

# Lower Gastrointestinal Hemorrhage Caused by Superior Rectal Artery Pseudoaneurysm

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## ABSTRACT

Acute lower gastrointestinal (GI) bleeding is self-limiting and managed conservatively. Ongoing bleeding from a lower GI source and hemodynamic instability can create difficult diagnostic and therapeutic dilemmas. The severity of bleeding can necessitate emergent diagnostic and therapeutic interventions. Diverticulosis and angiodysplasias are the most common causes of massive lower GI hemorrhage. Other etiologies that can lead to life-threatening hemorrhage are important to recognize. We present a rare case of massive lower GI hemorrhage attributable to a superior rectal artery pseudoaneurysm. The absence of a preceding traumatic or iatrogenic cause distinguishes this case from other reports in the literature.

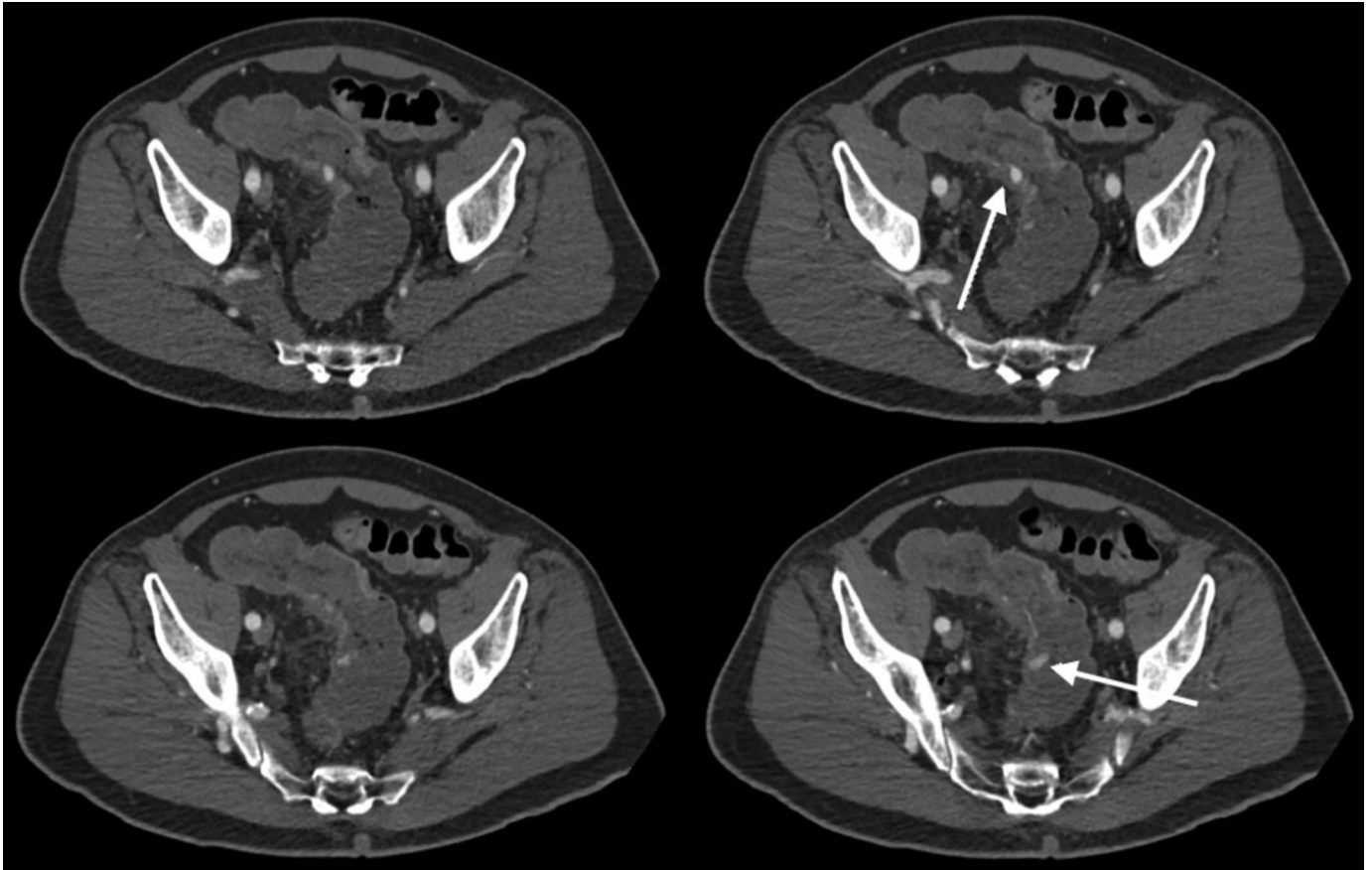
## INTRODUCTION

A pseudoaneurysm is a breach in the vessel wall resulting in a locally contained rupture between the tunica media and tunica adventitia, typically preceded by a penetrating injury that is either traumatic or iatrogenic.<sup>1</sup> Owing to the relative weakness of the wall within which they are contained, pseudoaneurysms carry a higher risk of rupture than true aneurysms of comparable size. Visceral pseudoaneurysms are very rare and arise more frequently in the celiac artery distribution with only 1% of cases affecting the inferior mesenteric artery (IMA) and its branches.<sup>2</sup> Although generally asymptomatic, visceral artery pseudoaneurysms carry a high risk of spontaneous rupture that can lead to massive hemorrhage and hemodynamic decline. Accurate and timely identification of these lesions is critical for effective management. The superior rectal artery (SRA) is a terminal branch of the IMA in which bleeding pseudoaneurysms are seldom reported without a history of trauma or procedure.<sup>3</sup> As with the other causes of massive lower gastrointestinal (GI) bleeding, endovascular means such as coiling and the injection of procoagulant substances are highly effective in the management of bleeding from ruptured pseudoaneurysms that fail to settle spontaneously.

