

Successful Treatment of Giant Splenic Artery Pseudoaneurysm Rupture with Transcatheter Splenic Artery Embolization

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Introduction

- Giant splenic artery pseudoaneurysm (GSAP) is defined as a splenic artery pseudoaneurysm exceeding 5 cm in diameter.
- To date, 53 cases of GSAP have been published in the peer-reviewed English literature. 25 of these cases were treated with transcatheter splenic artery embolization.
- Prior patients with GSAP have presented with various chief complaints. Gastrointestinal bleeding has occurred in cases complicated by fistula formation between the pseudoaneurysm and gastrointestinal structures. Hemoptysis also occurred in a patient who developed a GSAP-airway communication through a diaphragmatic defect.
- Our case describes the finding of GSAP rupture in a patient who was brought to the emergency department in hemorrhagic shock.

Hospital Course

Day 1

A 56-year-old Asian male with no significant past medical history developed severe abdominal pain at his home.

Vitals

Temperature	36.0°C
Blood pressure	71/44
Pulse	90 bpm
Respirations	18/minute
Oxygen saturation	95% on 2L/min O ₂ via nasal cannula

Lab Findings

Normocytic Anemia	Hemoglobin 7.6 mg/dL
Lactic acidosis	Lactic acid 11.0 mg/dL

Abdomen/Pelvis CT

Splenic artery pseudoaneurysm, with cross-sectional area 5.8 x 5.6 cm, and intra-abdominal fluid collections consistent with hemoperitoneum (Figures 1-2).

Intervention

Following hemodynamic stabilization via packed RBC transfusion and crystalloids, the patient underwent splenic artery arteriogram and coil embolization, which resulted in resolution of pseudoaneurysm filling and extravasation (Figures 3-5).

Day 2

The patient underwent exploratory laparotomy with hematoma evacuation and intra-abdominal washout.

Day 3

Following an uncomplicated post-operative course, the patient was given the Haemophilus influenzae type B, pneumococcal, and meningococcal vaccines and discharged.

