

Repair of a large iliac vein aneurysm secondary to a high-flow pelvic arteriovenous malformation under deep hypothermic circulatory arrest



Kevin Chang, MD, William Quinones-Baldrich, MD, Murray Kwon, MD, Mark Archie, MD, and Paul Finn, MD, Los Angeles, Calif

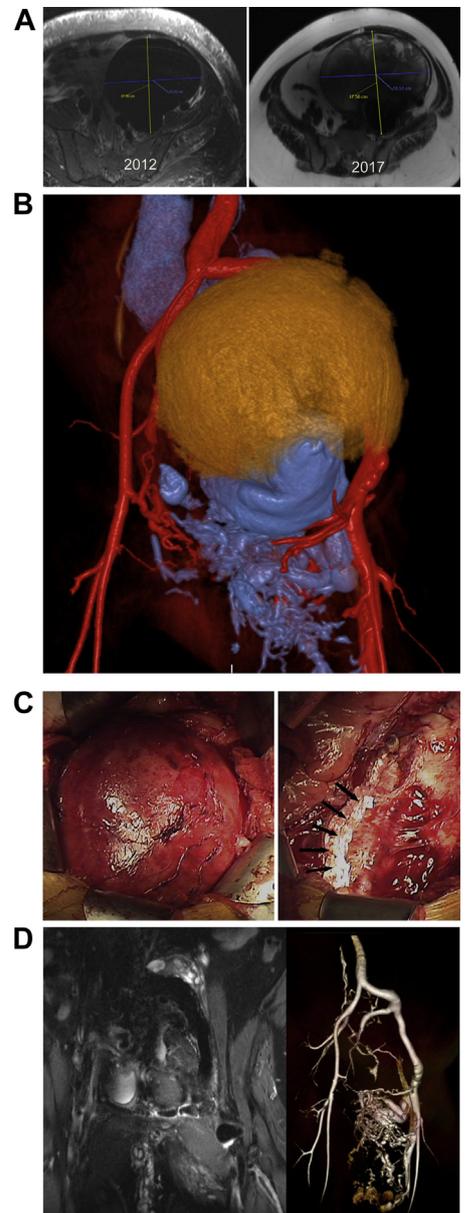
A 15-year-old boy presented first in 2012 with chronic abdominal pain and high-output congestive heart failure (CHF) due to a left iliac vein aneurysm secondary to high-flow pelvic arteriovenous malformation (AVM). Despite several embolization interventions with coils and Onyx (ev3, Covidien, Plymouth, Minn), the patient continued to have episodes of CHF. Magnetic resonance imaging (MRI) demonstrated a left iliac vein aneurysm with a diameter of 13 cm (A, left). To reduce flow from the AVM, an endograft from the inferior vena cava to the left external iliac vein was deployed, successfully treating his CHF.

The venous aneurysm continued to grow; in 2017, it measured 18.5 cm in diameter (A, right). The patient had abdominal pain and hydronephrosis. Surgical repair was recommended. MRI reconstruction demonstrated a high-flow venous aneurysm with arteriovenous connections in relation to pelvic vasculature (B/Cover). The patient consented to this publication.

Under general anesthesia, a stent was first placed in the left ureter. The aneurysm was exposed through a left retroperitoneal incision (C, left). Under deep hypothermic circulatory arrest, the aneurysm was opened, thrombus and coils were removed, and several arterial feeders as well as the primary nidus of inflow from the internal iliac vein were suture ligated. The excess aneurysm sac was resected and closed primarily with pledgets over the previously placed patent endograft (C, right). He was discharged on postoperative day 9 with normal neurologic function.

At 1-year follow-up, he had complete resolution of abdominal pain and hydronephrosis and resolution of the venous aneurysm on MRI (D).

Pelvic AVMs are notoriously difficult to treat because of the complexity of multiple feeding vessels. Open repair carries a significant risk of uncontrolled hemorrhage. Deep hypothermic circulatory arrest reduces this risk and thus facilitates open repair. Few reported cases in the literature have described repair of pelvic AVMs and aneurysms in this fashion.^{1,2} These case reports and our limited experience suggest that open repair under deep hypothermic circulatory arrest is a feasible and potentially effective alternative in the management of these very complex lesions.



From the Division of Vascular Surgery, Cardiac Surgery and Radiology, University of California at Los Angeles.

Author conflict of interest: none.

E-mail: wquinones@mednet.ucla.edu.

The editors and reviewers of this article have no relevant financial relationships to disclose per the Journal policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

J Vasc Surg: Venous and Lym Dis 2019;7:258-9

2213-333X

Copyright © 2018 by the Society for Vascular Surgery. Published by Elsevier Inc.

<https://doi.org/10.1016/j.jvs.2018.08.004>

REFERENCES

1. McCready RA, Fehrenbacher JW, Divelbiss JL, Bryant A, Savader S. Surgical resection of a large recurrent pelvic arteriovenous malformation using deep hypothermic circulatory arrest. *J Vasc Surg* 2004;39:1348-50.
2. Karthekeyan BR, Srigiri R, Vakamudi M, Saldanha R. Recurrent and large arteriovenous malformation with failed interventions managed surgically in deep hypothermic circulatory arrest—a case report. *J Clin Exp Cardiol* 2010;1:104.

Submitted Aug 29, 2018; accepted Aug 31, 2018.