

Unusual migration of interventional radiology products into the GI lumen

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Abstract

In this case series we present two cases demonstrating complications of Interventional Radiology (IR) product migration. The first patient had a history of peptic ulcer disease (PUD) bleed with coil embolization of the gastroduodenal and right gastroepiploic arteries. She presented with abdominal pain and had displaced coils protruding into the duodenum on endoscopic evaluation. Due to the risk for bleeding with coil removal, the coils were left in place and the patient had successful resolution of symptoms with conservative management. The second patient had a history of deep venous thrombosis (DVT) and stroke leading to placement of a retrievable inferior vena cava (IVC) filter. She presented with severe abdominal pain and imaging revealed filter perforation through the duodenal wall. Conservative management in these patients holds increased risk for ulceration and worsening GI bleeding, so patients with symptomatic or asymptomatic filter perforation should undergo percutaneous removal whenever possible.

Keywords

embolization coil migration; IVC filter complication; duodenal perforation.

Abbreviations

IR: Interventional Radiology; PUD: peptic ulcer disease; DVT: deep venous thrombosis; IVC: inferior vena cava; EGD: esophagogastroduodenoscopy

Introduction

IR products such as inferior vena cava filters and embolization coils are commonly used due to their efficacy, relative safety, and ease of placement. Embolization coils offer a highly effective method of occluding arteries for treatment of bleeding gastric ulcers. IVC filters are used in patients with deep vein thrombosis who have bleeding risk from anticoagulation use to decrease the risk of recurrent thromboembolism. Although these are generally low-risk procedures, migration of IVC filters and embolization coils can lead to a variety of gastrointestinal complications. In this case series, we present two cases involving migration of IR products. The first case depicts migration of embolization coils into the gastric lumen. The second case details IVC filter perforation through the duodenal wall.

Case Series

Case 1 (CG)

The first patient is a 72-year-old female who presented with a 2-week history of sharp, intermittent abdominal pain, vomiting, and constipation. She had hypertension, iron-deficiency anemia, and acid reflux. The patient had IR coil embolization of the gastroduodenal and right gastroepiploic arteries 3 years prior for a bleeding duodenal ulcer following unsuccessful endoscopic cauterization and hemostatic clips. An esophagogastroduodenoscopy (EGD) revealed a 2 cm ulcer in the duodenal bulb and narrowed duodenal lumen. Embolization coils from her prior procedure were visualized within the ulcer protruding into the duodenal lumen (Figure 1A,1B). The migrated coils did not appear to be causing mechanical obstruction. After discussion with IR, there were no attempts for endoscopic coil removal due to concern of further complications. Treatment of constipation improved her abdominal pain and a proton pump inhibitor was started for her ulcer. A subsequent EGD 1 month later showed further coil migration into the gastric lumen and resolution of duodenal ulceration and stenosis (Figure 2). The patient was followed for the next 6 months without recurrence of abdominal pain, constipation, or emesis and she chose to defer follow-up EGD.

Case 2 (MT)

A 59-year-old female with hypertension, reflux, iron deficiency anemia, and IVC filter placement presented with nonspecific abdominal pain, dizziness, and worsening anemia. A retrievable IVC filter was placed 9 years ago due to history of right lower extremity DVT in the setting of intracranial hemorrhage and brain aneurysm. Endoscopic evaluation revealed a metallic foreign body protruding from the second portion of the duodenum (Figure 3). Attempts to remove the foreign object were unsuccessful. One week after her last retrieval attempt, she developed subacute abdominal pain. A computerized tomography of the abdomen and pelvis with contrast confirmed IVC filter migration and perforation into the duodenum (Figure 4). The filter was removed percutaneously through the right internal jugular vein with endoscopic guidance. Minor duodenal bleeding was managed with a hemostatic clip. There was no evidence of IVC intimal defect, thrombosis, or bleeding following IVC filter removal. The patient's abdominal pain subsequently resolved.

Discussion

IR products are utilized for prophylaxis and management of arteriovenous conditions. Due to their high prevalence, it is important to be aware of the potential to migrate into the gastrointestinal tract. IR embolization coils may erode into the gastrointestinal lumen from various locations, including the gastroduodenal artery as seen in the patient in our case 1, the splenic artery [1], and the internal iliac artery [2]. Our case documents a relatively benign outcome of IR coil migration, featuring ulceration and luminal narrowing but no additional complications. However, previous case reports identify small bowel obstruction [3] and life-threatening bleeding [4] as possible outcomes of embolization coil migration. Coil migration should be explored as a possible cause of abdominal pain or bleeding in all patients with history of coil embolization as early detection is vital in avoiding development of more serious sequelae.

