Review #1:

**Scientific Quality:** Grade B (Very good)

**Language Quality:** Grade B (Minor language polishing)

**Conclusion:** Minor revision

**Specific Comments to Authors:**

I have carefully read the manuscript titled "Establishing and Clinically Validating an Approach for Unplanned Reoperations in Colorectal Cancer Surgery", which is a well-executed and interesting study. The authors have developed a predictive model for postoperative unplanned reoperations in CRC patients using machine learning techniques and clinical data. The advantages of this study lie in its rigorous methodology, large sample size, clinical relevance, and validation process. The internal validation and separate training/validation groups enhance the credibility of the predictive model. Some comments:

a) The authors should consider conducting external validation using data from other healthcare institutions. This would validate the model's performance across diverse patient populations and treatment settings.

Re: Thank you for your careful review of our study and your suggestion to conduct external validation. We fully recognize the importance of external validation to validate the model's performance in different patient populations and treatment settings. In fact, we have already mentioned this in the discussion section of the study and explained the specific reasons why we have not been able to perform external validation at this time. The main reason for this is data access limitation: we have tried to collaborate with other healthcare organizations to obtain external datasets for validation, but have not been able to obtain sufficient data support for various reasons (e.g., data sharing policies, patient privacy protection regulations, etc.). Second, resource and time constraints: external validation requires additional resources and time for coordination and data processing, and our research team currently encounters certain practical difficulties in this regard. Nonetheless, we have adopted rigorous internal validation methods in our study and ensured the reliability and validity of our model through different statistical tests (e.g., ROC curves, calibration curves, H-L tests, and decision curve analysis). We believe that these internal validation methods can prove the robustness of the model to a certain extent. In the future, we plan to connect with more partners to address the issue of data acquisition and perform the necessary external validation. We also hope to further improve the generalization ability and clinical application value of the model through future studies.

B) Long-term follow-up data would provide insights into the model's predictive accuracy beyond the immediate postoperative period.

Re: Thank you for your attention and suggestions for our study. We fully share the importance of long-term follow-up data for assessing the predictive accuracy of the model, especially the long-term effect beyond the immediate postoperative period. In the current study, we failed to
collect sufficient long-term follow-up data due to time and resource limitations. This point has been explicitly pointed out in the discussion section of the paper and is seen as an important limitation of this study. We plan to expand the follow-up period in future studies in order to be able to more comprehensively assess the model performance in long-term predictions and the actual impact on patient quality of life. We look forward to further verifying and improving our prediction model through more in-depth research in the future.

C) Some grammatical and syntactic errors should be corrected and improved.
Re: We have re-polished the manuscript based on your advice.

D) All figures should be clearer. After completing the modifications, the manuscript could be considered for publication.
Re: We have provided the new images to ensure the clarity of the manuscript images.

Reviewer #2:

Scientific Quality: Grade C (Good)
Language Quality: Grade B (Minor language polishing)
Conclusion: Minor revision

Specific Comments to Authors:

The study presents a comprehensive approach to predicting postoperative unplanned reoperations in colorectal cancer patients, utilizing machine learning methods and clinical data from two hospitals. The study is well-structured and addresses a clinically relevant problem. The methods are appropriately described, and the statistical analyses are sound.

(1) The study employs machine learning techniques and thorough statistical analyses to identify independent risk factors and construct a predictive model. (2) Considering the high morbidity and mortality associated with postoperative complications in colorectal cancer patients, the development of a predictive model for unplanned reoperations is highly relevant and could potentially improve patient outcomes. (3) The discussion effectively combined the results of existing literature, and the conclusion is consistent with the results. Overall, this study makes a valuable contribution to the field of colorectal cancer surgery by providing a predictive model for postoperative unplanned reoperations. With some additional validation and transparency improvements, the study could have even greater impact in clinical practice.

Re: Thank you very much for your recognition and in-depth comments on our research. We are pleased that you agree that the machine learning techniques and statistical analysis methods we employed did help us successfully identify independent risk factors associated with unplanned reoperation and build a predictive model. Indeed, given the high morbidity and mortality of postoperative complications in patients with colorectal cancer, the development of a model to predict unplanned reoperation has important clinical relevance and could significantly improve patient outcomes. In addition, our discussion section synthesizes the findings from the existing literature to ensure the consistency and scientific nature of the conclusions. The proposal of this prediction model provides an important tool for the
postoperative management of colorectal cancer and is expected to have a positive impact in clinical practice. Regarding improvements to additional validation and transparency, we do recognize that this is a critical step in improving the quality and utility of research. Due to current resource and data acquisition constraints, we were unable to perform external validation. We will seek partners to obtain additional data and perform necessary validations to further enhance the transparency and reliability of our research.