

# PREOPERATIVE PWV VALUES ASSOCIATION WITH SUCCESS RATES AND MATURATION TIMES OF NATIVE ARTERIOVENOUS FISTULA IN ESRD PATIENTS

Authors: Ileana PERIDE, Cristiana DAVID, Alexandra CONSTANTIN, Daniela RADULESCU, Andrei NICULAE, Ileana VACAROIU, Ionel Alexandru CHECHERITA

Institutions: Department of Nephrology and Dialysis, "St. John" Emergency Clinical Hospital Bucharest, Romania  
Clinical Department No. 3, "Carol Davila" University of Medicine and Pharmacy Bucharest, Romania

## Objectives:

Classic predictors of dialysis arteriovenous fistula primary patency are age, gender, distal/proximal position. The assessment of vascular wall characteristics using noninvasive methods and easy to determine biomarkers, especially the arterial stiffness measurements, are the new directions of interest for improving predictions for vascular access outcome in ESRD patients.

## Methods:

In 3 years we included in the study 71 successive incident patients aged 54+/-9.2, 51 males, undergone vascular surgery by the same surgeon for the formation of a new native arteriovenous fistula. PWV measurements for the assessment of vascular elasticity were made for each patient 1 week prior the surgery, using the same device operated by one investigator, than we corroborate the results with the primary success rates and the maturation times of the newly developed vascular access. We divided patients in 3 groups created based on PWV values (5-7 m/s, 7.1-9 m/s and over 9 m/s).

## Results:

An overall maturation rate of 69.01 % (49/71) and an average duration of 6.61+/-2.64 weeks to the successful use of the newly created vascular access were noted. PWV values were found in the range of 6.8-14.5 m/s, average 8.49+/-1.9 m/s. We determined a strongly significant difference between maturation times in groups PWV 5-7 m/s and 7,1-9 m/s ( $p = 0.0002$ ), also between groups 5-7 m/s and over 9 m/s ( $p = 0.001$ ) and no significant differences between group PWV 7,1-9 m/s compared with PWV over 9 m/s ( $p = 0.28$ ). High PWV values were associated with longer durations until mature vascular accesses were achieved. Patients with vascular access failure had a significant higher PWV (group average value 10.15+/-2.25,  $p = 0.0006$ ).

## Conclusions:

PWV as a marker of arterial stiffness was found to be associated with the risk of primary arteriovenous fistula failure and the increase of the maturation durations for newly created native vascular access. Along with clinically examination and ultrasound Doppler, PWV can be a reliable and easy to determine parameter in the early outcome predictions for arteriovenous fistula formation. In addition, future clinical trials including biomarker assessments, as high-sensitivity CRP and asymmetric dimethyl-arginine can complete the picture and lead to a better prediction pattern.