A Case of Spontaneous Celiac Artery Dissection After Laparoscopic Conversion of Sleeve Gastrectomy to Gastric Bypass

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Background

- Spontaneous visceral artery dissection is rare
- Increasing utilization of advanced radiologic imaging has resulted in higher prevalence
- Isolated celiac artery dissection is even rarer, with approximately 200 cases observed since its initial introduction to literature in 1947[1]
- Believed to be primarily iatrogenic
- Secondary causes include hypertension (HTN), trauma, pregnancy, or congenital disorders of the vasculature

Patient Presentation

History of Present Illness

- 46 year old female with medical history significant for GERD, HTN and obesity
- Surgical history of lap band in 2010 (removed in 2018) and sleeve gastrectomy in 2019 which was converted to gastric bypass in March of 2021 secondary to complications by hiatal hernia and GERD
- The patient was discharged on post-operative day 2 (POD 2) on a bariatric diet, after an uncomplicated hospital course. Follow up was scheduled for one week.
- She presented to ED on POD 6 for 4 days of fevers, Tmax 101.6 F, and intermittent, severe, sharp right back pain radiating inferiorly down the right flank
- Review of systems was otherwise negative

Physical Exam

- Vital signs: BP of 154/91 mmHg, HR 100/min, RR 16/min, T 98.5 F and SpO2 of 99% on RA.
- BMI 33.66 kg/m2
- Exam: Diaphoretic, abdomen was soft, non-tender, and without rebound, guarding, rigidity or CVA tenderness. Laparoscopy scars x3 were clean, dry, and intact. Mild right lower lumbar tenderness. Otherwise, negative.

Laboratory data

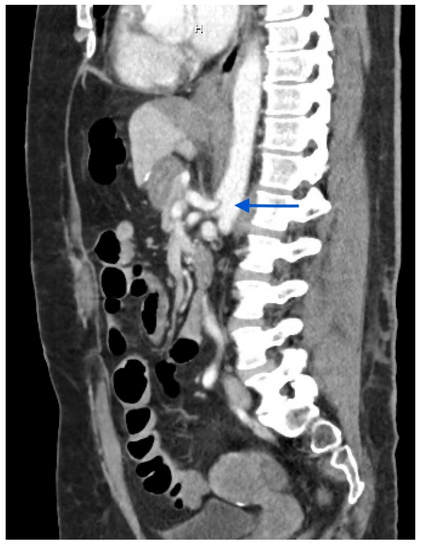
- CBC, CMP, Lactate, Blood cultures, UA were within normal limits except for an isolated elevation of ALT to 132.

Imaging

- CT of the abdomen and pelvis with and without contrast was concerning for a focal dissection at the origin of the celiac trunk with severe stenosis and an area of hypo-enhancement involving the left hepatic lobe, suspected to represent infarcts possibly due to distal emboli.

Clinical Course

- Patient was admitted to the surgical service with vascular surgery consult
- Recommended US of abdominal vasculature showed patent hepatic vessels with appropriate flow
- She was treated with a bolus of lactated ringers' solution, Vancomycin, Zosyn, Acetaminophen IV, Hydromorphone, and antiplatelet therapy.
- Vascular surgery also recommended blood pressure control with Metoprolol.
- On hospital day 2 (POD 8), the patient underwent selective angiography of the celiac artery with balloon angioplasty and placement of two bare metal stents in the proximal celiac artery
- Severe stenosis of the celiac artery of 99% was appreciated at start of procedure and was deemed optimized post-procedure with subsequent patency, as well as the SMA and HA.
- Post-procedure, the patient reported slowly improving symptoms and was discharged on hospital day 4 (POD 10) on bariatric stage 2 diet, pain management, Aspirin and Plavix with outpatient follow up 3 days later.
- Four days post-discharge, (POD 14), the patient began to have unrelenting RUQ pain and recurrent right back pain.



CT abdomen and pelvis with contrast shows a focal, isolated dissection of the celiac artery (arrow).

- EKG and bilateral lower extremity dopplers had no acute findings.
- She returned to the ED with right back pain worse with inspiration and exertion, which was reproducible on lying flat, concerning for PE
- STAT CTA of the chest, abdomen, pelvis to assess for PE and recently stented was ordered.
- CTA findings: negative for PE but did show multiple splenic infarcts with a patent splenic artery and vein, and a patent stent.
- The patient was placed under observation and started on multi-modal pain control.
- Vascular team was consulted, who recommended continuation of blood pressure control, Aspirin, and Plavix, and advised outpatient vascular follow-up.
- She was deemed stable for discharge home the following day (POD 15) with follow up in the bariatric and vascular surgery clinics

Discussion

Pathology

- Visceral artery dissection most commonly occurs in the SMA, followed by the celiac artery.[1]
- Most reported cases have iatrogenic causes or are believed to be secondary to atherosclerosis, trauma, pregnancy, connective tissue disorders, HTN and smoking.[2,3]
- Additional predisposing factors: previous abdominal surgery, sudden increase in abdominal hyper-pressure, which may contribute to weakening of the arterial wall[4]
- M >> F, Average age within the 5th decade of life.[5]
- A distinguishing difference of celiac artery dissection from SMA dissection is its association with hepatic and/or splenic ischemia and infarct,[6] which occurs via spread along the vessel wall causing the involvement of these branches.[7]
- The literature also reports cases of isolated celiac artery dissection found incidentally in asymptomatic patients. A proposed reason for this is a lack of small bowel involvement when the celiac artery is affected in isolation without involvement of the SMA, renal, or splenic arteries.[8]

Diagnosis

- CT and/or CTA are considered the gold standard
- Pathognomonic findings include double lumina, occlusion, irregular stenoses and aneurysms.[3, 9]

Treatment

- Primary treatment is nonoperative management with pain control, antiplatelet therapy, anticoagulation, and blood pressure control to prevent thromboembolic complications[3]
- Operative interventions include endovascular stenting and surgical revascularization in more severe cases

Conclusion

This case of a 46F presenting with abdominal pain and back pain constitutes a wide and varying differential diagnosis. Our patient however, had multiple risk factors including hypertension and recent laparoscopic abdominal surgery, which likely contributed to her presentation. Her presentation progressed as the literature predicts with hepatic involvement on initial presentation, and later splenic infarct in her subsequent admission. Although no formal recommendations exist, the severe stenosis exhibited on our patient's CTA likely caused worsening ischemia to the liver and spleen, and therefore endovascular stenting was indicated. Post-stenting, this patient was managed conservatively with BP control, anticoagulation, and antiplatelet therapy. Individuals undergoing bariatric surgery are overweight often with comorbidities that correspond to obesity, such as HTN. Moreover, the very nature of a surgical procedure may serve as an additional factor weakening or altering the arterial walls. In conjunction, this may be enough to cause a presentation like our patients'. Considering our inability to identify a similar case of celiac artery dissection following gastric surgery in the literature, we should work to better understand if this subset of patient's may be at increased risk of visceral artery dissection.

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