

PART VII

DEMONSTRATIONS



# A Practical Arterio-Venous Shunt for Dialysing Patients with Acute Renal Failure

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In patients with acute renal failure (ARF), several haemodialyses may prove to be necessary and in order to avoid repeated interventions upon an artery and a vein the use of the Quinton-Scribner shunt (Quinton et al, 1960) or of an arteriovenous fistula (Brescia et al, 1966) have been suggested. Both these methods are, of course, appropriate, if the treatment is to last for a considerable length of time; but this is not the case in ARF. In addition, the time required for collateral circulation to develop may render the fistula impractical in ARF, and the cost of a Quinton-Scribner shunt is relatively high. We have designed an arteriovenous shunt, made exclusively from materials used for dialysis itself.

We are aware that, due to the assumed local irritant effect of the vinyl material of which the catheters are made, this type of shunt may not be the ideal solution, but it is certainly an economical and practical one. In practice the irritant effect has very little time to make itself felt and actually has never been important.

## TECHNIQUE

The usual tapered vinyl catheters (Travenol) used for the dialysis are introduced into the brachial artery, distal to the origin of the deep humeral (profunda) artery, which allows ligation of the artery, when necessary. The high position is required because the catheters, which for safety reasons should not extend beyond the hand, cannot be shortened. The actual shunt consists of the end part of the 'venous line' of the twin-coil kidney, which is left in its working position in the venous catheter (Figure 1).

The arterial catheter is then pushed into the cut extremity of the 'venous line'. Between dialysis sessions, the patient should be adequately heparinised.

Of course, the connecting shunt has to be replaced for each new dialysis session, with the end of the new 'venous line' used, which is kept sterile under sterile gauze.

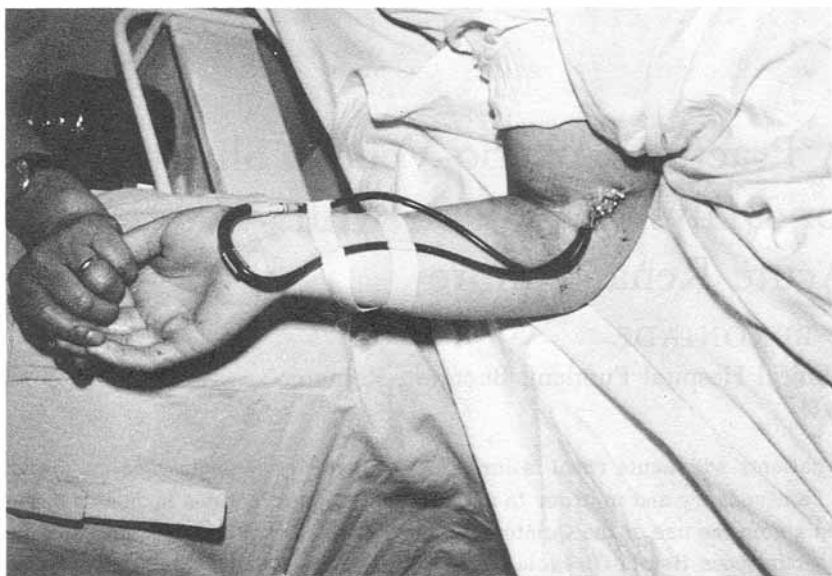


Figure 1. The shunt in place

#### COMMENTS

Our shunt has been used in 102 patients and we have had only 4 failures from thrombosis. Luckily, in two of these, maintenance of the shunt was no longer required. Presumably, an even more intense heparinisation would do away with all failures.

The shunt was reused up to 5 times (up to 23 days from insertion). When the shunt was removed the wall of the artery was in such good condition that it could be sutured satisfactorily. Some of the cases in which the artery had to be ligated showed a certain degree of numbness and increased sensitivity to cold in the limb concerned, but these inconveniences had almost disappeared 3 months later. The radial pulse persisted in some cases, however, in spite of the ligation of the cannulated artery.

We therefore conclude that this 'short-treatment' shunt is highly satisfactory for patients with ARF.

#### REFERENCES

- Brescia, M. J., Cimino, J. E., Appel, K. and Hurwich, B. (1966) *New England Journal of Medicine*, 275, 1089  
Quinton, W. E., Dillard, D. H. and Scribner, B. H. (1960) *Transactions. American Society for Artificial Internal Organs*, 6, 104