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## An innovative approach to temporary hemodialysis vascular access

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Central venous catheters, hemodialysis, temporary vascular access

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## Comments

This study comes from a tertiary referral center in the USA where interventional nephrologists insert all the vascular access catheters for renal support, including ICU. Whilst the authors provide an admirable example of the difference a skilled operator may make to the insertion of central catheters, it maybe an example few centers can hope to follow. As the authors comment, most central venous catheters are inserted by junior medical staff. This situation is unlikely to change in most hospitals but the level of supervision should be improved in some areas, with strict adherence to sterile technique. Increasingly, junior medical and particularly junior surgical staff are less experienced at central line insertion and frequently ask the help of anesthetists. It would be interesting to see if this move, to more central line insertion by anesthetists experienced in this technique, leads to a lower complication rate.

## Introduction

In the USA, guidelines have been set down by the National Kidney Foundation Dialysis Outcomes Quality Initiative (NKF-DOQI). These guidelines relate to temporary and permanent hemodialysis vascular access. The recommendations of this organisation were designed to improve overall outcomes, increase surgical placement of arteriovenous fistulae and intervene before thrombotic events. Their goals are to increase survival and reduce overall patient morbidity and mortality. According to these guidelines, the expected rate of serious complications (that require intervention) following catheter placement should be 2% or less.

## Aims

The authors, by using a consistent technique and skilled operators, aimed to show that the complication rate could be lower than that expected by the NKF-DOQI, and the outcome for their patients improved.

# Methods

Each patient (inpatient or outpatient) requiring catheter placement for temporary dialysis, or for longer access, was enrolled in the study. The clotting studies for each patient were checked and any patient who had abnormal coagulation or had prior central venous cannulation underwent central venous cannulation with ultrasound guidance. All cannulae were inserted by one of two experienced operators and a strict sterile technique was used. The femoral site was chosen if the patient was expected to require access for only 2 to 3 days. If the catheter was required for up to 3 weeks, the internal jugular route was used and the subclavian route only used as a last resort.

# Results

The authors placed 402 catheters between November 1996 and October 1997. On eight occasions line placement was unsuccessful (failure rate 2%). The significant complication rate (requiring intervention) was 0.7%: 67% were inpatients [intensive care unit (ICU), general medical and general surgical patients] and 33% outpatients. The most common reason for insertion was new end stage renal failure (33%). The most common site for insertion was internal jugular (73%), followed by femoral (15%), with only 12% placed by the subclavian route.

# Discussion

The authors, by using two skilled operators and strict sterile technique, were able to achieve a lower complication rate than that expected by the NKF-DOQI guidelines. The study patients also had a lower failure rate than that previously reported by other groups. The authors thought that this was due to the use of ultrasound and their close knowledge of the patient population. The reduced complication rate was calculated to reduce their institutional costs by approximately US \$50,000.

# References

1. Ross JL, Staffeld C, Lindberg JS, Lee M: An innovative approach to temporary hemodialysis vascular access. *Am J Kidney Dis.* 1999, 33: 718-721.