

# Unusual case of lower extremity pain and swelling associated with anuria - Acute kidney injury secondary to bilateral renal vein thrombosis in the setting of IVC filter

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## BACKGROUND

Since the beginning of its introduction in the early 1980s, Inferior Vena Cava (IVC) filter has been one of the popular prophylaxis against fatal pulmonary embolism (1). There are two main categories of IVC filter which are available in the market at the time: retrievable and permanent IVC filters. Recurrent thrombosis and IVC thrombosis are well-established risks/complication of the procedure (1) (2). With the increasing popularity of retrievable filter in the recent years, the short-lived devices are less likely to cause significant endovascular events (3).

## CASE DESCRIPTION

A 69-year-old Caucasian male with relevant past medical history of massive pulmonary embolism status post IVC filter placement in 2010 and negative thrombophilia work up, presents to the hospital with complaints of worsening low back pain radiating to bilateral lower extremities associated with bilateral lower extremity edema and anuria x 2 days. Labs were significant for leukocytosis with WBC count 15.1K, sodium of 129 mmol/L, potassium of 6.4 mmol/L, BUN 72 mg/dL, creatinine 3.51 mg/dL (baseline creatinine 0.8 mg/dl), glucose -319 mg/dL, D dimer - 9728 ng/mL. Patient had cola colored urine after Foley insertion. Lumbar spine MRI on the day of admission ruled out spinal cord compression. CT scan of abdomen and pelvis demonstrated IVC filter below the level of the renal veins with distended and dense appearance of the IVC and iliac veins below the filter which may suggest thrombus formation.

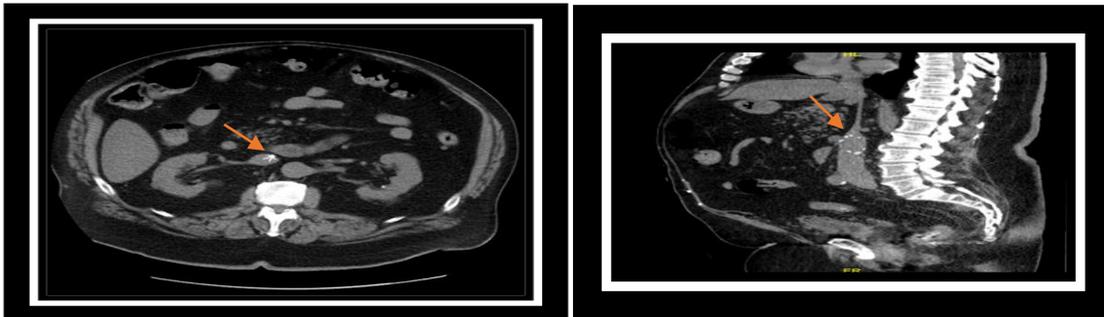


Figure 1. CT abdomen and pelvis without contrast demonstrated location of the IVC filter below the level of renal veins.

Ultrasound of kidneys and bladder was negative for hydronephrosis. Bilateral lower extremity doppler venous ultrasound demonstrated extensive acute deep vein thrombosis throughout the bilateral lower extremities extending up to the bilateral external and internal iliac veins. Patient was started on IV unfractionated heparin and switched to apixaban after 3 days. His renal functions improved, and his creatinine declined to 0.8 mg/dl in 5 days. Patient was discharged on apixaban with plans for anticoagulation for at least 6 months.

## DISCUSSION

Renal vein thrombosis (RVT) is a clinical condition commonly associated with underlying nephrotic syndrome, primary hypercoagulable disorder or metastatic cancer especially renal carcinoma (5). The gold standard diagnosis modality is renal venography but less invasive procedure such as CT angiography or MR angiography are reasonable and more practical tools (6)(7). The main stay of RVT treatment is similar to DVT/IVC thrombosis with anticoagulants such as NOACs or warfarin (8) (2). In this case, the main culprit of RVT is most likely the un-retrievable filter. The PREPICS studies has demonstrated that permanent filters significantly increase the risk of venous thromboembolism (VTE) up to 34% after eight-year (9). The case again emphasizes on the long-term risk of filter placement procedure and the importance of promptly removal of the device after the prophylaxis period.

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