

Basilic vein transposition tailored as rescue procedure in a uremic difficult access patient with thrombophilia

Dear Editor,

Vascular access is vital in patients with end-stage renal disease (ESRD) undergoing long-term hemodialysis. Several unlucky patients with thrombophilia often require multiple operations, and options for other access procedures become increasingly limited. Basilic vein transposition (BVT) offers vascular access in such difficult cases and is increasingly preferred over prosthetic grafts and central vein cannulation for decreasing the morbidity and costs of dialysis patients as highlighted in the KDIGO guidelines (1-3).

A 62-year-old woman was admitted with a diagnosis of chronic renal failure secondary to membranous glomerulonephritis. Her medical history was characterized by hypertension and right breast cancer treated by mastectomy without sign of recurrence on follow-up. She progressed to ESRD and regular thrice-weekly hemodialysis was started in July 2009 through a tunneled central venous catheter (CVC) in the right internal jugular vein. Two months later, a radiocephalic arteriovenous fistula over the left arm was created but suddenly thrombosed. Subsequently three attempts of arteriovenous fistula failed again. Then thrombophilia secondary to factor V Leiden mutation was discovered, and warfarin therapy was started. A polytetrafluoroethylene vascular graft was therefore inserted between the basilic

vein and brachial artery on the left forearm, under strict surveillance to reduce the incidence of other complications; however, the graft thrombosed after 2 years (Tab. I summarizes vascular access operations). A tunneled CVC was then implanted in the left jugular vein. Three months later she was admitted to the hospital for severe catheter-related bloodstream infection due to *Staphylococcus aureus* treated with vancomycin and catheter removal. When blood culture became sterile, a temporary CVC was placed in the left femoral vein. A venography was performed without signs of critical stenosis, then using the patient's own vessel a BVT was tailored on the left arm as rescue procedure (discontinuing warfarin and starting on unfractionated heparin 2 days prior to the intervention). After the beginning of hemodialysis treatment an ischemic steal syndrome developed especially during dialysis session, manifested by cold hand, numbness, pain and swelling, then the use of BVT paused. The patient was scheduled for banding with partial improvement in the symptoms. The hand swelling with pain persisted and, suspecting a central venous stenosis, a new phlebography was performed showing steno-occlusion of the left truncus anonymus; collateral veins were also visible on clinical examination and patency of BVT (Fig. 1). One month later BVT was successfully used for hemodialysis.

An adequate preoperative evaluation with physical examination, duplex ultrasonography and angiography are the keystones to avoid complications in the difficult access patients. Although angiographic study performed before surgery showed no critical central vein stenosis, in our patient thrombosis of ipsilateral left truncus anonymus was completely unexpected. However, the development of collateral

TABLE I - Patient vascular access history

Year	Vascular access	Complication
July 5, 2009	Temporary CVC in right femoral vein	
July 17, 2009	Tunneled CVC in right internal jugular vein	
From July 28, 2009 to August 8, 2009	Left radiocephalic arteriovenous fistula	Never used, thrombosis
August 5, 2009	Right radiocephalic arteriovenous fistula	Thrombosis
September 7, 2009	Right brachiocephalic arteriovenous fistula	Thrombosis
From June 9, 2010 to November 15, 2010	Left PTFE vascular graft	Thrombosis
From November 15, 2010 to November 29, 2010	Temporary CVC in right internal jugular vein	Jugular vein thrombosis
From November 30, 2010 to July 19, 2011	Tunneled CVC in left internal jugular vein	
From May 3, 2011 to April 2013	PTFE vascular graft	Three graft angioplasty, thrombosis
From April 2013 to September 15, 2013	Tunneled CVC in left jugular vein	CRBSI
From September 19, 2013 to January 15, 2014	Temporary CVC in left femoral vein	
From October 31, 2013	Basilic vein transposition on the left arm	Steal syndrome—steno-occlusion of left <i>truncus anonymus</i>

CVC = central venous catheter; PTFE = polytetrafluoroethylene; CRBSI = Catheter-related bloodstream infection.

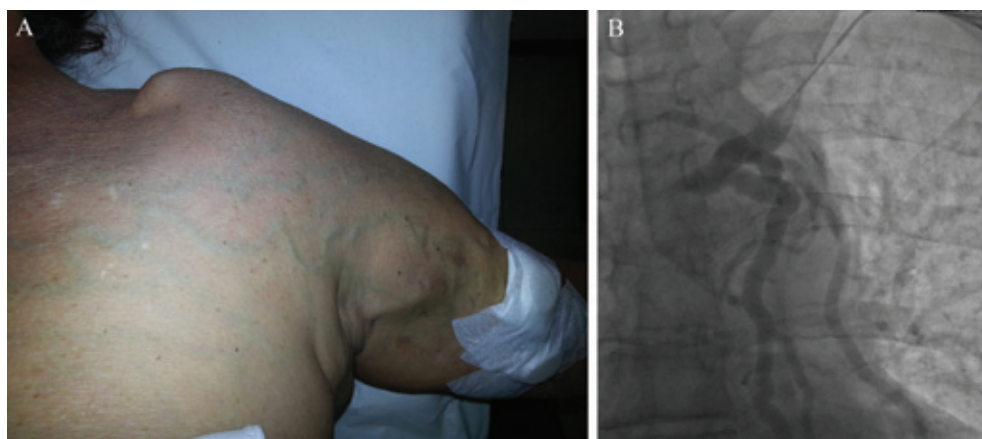


Fig. 1 - On physical exam prominent collateral veins are along the anterior chest wall and axilla **(A)**. The same finding detected by angiography **(B)**.

circuits visible on physical and angiographic examinations has led us to a successful salvage of BVT. This latter has been used in the presence of a slight hand swelling.

Our case demonstrates that in thrombophilic patients, previous central venous cannulations and systemic inflammatory status especially in the infectious setting may additionally increase the risk of thrombosis despite the patient undergoing anticoagulant therapy. This awareness may improve patency rates and may decrease the incidence of central vein thrombosis in difficult vascular access patients.

Disclosures

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References

1. Glickman M. Basilic vein transposition: review of different techniques. *J Vasc Access*. 2014;15(Suppl 7):S81-S84.
2. Agarwal A, Mantell M, Cohen R, Yan Y, Trerotola S, Clark TW. Outcomes of single-stage compared to two-stage basilic vein transposition fistulae. *Semin Dial*. 2014;27(3):298-302.
3. Morosetti M, Cipriani S, Dominijanni S, Pisani G, Frattarelli D, Bruno F. Basilic vein transposition versus biosynthetic prosthesis as vascular access for hemodialysis. *J Vasc Surg*. 2011;54(6):1713-1719.

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