and reflects perhaps a generalized capillary abnormality or excessive local capillary development as a result of reduced arterial saturation. It differs from the clubbing that develops in chest disease due to excessive reduced spoferritin. The clubbing that I cannot understand at all is the clubbing in bacterial endocarditis, left atrial myxoma, and coeliac disease.

Professor Booth: Thank you very much. We must conclude this was a patient with adult coeliac disease who developed Crohn's disease, whatever that may be.

NEW APPLIANCES

Repeated Haemodialysis with a Straight Silicone Rubber Cannula

Dr. J. B. Hawkins, registrar, and Dr. B. H. B. Robinson, consultant physician, Renal Unit, East Birmingham Hospital, write: The Quinton–Scribner Silastic/Teflon cannula (Quinton, Dillard, and Scribner, 1960; Quinton, Dillard, Cole, and Scribner, 1962) has made possible the widespread use of repeated haemodialysis for the treatment of chronic renal failure. This system is also valuable in the management of those patients with acute renal failure for whom repeated or frequent haemodialysis is necessary (Clark and Parsons, 1966). The system suffers from the disadvantage that it is often difficult to clear clotted cannulae because of the 180° bend as well as the 60° step, which interfere with the passage of a declotting catheter. The insertion of these cannulae requires careful judgement if the loop and the step are to lie in the appropriate position for alignment of the Teflon vessel tip in the cannulated vessel. Ramirez, Swartz, Oensti, Mailloux, and Brest (1966) described a "winged in-line" cannula which overcame the difficulty in declotting. We have developed a modification of this cannula, which has been in use in the East Birmingham Renal Unit for nine months. It is easy to clear of thrombus, relatively simple to insert, and cheap.

The cannula (Fig. 1) is made from medical-grade silicone rubber tubing (Eco Rubber Ltd.) similar in size to that used for conventional cannulae. To this is attached a silicone rubber wing 2.5 cm. wide by means of an appropriate adhesive (Dow Corning silicone type A). The edges of the wing slope away from the vessel tip at an angle of approximately 22°. Small holes may be made in each wing, and the proximal portion of the cannula projects 5 cm. ahead of the wing.

METHOD OF INSERTION

The vessel is exposed for cannulation. A space distal to this site just large enough for the wing is made between two tissue layers (usually beneath the deep fascia, or between muscles), while the distal part of the cannula is passed along the same tissue plane and out through an oblique stab incision at a suitable site. Care is taken to ensure that the cannula lies in line with the vessel to be cannulated. The holes in the wing can be used for suturing the wing to the deep fascia if desired; this may be useful in confused and violent patients, but is probably undesirable if it is intended that cannulae should remain in situ for more than a few weeks.

The proximal portion of the cannula is normally trimmed to within 0.5 to 1 cm. of the wing. A Teflon vessel tip of appropriate size is then inserted, a fine silk suture is passed through the vessel wall to anchor the intima, and the vessel is cannulated in the usual way, one proximal and two distal ligatures round vessel and cannula normally being used. If recannulation of the same vessel is required on a later occasion, a similar cannula is used, but is trimmed to leave a longer portion ahead of the wing; it is then possible to use the same track as before.

Thus a Teflon tip can be inserted higher up the same vessel with a minimum of tissue disturbance. After cannulation of artery and vein a single Teflon connector is used to produce an arteriovenous shunt (Fig. 2).

CLINICAL EXPERIENCE

Specially moulded cannulae available commercially are expensive. This cannula was originally designed as a cheap device for managing hypercatabolic acute renal failure by repeated haemodialysis, and has proved entirely satisfactory. It is relatively simple to insert compared with the conventional cannula, and is easy to clear of clot. There is a possible danger, however, that the over-vigorous passage of a declotting catheter might dislodge the vessel tip or damage the vessel wall. So far we have not had this experience. Once inserted, the cannula will withstand a direct pull in excess of 2.5 kg., sustained or intermittent, without dislodge-ment of the vessel tip.

Encouraged by the success of this cannula for acute cases, we have made use of it in several patients undergoing long-term intermittent haemodialysis. Initial results are good. Although specially prepared silicone rubber is not used for the cannulae, clotting episodes are no more frequent than with Quinton–Scribner shunts. Blood flow rates through Kill dialysers are on average, higher than with curved cannulae, though direct comparison is clearly not possible.

This shunt has the disadvantage that it cannot be placed as far distally in the limb as the Quinton–Scribner shunt, but an exit hole 4 cm. above the proximal wrist crease has been found satisfactory, and we believe that with either type of shunt it is better to cannulate the vessel well above this in order to minimize movement due to flexion and extension at the wrist. We have not found that a 60° step at the exit site is necessary, and its absence facilitates placing of the cannula.

The original pair of cannulae inserted for intermittent dialysis are still in use for home dialysis seven months after insertion, while three other pairs are in use after approximately five months. Only one pair of cannulae has required reimplantation (as a result of infection).

We are grateful to Professor J. P. Shillingford and Dr. E. D. Williams for assistance in preparing this report, and to Mr. W. Brackenbury for the photomicrographs.

REFERENCES


Fig. 1

Fig. 2