

LSU Health Science Center

LSU Health Digital Scholar

Medical Research Day

2021 Medical Research Day Posters

Oct 19th, 12:00 AM

Utilizing Quantitative COVID-19 Serological Testing to Assess Pathophysiological Importance of Complement Activation in Disease Severity

Shivani Jain

LSU Health Sciences Center- New Orleans

Harrison Travis

LSU Health Sciences Center- New Orleans, htrav1@lsuhsc.edu

Meredyth Berard

LSU Health Sciences Center- New Orleans, mbera4@lsuhsc.edu

Alexis Scheurermann

LSU Health Sciences Center- New Orleans

Alison A. Smith

LSU Health Sciences Center- New Orleans, asmi60@lsuhsc.edu

Follow this and additional works at: <https://digitalscholar.lsuhscc.edu/sommrd>



Part of the [Surgery Commons](#)

Recommended Citation

Jain, Shivani; Travis, Harrison; Berard, Meredyth; Scheurermann, Alexis; and Smith, Alison A., "Utilizing Quantitative COVID-19 Serological Testing to Assess Pathophysiological Importance of Complement Activation in Disease Severity" (2021). *Medical Research Day*. 53.

<https://digitalscholar.lsuhscc.edu/sommrd/2021MRD/Posters/53>

This Event is brought to you for free and open access by the School of Medicine at LSU Health Digital Scholar. It has been accepted for inclusion in Medical Research Day by an authorized administrator of LSU Health Digital Scholar. For more information, please contact aolini@lsuhsc.edu.

Solid Organ Pseudoaneurysms in Patients with High Grade Traumatic Injuries: A Case Series

Shivani Jain¹; Harrison Travis¹; Meredyth Berard¹;
Alexis Scheurermann, MD²; Alison A. Smith, MD, PhD²

Louisiana University Health Sciences Center (LSUHSC) School of Medicine¹,
LSUHSC Department of Surgery, Division of Trauma/Critical Care²



Background

Rationale:

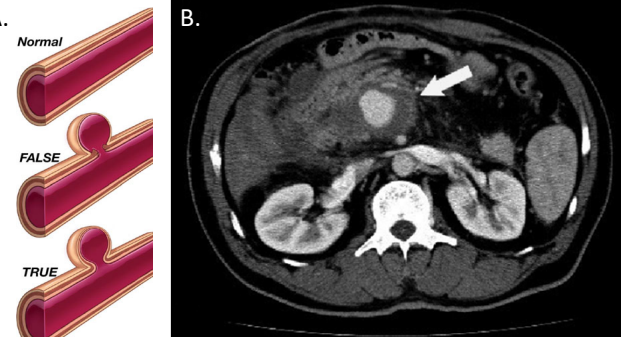
- Blunt abdominal trauma affects 25% of all patients admitted with traumatic injuries
- Although relatively rare (occurring in 2-10% of cases of solid organ injury), development of solid organ (splenic, hepatic, or renal) pseudoaneurysms (PSAs), particularly after initial imaging poses significant risk to patients. If untreated, these PSAs may rupture and lead to life-threatening hemorrhage.
- Despite risk, use of follow-up imaging after initial CT for blunt abdominal trauma remains controversial and has not widely been embraced

Objective:

- Case series conducted to capture experience of missed solid abdominal organ PSAs at two hospitals, a level 1 and level 2 trauma center
- Overall goals were to explore variables, to develop hypothesis for case-control study, & to inform screening guideline development

Figure 1. A. Arterial cross-sections of a normal vessel, a false aneurysm (pseudoaneurysm) with disruption of the intimal and medial layers of the arterial wall, and a true aneurysm with all three arterial wall layers intact.

