

Sep 15, 2022

Dear Reviewers:

I would like to express my heartfelt gratitude to you for spending your precious time on our study, which provides evidence that artificial intelligence may help surgeons in the selective implementation of a temporary ileostomy. We thank you for providing constructive critiques, comments, and suggestions that have improved the overall quality of the paper. By incorporating your comments and questions, we have made significant revisions to the manuscript. In the following pages, I provided detailed response to the Reviewers' questions/comments.

Sincerely yours

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**Response to individual reviewer's comments:**

**Reviewer #1:**

Scientific Quality: Grade B (Very good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Accept (General priority)

Specific Comments to Authors: The title reflect the main subject/hypothesis of the manuscript. The abstract summarize and reflect the work described in the manuscript, the key words are accurate. The background is adequately describing the background, present status and significance of the study The methods are described in adequate detail. The research objectives are achieved by the experiments used in this study. The study contributes to the research in this files by adding data. The manuscript interpret the findings adequately and appropriately, highlighting the key points concisely, clearly and logically. The findings and their applicative are stated in a clear and definite manner. The discussions are accurate and the paper's scientific significance and/or relevance to clinical practice is sufficiently exposed. The figures, diagrams and tables sufficient, good quality and appropriately illustrative of the paper contents. The overall manuscript is well, concisely and coherently organized and presented. The grammar and style are OK. The manuscript is prepared according to the STROBE statement. The informed consent and the ethics approval are issued in Chinese. The biostatistics and English proofing certificate are issued by specialists in the affiliated university not by an international accredited company. The original findings of the manuscript consist in the exploration of the components of the abdominal cavity as visceral fat, adiposity of the abdominal wall, skeletal muscle, anteroposterior diameter of the abdominal cavity and its transverse diameter in question as risk factor for the anastomotic leakage. This hypothesis is confirmed through a retrospective comparative matched cased study in which cases are matched only by BMI and sex and compared through many variables. The results found that some of the variables as the visceral fat area is directly correlated with the risk of anastomotic dehiscence, and transverse diameter and the antero-posterior diameter are inversely associated with the risk of anastomotic leakage. These are important and worthy findings to be taken into account when operating a patient with rectal cancer. However, in the group of patients with AL, some known risk factors are present and those are independent risk factors that were identified in previous studies. The authors did not a statistical analysis of the variables coding the components of the abdomen to see if those are revealed as independent risk factor in a univariate analysis. Therefore, the study may contain a

bias because of the superposition of multiple risk factors in the studied group. If the authors would remove from the analysis the patients that had lower levels of hemoglobin, lower albumin levels, then it would be more evident that the abdominal compounds would have more influence on the results. The intraoperative blood loss was already indicated as related to the amount of visceral fat, so the 2 factors are interconnected. Nevertheless the article brings new insights and evidence in the direction of preoperative risk factors for anastomotic leakage. There are almost 52 risk factors identified for anastomotic leakage in anterior rectal resections it is almost impossible to design studies in which to study only a few of them isolated. The future research would have to bring more cases into analysis and employ artificial intelligence to analyze the preoperative factors.

**Answer:** We greatly appreciated the reviewer's spending precious time in reviewing our study and his/her encouraging comments. We apologize for the language problems in the original manuscript. We have carefully and thoroughly read the manuscript and tried our best to correct all the grammar mistakes and typos. Meanwhile, the revised manuscript was polished by professional English language editing company.

As the reviewer suggested, we have made some revisions, the details are as follows:

1. We reviewed our original data and found that removing cases with lower levels of hemoglobin ( $<110\text{g/L}$ ) or lower albumin levels ( $<35\text{g/L}$ ) would exclude 44 cases, which leads to a less cases used for analysis. Therefore, univariate and multivariate logistic regression was performed to investigate whether the VFA, APD and TD were independent risk factors for AL. The data indicated that the VFA, APD and TD were independent risk factors ( $P<0.05$ ) (Supplementary Table 1).
2. We also agreed the reviewer's opinion that a research designed for investigating AL should include factors and cases as many as possible, hence, we are going to conduct a large sample study (~2500 cases from two centers ) to analyze the risk factors for the development of AL using artificial intelligence methods, such as, logistic regression (fitting in a machine learning frame), principal component analysis, lasso regression and feature importance analysis.

**Reviewer #2:**

Scientific Quality: Grade C (Good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Minor revision

Specific Comments to Authors: This manuscript highlights a relevant issue related with the preoperative factors for anastomotic leakage (AL): abdominal composition. In this study the different parts of body composition are assessed independently and related to the AL development. A positive correlation was found between VFA, APD and TD and AL, including a multivariable analysis using artificial intelligence (AI) methods. This is one of the strengths of this study, supporting its importance. Nonetheless, not only a refinement of the methods section but also a rearrangement of the contents in the methods and results sections are strongly recommended as in the following examples: In the methods section of the abstract, some results are included in an improper manner. Additionally, this section should briefly mention statistical techniques, in particular those which are innovative (as AI methods). In the definition section of the manuscript, anatomic rectal cancer definition should be included. The results section of the manuscript contains some issues that should be presented in the “Methods” (most of what is in the first paragraph of “Feature importance analysis” section), and the results of the item “Feature importance analysis” should be developed a little further. Concerning the limitations of the study, they are clearly presented. However, the future directions of the topic should be described, mainly to overcome some of the study constraints, as its retrospective design and small sample size, among others. Some language issues should be revised.

**Answer:** We greatly appreciated the reviewer’s spending precious time in reviewing our study and his/her encouraging comments. We apologize for the language problems in the original manuscript. We have carefully and thoroughly read the manuscript and tried our best to correct all the grammar mistakes and typos. Meanwhile, the revised manuscript was polished by professional English language editing company.

As the reviewer suggested, we have made some revisions , the details are as follows:

1. We revised the 'Methods' and 'Results' section of the abstract and added the artificial intelligence method.
2. We added the anatomic rectal cancer definition in the 'Definition and variables' section of the revised manuscript.
3. We refined the 'Feature importance analysis' of the results section and rewrote the method in the 'Methods' section of the revised manuscript.
4. We added the future directions of the study in the 'Discussion' section, such as, Given the retrospective nature of this study and the small sample size, future longitudinal investigations with large samples are advocated to provide reliable data to determine causality for the correlation of abdominal components and AL .