Endovascular Reconstruction of Occluded Duplicate Inferior Vena Cava

Hyun Woo Joo, MD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US
Ioannis Tsouknidas, MD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US
Stefanos Giannopoulos, MD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US
Yuli Breier, MD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US
Binit Katuwal, MBBS, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US
Apostolos Tassiopoulos, MD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US
Angela Kokkosis, MD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, US

Objective:

Duplication of the inferior vena cava (IVC) is a congenital anomaly with an incidence of 0.1-3.5%. IVC filter thrombosis occurs in 19% of the patients, with complete occlusion noted in 0.5% of all cases. Different surgical options include balloon venoplasty and stenting, mechanical / pharmacochemical thrombectomy, catheter-directed thrombolysis as well as open reconstruction.

Methods:

We present a case of duplicate IVC chronic occlusion associated with bilateral IVC filters that was treated with endovascular reconstruction. Patient provided consent for the procedure and the presentation of the case.

Results:

A 55-year-old morbidly obese male with duplicate IVC system, remote history of prophylactic bilateral IVC filter placement (2012) and chronic venous insufficiency with recurrent venous ulcers, venous claudication, requiring multiple interventions and hospitalizations, presented for evaluation. Previous imaging suggested right IVC thrombosis and scarred left IVC. The patient underwent bilateral inferior venacavogram and lower extremity venogram, which showed occlusion of both IVCs to the level of the filters, and left external iliac vein occlusion with bilateral collateral flow (Figure 1). Both iliocaval systems including the filters were predilated. Three Venovo   venous stents (Bard/Becton, Dickinson and Company, Tempe, Arizona, USA) were deployed in each side, followed by post-dilation balloon venoplasty. Intravascular ultrasound was used throughout the procedure, to identify the proximal and distal landing zones, size the vessels, and confirm adequate apposition of the stents. Completion venograms showed successful recanalization of both IVCs with brisk flow across the stents into the confluence of the suprarenal IVC (Figure 2). He was discharged home on post-operative day 2 on therapeutic anticoagulation. At 3-month follow-up visit he was recovering well and both stents were patent on computed tomographic venogram.

Conclusion:

Reconstruction of chronic iliocaval occlusions is feasible in patients even in the presence of IVC filters. Further research is warranted to determine the long-term patency of such intervention.

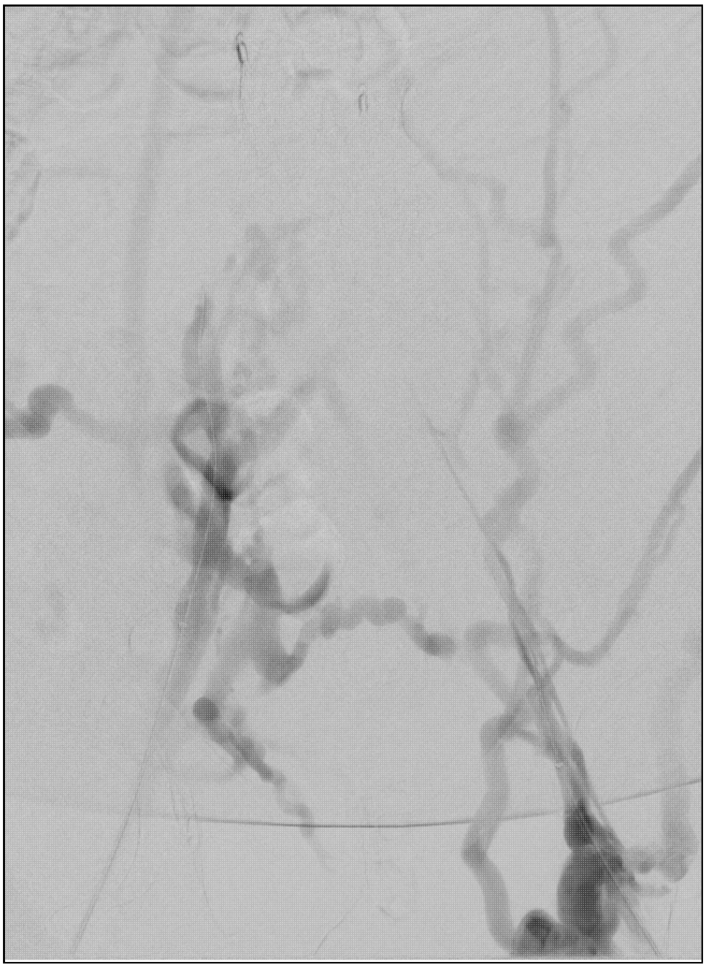

Fig 1 Pre-venoplasty venogram showing occlusion of both IVCs to the level of the filters

Fig 2 Post-venoplasty venogram showing patent IVCs with brisk flow