## CASE REPORT

A 79-year-old man with a medical history of coronary artery disease after percutaneous coronary intervention with a single drug-eluting stent to the right coronary artery 5 years ago presented with lower abdominal pain, dizziness, and multiple episodes of large volume hematochezia preceded by 1 week of constipation. Medications included aspirin and clopidogrel. On presentation, his vital signs were normal. He appeared pale and had tenderness to palpation in the left lower quadrant with active large volume hematochezia in the emergency department.

The patient was admitted because of ongoing bleeding and drop in blood pressure to 76/45 mm Hg that followed the episode of hematochezia with tachycardia up to 123 beats per minute. Laboratory data were significant for hemoglobin of 8.1 g/dL from a baseline of 14 g/dL that decreased to 6.2 g/dL after recurrence of hematochezia, requiring transfusion of 4 packed red blood cell units. Abdominal computed tomography (CT) angiogram showed focal wall thickening of the distal sigmoid colon and active contrast extravasation suggestive of active hemorrhage without evidence of vascular disease elsewhere (Figure 1). Owing to recurrent bleeding and hemodynamic instability, endoscopic evaluation was deferred. Interventional radiology performed visceral arteriography which demonstrated active



**Figure 1.** Axial computed tomography with contrast showing pericolic stranding and evidence of active contrast extravasation. The arrows point to contrast filling of the colon with focal wall thickening at this level.

extravasation associated with a pseudoaneurysm in the distal branch of the SRA (Figure 2). Coil embolization was successful, and the patient remained hemodynamically stable without recurrence of bleeding (Figure 3).

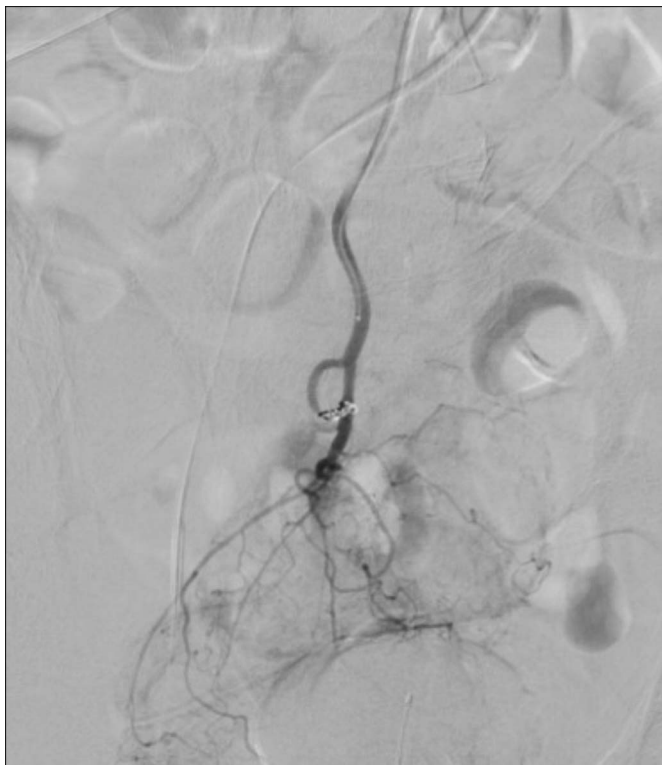
## DISCUSSION

Lower GI bleeding signifies bleeding that occurs anywhere within the GI tract from the ligament of Treitz to the anus and is categorized as occult, moderate, or severe depending on the clinical presentation.<sup>4</sup> Diverticular disease is the most common etiology of all lower GI bleeds, and spontaneous resolution with conservative measures is seen in more than 80% of the cases.<sup>4,5</sup> Major GI bleeds from a lower GI source occur in approximately 20% of cases and are largely attributable to bleeding diverticulosis and angiodysplasias.<sup>6</sup> Massive lower GI hemorrhage is associated with a substantial increase in the rate of mortality and therefore requires prudent management, accurate identification of bleeding sources, and early intervention.

