

Reviewer #1:

Scientific Quality: Grade C (Good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Minor revision

Specific Comments to Authors: Recently, anastomotic leakage (AL) occurs frequently after sphincter-preserving surgery for rectal cancer and has a significant mortality rate obesity, which lacks effective predictive models. To address this challenge, in this study, the authors aimed at to evaluating the predictive efficacy of the three models, including nomogram, decision tree, and random forest, on AL patients. The authors used primary clinical data, study variables, and statistical analysis to verify their hypothesis. The results showed that by comparing the predictive efficacy of the three prediction models, the random forest model performed the best and may be a useful alternative tool for predicting patients at a high risk of AL. So, in my opinion, this paper is well-written. The experimental design is reasonable, and the results reflects the conclusion as well. I recommend its acceptance after the minor revision. The detailed comments are:

1) In the “Study variables” part, the authors listed various variables. Among them, the TNM stage usually involves tumor size. So why the authors list tumor size as a separate variable?

Reply : In order to comprehend the direct impact of tumor size on the occurrence of anastomotic leakage (AL), we are investigating tumor size as a separate variable. Despite the fact that the TNM staging system takes into account a number of variables, including as tumor size, lymph node involvement, and the existence of metastases, to comprehensively describe the clinical stage of the tumor, focusing on tumor size enables a more focused investigation of its relationship with AL. We can more accurately evaluate each component's individual contribution using this method.

2) For single factor analysis of AL, diabetes mellitus is listed as an important

factor. What is the possible underlying mechanism of this phenomenon?

Reply : Diabetes mellitus can affect the anastomotic blood supply as uncontrolled hyperglycemia leads to vascular damage, reduced blood flow, and cellular accumulation of toxic glucose-derived metabolites, resulting in a significant decrease in anastomotic healing and the ability to fight infection. We have added in the "DISCUSSION" part.

Reviewer #2:

Scientific Quality: Grade B (Very good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Minor revision

Specific Comments to Authors: The authors established three predictive models of anastomotic leakage (AL) to explore their predictive efficacy and determine the best way in clinical applications. After reasonable setting groups of AL group and No AL group, the authors showed that the DeLong test revealed that the AUC value of the decision-tree model was lower than that of the random forest model ($P < 0.05$). This result also draws a conclusion that the random forest model may be used to identify patients at high risk of AL after sphincter-preserving surgery for rectal cancer owing to its strong predictive effect and stability. In short, the topic of this manuscript is timely and interesting. The authors have organized the manuscript rationally, with good methodology and well-written English.

However, some important editing needs to be done before publication:

-The authors showed comprehensive study in this paper. I noticed in three models of nomogram, decision tree, and random forest, why the key variables are different in each group?

Reply: Each model uses different algorithms to make predictions. The nomogram is based on regression models. The decision tree uses a hierarchical

structure to partition data, and the random forest combine multiple decision trees. These algorithm differences may lead to different key variables.

-In my opinion, the BACKGROUND of Abstract is too simple, which cannot reflect the importance for constructing predictive models of AL.

Reply: We have modified the BACKGROUND of Abstract.