Chronic Left Gastric Artery and Acute Superior Mesenteric Artery Dissections During a Hypertensive Crisis

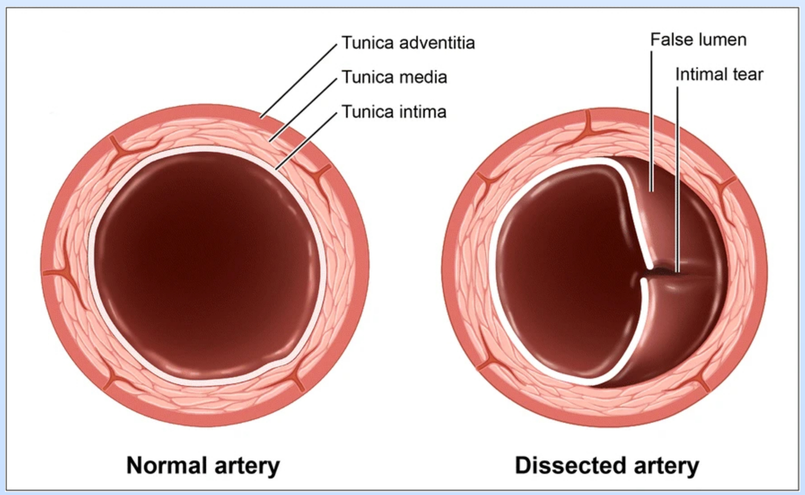
Victor David Ivancev, OMS-III[2], Cory O'Gara, OMS-III[2], Stephen Howard, DO[1], Tarig Mohamed, MD[1], Amir Hanafi, MD[1]
1. Division of Internal Medicine, RRH Unity Hospital
2. Lake Erie College of Osteopathic Medicine

Introduction

Background
- Spontaneous isolated visceral artery dissection (SIVAD) is a primary dissection of a visceral artery occurring without aortic involvement or identifiable precipitating cause.
- Most commonly involves the superior mesenteric artery (SMA); incidence has risen with increased use of advanced cross-sectional imaging.
- Estimated to account for <0.06% of cases presenting with acute abdominal pain.
- Dissection of other visceral arteries is rare, with left gastric artery (LGA) involvement exceptionally uncommon.

Pathophysiology
- Hypertension is a major risk factor due to chronic elevation in arterial shear stress.
- Additional associations include atherosclerosis, connective tissue disease, fibromuscular dysplasia, and segmental arterial mediolysis.
- A transverse intimal tear leads to false lumen formation and intramural hematoma, which may progress to partial thrombosis, vessel wall remodeling, or a dissecting aneurysm.

Clinical significance
- Can be asymptomatic or present with acute abdominal pain disproportionate to exam findings.
- Hypertensive emergency may precipitate or exacerbate dissection.
- Delayed recognition may result in bowel ischemia or aneurysmal rupture.



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Case Presentation

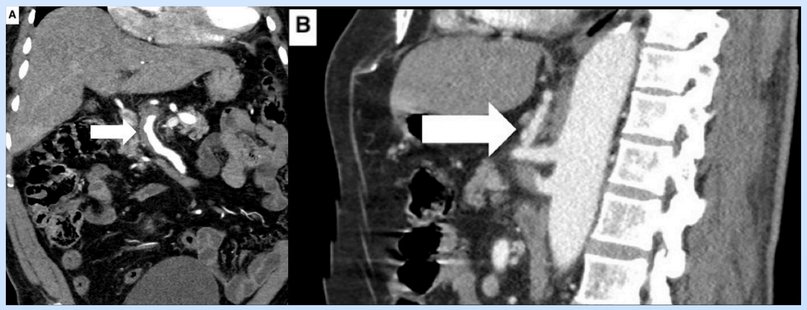
Patient profile
- 74-year-old male with a history of primary hypertension, latent syphilis, prior intracranial hemorrhage, and medication non-adherence.

Chief complaint
- Acute periumbilical abdominal pain which progressed to sharp, constant, diffuse pain over 24 hours.
- Associated abdominal fullness.
- Denied nausea, vomiting, diarrhea, hematochezia, and trauma.

