up to five hours postoperatively."

Q7: Data on anesthesia duration, pain scores, and complications support the conclusions.A7: Thank you. We have maintained detailed descriptions of techniques and *anesthesia duration, pain scores, and complications* to ensure reproducibility.

Associate Editor's Comments:

Associate Editor 0:
Dear EIC,
Thanks to the authors and appreciation to the researchers. The manuscript is valuable research. But some revisions are needed. Authors should revise it based on reviewer comments. Also, minor changes should be done in TEXT:
**-Summary of Statistical analysis results should be mention in result section of ABSTRACT.*
A: Thank you for your attention and for correcting it.

**While the data are robust, the clinical relevance of the hemodynamic changes (e.g., SBP/DBP differences of 3–5 mmHg) is not discussed.*A: We have revised the abstract's results section to include critical statistical values, e.g., p-values and mean differences, in red:

The combination of bupivacaine with epinephrine resulted in a significantly longer duration of anesthesia (222.38 ± 17.48 minutes vs. 169.88 ± 15.57 minutes; $p = 0.001$) and higher rates of complete muscle relaxation (84% vs. 46%; $p < 0.001$). However, this group showed increased incidences of hypotension (16% vs. 0%; $p < 0.001$) and bradycardia (10% vs. 0%; $p < 0.001$). The bupivacaine-fentanyl group reported lower pain scores at all time points (e.g., 1.0 ± 0.0 vs. 1.3 ± 0.73 at 30 minutes; $p = 0.005$) but had higher pruritus rates (14% vs. 0%; $p = 0.001$).

We also added a brief discussion on the clinical relevance of the hemodynamic changes in the Discussion (page 14) :

"Although the epinephrine group showed statistically significant increases in hypotension and bradycardia, the small differences in SBP and DBP (3–5 mmHg) are unlikely to have meaningful clinical consequences in ASA I–III patients undergoing elective surgery."

**Numerous grammatical and syntactic errors reduce clarity.*
*Example: "fentanyl improves both intraoperative and early postoperative pain control but may lead to respiratory depression and hemodynamic fluctuations" → consider splitting for clarity.*A: We have carefully proofread and revised the manuscript for improved grammar and clarity. For example, the sentence mentioned is now:

"Fentanyl improves both intraoperative and early postoperative pain control. However, it may cause respiratory depression and hemodynamic fluctuations."

All such revisions are highlighted.

2 Revision 1

1 comment · 5 Aug 2025

Editor-in-Chief

ACCEPT 5 Aug 2025

Dear Authors,
Thank you for revising the manuscript. This version of the manuscript is acceptable for publication in the journal.
Regards,