1143-92-188 **Zengding Bai** (baiz@iu.edu), 402 N Blackfort Street, LD 270, Math Dept, Indianapolis, IN 46202, and **Luoding Zhu*** (luozhu@iupui.edu), 402 N Blackfort Street, LD270, Math Dept, Indianapolis, 46202. *Modeling and simulation of blood flow past the distal anastomosis of arteriovenous graft.*

Arteriovenous grafting (AVG) is a common device applied in hemodialysis for kidney failure patients. It is often failed because of the intimal hyperplasia formed around the AVG anastomosis. In order to help understand the mechanism of the formation of intimal hyperplasia, we investigate the flow patterns and force distributions near the distal anastomosis by modeling and simulation. The anastomosis structure (graft and vein) is modeled by elastic fibers. The surrounding tissue is modeled by elastic springs in viscous fluid. The blood is modeled by viscous incompressible fluid and the flow is numerically simulated by the lattice-Boltzmann method. The fluid-structure-interaction is treated by the immersed boundary method. We perform series of simulations using different Reynolds numbers and AVG configurations including attached angles and vein-graft diameter ratio. Both rigid and deformable cases are considered. Flow fields are visualized and compared. Wall shear stress, wall shear stress gradient, wall normal stress gradient, etc. on the vein/AVG walls are computed and analyzed. Significant differences between the rigid and the deformable cases are found. (Received August 11, 2018)