

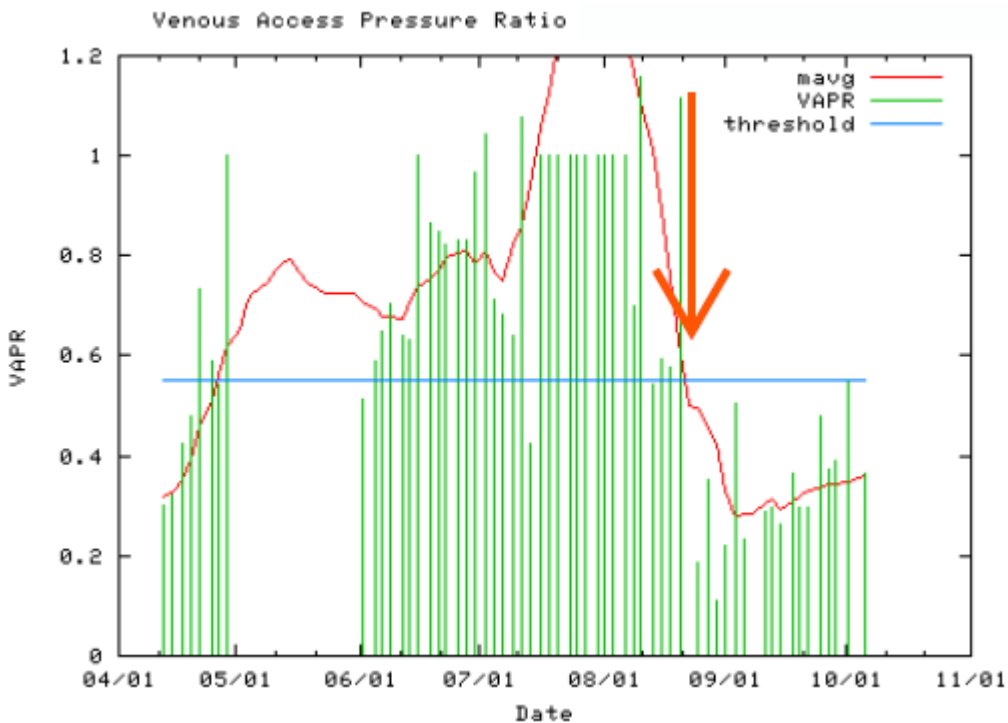


## VASC-ALERT ACCESS SURVEILLANCE CASE STUDY

### PATIENT PROFILE

69 year old male  
Primary cause of ESRD: Type 2 Diabetes  
Dialysis start date: 2/13/06  
Dialysis access: Left upper arm arteriovenous fistula  
Dialysis access placed: 11/22/05  
Treatment time: 4.25 hours / 455 minutes 3 times per week  
Ordered BFR: 400 ml/min  
Kt/V result at time of intervention: 2.0

### VASC-ALERT DATA



This patient had multiple high readings and alerts issued by Vasc-Alert. In the above VAPR graphs each vertical green line indicates the average VAPR for the dialysis session. The horizontal blue line is a pre-set threshold value. The red line is a moving average which is used to visualize the trend of the graph more easily. The red arrow indicates when an intervention took place. The dates on the graph are in month/day format.

There were no clinical signs or symptoms that were indicative of access dysfunction or stenosis (e.g. no increase in venous pressure, no excessive bleeding, no decrease in blood flow, no difficulty in cannulation, no decrease in Kt/V), but the patient had consistent alerts and an increasing trend of VAPR results above threshold. The patient was sent for a fistulogram on 8/23/06 based solely on Vasc-Alert results and was determined to have significant stenosis, so an angioplasty was performed. The red arrow on the graph indicates the drop in VAPR values below the threshold immediately after a fistulogram and angioplasty.

## **PROCEDURE**

The patient's left upper arm dialysis shunt is accessed near its presumed origin near the antecubital region. Through this, contrast is injected and images of the shunt are taken as well as the major draining veins of the left upper extremity. Using the same approach, imaging is done of the major draining veins of the left upper extremity. Using the same approach, angioplasty is done of an outflow lesion described below.

## **FINDINGS**

The access shunt is patent with no stenosis but there is moderate deterioration of its mid portion with small umbilications at previous access puncture sites. There is tight narrowing at the venous outflow which is to the axillary vein with 80% concentric narrowing here.

Left axillary vein, subclavian vein and innominate veins are otherwise normal. There is no evidence of inflow narrowing on this procedure angiographically.

Patient is sent for hemodialysis immediately following this procedure. The outflow narrowing is dilated to native caliber (6 mm) using conventional techniques.

Completion sonogram shows elimination of stenosis, improvement in flow and elimination of collateral drainage pathways.

## **IMPRESSION**

1. Tight concentric narrowing at the venous outflow of the graft to the left axillary vein.
2. Above narrowing obliterated with the use of conventional techniques.
3. No central venous obstruction seen.
4. Mild deterioration of the central portion of the graft, described above.

## **SUMMARY**

The patient was sent for access study based on Vasc-Alert results and found to have a hemodynamically significant stenosis of 80% that was treated by angioplasty. Shortly after intervention the patient's VAPR results returned to normal and fell below the threshold.