

Vasculorama

Some 18-27% of patients referred for placement of hemodialysis catheters have thrombosed, occluded, absent, or anomalous internal jugular veins. Using ultrasound greatly decreases the risk of complications such as placement failure, multiple placement attempts, and improper positioning. Cuffed catheters should be placed within the left atrium. The arterial (red) end of the double lumen catheter should be turned medially (away from the vessel wall) so that it will not adhere to the vessel wall when suction is applied. In obese patients with large breasts catheters placed at the atrio-caval junction may be troublesome because they can move up when the patient is sitting. (Schwab SJ and Beat-hard G. *Kidney Int* 56: 1).

The use of subclavian or internal jugular vein catheters may cause phrenic nerve paralysis. This rare complication may be immediate or delayed, transient or permanent, resulting in pain or shortness of breath. Sometimes it is found incidentally on fluoroscopy as a markedly elevated diaphragm that fails to move. The injury may be due to direct trauma, chemical injury from local anesthesia or extravasated fluid, or compression by a mediastinal hematoma (Aggarawal S et al. *Pediat Nephrol* 14: 203).

Vascular stenosis or occlusion at the venous end of polytetrafluoroethylene (PTFE) grafts, the most common cause of graft failure, is due to stimulation of smooth muscle cells by pulsatile wall stresses and flow disturbances at the anastomosis. To obviate this process California investigators have excluded the cut venous end from the anastomosis by inserting into the vein a short PTFE graft with outside plastic rings, stabilizing it with an external purse-string suture and reinforcing it with vascular clips (Coulson AS et al. *Dialysis and Transplantation* 29: 10).

The topical application of bovine thrombin to promote hemostasis during access and other surgeries may induce the formation of antithrombin antibodies with anticoagulant and procoagulant properties. Such antibodies are more common in patients with a history of graft thrombosis, raising the possibility of a causal relationship (Sands JJ et al. *Am J Kidney Dis* 35: 7960).

In the United States 62% of new hemodialysis patients and 31% of prevalent patients use dialysis catheters. Catheter related bacteremia occurs in 0.7 to 1.5 cases per catheter year, are difficult to resolve with antibiotics alone, and may result in serious infections (endocarditis, osteomyelitis, epidural abscess, or septic arthritis). Not more than one third of tunneled catheters can be salvaged without catheter removal. According to a recent retrospective survey, the results of exchanging a catheter over a guidewire were no worse than removing it and replacing it later (Tanriover B et al. *Kidney Int* 57: 2151).

A new test for vascular access recirculation involves drawing samples of blood from the arterial port before and after injecting a bolus of concentrated glucose into the venous port. If the second glucose concentration exceeds the first recirculation is present. The usefulness of this test may require validation, because exact timing of drawing the blood and injecting the glucose may be critical (Magnasco A et al. *Kidney Int* 57: 2123).

The lack of a vascular access greatly increases the hospital utilization by chronic dialysis patients, especially during the first three months of treatment. Overall, dialysis related events account for about one third of hospitalizations. Having a temporary rather than a permanent access increases the number of days spent in hospital during the first three months from 23 to 42 (Arora P et al. *J Am Soc Nephrol* 11: 740).

Using an ultrasonic flow meter is currently the most accurate method of measuring blood flow through a dialyzer. Blood flow as indicated by the hemodialysis roller pump overestimates the true blood flow by some 10-20%. The difference is due to the negative pressure induced by the pump in the arterial line; it is higher with increasing blood flow rates and decreasing arterial needle gauges (Teruel JL et al. *Nephron* 85: 142).

Systemically administered vancomycin diffuses poorly from plasma into the heparin filled lumen of infected cuffed permanent hemodialysis

catheters. Better results may be obtained by the "antibiotic-lock technique", in which 2 ml of heparin solution (1000 units/ml) containing 100 mcg/ml of vancomycin are instilled in each port of the PermCath (Bastani B et al. *Nephrol Dial Transpl* 15: 1035).

According to investigators from Perugia, Italy, vascular access survival is not shortened by the increased number of punctures required by daily hemodialysis. Daily dialysis does not seem to have an adverse prognostic significance on access survival (Quintaliani G et al. *Clin Nephrol* 53: 372).

It appears that native arteriovenous fistulae become somewhat wider in patients with polycystic kidney

disease that in other diseases, possibly reflecting the presence of various other vascular abnormalities (such as aneurysms) in this condition (Hadimeri H et al. *Nephron* 85: 50).

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