

# IVC Filter Strut Fracture and Migration into the Abdominal Aorta

ArnotHealth  
Graduate Medical Education

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## PRESENTATION:

The patient a 38-year-old female with a past medical history significant for Crohn's disease, prior pulmonary embolism status post IVC filter placement, chronic abdominal pain, chronic back pain, constipation, and anemia presented to the emergency department after a one day history of chest pain. The patient had previously presented to the emergency department a few days prior for abdominal pain and was discharged after a negative workup, negative CT abdomen and pelvis, and pain relief with Dilaudid.

On initial interview the patient had a hard time answering questions due to the severity of her chest pain. The patient also complained of shortness of breath and a sore throat. Initial presentation was concerning for pulmonary embolism given patient's severe chest pain and low O2 saturation. Subsequently a CT chest angiogram was ordered. The CT demonstrated no evidence of a pulmonary embolism but revealed bilateral atypical pulmonary infiltrates with left side predominance, and an IVC filter that had migrated superiorly with its most medial strut fractured and migrated into the aorta at the level of the celiac artery.

Prior imaging of the patient in 2016 demonstrated superior displacement of the IVC filter without evidence of strut fracture or migration. Due to abnormal placement, vascular surgery agreed to evaluate the patient. The patient was started on antibiotics and admitted into the hospital due to concern for sepsis and non-improving vitals.

Vascular surgery determined the patient's IVC filter fracture and migration was incidental and not causing her pain. Treatment for the migrated strut would require extensive open surgery to remove and the patient was not interested in this option. They recommend to continue monitoring with a follow up CT in six months to monitor progression.

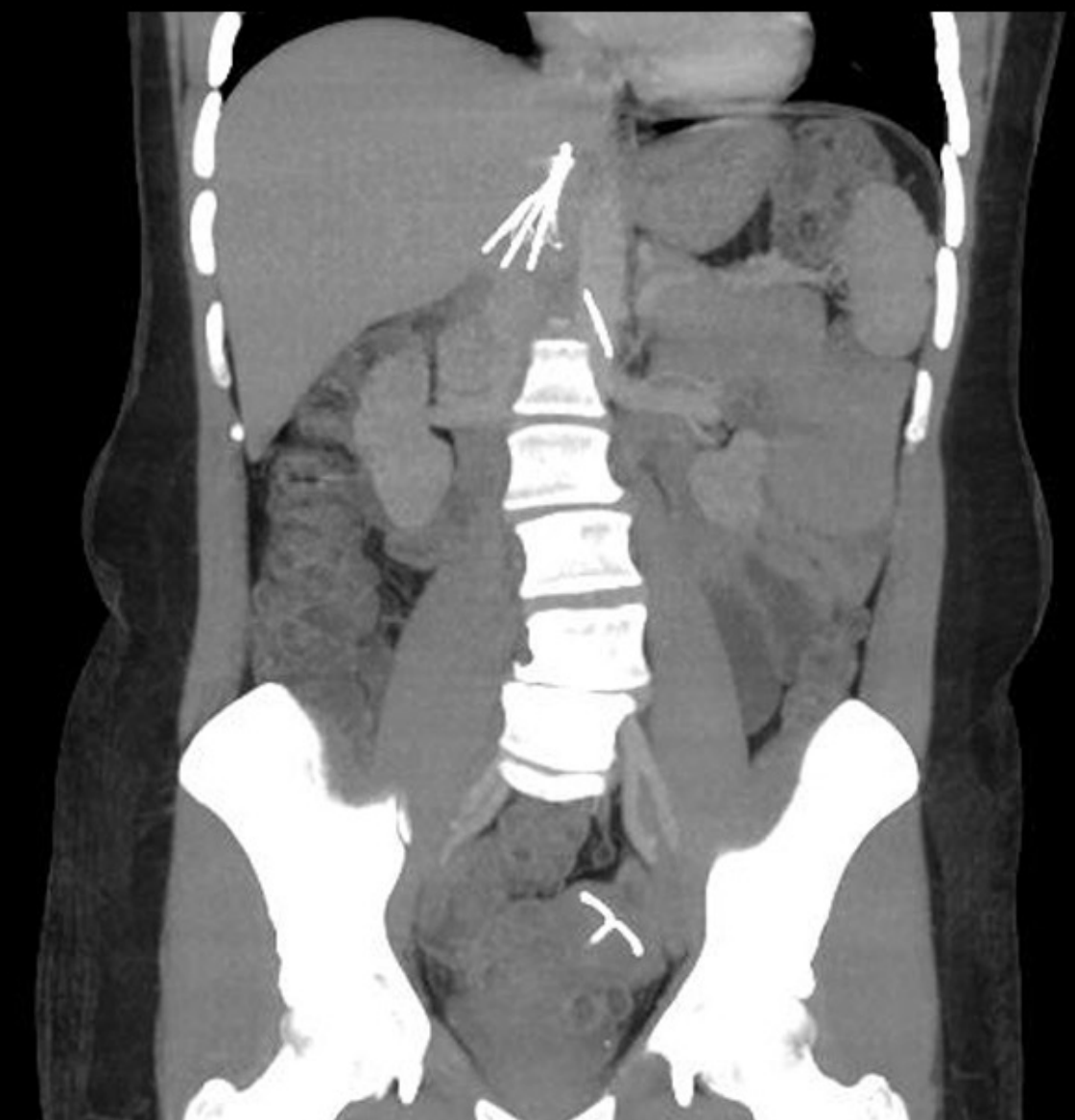
## DISCUSSION:

There has been a stable 0.1% incidence of people experiencing their first deep venous thrombosis and pulmonary embolism each year within the United States. This amounts to around 300,000 people experiencing a pulmonary embolism each year in the United States. There is an associated 12% likelihood of death within one month after development of a thromboembolic event, making these events a significant part of mortality and morbidity in our nation. Though anticoagulation is the first line treatment for patients who survive thromboembolic events, for some patient's these medical treatments are ineffective and contraindicated. For those patients IVC filter placement has become the treatment of choice. Placement rates for patients with a history of venous thromboembolic events is between 12-17%. With IVC filter placement there are a number of perioperative and late complications that can take place that can lead to failure or decreased effectiveness. A short list of potential complications are listed to the right. The late complications are at increased risk when the patient has the filter for an extended period of time as had this patient.

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The images above are coronal and axial CT images of the abdomen and pelvis that demonstrate a superiorly migrated IVC. The images on the right hand demonstrate the fractured IVC filter strut migrated to the abdominal aorta.

## Perioperative IVC Filter Complications

Improper placement	1.3%
Pneumothorax	0.02%
Hematoma	0.6%
Air embolism	0.2%
Arterial puncture	0.04%
Arteriovenous fistula	0.02%
Insertion site thrombosis	0.4-1.8%

## Late IVC Filter Complications

IVC thrombosis	2-9.5%
IVC penetration	4.4%
Migration	1-18%
Filter embolization	2-5%
Filter fracture	2-10%
Recurrent PE	1.3%
Recurrent DVT	6-36%

Adapted from: Kiguchi, Misaki & Dillavou, Ellen. (2014). IVC Filters: Challenges and Future Directions. Advances in Vascular Medicine. 2014. 10.1155/2014/432820.

## SOURCES:

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