Get off my back! Inferior vena cava filter erosion into the lumbar spine

Jacob Mathew,¹ Michael R Povlow,² Allen Fong¹

¹Department of Internal Medicine, US Army Brooke Army Medical Center, Fort Sam Houston, Texas, USA

²Department of Radiology, US Army Brooke Army Medical Center, Fort Sam Houston, Texas, USA

Correspondence to

Dr Jacob Mathew Jr, drjacobmathewjr@gmail.com

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DESCRIPTION

We present the case of an 84-year-old woman with a medical history of both provoked and

unprovoked deep venous thromboembolisms and heterozygosity for Factor V Leiden, on chronic rivaroxaban 20 mg/day, who was seen at our institution with increasing left leg swelling and discomfort. On examination, she was breathing and resting comfortably. She had slight increased circumference of the left lower extremity in relation to the right lower extremity with tenderness to palpation. Positive Homan and Lisker's sign were noted. Dorsalis pedis and posterior tibialis pulses were two out of four in both lower extremities. On questioning, she denied any recent long distance travel or trauma (to include surgery) and did not miss any doses of her rivaroxaban. She had no family history of bleeding diathesis or thrombotic events. Her surgical history was notable for the placement of an inferior vena cava filter (IVCF) in 2015 due to deep vein thrombosis (DVT) in the setting of a concurrent gastrointestinal bleed (which prohibited the use of therapeutic anticoagulation at that time). Vital signs were stable, and the patient did not look unwell. She had a normal haemoglobin, haematocrit, platelet count and coagulation laboratory panel. Deep venous ultrasound of the left lower extremity revealed evidence of DVT extending from the left common femoral vein to the left popliteal vein. Given the presumed failure of rivaroxaban, she was transitioned to a heparin drip on admission. Review of her medical chart (to include prior CT imaging from 2017 of the abdomen and pelvis) revealed the posterior limb of the IVCF traversing the caval wall and terminating and embedded in the L3 vertebral body (figure 1). Vascular surgery was consulted due to the concern for potential retroperitoneal bleed due to her concurrent heparin drip. Given the chronicity of the findings, and lack of symptoms otherwise, surgical intervention was not considered emergent and instead, repeat imaging was recommended. As can be seen in figure 2, repeat imaging showed no significant progression or worsening of the position of the IVCF. Given its unchanged appearance, and her current thrombotic episode, no surgical intervention was advised. The patient was ultimately discharged on dabigatran with close vascular surgery follow-up.

IVCFs are devices that capture propagating thrombi from the lower extremities to the pulmonary arteries.¹⁻³ Placement is considered in a select group of patients with a contraindication to anticoagulation who are found to have venous thromboembolism at high risk for recurrence and/or propagation to pulmonary embolism.³⁻⁵ Such contraindications include active gastrointestinal bleed (as in our patient's history), cerebral

Figure 1 CT of the abdomen and pelvis with intravenous contrast, sagittal plane, showing an inferior vena cava filter with the posterior most limb of the filter traversing the caval wall, terminating in the L3 vertebral body.

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Figure 2 CT of the abdomen and pelvis with intravenous contrast, coronal plane, showing an unchanged position of the IVCF with multiple tines outside the IVC including one within the anterior inferior aspect of the L3 vertebral body. IVC, inferior vena cava filter.

haemorrhage and haemorrhagic stroke among others.⁴ There are two major types: retrievable and permanent.⁶ Since their introduction in the late 1990's, the placement of retrievable IVCFs has risen in part due to reportedly lower complication rates than permanent filters, which associated with an increased incidence of recurrent DVTs, filter migration, caval wall perforation, thrombosis, infection, pulmonary emboli and filter fracture.²⁻⁴⁻⁹ Despite limited evidence supporting their ability to truly prevent life-threatening pulmonary emboli, and association instead, with recurrent DVTs, IVCFs continue to be placed in patients with absolute contraindications to anticoagulation.¹⁰⁻¹¹ As a result, the Federal Drug Administration recommends that both retrievable and permanent filters be removed within 59 days of insertion once the risk for pulmonary embolism has resolved.⁶⁻⁹ In our case, the discovery of a retained IVCF more than 2 years after its original insertion was not surprising as retrieval rates of filters has not matched the uptick in their insertion.⁶ In our case, due

to the complexity of the surgery and her comorbidities, she was discharged on anticoagulation with outpatient follow-up with her vascular surgeon to further discuss safe IVCF removal.

In summary, while controversial, inferior vena cava filters remain an option in a select group of patients with contraindications to anticoagulation whom the care team feels have an unacceptably high risk of thrombi propagation from the lower extremities. It is important for providers who are considering offering this treatment option to patients to understand the inherent risk the device poses to the patient and the complications that have been clearly reported in literature which include the development of pulmonary emboli and recurrent DVT. All filters, regardless of type, have been shown to pose risks to the patient when kept long term and thus require consistent re-evaluation by clinicians to ensure of their removal when clinically feasible.

Learning points

- ▶ While controversial, inferior vena cava filter placement should only be considered in patients with a high risk of thromboembolic disease but contraindications to systemic anticoagulation, given the significant risk the device poses to the patient.
- ▶ Regardless of the type of filter placed, a clear plan prior to, or on placement, aimed towards eventual removal within 59 days of insertion, should be established assuming the contraindication for anticoagulation has resolved.

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