An uncommon etiology of massive lower GI bleeding is a ruptured pseudoaneurysm of a visceral artery. In contrast to true aneurysms that involve all 3 layers of the artery wall, pseudoaneurysms refer to a collection of blood that forms

between the outer 2 layers. Owing to this structural difference, pseudoaneurysms carry a higher risk of spontaneous rupture.<sup>1</sup> Penetrating injuries are the usual culprit for the formation of these lesions, and with recent advancements of minimally invasive procedures, it can be concluded that the most common etiology is iatrogenic rather than traumatic.<sup>1</sup> Visceral artery aneurysms and pseudoaneurysms are exceptionally rare with an incidence of 0.2% and are usually asymptomatic incidental findings.<sup>1</sup> The high risk of rupture renders them potentially fatal and necessitates intervention even if identification is incidental. Typical locations include the celiac, hepatic, and splenic arteries with only 3% of cases affecting the superior mesenteric artery and as few as 1% of cases arising from the IMA and its branches as seen in this case.<sup>2</sup> The SRA is a branch of the IMA that supplies the superior aspect of the rectum. The extensive anastomotic networks that exist in the wall of the rectum between the SRA and the middle and inferior rectal arteries create collateral blood supply that decreases the risk of ischemic events and makes it possible to intervene on acute bleeds with selective arterial embolization.<sup>6</sup>

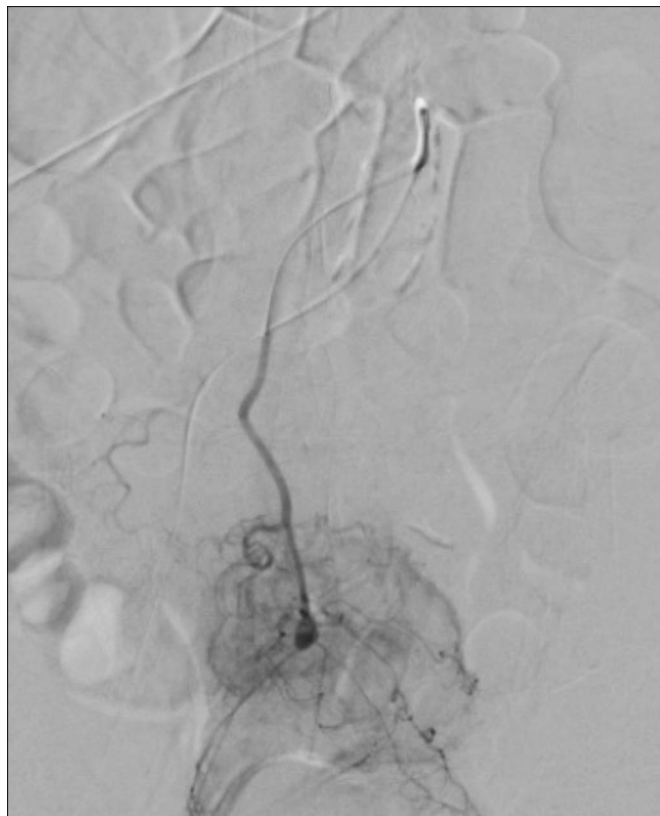
Emergent surgical bowel resection was usually pursued if colonoscopy was unsuccessful; however, it is now avoided when possible, given the significant risk of morbidity and mortality of



**Figure 2.** Pre-embolization angiogram showing a bleeding pseudoaneurysm arising from a distal branch of the superior rectal artery near the rectosigmoid junction.

undergoing emergent surgery.<sup>4</sup> CT angiography has become the modality of choice for the identification of these lesions. As seen in this case, CT angiography provides rapid and accurate localization of the bleeding lesion. Selective radiologic embolization of the bleeding vessels allows for a minimally invasive approach with high success rates and low risks of rebleeding and ischemia.<sup>2</sup> Thus, it has emerged as the preferred treatment approach for hemodynamically unstable rectal bleeding, often providing a definitive long-term solution. Bleeding is terminated in approximately 85% of cases, obviating the need for emergency surgery and eliminating the associated mortality rate.<sup>6</sup> Disadvantages to selective embolization include a relatively low sensitivity at 85% and a 15% risk of rebleeding.<sup>4</sup>

The cause of the SRA pseudoaneurysm seen in this patient remains obscure because other cases in the literature occur in the setting of penetrating trauma, recent procedure, colorectal cancer, connective tissue disease, and vasculitis.<sup>3,5,7–9</sup> Two similar cases are described in the literature with massive lower GI bleeding occurring with constipation in the setting of anticoagulation or antiplatelet therapy, managed similarly with coil embolization.<sup>10,11</sup> This case serves to illustrate a less common etiology of rectal bleeding and highlights the effective use of angiography and selective embolization in the diagnostic and therapeutic approach to unstable massive lower GI bleeding. It is important to keep in mind that clinical status in these cases can change fairly quickly, and at times, segmental resection may ultimately be required. Therefore, it is



**Figure 3.** Postembolization angiogram showing the placement of the coils proximal to the pseudoaneurysm with a resolution of the pseudoaneurysm and preservation of the distal vasculature.

best to approach these cases from a multidisciplinary standpoint early in the diagnostic evaluation.

## DISCLOSURES

Author contributions: C. Nguyen and M. Baliss wrote the manuscript. O. Tayyem and S. Merwat edited the manuscript. M. Baliss is the article guarantor.

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Informed consent was obtained for this case report.

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