

CASE REPORT

Recurrent Acute Pancreatitis from a Displaced IVC Filter

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ABSTRACT

Context Perforation of interior vena cava filters is uncommon but has been described. We report a case of an interior vena cava filter which appeared to have perforated into the main pancreatic duct causing recurrent pancreatitis. **Case report** A seventy-six-year-old female with previous interior vena cava filter placement developed recurrent pancreatitis. During one of her hospital admissions for acute pancreatitis, an interior vena cava filter prong was noted to be abutting the duodenal wall at the level of the pancreatic head on computer tomography imaging. Magnetic resonance imaging/cholangiopancreatography revealed multifocal pancreatic duct stricturing. Given her recurrent acute pancreatitis and multiple pancreatic duct strictures, an endoscopic retrograde cholangiopancreatography with pancreatic duct stent placement was performed. During pancreatic duct stent exchange on a subsequent endoscopic retrograde cholangiopancreatography, two interior vena cava filter prongs were noted to have bent in a different orientation during manipulation of the stent. At this time, there was concern for communication between the interior vena cava filter and the pancreatic duct, along with suspicion that this was precipitating her recurrent episodes of pancreatitis. The interior vena cava filter was subsequently removed by interventional radiology, and she has not had any further documented episodes of acute pancreatitis in the 13 months since her interior vena cava filter removal. **Conclusions** Perforation of interior vena cava filters is a rare cause of recurrent pancreatitis. When noted, the interior vena cava filter should be removed.

INTRODUCTION

Symptomatic perforation of IVC filters is uncommon but has been reported in the literature [1]. Several cases of bowel lesions, gastrointestinal bleeding, abdominal pain, and asymptomatic perforation into the duodenum have been described [2]. To our knowledge, there has only been one previously reported case report of an IVC filter perforation causing acute pancreatitis 6 weeks after insertion [3]. We present a case of IVC filter perforation causing recurrent acute pancreatitis five years after insertion. While this is a rare occurrence, this case highlights the importance of diagnosing symptomatic IVC filter perforation and performing early IVC filter removal.

CASE REPORT

A seventy-six-year-old female with history of a DVT and IVC filter placement 5 years previously presented to an outside hospital with recurrent acute pancreatitis. She had multiple episodes over the course of a month, representing each time with nausea, vomiting, abdominal

pain, and elevated lipase. The etiology of her recurrent pancreatitis at that time was unclear. She had been discharged home after her most recent episode with plans to obtain an endoscopic ultrasound after her pancreatitis had subsided to evaluate for a potential etiology of her recurrent pancreatitis. Her symptoms briefly subsided but recurred two days after her discharge. She presented to our hospital with recurrent symptoms and was found to have a lipase of 752 (upper limit of normal 99), with normal IgG4, triglycerides, liver enzymes, calcium, and gallbladder ultrasound. CT performed at that time was notable for an IVC filter prong abutting the duodenal wall at the level of the pancreatic head (**Figure 1**). MRI/MRCP demonstrated walled-off pancreatic necrosis, acute on chronic pancreatitis, and pancreatic duct dilation to maximal 7 mm dimension with 4 mm and 8 mm strictures at the pancreatic head and neck respectively. The MRI

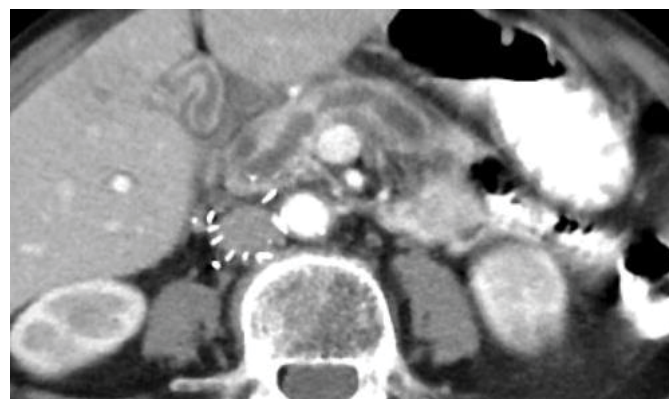


Figure 1. Cross sectional CT scan image of IVC filter with abutment of an anterior prong against the descending duodenal wall.

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Keywords Pancreatic Ducts; Pancreatitis, Chronic

Abbreviations CT computer tomography; ERCP endoscopic retrograde cholangiopancreatography; IVC interior vena cava; MRI/MRCP magnetic resonance imaging/ magnetic resonance cholangiopancreatography

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additionally noted that the IVC filter was at the level of the pancreatic head with prongs in close apposition to the pancreatic head. Given her recurrent acute pancreatitis and multifocal pancreatic duct strictures, an ERCP with pancreatic duct stent placement was performed. ERCP showed diffuse pancreatic duct dilation, changes consistent with chronic pancreatitis, and contrast extravasation from the pancreatic body concerning for pancreatic duct leak. A pancreatic sphincterotomy was performed and two plastic stents were placed across the leak. She was discharged home but represented a week later with another episode of acute pancreatitis, with lipase 350 (upper limit of normal 60). Her pancreatitis was managed conservatively, and her walled off necrosis collection was drained transmurally with a lumen apposing self-expanding metal stent. Her symptoms improved, and she was again discharged home. Repeat ERCP done two months later for stent management noted resolution of the pancreatic duct leak but persistent

