Dear Dr. Ma,

Thank you very much for your decision letter and advice on our manuscript (Manuscript NO.: 87687, Retrospective Study) entitled "Development of a machine learning-based model for predicting the risk of early postoperative recurrence of hepatocellular carcinoma." We also thank the reviewers for their constructive comments and suggestions. We have revised the manuscript accordingly, and all amendments are indicated in yellow font in the revised manuscript. In addition, our point-by-point responses to the comments are listed below this letter.

This revised manuscript has been edited and proofread by Medjaden Inc..

We hope that our revised manuscript is now acceptable for publication in your journal and look forward to hearing from you soon.

With regards

Peng Lei

First of all, we would like to express our sincere gratitude to the reviewers for their constructive and positive comments.

Replies to Reviewer 1

Specific Comments

1. In my view, the abstract is overly cumber some and difficult to extract the main point. It would be helpful to include more detailed keywords to enhance clarity.

Response: Thank you for your insightful suggestion. Several sentences have been changed in the abstract of the revised manuscript to address this issue.

2. Please proofread the manuscript carefully, paying particular attention to grammatical errors, and improve the formatting of the text, figures, and tables as

needed.

Response: We have improved the formatting of the text, figures, and tables as needed in the revised manuscript. This revised manuscript has been edited and proofread by Medjaden Inc..

3. The contributions made in this manuscript may not be adequate for publication in this journal. Therefore, I strongly recommend that the authors clearly define and elaborate on their contributions.

Response: We have defined and elaborated our contributions in the conclusions: "The XGBoost model displays superior performance and is a reliable tool for predicting early postoperative HCC recurrence. The model may guide surgical strategies and postoperatively individualized medicine".

4. The proposed method and experiments are not clearly illustrated.

Response: The study is retrospective. The training set was analyzed and were We selected six different machine learning methods to constrcture prediction models according to key feature variables with predictive value for early HCC recurrence. Each model was evaluated, and the best-performing model was selected for the shape-model interpretation of the importance of each variable. Finally, a model-based calculator was generated online for daily clinical practice.This point has been briefly mentioned in the Methods of the revised manuscript (Page 7-10).

5. The Results and Discussion section of the paper appears inadequate and requires more attention, with a need for better explanation and elaboration.

Response: Thanks for your thoughtful suggestion. Accordingly,

6. The conclusions in this manuscript are primitive. Write your conclusions.

Response: Thank you for your thoughtful suggestion. Several sentences have been changed in the Conclusion of the revised manuscript.

7. Please explain the proposed method in more details, what is the novelty of the proposed method compared to the state of the art?

Response: We have explained our method in the **Materials and Methods of** the revised manuscript. We built the model using six machine learning methods. The results indicated that the XGBoost model exhibited better discriminative and

predictive values compared to other models constructed. The predictive model is easily accessible in daily clinical practice and may be an essential tool in guiding post-operative follow-up and individualized medicine for HCC patients.

Replies to Reviewer 2

1.   Is there an inherent bias since the fact that these were all cases going to surgery first meant more limited disease?

Response: Thank you for raising this critical issue. We aimed to develop a new preoperative prediction model for the postoperative recurrence of HCC. The case was collected according to the inclusion and exclusion criteria, so there is no inherent bias.

2.   Have the authors compared or are they planning to compare/validate their model with other existing ones?

Response: We recognized that our study had a relatively smaller sample size in a single center and lacked external validation from other centers. We plan to expand the sample size through a multicentre study in the future and compare with other prediction models to further verify the reliability of our model.