

A Case of a Missing IVC: Always Absent or an Adverse Event?

Authors: Laura Saldivar, MD, PGY-2, Internal Medicine-Pediatrics; Tara Cicic, MS3; Dr. Adam Doyle, MD; Dr. Jeffrey Andolina, MD, MS

Program: University of Rochester Medical Center- Strong Memorial Hospital

Program director: Brett Robbins, MD; email: Brett_Robbins@urmc.rochester.edu

Contact: Laura Saldivar, MD; cell: 937-542-0000, email: Laura_Saldivar@urmc.rochester.edu

Introduction: When taking care of the adolescent or young adult patient, it is important to consider both pathologies of childhood and adulthood. In this case, a patient was found to have significant thrombosis secondary to extensive venous collateralization. The formation of these collateral vessels may represent complications of central catheter placement in childhood or congenital anomaly of the inferior vena cava (IVC). While congenitally absent structures are often expected to show symptoms during childhood, an adult male patient has been reported in the literature to have an absent IVC not diagnosed until age 54 with first deep vein thrombosis (DVT) occurrence.¹ Congenital absence of the inferior vena cava is extremely rare and may present with DVT presumably related to abnormal venous flow. In many patients it is not well understood whether an absent IVC is the consequence of an anomaly of fetal development or a complication of central catheterization in infancy.

Case Report: A 16-year-old male was admitted with 1 month of worsening hip and left lower extremity pain with erythema and edema of the left lower extremity (LLE). Past history revealed a possible aortic arch abnormality and a reported history of a left femoral venous catheter which had become “kinked” during his NICU stay. He had no personal history of immobilization, surgery, DVT, or pulmonary embolism (PE). His exam was significant for nonpitting edema of the LLE to the mid-thigh accompanied by pain with dorsiflexion of the left foot and varicose veins on the left anterior thigh. LLE ultrasound revealed an extensive and occlusive DVT involving the left femoral, profunda, and left common femoral veins extending down through the left popliteal and posterior tibial veins. Subsequent CT venograms of the pelvis revealed no visible IVC with extensive venous collaterals. After undergoing lytic catheterization and femoral venoplasty, he was discharged on therapeutic enoxaparin and aspirin (later transitioned to aspirin and rivaroxaban) with plans for lifelong anticoagulation. It remained unclear if his extensive collateralization was secondary to a congenitally absent IVC or complications of his prior central catheterization.

Discussion: This is a case of a patient with a common presentation of DVT with an extremely rare finding of extensive venous abnormalities of unclear etiology. While multiple embryologic events leading to IVC absence have been proposed, no single event fully explaining the agenesis has been identified.² At the same time, a significant number of young patients with IVC thrombosis have had prior catheterization procedures, proposing the possibility of catheter-induced thrombosis as a cause of eventual agenesis of the IVC.³ This case demonstrates that it is important to consider congenital pathologies and birth history in the care of adolescent, young adult, and even older adult patients.

References:

1. Congenital absence of inferior vena cava and thrombosis: a case report. Javid Iqbal, Eswarappa Nagaraju. Med Case Reports. 2008; 2: 46. Published online 2008 Feb 12. doi: 10.1186/1752-1947-2-46
2. Ghandour A, Partovi S, Karuppasamy K, Rajiah P. Congenital anomalies of the IVC - embryological perspective and clinical relevance. Cardiovasc Diagn Ther. 2016; 6:6. doi: [10.21037/cdt.2016.11.18](https://doi.org/10.21037/cdt.2016.11.18). PMID: [28123970](https://pubmed.ncbi.nlm.nih.gov/28123970/)
3. Bass JE, Redwine MD, Kramer LA, Harris JH. Absence of the infrarenal inferior vena cava with preservation of the suprarenal segment as revealed by CT and MR venography. American journal of Roentgenology 1999;172:1610-1612.