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Effects of the flexibility of the arterial wall on the wall shear stresses and wall tension in Abdominal Aortic Aneurysms. ANNE-VIRGINIE SALSAC, Ecole Polytechnique, MIGUEL FERNANDEZ, INRIA Rocquencourt, JEAN-MARC CHOMAZ, PATRICK LE TALLEC, Ecole Polytechnique — As an abdominal aortic aneurysm develops, large changes occur in the composition and structure of the arterial wall, which result in its stiffening. So far, most studies, whether experimental or numerical, have been conducted assuming the walls to be rigid. A numerical simulation of the fluid structure interactions is performed in different models of aneurysms in order to analyze the effects that the wall compliance might have on the flow topology. Both symmetric and non-symmetric models of aneurysms are considered, all idealistic in shape. The wall mechanical properties are varied in order to simulate the progressive stiffening of the walls. The spatial and temporal distributions of wall tension are calculated for the different values of the wall elasticity and compared to the results for the rigid walls. In the case of rigid walls, the calculation of the wall shear stresses and pressure compare very well with experimental results.

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