Abstract:

Purpose: Central venous catheters for maintenance hemodialysis (HD) are designed to attain the required dialysis dose through sustained high blood flow rates (BFR). The authors studied the immediate and long-term performance and complications of two twin-catheter systems, the Tesio catheter (TC) and the LifeCath Twin (LC), to inform clinical practice.

Methods: This single-center randomized controlled parallel-group trial allocated 80 incident patients (1:1) to receive either a TC (MedComp) or LC (Vygon). Patients were dialyzed to target BFR 450 mL/min and followed up for 12 months. The primary outcome was achievement of target BFR during the first HD session. Secondary outcomes included thrombotic dysfunction, displacement and catheter-related infection. Catheter dysfunction was defined by a BFR ≤ 250 mL/min.

Results: More LCs reached the primary endpoint (44% vs. 10%, p=0.001) delivering a higher BFR (mean 383±82 vs. 277±79 mL/min, p<0.001). Significant differences in BFR persisted until the fourth dialysis session. Rates of catheter-related bacteremia (0.40 vs. 0.51/1,000 catheter days, p=0.7) and exit site infection were similar between groups (0.24 vs. 0.09/1,000 catheter days, p=0.4). Overall rates of catheter dysfunction were 2.8/1,000 catheter days (95% CI 2.1-3.5), with no differences in thrombolytic lock use although the LC group required more thrombolytic infusions (6 vs. 0, p=0.01).

Conclusions: The LC can deliver greater BFRs in the first three HD sessions following insertion although this did not translate into differences in performance, dialysis adequacy or complication rates with long-term use. Both catheter types can consistently deliver high BFRs over an extended period of time.

Other intravenous and vascular access resources that may be of interest (External links – IVTEAM has no responsibility for content).

Guide for intravenous chemotherapy and associated vascular access devices from Macmillan.
An example of peripheral cannulation OSCE from OSCE Skills.