

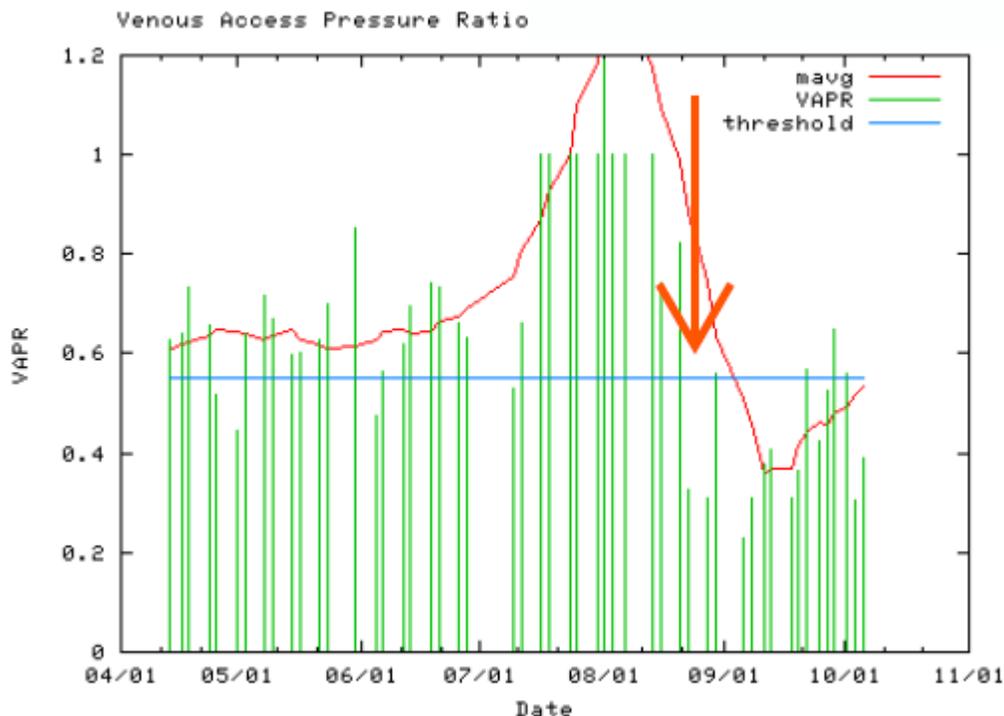


## VASC-ALERT ACCESS SURVEILLANCE CASE STUDY

### PATIENT PROFILE

75 year old female  
Primary cause of ESRD: Hypertension  
Dialysis start date: 2/01/03  
Dialysis access: Left upper arm arteriovenous fistula  
Dialysis access placed: 3/12/04  
Treatment time: 3.5 hours/210 minutes 3 times per week  
Ordered BFR: 400ml/min  
Kt/V result at time of intervention: 1.5

### 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 in 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 left upper arm dialysis fistula is accessed near its presumed origin near the antecubital region. Through this, contrast is injected and images are done of the fistula as well as the major draining veins of the left upper extremity. Using the same approach, a lesion at the venous outflow is dilated using conventional techniques and balloon venotomy.

## **FINDINGS**

There is a well-formed arterialized vein which appears to be a brachio basilic vein. There is no excessive collateral formation. There is no evidence of inflow restriction on this examination. There are two, adjacent, tight narrowing at the venous outflow with 90% concentric narrowing each. One of these is at the peripheral end of an indwelling stent placed within the draining vein, the axillary vein in the left axillary region. Second stenosis is within the stent itself, having a typical appearance for intimal hyperplasia.

The remainder of the central veins including the remainder of the axillary vein, subclavian vein and innominate veins are normal.

Above narrowings are obliterated with a combination of conventional angioplasty and balloon venotomy through the area of intimal hyperplasia to native caliber (6 - 7 mm).

Completion shuntogram shows improvement in flow and reduction in fistula pulsatility. Mild residual narrowing seen within the old stent.

## **IMPRESSION**

1. Two, adjacent, tight outflow narrowings of a left upper arm fistula to the left axillary vein.
2. Above narrowings are obliterated using conventional techniques - please see above description.
3. No central venous obstruction seen.

## **SUMMARY**

The patient was sent for access study based on Vasc-Alert results and found to have a hemodynamically significant stenosis of 90% that was treated by angioplasty. Shortly after intervention the patient's VAPR results returned to normal and fell below the threshold.