CASE REPORT

A 29-year-old male with an extensive past medical history including Crohn’s disease, primary sclerosing cholangitis, hypertension and diabetes, presented with fever, leucocytosis and severe anemia of 5.2 gm/dl. He had previously undergone placement of an IVC filter after he developed lower gastrointestinal bleeding on anticoagulation for recurrent pulmonary emboli. Other past medical history included anemia, hypothyroidism and renal insufficiency.

On admission the patient had a temperature of 38.9°C, blood pressure of 96/55 mmHg, and pulse rate of 129/minute. He had moderate epigastric tenderness on exam. White cell count was 24,000 and hemoglobin was 5.2 gms/dl. Given a history of abdominal pain, fever and anemia, a computerized tomography scan of his abdomen was performed. This revealed the proximal prongs of the IVC filter within the duodenum, aorta and peri-caval soft tissue (Figure 1). Broad spectrum antibiotics were initiated, vascular surgery team was consulted, and endoscopy was recommended to assess for intralumenal penetration by the filter as well as determine any other source of gastrointestinal bleeding. This revealed 2 metal filter prongs within the third portion of the duodenum (Figures 2 and 3).

The IVC filter was successfully removed endovascularly, and microbiology of the filter exudate showed Gram-positive cocci, Gram-negative bacilli and fungal hyphae.

Multivisceral Perforation from Inferior Vena Cava (IVC) Filter Migration

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DISCUSSION

The concept of vena caval interruption has evolved from the original description by Armand Trousseau in 1865 to percutaneously placed, retrievable inferior vena cava (IVC) filters [1]. We describe an unusual case of a life threatening complication of IVC filters with multivisceral penetration and successful endovascular retrieval in a high risk surgical candidate.

Complications of IVC filters are divided into three categories [2]:
1. Complications associated with insertion.
2. Device failure, and
3. Long-term complications.

The overall mortality rate associated with filter insertion is less than 0.5%. Reported complication rates vary widely between 0.3% and 5% [3,4,5] to insertion site thrombosis rates of 23%–36% [6].

Other insertion related complications include puncture site complications, filter malposition, tilting, and incomplete opening. Delayed complications include recurrent pulmonary emboli, penetration into various viscera, caval thrombosis, filter migration occlusion and disruption.

Clinically significant filter migration is defined as cranial or caudal migration greater than 1.0 cm [6]. Filter migration with inferior vena cava penetration is well described. Most cases are clinically insignificant, asymptomatic and usually detected on imaging for other reasons or at the time of removal of temporary filters. The precise mechanism of migration with or without penetration into surrounding structures has not been well defined, but aortic pulsation and respiratory motion are thought to be contributory factors [6].

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Symptomatic perforation is rare with a reported incidence of 0.4%. They include delayed retroperitoneal hemorrhage, intracardiac penetration with valvular destruction, and sudden cardiac death [7–9]. Filters are also associated with a 2-fold increase in the incidence of recurrent DVT [10].

Though there are few case reports of duodenal perforation, to our knowledge, there has been one report of simultaneous duodenal and aortic perforation in an asymptomatic patient. Retrieval and repair in that patient was through an open approach.

Our case highlights filter migration with multivisceral penetration with successful endovascular removal in a high risk surgical patient.

References