Evaluation
- *Vitals:*
  - Blood pressure of 170/130 mmHg, borderline bradycardia, afebrile, and normal oxygen saturation.
- *Laboratory findings:*
  - CBC, CMP, & lactate within normal limits.
  - Mildly elevated inflammatory markers (ESR & CRP).
- *Physical exam:*
  - Soft abdomen with diffuse tenderness.
  - No rebound, guarding, or peritonitic findings.
  - Symmetrical and intact peripheral pulses.

Cardiac event:
- Narrow-complex super ventricular tachycardia (SVT) on electrocardiogram (ECG) with spontaneous conversion to normal sinus rhythm.

Imaging findings
- Computed tomography angiography (CTA) abdomen revealed:
  - 4-cm proximal superior mesenteric artery (SMA) dissection with mild-to-moderate luminal narrowing (A).
  - Left gastric artery (LGA) dissection with 7-mm aneurysm from proximal celiac axis (B).



Management

Conservative treatment strategy
- Aspirin 81 mg.
- IV heparin infusion with planned outpatient oral anticoagulation.
- Blood pressure goal: SBP <130 mmHg.
- PRN hydralazine.
- IV opioids for pain control.
- Bowel rest + gentle IV fluids.
- Serial abdominal exams and lactate monitoring.

Hospital course
- Repeat CTA at 48 hours revealed a minimally narrowed SMA lumen and stable LGA dissection with aneurysm.
- Improved abdominal pain and no clinical evidence of ischemia.

Discharge plan
- Aspirin 81 mg daily & apixaban 5 mg BID x 3 months.
- Transition to aspirin 325 mg daily long-term.
- Strict blood pressure (BP) control.
- Vascular surgery follow-up in 1 month.

Discussion

- SIVAD is rare and has an incompletely understood natural history.
- Hypertension is the most consistently reported risk factor.
- This case is notable for simultaneous chronic LGA dissection and acute SMA dissection in the setting of poorly controlled hypertension.
- In the absence of ischemia or peritonitis, conservative management with strict BP control and antithrombotic therapy is appropriate.
- Our patient improved clinical without endovascular or surgical intervention, with imaging surveillance demonstrating stability.
- Intervention should be considered in cases of worsening abdominal pain, radiographic evidence of bowel ischemia, or aneurysmal enlargement or rupture.
- Longitudinal imaging follow-up is essential to monitor for aneurysmal progression or vascular compromise.
- An additional feature was the transient narrow-complex SVT.
- While causality is unclear, tachyarrhythmias may contribute to acute hemodynamics fluctuations and increased arterial shear stress.

References

1. Kiriyak ND. *Arterial dissection*. Wikimedia Commons. Published February 15, 2019. Accessed February 28, 2026. https://commons.wikimedia.org/wiki/File:Arterial_dissection.webp
2. Shi Y, Guo J, Dong J, Chen X, Luo L, Shen Y. Comparative analysis of prevalence, evaluation, management, and rehabilitation outcome of spontaneous isolated visceral artery dissection: A systematic review and meta-analysis of 80 reports. *International Journal of Surgery*. 2023;109(3):469-480. doi:10.1097/js9.0000000000000301
3. Morgan CE, Mansukhani NA, Eskandari MK, Rodriguez HE. Ten-year review of isolated spontaneous mesenteric arterial dissections. *Journal of Vascular Surgery*. 2018;67(4):1134-1142. doi:10.1016/j.jvs.2017.08.071
4. Kratovska A, Ponomarjova S, Vellere N, Ligers A, Mohammadian R. Spontaneous isolated superior mesenteric artery dissection: A case report and brief analysis. *Radiology Case Reports*. 2023;18(9):3179-3183. doi:10.1016/j.radcr.2023.06.027
5. Yamaguchi H, Murata S, Onozawa S, Sugihara F, Hayashi H, Kumita S. Strategy for the treatment of spontaneous isolated visceral artery dissection. *European Journal of Radiology Open*. 2018;6:9-15. doi:10.1016/j.ejro.2018.11.003
6. Taneja T, Kadish AH, Parker MA, Goldberger JJ. Acute blood pressure effects at the onset of supraventricular and ventricular tachycardia. *The American Journal of Cardiology*. 2002;90(12):1294-1299. doi:10.1016/s0002-9149(02)02866-7