Abdomen/Pelvis

Computed Tomography

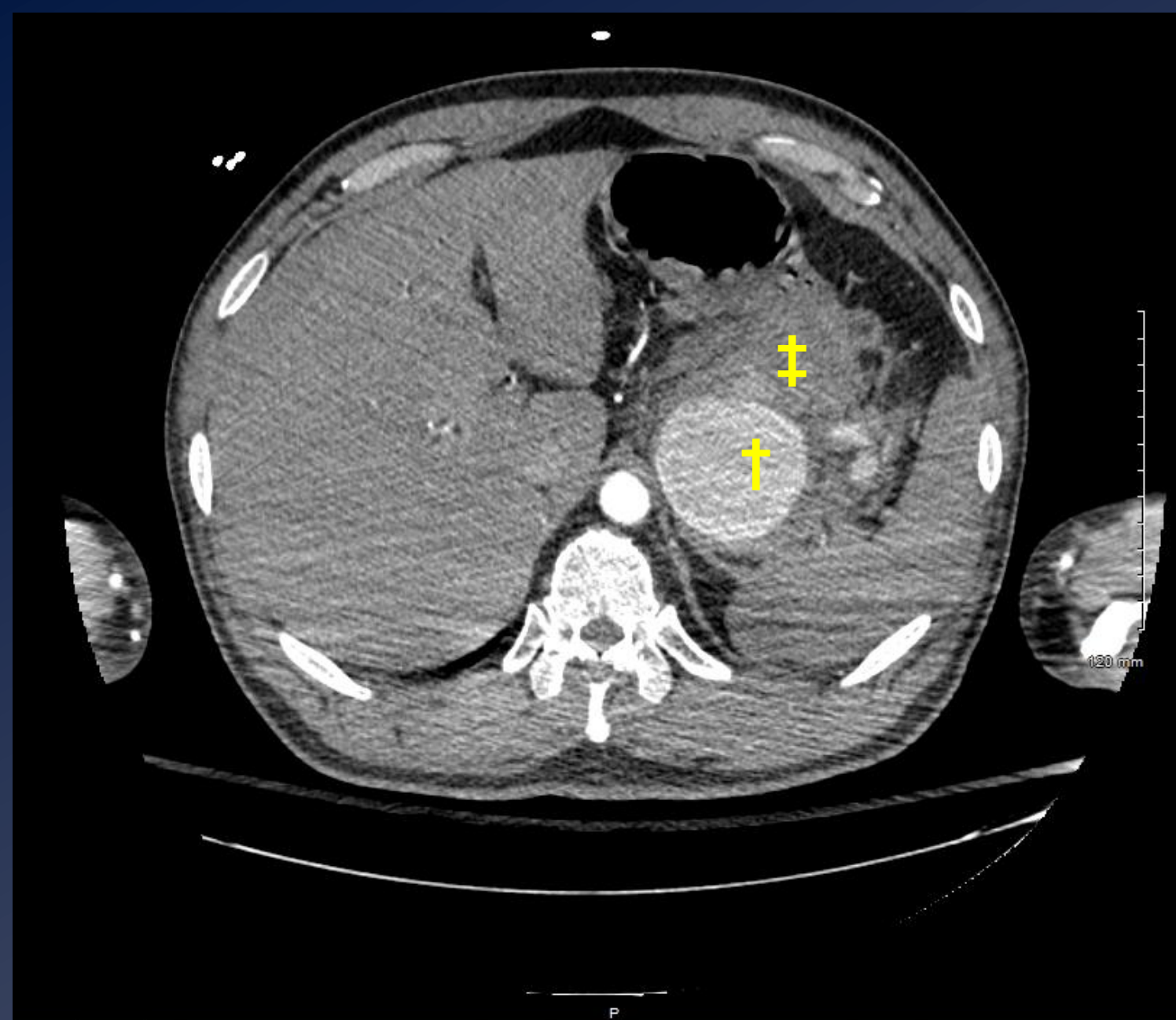
