

Patient Specific 3D Numerical Fluid-Structure Interaction Model for Blood Flow in an Atherosclerotic Artery

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Abstract

The inflammatory process of atherosclerosis leads to the formation of an atheromatous plaque in the intima of the blood vessel. The plaque rupture may result from the interaction between the blood and the plaque. A three dimensional realistic fluid-structure interaction (FSI) model is used to perform the study. An absorbing boundary condition is imposed directly on the outflow in order to cope with the spurious reflexions due to the truncation of the computational domain. We show that the risk of plaque rupture is higher in the case of a moving wall, while in the case of a fixed wall the risk of progression of the atheromatous plaque is more important.

Keywords: atherosclerosis, fluid-structure interaction, blood flow, WSS.

References

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