

Abstract Submitted
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Ansys Fluent versus Sim Vascular for 4-D patient-specific computational hemodynamics in renal arteries¹ AVINASH MUMBARADDI, HUIDAN (WHITNEY) YU, Indiana University-Purdue University Indianapolis, ALAN SAWCHUK, MICHAEL DALRING, School of Medicine, Indiana University — The objective of this clinical-need driven research is to investigate the effect of renal artery stenosis (RAS) on the blood flow and wall shear stress in renal arteries through 4-D patient-specific computational hemodynamics (PSCH) and search for possible critical RASs that significantly alter the pressure gradient across the stenosis by manually varying the size of RAS from 50% to 95%. The identification of the critical RAS is important to understand the contribution of RAS to the overall renal resistance thus appropriate clinical therapy can be determined in order to reduce the hypertension. Clinical CT angiographic data together with Doppler Ultra sound images of an anonymous patient are used serving as the required inputs of the PSCH. To validate the PSCH, we use both Ansys Fluent and Sim Vascular and compare velocity, pressure, and wall-shear stress under identical conditions.

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