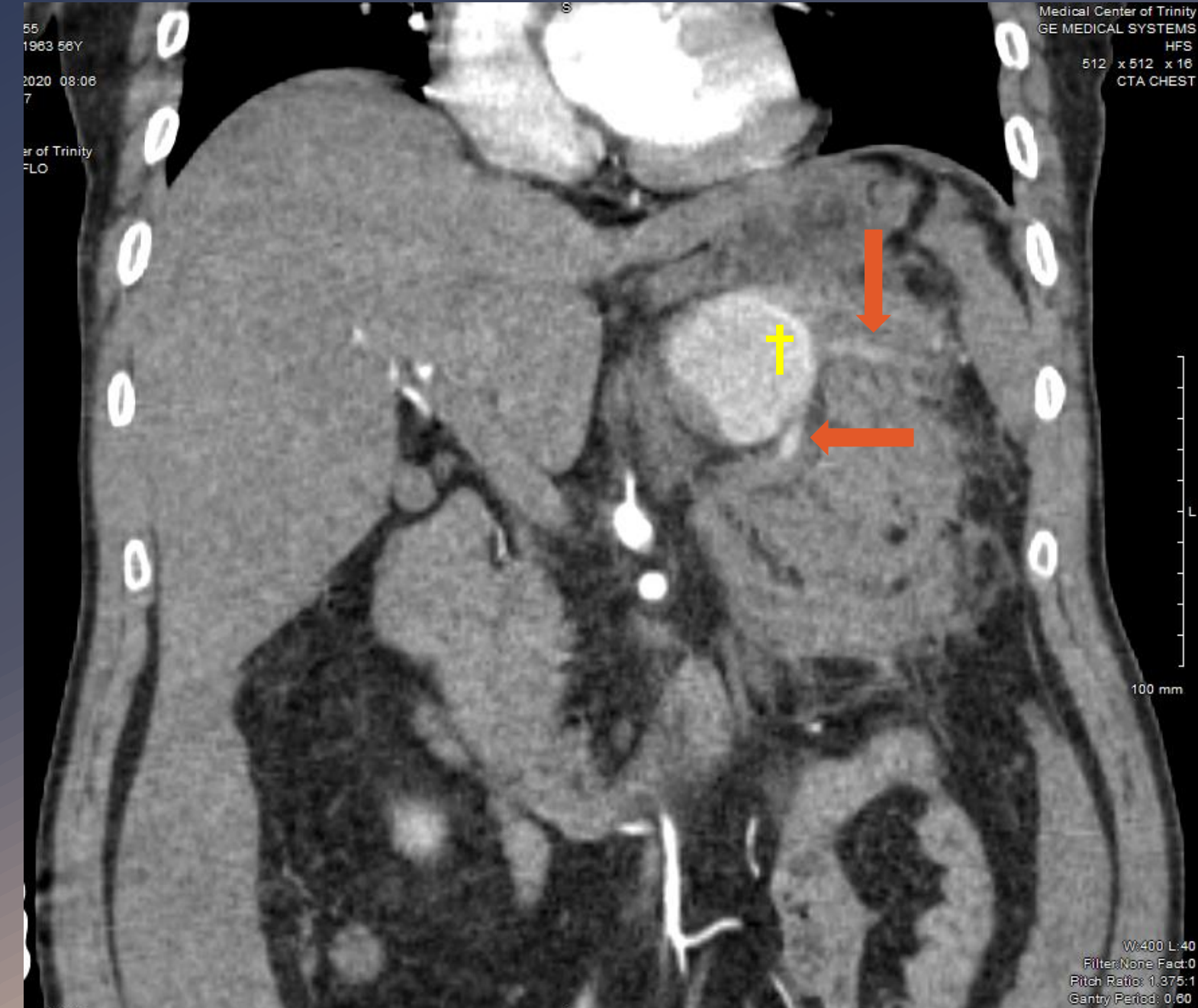