For patients without severe complications, removal via EGD and conservative management are both reasonable options, but they each have associated risks that should be carefully considered. In cases associated with high risk of complication, such as a large amount of endovascular coil resulting in significant potential for obstruction, the benefit of coil removal likely outweighs the risk of rebleeding. In these cases, careful partial removal of the coils has been reported as an effective treatment that minimizes the risk of bleed [5]. In our patient, risk for luminal obstruction was relatively low; conservative management and follow-up with repeat imaging and EGD was deemed appropriate to avoid risk of rebleeding following coil removal and resulted in good outcomes. It is important to note that removal of migrated embolization coils is not necessary for all patients. Symptom resolution may occur with conservative management, so they may safely be left in place in certain patients who do not have significant stenosis or obstruction.

Filter perforation through the IVC wall is an under-recognized but important complication. Retrievable IVC filters are often left in place due to perception of low risk of injury, but timely removal may prevent development of harmful sequelae. Contemporary IVC filters use new prong hooks which decrease incidence of filter migration but increase risk of perforation [6]. As many as 5% of IVC filters may migrate [7] but, as initially seen in case 2, this is often asymptomatic. Development of symptoms including non-specific abdominal pain, melena/hematochezia, or iron-deficiency anemia is often indicative of concomitant organ involvement, most commonly involving the duodenum. As in this case, IVC perforations from retrievable filters are preferentially managed with endoscopic removal due to the high rates of symptom resolution and low rates of complications [8]. Conservative management with analgesics and follow-up imaging in symptomatic patients often holds higher risk for further penetration of the filter into the duodenum, potentially leading to ulceration or worsening GI bleed. Unlike in embolization coil migration, product removal should be strongly considered in most patients presenting with IVC filter perforation.

Embolization coils and IVC filters are considered safe and efficacious therapies, but complications secondary to product migration may occur. Management of these complications, particularly the potential risks and benefits of any subsequent intervention, need to be carefully taken into consideration. For embolization coil migration, conservative management can safely be considered in patients with less significant luminal stenosis. However, removal of displaced IVC filters is preferred in patients able to tolerate removal.



Figure 1A: Endoscopic image of a nonbleeding ulcer with visible embolization coils in the duodenal bulb.



Figure 1B: CT abdomen/pelvis with contrast showing embolization coils in the duodenal lumen

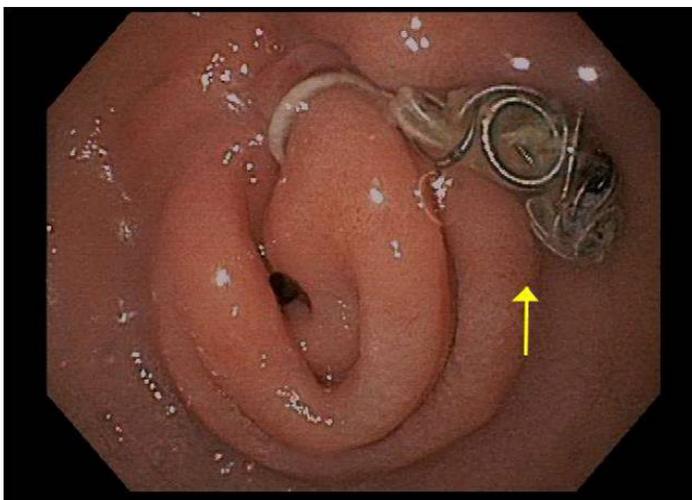


Figure 2: Endoscopic image of migrating embolization coils in the gastric antrum.

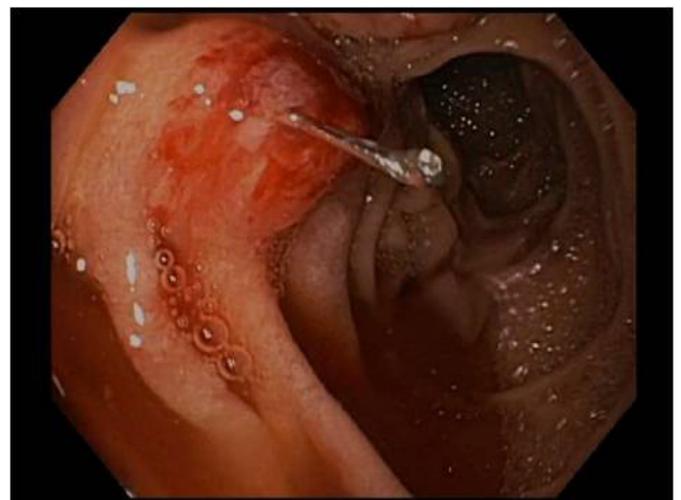


Figure 3: Endoscopic image of a metallic foreign body protruding from the wall of second part of duodenum.



Figure 4: CT abdomen/pelvis with contrast showing a migrating IVC filter.

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