NEEDLE INFILTRATIONS OF ARTERIOVENOUS FISTULAS IN HEMODIALYSIS: RISK FACTORS AND CONSEQUENCES. T Lee, J Barker, and M Allon, University of Alabama at Birmingham, AL and Montana State University, Bozeman, MT.

Long-term use of an arteriovenous (AV) fistula for dialysis requires the ability of the dialysis staff to cannulate the fistula with large bore needles three times a week. One complication of unsuccessful fistula cannulation is a needle infiltration, resulting in development of a subcutaneous hematoma, and precluding fistula use until resolution of the hematoma. Needle infiltrations of fistulas may result in the temporary inability to use the fistula for dialysis and may lead to fistula thrombosis, necessitating tunneled catheter use for maintenance hemodialysis. The purpose of this study was to evaluate the risk factors for fistula infiltrations, and the clinical consequences arising from this complication.

Using a prospective, computerized vascular access database, we identified all hemodialysis patients who suffered a fistula infiltration during a 5-year period (1/1/00-12/31/04) severe enough to require a follow-up diagnostic test, surgery appointment, or an intervention. This patient group was compared to a control group without fistula infiltrations. We also quantified subsequent access outcomes in patients with infiltrations.

During a five-year period, we identified 62 patients with fistula infiltrations, representing a 7% annual rate. On multiple variable regression analysis, the likelihood of fistula infiltration was strongly associated with patient age (odds ratio 1.038 per each year increment, 95% CI 1.014 to 1.063, p=0.001). Fistula infiltration was not associated with sex, race, diabetes, presence of peripheral vascular disease, location of fistula, or body mass index. New fistulas (≤ 6 months in age) were more likely among patients with infiltrations, as compared to a cross-section of patients without infiltrations (43.5% vs 20.5%; odds ratio 2.98, 95% CI 1.61 to 5.54, p=0.0004). The 62 infiltrations resulted in 128 procedures or appointments. Fistula thrombosis occurred in 12 patients (or 19%). Prolongation of tunneled catheter-dependence occurred in 48 (or 77%) of patients with infiltrations, for a median of 97 days.

Needle infiltration of fistulas occurs more commonly in older patients and in new fistulas. These infiltrations result in numerous procedures, and prolongation of catheter-dependence. Prospective studies are needed to evaluate the causes of increased infiltrations in new fistulas, the relationship of dialysis nurse experience to infiltrations, and the role of fistula infiltration in causing thrombosis.