Figure 1. Splenic artery pseudoaneurysm (†) and adjacent hemoperitoneum (‡), axial view

Figure 2. Splenic artery pseudoaneurysm (†), coronal view. Segments of the splenic artery proximal and distal to the pseudoaneurysm labeled with leftward and downward arrows respectively.



Splenic Artery Arteriogram and Coil Embolization

Intraoperative Fluoroscopy Prior to Embolization

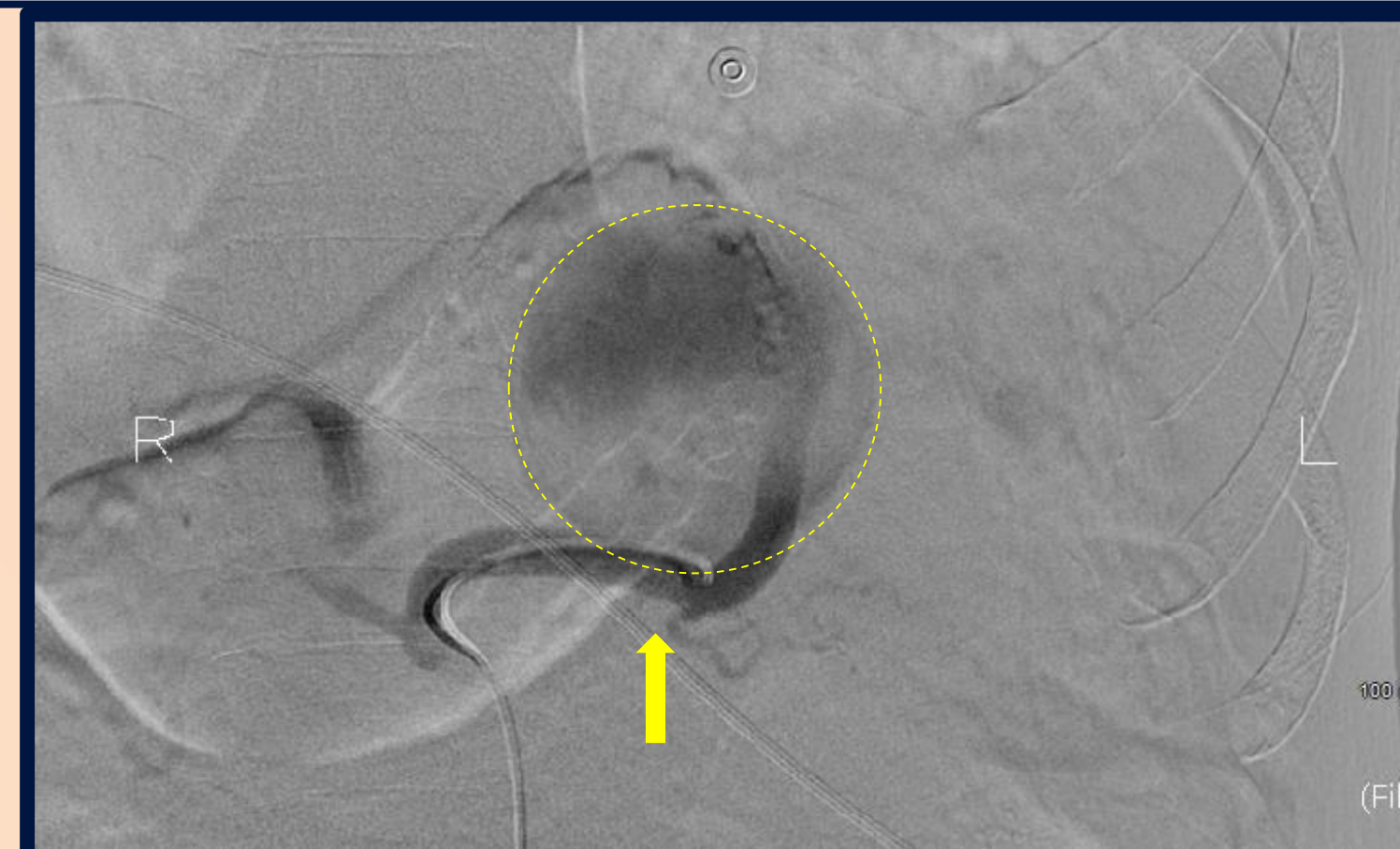


Figure 3. Angiogram prior to splenic artery embolization. Arrow pointing to contrast flow in the splenic artery proximal to the pseudoaneurysm (outlined by dashed circle).

