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Invited Commentary

The Significance of Upper Arm Cephalic Vein Disease in Vascular Access Creation

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A radiocephalic AV fistula at the wrist or snuffbox fistula is the usual first choice for vascular access because it is more comfortable for the patient, easier to needle and gives a longer length of available vein. It also leaves more options for future access. On the other hand, proximal AV fistulae at the cubital fossa may have a reduced rate of early thrombosis and have been advocated by some as a first choice in the elderly,[1] whose life expectancy on dialysis is reduced. A variety of factors have been shown to influence the success rate of AV fistula creation, such as vessel diameter and distensibility, proximal arterial disease, gender, age, coexisting arterial disease and diabetes, but thrombosis and phlebitis in the draining vein remain major determinants of patency. Preoperative duplex scanning can detect such problems and help determine the optimum level for an AV fistula.

Radiocephalic AV fistulae drain via the cephalic vein as far as the cubital fossa, at which point blood may continue its proximal flow via the cephalic vein, the basilic vein or into the brachial veins via the deep perforating vein. In some patients the forearm cephalic vein remains patent but one or more of these proximal veins is compromised, usually as a result of previous intravenous cannulation. The question then arises as to whether the patency of a distal AV fistula is reduced if one of these veins is thrombosed or stenosed.

In this issue, Lee et al.[2] reported their investigation into whether occlusion or stenosis of the upper arm cephalic vein influences the patency of radiocephalic AV fistulae when an alternative route of venous drainage exists. They used routine preoperative venography rather than duplex scanning and found that a compromised upper arm cephalic vein significantly reduced the rate of maturation of radiocephalic AV fistulae from 90% to 75% and substantially reduced subsequent primary and secondary patencies over 3years. The number of secondary interventions necessary to maintain patency was also greater and, interestingly, the pattern of subsequent venous stenoses was different, with most occurring along the course of the vein rather than in the juxta-anastomotic segment. This suggests that these patients might have been more susceptible to intimal hyperplasia or phlebitic change.

So, if the upper arm cephalic vein is occluded, should the surgeon opt for a different access? The remaining options would be to use the non-dominant arm or a more proximal access, which would have to be a basilic vein transposition (BVT) or a prosthetic graft. A BVT is a more extensive procedure and if, as the results of this paper might suggest, such patients are more susceptible to phlebitis or intimal hyperplasia, its patency might also be reduced. A prosthetic graft would also be expected to have poor primary patency and would have the added disadvantage of greater susceptibility to infection. Thus, when the upper arm cephalic vein is occluded, it would probably be best either to use the opposite arm or accept poorer patency and still opt for an ipsilateral radiocephalic AV fistula.

References

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