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IT ALL UNRAVELED FROM THERE: CASE REPORT OF A CENTRAL VENOUS CATHETER GUIDEWIRE UNRAVELING

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Abstract—Background: Inferior vena cava (IVC) filters can present challenges to emergency physicians in the process of central venous catheter (CVC) placement. Case Report: A 68-year-old woman presented to the emergency department with severe shortness of breath and was intubated. A central line was placed after the intubation to facilitate peripheral access. A CVC guidewire unraveled during placement after getting caught on an IVC filter. Why Should an Emergency Physician Be Aware of This?: Emergency physicians should be aware of the complications that IVC filters can cause in the placement of CVCs. Imaging and identification of IVC filters beforehand will allow for proper planning of how to manage the case in which a filter catches on the guidewire. Simple anecdotal techniques, such as advancing the guidewire and spinning the guidewire between the fingers, can facilitate the removal of the guidewire from the IVC filter. © 2014 Elsevier Inc.

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INTRODUCTION

Inferior vena cava (IVC) filters have become increasingly common because there are a myriad of reasons for their insertion. Their placement is almost always a benign procedure, leaving patients with only memories of the more devastating events leading up to their placement. This can result in patients neglecting to mention that they have an IVC filter. The placement of a central venous catheter (CVC) is often done in the obtunded patient, necessitating, in the best of circumstances, family members who most likely have no recollection of IVC placement, or no surrogate at all in the presence of a precipitous illness and the urgent need for central access. Elias et al. presented a patient in need of dialysis who underwent a right internal jugular (IJ) CVC(1). In this patient, the guidewire was found to be “entrapped” on the IVC filter upon an abdominal x-ray. The guidewire entanglement resolved without any intervention(1). Drummond et al. presented a case in which a guidewire was removed from the IVC filter by an interventional radiologist. IVC filters can be dislodged by the force used to pull on an entangled guidewire and, because of the force, can move proximally. IVC filters have been moved from the level of the hepatic IVC into the right brachiocephalic vein (2). We present a case in which the guidewire “unraveled” upon being withdrawn from the patient, leaving an outer metallic portion uncoiled within the patient, attached to the IVC filter.

Case Report

A 68-year-old woman presented to the emergency department (ED) with respiratory distress and stridor. She was subsequently successfully intubated in the ED using rapid sequence intubation medications through a single peripheral line. Post-intubation chest x-ray study showed the endotracheal tube in a good position and an IVC filter (Figure 1).
After attempts to gain further peripheral access failed, the decision to insert a CVC was made. The patient was prepped and draped for a right IJ CVC with guidance via ultrasound. The right IJ was visualized and entered successfully on the first attempt. The Seldinger technique was utilized but, on completion of dilatation, resistance to withdrawal of the J guidewire was noted. The J guidewire was withdrawn with application of minimal resistance, and when the end of the J point was withdrawn, it was noted that there had been unraveling of the guidewire. Although the solid central portion was fully withdrawn, the outer, coiled metal portion was presumed to still be intravascular (Figure 2). A noncontrasted chest computed tomography (CT) scan was obtained at the request of the vascular surgeon and the guidewire was found to be caught on the IVC filter. Although the uncoiled portion of the guidewire remained intravascular, the central core was held with a hemostat at the level of the skin. Upon returning from CT, the wire became detached, allowing the outer uncoiled portion to retract into the subcutaneous tissue (Figure 3).

After consultation with interventional radiology, it was decided that the interventional radiologist would attempt to withdraw the remaining portion of the guidewire from the patient (Figure 4). A general surgeon assisted in the component of withdrawing, from the level of the neck, the portion that remained in the subcutaneous tissue (Figure 3).
tissue after the interventional radiologist unattached the guidewire at its distal end with a snare over loop technique. This technique allowed the operator to dislodge the looped portion of the J guidewire distally, from a femoral approach, and the general surgeon then pulled the uncoiled portion proximally through the original insertion site in the right internal jugular vein. The patient went on to be extubated and was discharged to rehabilitation.

**DISCUSSION**

There has been a handful of case reports addressing guidewires being left in patients and guidewires being caught on IVC filters (3). Vannucci et al. described four cases in which guidewires were left in patients, and the following situations surrounded those events: urgent and complex surgical procedures, hemodynamically unstable patients, and the presence of multiple open kits (4).

**WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?**

Differing techniques have been used to describe removal of CVC wires from IVC filters (4,5). Whatever mode is decided on after the wire is “caught” on the IVC filter, knowledge beforehand of the existence of the IVC filter always would be helpful. Often, this knowledge would not change the course for the crashing patient but, if a more routine CVC is being placed, the use of fluoroscopy would be helpful in navigating a J guidewire through the procedure. The use of a straight guidewire may also be an option. Noting on x-ray the estimated distance from the site of entry to the IVC filter would allow for comparison of the length of the J guidewire. Simple anecdotal techniques, such as advancing the guidewire and simply spinning the guidewire between the fingers, can facilitate the release of the guidewire from the IVC filter.

**REFERENCES**