B. Axial CT image of the abdomen shows a pseudoaneurysm (arrow).



Participant Data

Table 1. Patient Demographics, Injury Characteristics

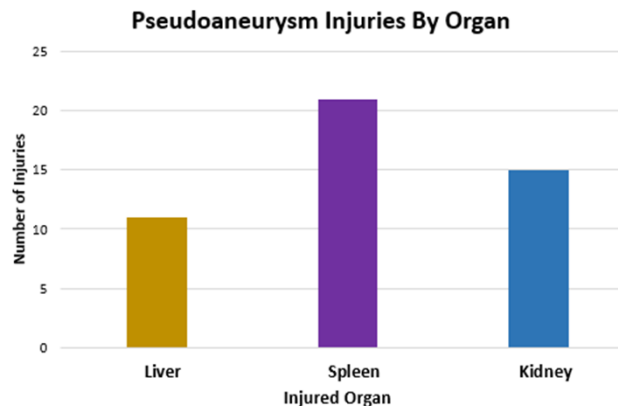
Age, (Median in Years)	34
% Female	68.3
% Penetrating	23.4
ISS (Median)	24.5
AAST Grade (Median)	4
Hospital LOS (Median, in Days)	9
% Readmitted for PSA	6.38
% Mortality	14.89

Methods

- Created database from retrospective longitudinal data across 5 platforms to include all adult patients between 2012 and 2020 with traumatic solid organ injuries of an AAST grade 3 or higher
- Performed quality control and comprehensive review to identify patients with PSAs, their demographic characteristics, and their clinical outcomes
- Statistical analyses were performed after controlling for outliers and performing 5-tiered checks of AAST grade level, data input, and interpretation of imaging data raw files as well as Surgery and IR medical notes

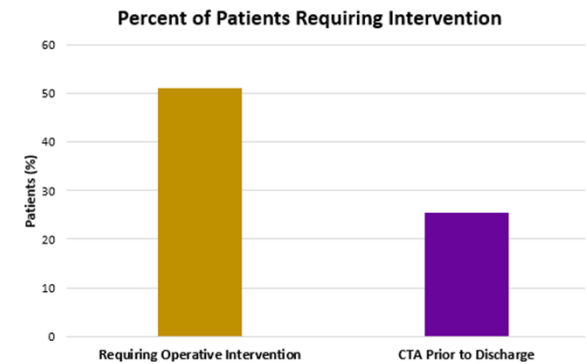
Results: Figure 2

Figure 2. Number of hepatic, splenic, and renal PSAs accounted for from Jan 2012 – August 2022 across 2 major trauma centers.



Results: Figure 3

Figure 3. Percent of patients who did not undergo PSA surveillance after admission and later required interventions due to ruptured PSA.



Conclusions

- Incidence of PSAs consistent with in previously published literature, but previous literature has excluded patients with penetrating trauma
- Given our population's ↑ percentage of penetrating trauma, this may be a focus for future research
- Now all patients with AAST grade 3 or higher solid organ injuries are now undergoing CTA surveillance prior to discharge to screen for PSAs
- Further studies needed to determine whether this change in screening guidelines affects incidence of PSAs and patient outcomes

References & Acknowledgments

- Wallen TE, Clark K, Baucom MR, Pabst R, Lemmink J, Pritts TA, Makley AT, Goodman MD. Delayed splenic pseudoaneurysm identification with surveillance imaging. *J Trauma Acute Care Surg.* 2022 Jul 1;93(1):113-117.
- Kittaka H, Yagi Y, Zushi R, Hazui H, Akimoto H. The investigation of posttraumatic pseudoaneurysms in patients treated with nonoperative management for blunt abdominal solid organ injuries. *PLoS One.* 2015;10(3):e0121078.
- Wagner ML, Streit S, Makley AT, Pritts TA, Goodman MD. Hepatic pseudoaneurysm incidence after liver trauma. *J Surg Res.* 2020;256:623-628.
- Kozar RA, Crandall M, Shanmuganathan K, Zarzaur BL, Coburn N, Cribari C, et al, AAST Patient Assessment Committee. Organ injury scaling 2018 update: spleen, liver, and kidney. *J Trauma Acute Care Surg.* 2018;85(6):1119-1122.

This work would not have been possible without the contributions of the UMCNO's Departments of Trauma Surgery and IR. In particular, we would like to thank Alison Smith, MD, PhD, and Alexandra Fairchild, MD, for their insights and guidance. Much thanks also goes to Marquinn Duke, MD, and Jennifer Rhodes, PA, our collaborators at North Oaks Medical Center, who provided data. We also want to acknowledge UMCNO's Trauma Registrar Vicki Holloway for her help in accessing some of the data.
This research project was supported through the LSU Health Sciences Center, School of Medicine.