

Sigmoid Volvulus

A 68-year-old African American male with past medical history significant for atrial fibrillation, hypertension and coronary artery disease status post CABG, presents to the ED by EMS after multiple syncopal episodes at home. Patient reports mild, diffuse abdominal pain when he got up earlier today and proceeded to pass out. He also complains of blood mixed in his stool, hematuria and blood at the meatus of his penis for the past several days. Denied headache, chest pain, nausea, vomiting or previous syncopal episodes. Surgical and social history are unremarkable. On exam, patient is pale, tachycardic and hypotensive. Patient is alert and in no acute distress. Abdomen is soft, nontender with mild upper abdominal distension that is hypertympanic to percussion. No guarding or rebound. Rectal exam is guaiac negative. Labs are significant for lactic acid 2.7 mmol/L, hemoglobin 7.5 g/dL, potassium 2.9 mmol/L. CT abdomen/pelvis shows abdominal distension up to 12 cm, compatible with sigmoid volvulus. What is the appropriate management for this diagnosis?

- A. Discharge with outpatient GI follow-up in 1 week
- B. Consult surgery for immediate subtotal colectomy and ileostomy
- C. Consult GI for endoscopic detorsion with rectal tube placement
- D. Consult surgery for immediate segmental colon resection



Figure 1. Supine radiograph of abdomen revealed marked dilatation of large bowel loops in the mid and upper abdomen.

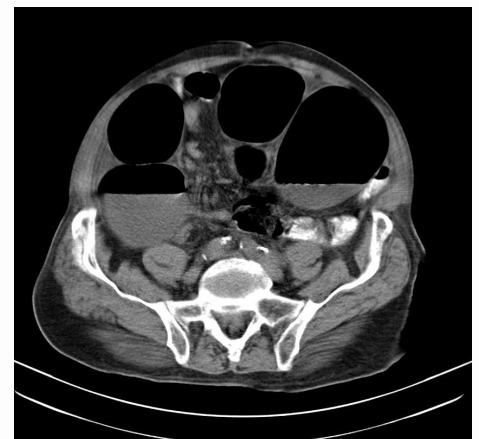


Figure 2. Axial image of CT abdomen and pelvis without contrast showing sigmoid volvulus. Creative Commons license: Case courtesy of Dr. Bruno Di Muzio, Radiopaedia.org, rID: 17788.

Discussion

The correct answer is C, consult GI for endoscopic detorsion with rectal tube placement. This patient did not have the classical presentation of sigmoid volvulus. He presented with syncope, pallor, tachycardia, hypotension and abdominal pain which was more characteristic of a ruptured abdominal aortic aneurysm. Imaging revealed sigmoid volvulus, 3.4 cm bladder mass and 8 mm bladder calculi.

Volvulus occurs when air-filled loops of a segment of the alimentary tract twist around its mesentery, which can lead to bowel obstruction. Volvulus most commonly occurs in the sigmoid colon and cecum. The diagnosis of sigmoid volvulus is supported by physical exam findings and imaging studies. Alarm signs of peritonitis, perforation and bowel compromise are not present so more conservative management should be performed before surgery.

Epidemiology

Sigmoid volvulus usually presents in older adults with a mean age of 70. There is a higher incidence in men (Halabi, 2014). Sigmoid volvulus is the third most common cause of bowel obstruction following cancer and diverticulitis (Lee, 2008). In the United States, sigmoid volvulus representing less than 10% of cases. However, in other parts of the world, it is the underlying etiology in 50-80% of patients with obstruction (Hodin, 2022).

Risk factors include sigmoid colon redundancy from chronic constipation and colonic dysmotility due to underlying neurologic disorders (Bauman, 2018). Sigmoid volvulus has been reported in patients with Crohn's disease and Chagas disease.

Clinical Findings

Sigmoid volvulus classically presents with insidious onset of slowly progressive abdominal pain, abdominal distension, and constipation. On exam, the abdomen is distended, tender and tympanic. Fever, tachycardia, hypotension, guarding and rigidity is absent in the early stages and can indicate perforation or peritonitis.

Diagnosis

Patients with signs and symptoms of abdominal pain, distension, and constipation with a distended tympanic abdomen should be suspected of sigmoid volvulus. Laboratory testing is typically normal in patients with sigmoid volvulus without gangrene, peritonitis, or sepsis.

Abdominal computed tomography scan will establish the diagnostic confirmation. The appearance of a dilated, inverted U-shaped, air-filled closed loop of colon is known as coffee bean sign. Another characteristic finding, whirl sign, displays dilated sigmoid colon around mesocolon and vessels. Contrast enema can also be used to visualize the point of obstruction with the characteristic bird's beak sign (Le, 2022).

