A Modified Technique of Delayed Basilic Transposition — Initial Results

A. Kapala, J. Szmytkowski, W. Stankiewicz and S. Dabrowiecki

Department of General and Endocrine Surgery, and Department of General and Vascular Surgery, Nicolaus Copernicus University Hospital, Bydgoszcz, Poland

The radiocephalic wrist fistula remains the “gold standard” for primary vascular access placement according to NKF — DOQI guidelines. However, liberal inclusion criteria for dialysis therapy, as well as increasing longevity and prevalence of diabetes, have led to an increased number of patients with distal vessels unsuitable for vascular access creation. Another available location, and one used with increasing frequency, is the anterior cubital fossa. Arteriovenous anastomoses in this location leads to the development of two possible vascular accesses: cephalic and basilic. The basilic vein needs to be transposed to the anterior aspect of the arm. However, this procedure is technically difficult and carries a high risk of complications, often associated with axial torsion or kinking of the transposed vein during placement in the subcutaneous tunnel. The authors propose a simple technical modification which minimizes the risk of these complications. The main advantage is the prevention of axial torsion and kinking, as well as avoiding venous stenosis by transecting the vein at its widest point.

Keywords: Vascular access; Basilic vein transposition.

Operative Technique

In the first stage of the operation, an end-to-side arteriovenous anastomosis is created in the anterior cubital fossa between the proximal segment of the radial artery or the distal segment of the brachial artery and the perforating antecubital vein (PAV). If the PAV is unsuitable, other available superficial veins of this region can be used. In patients, in whom the cephalic vein fails to mature after 4 weeks, the basilic vein is evaluated (clinical evaluation + Doppler ultrasound). The second stage procedure is usually performed in the 5th week after the first stage.

Bringing the basilica vein to a superficial position is performed under general anaesthesia, with the patient in the supine position with the arm abducted. The operating field includes the axillary fossa, the arm and proximal 1/3 of the forearm. The course of the basilic vein is palpated from the anastomosis to the axilla. An incision is then made from the axilla to approximately 2 cm above the arteriovenous anastomosis. The vein is mobilized and separated from surrounding tissue and any collateral branches ligated. During this stage of the operation special attention must be given to avoid damaging the small-calibre nerve branches, which can be quite abundant in this region. After the whole length of the vein has been mobilized, it is transected in the axillary fossa, where its diameter is maximal. Next, a tunnel is created in the subcutaneous tissue of the antero-medial aspect of the arm with the use of a blunt atraumatic tunneling device, and the vein is guided through the tunnel. After the vein has been placed in the tunnel, its distal end is closed with a clamp (Fig. 1) and the clamp placed above the anastomosis is released.
This causes the collapsed vein to fill with blood at arterial pressure. The blood pressure dilates the vein, correcting any kinking or twisting which may have occurred while guiding the vessel through the subcutaneous tunnel (Fig. 2). Next, the clamp above the anastomosis is replaced and the proximal clamp removed to evacuate the blood from the vein segment in the tunnel. Subsequently, the cut ends of the vein are reanastomosed. In obese patients, the creation of the final anastomosis can be facilitated by fixing the superior skin flap above the axilla with a temporary suture. The end-to-end anastomosis is created with the use of two 6-0 sutures. After the anastomosis is completed, vascular clamps are released. A Redon tube is placed and the soft tissues closed with running sutures.

**Patients and Results**

In the period between January and October 2005, 8 diabetic patients: 3 males (mean age: 55; range: 43–67) and 5 females (mean age: 71.4; range: 45–85) underwent two-stage basilic transposition by the technique described. For all of these patients this was the first vascular access; all of them have been disqualified from distal forearm fistula creation due to poor arterial flow or unsuitable forearm veins (determined by Doppler US and venography). In all of the patients the cephalic vein had failed to mature.

Kinking or axial rotation of the transposed vein was not observed in any of the patients. The newly-created access was suitable for dialysis immediately after complete healing of the operative wound. The follow-up included Doppler ultrasound and regular recirculation measurements (glucose infusion test). After a mean follow-up of 3 months (range: 1–8 months) all patients are managed dialysis successfully with the use of the transposed basilic vein. Transient swelling of the access-bearing limb was observed in one patient. One patient required surgical intervention after 4 months due to stenosis at the re-anastomosis site.

**Reference**


Accepted 11 March 2006
Available online 22 May 2006