

Draft Preview of Abstract #250262

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ASAIO's 52nd Annual Conference

Abstract Number: 250262

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Membership number (if known):

Abstract Classification: Renal

ASAIO Willem J. Kolff Young Investigator Fellowship: No, do not consider me for this fellowship.

Year of Birth: None Selected

ASAIO Paul Malchesky Student Abstract Fellowships: Yes, please consider me for this fellowship.

Member?: No selection made

Title: HISTOLOGICAL AND HEMODYNAMIC END POINTS IN A PIG MODEL OF ARTERIOVENOUS FISTULA STENOSIS

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Body: Arteriovenous fistulae (AVF) are currently the preferred mode of hemodialysis access, despite problems with maturation failure and venous stenosis, which are thought to be related to hemodynamic parameters such as shear stress. The AIM of this study was to develop a pig model of AVF stenosis which would include both hemodynamic and histologic end points.

End to side AVF were created bilaterally in the groin, in 11 pigs. Flow, pressure and internal diameter data (Intravascular Ultrasound [IVUS] analysis of artery and vein) were obtained at the time of AVF placement and just prior to sacrifice. Animals were sacrificed at the 2d, 7d, 28d and 42d timepoints for histological studies.

Significant neointimal hyperplasia was present at the 28 and 42 day time points comprising primarily desmin -ve, vimentin +ve, smooth muscle actin +ve myofibroblasts. Hemodynamic studies demonstrated high flows in the proximal vein with retrograde flow in the distal artery. Using hemodynamic and image data obtained at the time of AVF placement and sacrifice, image reconstruction of the AVF was performed in order to determine shear stress at different time points.

We have described the development of a pig model of AVF stenosis which will allow us to (a) establish correlations between hemodynamic parameters and maturation/stenosis in

AVF (b) use this information to optimize the surgical configuration and placement of AVF and (c) incorporate both histological and hemodynamic end points into the testing of novel therapies for AVF dysfunction.

Disclosure?: No.