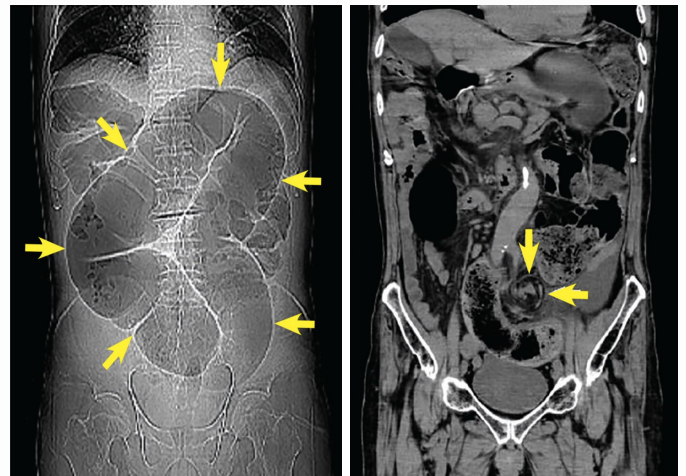


Figure 3. CT abdomen and pelvis showing distended sigmoid loop with inverted U-shape (arrows), known as coffee bean sign (left image). CT coronal view of whirl sign, representing twisted bowel and mesentery (arrows) (right image). From "Sigmoid volvulus: Coffee bean sign, whirl sign," by Yusaku Kajihara, MD, FACP, 2020, *Cleveland Clinic Journal of Medicine*, 87 (2) 81-82; DOI: <https://doi.org/10.3949/ccjm.87a.19064>.



Treatment

Patients with alarm signs of perforation or peritonitis require immediate surgical management. Volvulus generally should not be reversed to avoid reperfusion injury and should instead be resected. If vascular compromise is present, a subtotal colectomy and ileostomy rather than segmental resection is required.

Patients without alarm signs should undergo endoscopic detorsion with sigmoidoscopy and colonic decompression with rectal tube placement. The success rate of sigmoidoscopic reduction is between 50-100% (Atamanalp, 2021). Due to high recurrence rate, definitive management is bowel resection within two days after bowel preparation. Patients with recurrent episodes of sigmoid volvulus who are not surgical candidates require percutaneous endoscopic colostomy or percutaneous endoscopic sigmoidopexy.

Take Home Points

- **Sigmoid volvulus is potentially life threatening and early diagnosis and treatment is essential.**
- **Abdominal CT scan is used to establish the diagnosis with characteristic coffee bean sign and whirl sign, as well as to rule out other etiologies.**
- **Immediate surgical management is required with perforation or peritonitis.**
- **Flexible sigmoidoscopy is used to attempt detorsion with rectal tube placement for decompression if successful.**
- **Due to high recurrence, surgery is recommended.**



About the Author

This month's case was written by Elizabeth "Libby" Collyer. Libby is a 4th year medical student from NSU-KPCOM. She did her emergency medicine rotation at BH North in July 2022. She plans to pursue a career in emergency medicine.

References

Atamanalp, S. S., & Peksoz, R. (2021). Sigmoid volvulus: Treatment options and volvulus recurrence. *Emergency Care Journal*, 17(4). <https://doi.org/10.4081/ecj.2021.10294>

Bauman, Z. M., & Evans, C. H. (2018). Volvulus. *Surgical Clinics of North America*, 98(5), 973–993. <https://doi.org/10.1016/j.suc.2018.06.005>

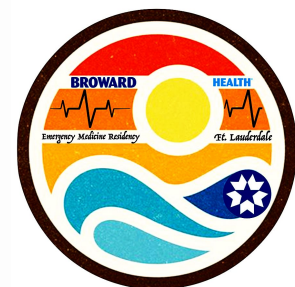
Halabi, W. J., Jafari, M. D., Kang, C. Y., Nguyen, V. Q., Carmichael, J. C., Mills, S., Pigazzi, A., & Stamos, M. J. (2014). Colonic volvulus in the United States. *Annals of Surgery*, 259(2), 293–301. <https://doi.org/10.1097/sla.0b013e31828c88ac>

Hodin, R. (2022, June 16). *Sigmoid volvulus*. UpToDate. Retrieved July 10, 2022, from <https://www.uptodate.com/contents/sigmoid-volvulus>

Kajihara, Y. (2020). Sigmoid volvulus: Coffee Bean Sign, whirl sign. *Cleveland Clinic Journal of Medicine*, 87(2), 81–82. <https://doi.org/10.3949/ccjm.87a.19064>

Le CK, Nahiriak P, Anand S, et al. Volvulus. [Updated 2022 Apr 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441836/>

Lee, Y.-S., & Lee, W.-J. (2008). Coffee-bean sign. *Canadian Medical Association Journal*, 178(13), 1657–1657. <https://doi.org/10.1503/cmaj.071760>



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