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**The influence of inflow cannula malposition and left ventricle size on intraventricular thrombosis risk for Left Ventricle Assist Device** V. KESHAV CHIVUKULA, PATRICK MCGAH, Mechanical Engineering. U. Washington, ANTHONY PRISCO, Dept. Medicine. U. Minnesota, JENNIFER BECKMAN, Div. Cardiology, NANUSH MOKADAM, Div. Cardiothoracic Surgery, CLAUDIUS MAHR, Div. Cardiology, ALBERTO ALISEDA, Mechanical Engineering. U. Washington — Patients with left ventricular assist devices (LVAD) have high incidence of thrombosis and stroke. Patient-specific left ventricle 3D models were created with different LVAD inflow cannula angles with the ventricle axis (in increments of $\pm 7^o$). Left ventricle sizes ranging from $4 - 7.5$ $cm$ in diameter were studied. The aim is optimizing inflow cannula selection and alignment in LVAD patients by understanding the roles that misalignment of the cannula and ventricle size variability play in platelet activation, residence time and agglomeration. Unsteady CFD simulations with patient-specific boundary conditions were performed, and particle tracking was conducted for 10 cardiac cycles to compute the residence time and shear stress histories of platelets for different configurations. Eulerian and Lagrangian metrics, as well as a newly-developed thrombogenic potential score were calculated and used to assess the thrombogenic risk associated with the inflow cannula. Results indicate that inflow cannula misalignment can significantly increase the risk of thrombosis. Cannula sizing without ventricle size consideration affects thrombogenecity for patients outside the normal range (5-6 cm). A methodology is outlined for minimization of thrombotic potential in LVAD implantation strategies

Alberto Aliseda
Department of Mechanical Engineering. University of Washington

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