Reappraisal of Femoral Vein Cannulation for Temporary Hemodialysis Vascular Access

A.F.	Anthony F.	Firek
R.E.	Ralph E.	Cutler
P.G.	Paul G.	St. John Hammond

Department of Medicine, Nephrology Section, Jerry L. Pettis Memorial Veterans Hospital, Loma Linda, Calif., USA

Ralph E. Cutler, MD, Jerry L. Pettis Memorial VA Hospital, 11201 Benton Street, Loma Linda, CA 92357 (USA)

Dear Sir,

Patients requiring dialysis due to acute or chronic renal failure frequently require temporary vascular access. Subclavian vein cannulation for acute hemodialysis is a well accepted and utilized technique. Recent reviews have shown that it is generally well tolerated [1,2]. However, the need for postcannulation chest x-ray films and the real potential for disastrous complications exist using this technique [3, 4]. The alternative to subclavian cannulation is femoral vein cannulation, which is widely used for acute single-episode dialysis. However, the use of the femoral vein cannula left in situ as a temporary vascular access in ambulatory dialysis patients has largely been neglected. This neglect has been based on the often anecdotal belief in a high rate of complications including infection, thrombosis, hemorrhage and the inability to ambulate [5]. Much of this is based on early reports in nonambulatory patients and for indications other than hemodialysis.

At the Jerry L. Pettis Memorial Veterans Hospital Dialysis Unit, we have been using femoral vein cannulation with a double-lumen catheter as in situ temporary vascular access in ambulatory patients. Twenty-six patients with end-stage renal disease (ESRD) needing temporary vascular access at various times over 10 months had femoral and/or subclavian cannulation using standard strict technique. The results are presented in tables I and II. All 26 patients had femoral catheters placed for a total of 45 cannulations. They had a total of 277 dialysis sessions with an average of 5.0 ± 0.5 sessions per catheter. Seventeen of these patients also had 19 subclavian cannulations used for a total of 245 sessions with an average of 12.9 ± 2.5 sessions per catheter. Femoral catheters remained for a sum of 546 days of use and averaged 12.1 ± 1.5 days per catheter compared to 708 total days of use and 37.3 ± 8.1 days per catheter for subclavian cannulation. Table II shows reasons for catheter removal. Complications were rare using both techniques, with the predominant reason for discontinuing use being resolution

Table I. Comparison of catheter performance

Table II. Reasons for catheter removal

Data are expressed as number of sessions. The percentage of total sessions is given in parentheses. Catheter removed due to resolution of indication.

Firek/Cutler/St. John Hammond

of the need for access, which was 36% for femoral and 58% for subclavian cannulation. Both sites had only one documented episode of site infection or sepsis (each with *Staphylococcus aureus*). Loss of flow necessitating removal of either was 29% for femoral and 21% for subclavian catheters. Thirty-three percent of the femoral catheters were removed for 'infection prophylaxis' unrelated directly to the catheter. Overall 71% of the femoral and 79% of the subclavian catheters were functioning when removed. There were no documented cases of resultant deep venous thrombosis, pulmonary embolism or hemorrhage. Nonpurulent inflammation at the insertion site occurred in 18% of femoral and 16% of subclavian catheters. Only 1 patient with a femoral catheter complained of reduced mobility due to pain at the site. We conclude that double-lumen femoral catheters left in situ for temporary vascular access are a viable alternative with good patient acceptance and with relatively few serious complications.

References

- Fares II, L.G.; Hsu, T.C.; Leva, R., et al.: Subclavian cannulation, valuable dialysis access alternative. *Am. Surg.* 50:283–285 (1984).
- Kozeny, G.A.; Venzio, F.R.; Bonsai, V.K., et al.: Incidence of subclavian dialysis catheter-related infections. *Archs intern. Med.* 744:1787–1789 (1984).
- Tapson, J.S.; Uldall, P.R.: Delayed onset of hemothorax: an unusual complication of subclavian access for hemodialysis. *Nephron* 40:495 (1983).
- Tapson, J.S.; Uldall, P.R.: Avoiding deaths from subclavian cannulation for hemodialysis. *Int. J. artif. Organs* 6: 227–230 (1986).
- Dailey, R.H.: Femoral vein cannulation: a review. *J. Emergency Med.* 2:59–64(1986).