**Title**

Non-invasive Assessment of Mesenteric Hemodynamics in Patients with Suspected Chronic Mesenteric Ischemia using 4D flow MRI

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**Declarations**

*Funding*

Not applicable.

*Conflicts of interest/Competing interests*

The University of Wisconsin - Madison receives research support from GE Healthcare. The authors declare that they have no other potential competing interests.

*Ethics approval*

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Patients suspected of CMI were scanned for clinical purposes and a University of Wisconsin - Madison Health Sciences IRB approved protocol (PI: Scott Reeder, MD, PhD; Title: Clinical Imaging and Outcomes Research; IRB Tracking Number: 2016-0518) was used to retrospectively analyze those data sets. A separate IRB protocol (PI: Scott Reeder, MD, PhD; Title: Evaluation of Liver Hemodynamics by 5-point 4D Phase Contrast MRA; IRB Tracking Number: H-2010-0035) was used for the prospective recruitment and imaging of healthy volunteers and was approved by the University of Wisconsin - Madison Health Sciences Institutional Review Board. All IRB protocols were compliant with the Health Insurance Portability and Accountability Act (HIPAA).

*Consent to participate*

Informed consent was obtained from all healthy control participants included in the study. Need for consent from the patient cohorts was waived.

*Consent for publication*

Not applicable.

*Availability of data and materials*

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

*Code availability*

Not applicable.

*Authors’ contributions*

GSR reconstructed the 4D flow data, performed image segmentation and data analysis, interpreted the results, and drafted the manuscript. CJF helped design the MRI scanning protocol, provided clinical perspective on abdominal vascular anatomy, assisted in recruitment of subjects, and commented on previous drafts of the manuscript. JS provided perspective on clinical findings and performed search in electronic health records. AR helped design the MRI scanning protocol, assisted in the retrospective collection of subjects, provided expertise for using specialized segmentation and data analysis software, and commented on previous drafts of the manuscript. OW helped design the MRI scanning protocol, provided guidance on the study design and data analysis, and made significant critical revisions to the manuscript. All authors read and approved the final manuscript prior to submission.

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