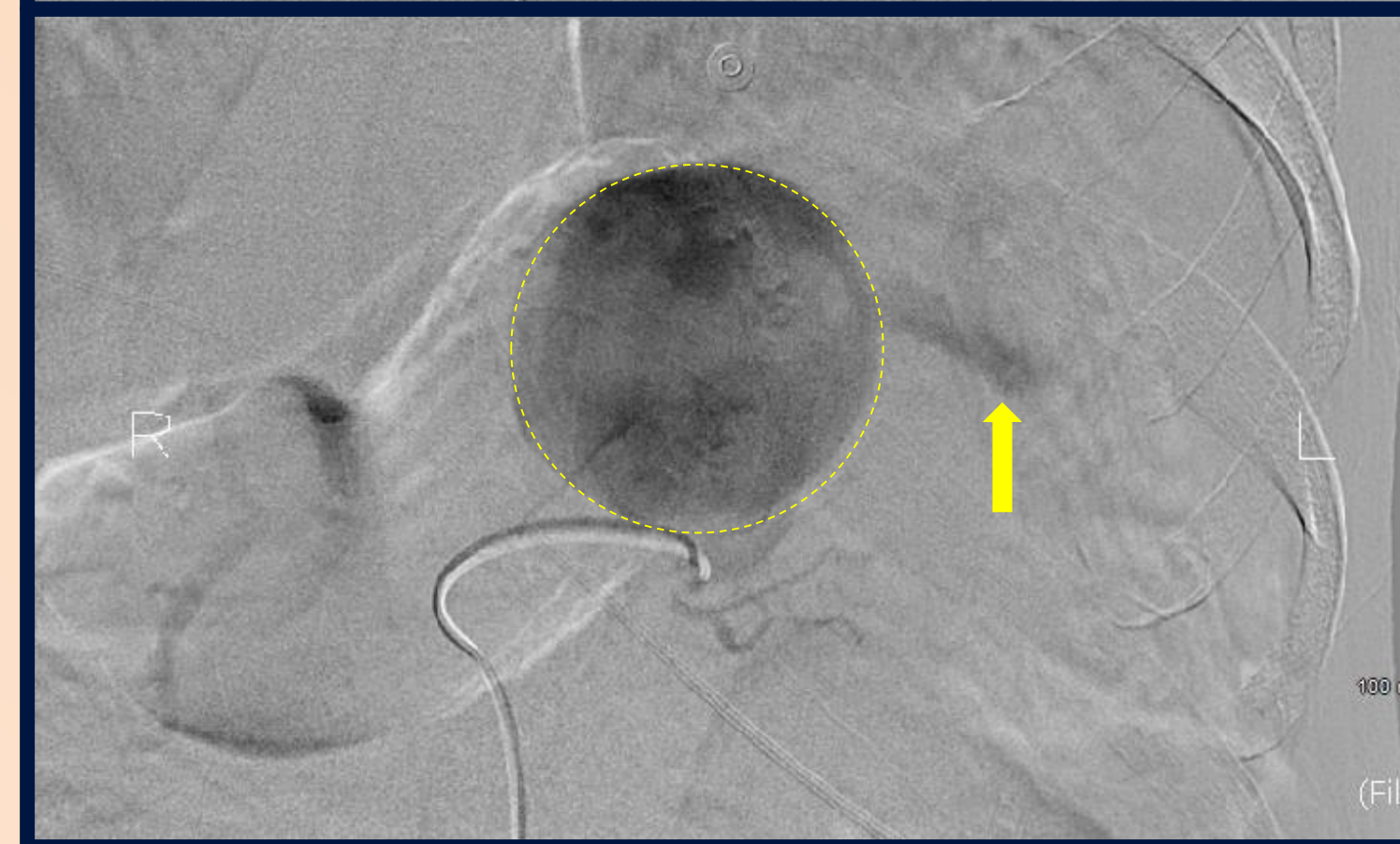


Figure 4. Angiogram prior to splenic artery embolization. Arrow pointing to contrast flow in the splenic artery distal to the pseudoaneurysm.

Angiogram Following Embolization

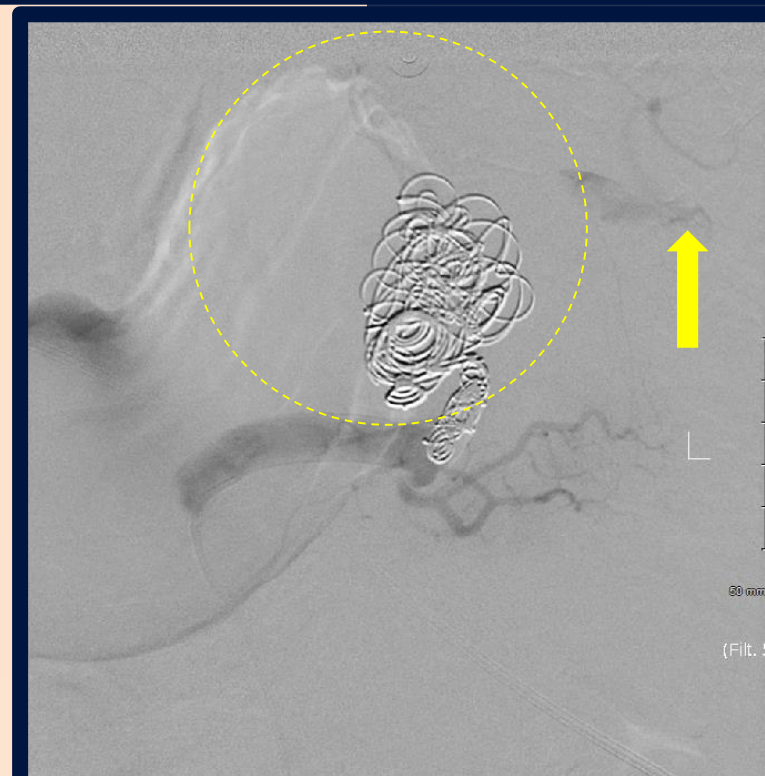


Figure 5. Angiogram following splenic artery coil embolization. Arrow pointing to contrast flow demonstrating continued perfusion of the distal splenic artery from collateral vascular supply. No evidence of persistent pseudoaneurysm filling or extravasation (former area of pseudoaneurysm outlined by dashed circle).

Literature Review

- Splenic artery embolization (SAE) is most commonly performed in blunt splenic injury patients. Research to date has not fully elucidated the degree of splenic function that is preserved following SAE via either main splenic artery embolization or peripheral splenic artery branch embolization.
- In regards to potential immune compromise following SAE, we identified a retrospective study on hospital readmissions following blunt splenic injury (Cioci et al., 2020). This study demonstrated that the incidence of infectious complications following cases treated by SAE exceeded the incidence following non-operative management.
- To guide our approach to preventing post-SAE opportunistic infections in our patient, we took into account the Advisory Committee on Immunization Practices recommendation to administer early pneumococcal vaccination and to repeat administrations of the pneumococcal and meningococcal vaccines in patients who develop reduced or absent splenic function due to any cause.
- In addition to prophylactic vaccinations against encapsulated organisms, Davies et al. (2011) recommended antibiotic prophylaxis in splenectomy patients in the immediate post-operative period. However, our literature review produced no established recommendations for the use of prophylactic antibiotics following SAE.
- To safeguard against potential opportunistic infections following SAE in our patient, we ultimately administered vaccinations against encapsulated organisms prior to discharge.

Summary

- Arterial pseudoaneurysm is an important differential in the diagnosis of abdominal pain, hemorrhagic shock, gastrointestinal blood loss, and hemoptysis.
- There remains a need for further research to guide the use of prophylactic vaccinations and antibiotics in patients who have undergone splenic artery embolization.

References

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