

Arteriovenous fistulas created before dialysis start – ongoing evaluation of preemptive AVF outcomes in British Columbia.

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The interdisciplinary Provincial Vascular Access Services Team (PVAST) in British Columbia (BC), Canada, focuses on improving provincial vascular access (VA) outcomes. As part of this initiative, we are committed to monitoring arteriovenous fistula (AVF) outcomes over time at the provincial, health authority, and hospital levels by regularly reporting VA outcomes. Since 2008 we have been able to capture 100% of key vascular access data elements due to provincial funding for data entry, allowing accurate assessment of outcomes and permitting continuous quality improvement.

The objective of this analysis is to describe the outcomes of preemptive fistulas created in patients with Chronic Kidney Disease (CKD) in British Columbia between 2008-2010 and who had been followed by a nephrologist for a minimum of 6 months at time of AVF creation. Follow-up data was collected until September 30, 2011. This information is required for ongoing quality assurance and permits local, accurate, and unbiased outcome data, from which patients being advised to have a preemptive AV fistula created can be informed.

A retrospective analysis of prospectively collected data identified 794 first AVF's created between April 1, 2008 and March 31, 2010. Of these, 371 were created during the pre-dialysis period. Patients with a preemptive fistula created had been followed by a nephrologist for a median of 16 (5-39) months prior to creation. Median eGFR at AVF creation was 13 (11-16) mmol/L. Patients whose AVF was created during CKD were older (HD 67 yrs, CKD 70 yrs, $p=0.002$), more likely to be Caucasian (HD 56%, CKD 64%, $p=0.03$), less likely to require an angioplasty (HD 29%, CKD 20%, $p=0.004$), but displayed no gender or comorbidity differences when compared to the HD group.

In the CKD cohort ($n=371$), primary failure occurred in 81 (22%) of AVFs. Of the patients whose AVF experienced a primary failure, 70% were Caucasian, 60% diabetic, 58% with a cardiovascular comorbidity, and 59% were forearm AVFs.

260/371 (72%) patients started HD by the end of follow-up. 216/260 (83%) started HD with a fistula (first fistula in 204, subsequent fistula in 12). 40 patients started with a catheter and 4 patients started with a graft.

17 patients died prior to dialysis start (14 with a mature fistula, 3 with a failed fistula).

Of first AVFs that were created during CKD and then used for HD, 1, 2 and 3 year patency rates were 78, 64, and 64% for primary patency; 99, 96, and 94% for secondary patency; 97, 94, and 91% for functional patency; and 87, 80, and 80% for functional patency up to first intervention. Complete data capture allows accurate assessment of patency rates in different cohorts, and will help direct practice improvements.



In conclusion, we report the outcomes of pre-emptive fistula creation in British Columbia. In our cohort, a large percentage of patients (72%) started dialysis within the follow-up period and very few died before dialysis start, indicating appropriate selection of patients. As vascular access guidelines continue to promote fistula creation in the pre-dialysis period, ongoing evaluation of outcomes are required to ensure appropriate patient selection and outcomes.

Figure: Exploration of patients whose AVF was created prior to dialysis start

