

Response to Reviewer Comments

We sincerely thank the reviewer for the constructive feedback and insightful suggestions that have helped improve the clarity and scientific strength of our manuscript titled *“Integrating Artificial Intelligence in the Diagnostic Pathway of Duodenal GIST: A Rare Case Presenting with Obstructive Jaundice.”* The following is our point-by-point response to the reviewer’s comments:

Comment 1:

“The link between the presented case and the discussion on artificial intelligence (AI) is not sufficiently substantiated. The authors mention the potential of AI in improving rare tumor diagnoses but do not provide any actual demonstration, data analysis, or illustrative example to support this claim. As a result, the AI-related content feels disconnected from the main case narrative.”

Response:

We appreciate this important observation. To strengthen the connection between the case and AI discussion, we have:

- Included a **hypothetical AI-based radiomics workflow** illustrating how machine learning algorithms could have analyzed the CT features of our case to differentiate a duodenal GIST from a pancreatic malignancy.
- Added a **schematic diagram (Figure 3)** demonstrating an AI-assisted diagnostic framework for periampullary masses.
- Cited recent studies where **AI and deep-learning radiomic models were successfully applied to differentiate GISTs from other soft-tissue tumors**
- Condensed overly theoretical sections of the AI discussion to keep the narrative directly relevant to this clinical scenario.

This approach provides a clearer, evidence-based rationale for how AI could realistically impact preoperative diagnostic accuracy in rare tumors like duodenal GIST.

Comment 2:

“The report notably lacks radiological images such as CT or MRI scans, which are essential to support the clinical and diagnostic descriptions.”

Response:

We fully agree. In the revised manuscript, we have:

- Added **contrast-enhanced CT images (Figures 1a-b)** depicting the periampullary mass initially suspected to be pancreatic cancer.
- Annotated these images to highlight key diagnostic clues—specifically, the lesion’s origin from the duodenal wall and the pattern of vascular displacement.
- Included corresponding **postoperative specimen images (Figure 2)** for visual correlation.

These additions significantly improve the manuscript’s educational and scientific value by illustrating the diagnostic ambiguity that led to the misdiagnosis.

Comment 3:

“The discussion section remains too general and could benefit from deeper engagement with recent literature. The authors may expand on how AI-driven image analysis or decision-support systems have been applied in GIST or similar soft tissue tumors, as well as address the current limitations or ethical challenges of implementing AI in rare disease diagnosis.”

Response:

We have revised the discussion extensively to include:

- A **summary of recent AI-driven studies** on radiomics and deep learning applied to GIST imaging and pathology.
- Discussion of **AI’s potential role in integrating radiologic, histopathologic, and molecular data** for holistic decision support in rare tumor diagnosis.
- A dedicated paragraph on **ethical and practical limitations**, including dataset bias, interpretability challenges, and the need for prospective validation in rare tumor subgroups.

These updates make the discussion more critical, contemporary, and contextually aligned with the presented case.

Comment 4:

“To enhance the paper’s credibility, the authors should either (1) include a concrete instance of AI or radiomics application related to GIST imaging analysis, or (2) substantially narrow the AI discussion to a concise contextual remark rather than an extended theoretical section.”

Response:

We have chosen to implement option (1) by adding:

- A **conceptual AI-radiomics analysis framework** showing how texture parameters (entropy, GLCM contrast, irregularity indices) could differentiate duodenal GISTs from pancreatic tumors.
- A brief **example simulation** referencing open-access radiomic datasets for GIST characterization.

Additionally, we refined the AI section to remove generic commentary and focus tightly on imaging-based decision support relevant to our case.

We believe these revisions fully address the reviewer's concerns and significantly enhance the clarity, coherence, and scientific rigor of the manuscript.

Revised Figures Added:

- *Figure 1:* Resected specimen of duodenal GIST
- *Figure 2:* AI-based diagnostic workflow for differentiating duodenal GIST and pancreatic cancer
- *Figures 3A–3C:* Preoperative CECT images annotated to show key diagnostic features

We sincerely thank the reviewer and editorial board for their valuable comments and consideration.