

Peer Review File

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Reviewer A

This is a fantastic article - it is focused and well written.

The retrospective nature of the paper is a limitation, but does not preclude its use in the literature.

My only comment is regarding the use of the VAS as a measuring tool. Neither the introduction or the Methods mention why this tool was chosen or its validity. This is important EARLY in the paper to establish the methodology.

Reply: Thank you very much for your encouraging comment on our manuscript. We agree with you that the use of the VAS as a measuring tool should be clarified in the early part of the manuscript. We chose to use VAS score because it was the most common way of patient reported outcomes of postoperative pain.

Changes in the text: We added a phrase “which has been commonly used to assess severity of pain in abdomen-based breast reconstruction,” to the subheading “Measurement of Pain Scores After Surgery” of PATIENTS AND METHODS section (see Page 5, line 20–21).

Reviewer B

1. Could the authors explain how patients receiving the On-Q pain relief system were selected? Did they manage to reduce selection bias?

Reply 1: Thank you for taking the time to review our article and give your valuable feedback. As described in the subheading “Subcutaneous Plane Block” of PATIENTS AND METHODS section, the On-Q pain relief system was applied when it was available and the patient had consented to its use for a continuous percutaneous anesthetic infusion. Patients receiving the On-Q pain relief system were not randomly selected because this was a retrospective study. We added this issue to the last paragraph of DISCUSSION section. A misdescribed sentence—“However, we randomly implemented catheter-based anesthetic infusions”— was also corrected.

Changes in the text: “Second, the sample size in this study was relatively small. However, we randomly implemented catheter-based anesthetic infusions, and only patients who underwent breast reconstruction performed by a single surgeon were included in this study to minimize bias.” was changed into “Second, the sample size in this study was relatively small and patients who receiving catheter-based anesthetic infusions were not randomly selected. However, only patients who underwent breast reconstruction performed by a single surgeon were included in this study to minimize bias.” in the last paragraph of DISCUSSION section (see Page 12, line 17-20).

2. In the introduction the authors state that they want to point out factors that influence post-operative pain, identifying a subgroup of patients with severe pain. Could the authors explain why they used 'the On-Q pain relief system' as a variable for outcome? It is well chosen as a possible confounder and should be taken into account, but the use of the On-Q pump is not a 'subgroup of patients' that can be translated to the general population.

More firm conclusions about subgroups could have been drawn selecting patients with the same pain management.

Reply 2: We used 'the On-Q pain relief system' to evaluate the effect of subcutaneous plane block because the effect of a subcutaneous plane block has not been evaluated separately from the effect of TAP blockade in abdomen-based breast reconstruction in previous studies, as discussed in the second paragraph of DISCUSSION section. As you have pointed out, the use of the On-Q pump might not be generalized into general population. We changed the term 'On-Q pain relief system' to a more general term 'Subcutaneous plane block' throughout the entire manuscript.

Changes in the text: "analgesic infusion" was changed into "subcutaneous plane block" in the Methods of ABSTRACT (see Page 2, line 16). "A catheter-based analgesic infusion" was changed into "The use of subcutaneous plane block" in the Results of ABSTRACT (see Page 3, line 2-3). "percutaneous abdominal anesthetic infusion" was changed into "subcutaneous plane block" in the subheading "Population and Variables" of PATIENTS AND METHODS section (see Page 5, line 15). Subheading "ON-Q Pain Relief System" of PATIENTS AND METHODS section was changed into "Subcutaneous Plane Block" (see Page 6, line 7). "for subcutaneous layer block" was added to the subheading "Subcutaneous Plane Blockade" of PATIENTS AND METHODS section (see Page 6, line 10). "On-Q pump" was changed into "Subcutaneous plane block" throughout the entire manuscript (see Page 7, line 24; Page 8, line 10; Page 8, line 21-22; Page 9, line 6; Page 9, line 9; Table 1, 2, 3, 4, and 5). "the On-Q pain relief system above the rectus fascia" was changed into "subcutaneous plane block" in the first paragraph of DISCUSSION section (see Page 9, line 23).

3. In the discussion the authors focus on this 'On-Q pump'. They compare it to other types of pain management indicating they are answering a question about the treatment of pain: 'Is the On-Q pump better than other types of pain management? A different question than stated in the introduction.

A therapeutic and a prognostic question are mixed. Also see point 2 above.

Reply 3: We did not intend to compare 'On-Q pump' to other types of management system. We tried to evaluate the effect of subcutaneous plane block as discussed in the above question. We feel sorry to cause such confusion according to unintended emphasis on the term 'On-Q pump'.

Changes in the text: Not applicable

4. Could the authors explain table 2 in more detail? The title states univariate analysis but 'time' has been added to every analytical model. This suggest that two variables have been used.

Reply 4: As you commented, we used two variables — time and each clinical variable — in the linear mixed effect models to analyze the effect of each clinical variable on the postoperative VAS scores, because VAS score was repeatedly checked according to postoperative time. We asked this point to statistic specialist and found that using term 'univariable analysis' in the Table 2 was inappropriate. We corrected the title of Table 2, and 3. Thank you for your valuable point.

Changes in the text: Title of Table 2 was changed from “Univariate analysis of the effect of each variable on the postoperative VAS scores” to “Fixed effects of time and each clinical variable on the postoperative VAS score in the linear mixed effect models”. Title of Table 3 was also changed from “Multivariate analysis of the effect of each variable on the postoperative VAS scores” to “Fixed effects of time and multiple clinical variables on the postoperative VAS scores in the linear mixed effect models” to maintain consistency with Table 2 (see Table 2 and 3). Relevant descriptions in the main document were also changed. “In the univariate analysis” was changed into “In the analysis of effects of time and each clinical variable on the postoperative VAS scores using linear mixed effect models”, and “In the multivariate linear mixed-effects model” was changed into “In the analysis of effects of time and multiple clinical variables on the postoperative VAS scores using linear mixed effect models” in the third paragraph of RESULTS section (see Page 8, line 17-18, Page 8, line 23-Page 9, line 1). “In the multivariate linear mixed effect model” was changed into “In the linear mixed effect model using multiple clinical variables” in the Results of the ABSTRACT (see Page 2, line 22).