

CASE REPORT

Gastric Bleeding Caused by Migrated Coil: A Rare Complication of Splenic Artery Coil Embolization



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Transarterial embolization (TAE) has emerged as the first-line treatment for visceral artery aneurysms or pseudoaneurysms-related bleeding. Coil migration is a rare and remote complication of endovascular embolization into the gastrointestinal lumen, with only fifteen cases reported upon conducting a literature review. It can occur immediately or several years after and potentially cause fatal bleeding owing to formation of aorto-enteric fistulas and infections. Here, we report a case of a patient who presented with upper gastrointestinal bleeding due to coil migration into the gastric lumen after transarterial embolization of splenic artery pseudoaneurysms.

Keywords: Gastric Ulcer; Coil Migration; Transarterial Embolization; Gastrointestinal Bleeding

Introduction

Splenic artery pseudoaneurysms are rare entities. It is associated with high morbidity and mortality owing to a high risk of rupture. The patient can be totally asymptomatic before the rupture. The most common etiologies are pancreatitis, abdominal trauma, peptic ulcer disease, and iatrogenic causes.¹ In recent years, endovascular transcatheter coil embolization is often performed to treat splenic pseudoaneurysms. Coil migration is a rare but serious complication of transarterial embolization (TAE) that leads to gastrointestinal (GI) bleeding. Only fifteen cases of coil migration to the GI tract after TAE of an aneurysm or pseudoaneurysm have been reported on PubMed-listed publications.^{2–16} The following vignette highlights a case of endovascular coil migrated into the GI lumen causing recurrent hematemesis.

Case Report

A 36-year-old African American male presented with three episodes of hematemesis. Past medical history is significant for alcohol use disorder, dilated cardiomyopathy with reduced ejection fraction, chronic pancreatitis, and splenic artery pseudoaneurysm after coil embolization in 2018. One month previously, an upper endoscopy

performed at another facility for acute upper GI bleed was reported as negative. On physical examination, he was hemodynamically stable with unremarkable abdominal and digital rectal exams. After medical optimization, he underwent an upper endoscopy which demonstrated a metal ring protruding from the posterior wall of the gastric fundus [Figure 1]. The surrounding gastric mucosa appeared nodular but without ulcerations or stigmata of bleeding. Given the concern for coil eroding through the gastric wall, CT angiogram was immediately obtained and showed linear metallic density within the proximal stomach, suggestive of a partially migrated postembolization coil. It also showed an arterial enhancing $3.6 \times 1.9 \times 2.6$ cm collection posterior and inferior to the expected location of the distal splenic artery concerning for actively bleeding pseudoaneurysm [Figures 2 and 3]. Angiogram showed the origin of the splenic artery pseudoaneurysm was immediately distal to a mass of coils in the mid-splenic artery.

A multidisciplinary discussion was held between surgical, GI, and interventional radiology teams. As a result, a decision was made to proceed with further coil embolization of the bleeding pseudoaneurysm with a total of 25 varying-sized coils deployed followed by a thrombin injection. Owing to patient remaining hemodynamically stable, both endoscopic and surgical removal of embolization coil were deferred. Given prior case reports detailing spontaneously passed migrated coils, the patient was discharged with close outpatient follow-up. On patient follow-up, there were no signs of infection or recurrence of bleeding.^{4,8,13}

Discussion

Splenic artery pseudoaneurysms are extremely rare entities, with less than 250 cases reported in the literature and far less common than true aneurysms of the splenic artery.¹⁷ The most common etiology is pancreatitis (52%),

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Figure 1. Protruding coil in gastric fundus.

either in the chronic pancreatitis case or in the acute setting. Less common causes include abdominal trauma (29%), peptic ulcer disease (2%), or iatrogenic causes (3%).¹ Iatrogenic splenic artery pseudoaneurysms are rare and presumed to be due to injury to the vessel during surgical exploration. The local release of pancreatic enzymes in conditions such as acute pancreatitis leads to the breakdown of the elastin fibers and degeneration of the vessel wall predisposing it to false aneurysmal dilation of the splenic artery.

One particular feature that differentiates splenic artery pseudoaneurysms (PSAs) from splenic artery aneurysms (SAAs) is that the former is always symptomatic while most SAAs are asymptomatic and discovered incidentally. The risk of rupture for a PSA is alarmingly high (37%–47%), given its histopathological characteristics—absence of vascular wall—with a mortality rate of 90% when untreated. Unlike a true aneurysm, the size of the PSA does not



Figure 2. Migrated coil within proximal stomach.



Figure 3. Migrated coil with arterial enhancement.

determine the risk of rupture.¹ CT angiography of the abdomen is the gold standard for the diagnosis of SAAs and splenic artery PSAs.

Recently, TAE was adapted as the preferred technique for endovascular treatment of splenic artery PSAs. The potential complications of TAE include nontarget vessel occlusion, vessel dissection and perforation, and coil migration.^{18,19} Among these complications, coil migration is extremely rare. Only fifteen cases have documented coil migration into the GI tract after TAE.^{2–16} In six of these cases, the coil migrated into the stomach,^{2,3,5,6,11,13} while in five cases, the coil migrated into duodenum,^{9,10,14–16} one into the small bowel,¹² one into the esophago-jejunal anastomosis after total gastrectomy,⁷ one into sigmoid colon,⁸ and one into the rectum.⁴ Interestingly, one case reported coil migrated into the ureterovesical junction.²⁰

The etiology for coil migration remains unclear. The thin fragile wall of the PSA combined with localized reactive inflammation secondary to a foreign body is hypothesized to predispose coil migration in a PSA. Thus, proximal and distal embolization without filling the aneurysmal space has been reported to reduce the risk of coil migration.^{2,5,7}

The ideal management of coil migration into the GI tract remains unclear, given low prevalence of such a complication. Endoscopic removal of the migrated coil with biopsy forceps was reported with one case where the patient survived, while the other case reported that the patient expired three weeks after the procedure owing to sepsis and hepatic failure.^{11,21} Spontaneous passage of coils within the stool has also been reported.^{4,8,13} Therefore, in most cases this type of complication is conservatively managed.

We hope this case report raises awareness of PSA coil migration into the GI tract as a possible cause of GI bleeding. In summary, in a case of pancreatitis, with unexplained

anemia or recurrent upper GI bleed, one should maintain a high index of suspicion of coil migration especially in the background of prior endoscopic treatment for PSAs. A high clinical index of suspicion in conjunction with timely cross-sectional imaging will facilitate early diagnosis and intervention, thereby preventing a potentially catastrophic outcome.

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The corresponding author, on behalf of all authors, jointly and severally, certifies that their institution has approved the protocol for any investigation involving humans or animals and that all experimentation was conducted in conformity with ethical and humane principles of research.