

# Robotic Assisted Splenic Artery Aneurysmectomy and Splenectomy

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# Summary

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History of Present Illness

Physical Exam

Imaging

Background

Planning, Intervention, and Results

Discussion, and Review of Current Literature

Conclusions and Acknowledgements



66 year old male

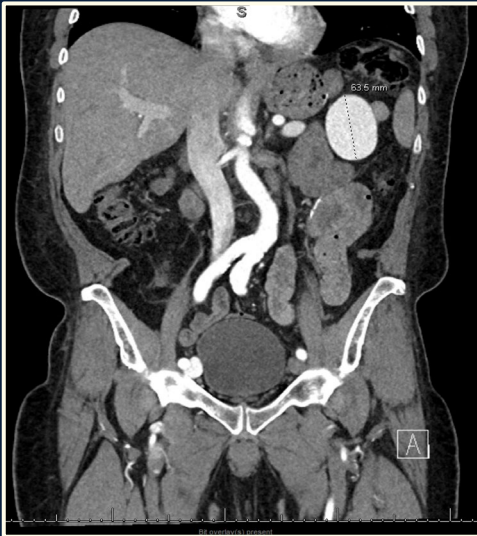
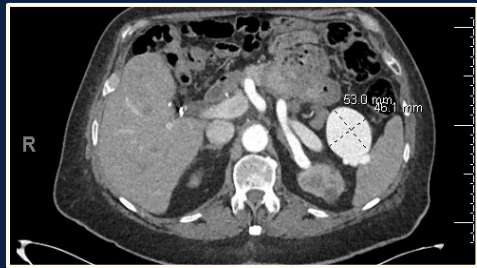
- PMH: hiatal hernia, coronary artery disease with previous MI, hypertension, hyperlipidemia
- PSH: laparoscopic roux-en-y gastric bypass (2007), laparoscopic cholecystectomy (1999)
- Social: 50py smoking history
- Presented to the ER complaining of 4 days of worsening intense substernal and right upper quadrant abdominal pain radiating to the back



66 year old male | 92 kg | BMI 32

- Chest pain, epigastric abdominal pain
- 2+ pedal pulses bilaterally
- Palpable pulsatile mass in the left upper quadrant with an audible bruit
- Palpable thrill in the right femoral region
- Negative Cardiac workup







## Splenic Artery Aneurysms

- Most common visceral artery aneurysm, ~60% of splanchnic arterial aneurysms, third most common intra-abdominal aneurysm
- 3% risk of rupture
- 20-36% risk of mortality
- Types
  - True Aneurysms: arterial wall degeneration
  - Pseudoaneurysm: trauma, inflammation, iatrogenic injury



## Splenic Artery Aneurysms

- SVS guidelines recommend intervention for
  - Symptomatic
  - >3cm
  - Demonstrated growth
  - Pseudoaneurysm (trauma, inflammation, iatrogenic injury)
  - Pregnancy/Women of childbearing age
- Diagnosis: CTA
- Treatment options
  - 1st Line: Endovascular
  - Open/MIS: morphology, location, patient factors