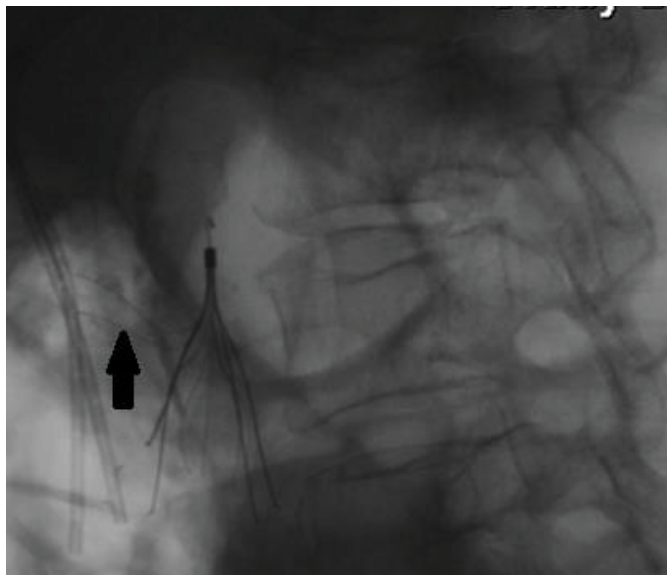


Figure 2. Fluoroscopic view of two IVC filter prongs bent towards pancreatic duct stent, in a different orientation than initial scout view.

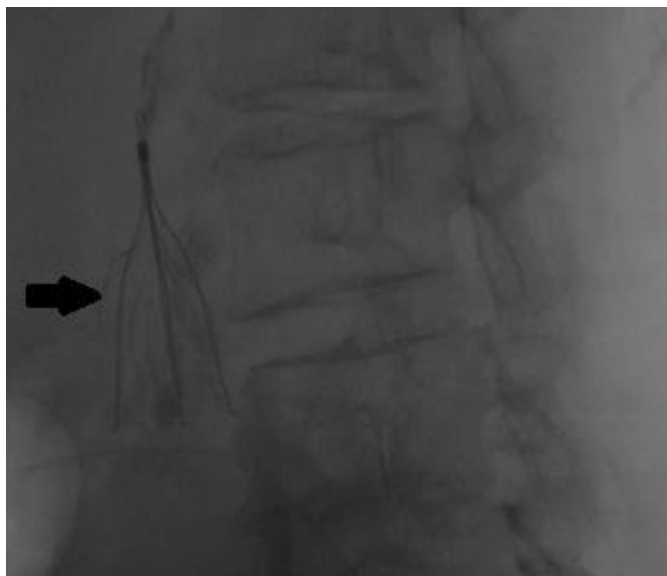


Figure 3. Scout film of IVC filter prongs prior to pancreatic duct stent replacement.



Figure 4. IVC filter after removal with bent prongs.

stenosis in the pancreatic duct mid body, so two plastic stents were again placed into the ventral pancreatic duct. Following stent replacement, it was noted on fluoroscopy that two IVC filter prongs appeared bent in a different orientation towards the pancreatic duct (**Figure 2**) than on initial scout film (**Figure 3**). At this time, there was concern for communication between the IVC filter and the pancreatic duct. Lower extremity Doppler confirmed resolution of her previously noted DVT's and her IVC filter was removed by interventional radiology (**Figure 4**). Repeat ERCP 3 months later showed resolution of the pancreatic duct stenosis and all stents were removed. No further episodes of pancreatitis have been noted in the past 13 months following her IVC filter removal.

DISCUSSION

Penetration of an IVC filter occurs when the hooks or struts move beyond the vena cava adventitia. This can be further described as perforation once the strut or anchor extends >3 mm outside the IVC wall. The reported rate of IVC penetration ranges from 9 to 40% [4, 5, 6, 7]. Approximately 10% of IVC filter penetrations are symptomatic [8]. While symptomatic penetration or perforation of IVC filters is uncommon, cases of bowel lesions, gastrointestinal bleeding, abdominal pain, and asymptomatic perforation into the duodenum have been described [1, 2]. A single case of acute pancreatitis occurring 6 weeks after placement from IVC filter penetration has also been reported [3].

In our case, the patient had recurrent acute pancreatitis and chronic pancreatitis without a clear underlying etiology. She developed complications including walled off pancreatic necrosis, multifocal pancreatic duct strictures, and a pancreatic duct leak as a result of her recurrent pancreatitis and had several repeat hospital admissions because of this. During the course of her treatment, it was noted that her IVC filter prongs were in close apposition to the pancreatic head on imaging and that an IVC filter prong had appeared to have changed configuration on fluoroscopy during pancreatic stent manipulation, suggesting perforation of the IVC filter into the pancreatic duct. While there are numerous causes of idiopathic recurrent pancreatitis and we cannot definitively prove that the IVC

filter prong penetrated the pancreatic duct and was the etiology of her recurrent episodes, the patient has not had any further documented episodes of acute pancreatitis or related hospital admissions in the 13 months since her IVC filter removal.

This case highlights the potential risks of indwelling IVC filters and the importance of IVC filter removal when no longer indicated. While most placed IVC filters are retrievable, the retrieval rate is only 20-30% in reported studies [6]. Additionally, while IVC filter perforation is not a common etiology of pancreatitis, this case points out the need to consider IVC filter perforation as a potential cause of recurrent pancreatitis in patients with indwelling IVC filters, especially in cases where the IVC filter prongs are in close proximity to the pancreas on imaging.

Conflict of Interest

The authors have no conflicts of interests to declare.

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