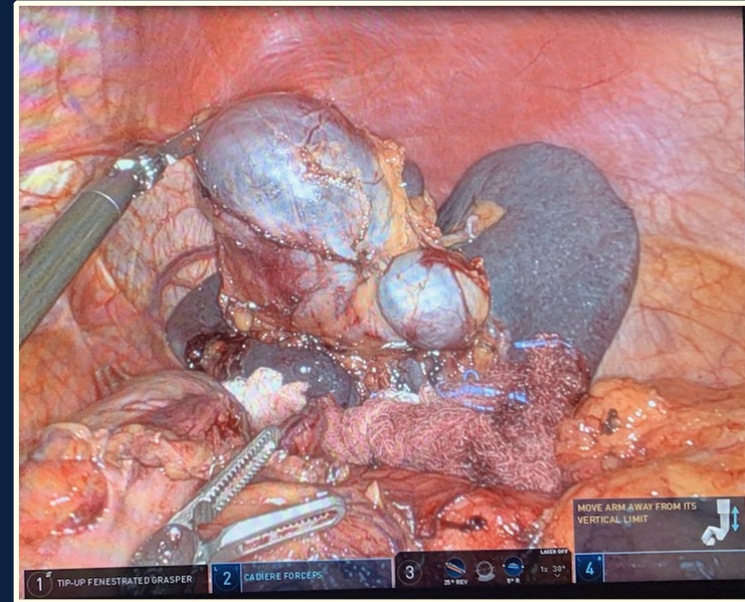
## Splenic Artery Aneurysms

- Potential mechanisms for pseudoaneurysm formation in the setting of Roux-en-Y Gastric Bypass
  - Chronic inflammation
  - Leak
  - Pancreatitis
  - Arterial erosion
- Implications
  - Altered anatomy, difficult diagnosis, technical challenges for repair
- Considerations for splenectomy
  - Distal/hilar aneurysms
  - Concerns for infarction or pancreatitis

- Diagnosis: multilobar giant hilar splenic artery aneurysm, 6.4cm at widest diameter with a fistula to the splenic vein.
- Multidisciplinary planning:
  - Splenectomy with aneurysmectomy
  - Open repair and revascularization would be difficult due to the hilar location
  - Aneurysm/arterial embolization could risk inadvertent embolization to the portal vein
  - Endovascular treatments may risk splenic necrosis due to history of short gastric artery ligation (from bypass)
  - Robotic XI platform selected



- Procedure: Robotic XI assisted splenic aneurysmectomy and splenectomy
- Findings: Bilobed splenic artery aneurysm of the splenic hilum, dilated splenic vein, and AVF. Post-bypass changes. Adhesions.
- 4 port sites
- Lysis of adhesions
- Dissection down to the gastro-splenic ligament
- Circumferential dissection of the artery and vein
- En bloc division with a 60mm robotic stapler
- Mobilization and dissection of aneurysm off of surrounding structures (i.e. pancreas).
- Splenic mobilization and retrieval via endocatch bag



- Appropriate postoperative course for a minimally invasive splenectomy, discharge on POD 3
- Typical post-splenectomy vaccination regimen
- Uneventful 1 year follow-up

#### CLINICAL DATA

Bilobed splenic artery aneurysm at the splenic hilum with splenoportal fistula.

#### DIAGNOSIS

Case ID: SW24-16568

Spleen and aneurysm; splenectomy and aneurysm resection  
- Benign spleen and accessory spleen  
- Vascular aneurysm with thrombosis and reactive changes

*NOTE: One or more of the slides from this case were reviewed by one or more additional Pathologists for Quality Review purposes.*

#### Comments:

Signed Out From MRH PATHOLOGY SVCS HUB



- Successful example of a robotic-assisted laparoscopic splenic artery aneurysm in a patient with previous weight-loss surgery.
- Patient factors supporting our decision to proceed with this option:
  - Distal/hilar location
  - Proximity to the pancreas
  - Size and morphology
  - Presence of an AVF in the hilar structures
  - History of bypass and other previous abdominal surgeries
  - Skilled minimally invasive/robotic surgery team
- Advantages of a robotic approach
  - Visualization, ergonomics, useful for complex anatomy

- *Laparoscopic and Robotic Surgery for Splenic Artery Aneurysm* (Ossola et al.) from the Annals of Vascular Surgery
  - Systematic Review, 107 patients undergoing lap and robotic SAA repair
    - Laparoscopic Repair: 164 minutes, Robotic: 150 minutes
    - Conversion or reintervention 4.8% for laparoscopic, 0% for robotic
    - Mean LOS: 5.4-6.1 (our patient, 3 days)
- Limitations
  - Current evidence consists of small series and retrospective analyses
  - Rarity of the etiology precludes RCTs
  - Need for larger studies with long term follow-up



- Minimally invasive options such as robotic-assisted laparoscopic splenic artery aneurysmectomy are safe and viable options for the appropriate patient population where endovascular or open options are not suitable
- Outcomes are generally very good in experienced hands.
- Enhanced visualization and ergonomics can offer advantages in the setting of challenging/altered anatomy that other modalities simply cannot.

# Acknowledgements

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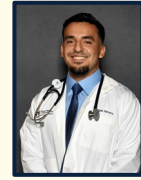
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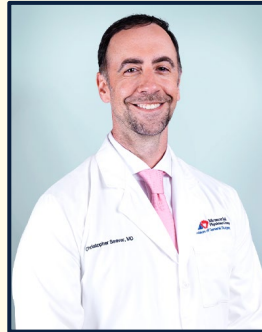


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