ANSYS Flow Through an Aortic Aneurysm - Validation

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Validation

In order to verify that the simulation is accurate, it must be compared to a study that is similar in nature. This tutorial will have its results compared with the results from a study done by the Team for Advanced Flow Simulation and Modeling (TAFSM). In a study called “Patient-Specific Computer Modeling of Arterial Dynamics and Blood Flow,” the TAFSM collaborated with researchers at Texas Medical Center to identify arterial data in different categories and demonstrate the effectiveness of computer modeling in those categories. One of these categories is the Abdominal Aortic Aneurysm, in which the aneurysm was created digitally and subjected to flow in order to predict the flow using two different computational methods. Both methods resulted the same plot, shown below, which can be compared to the AIM solutions due to the similarity in geometry.

Below is the plot output by AIM for the same situation. As a qualitative comparison, it can been seen that the two plots are similar. There is an area of recirculation in the aneurysm, which is the key feature of aortic aneurysms. Further validation with experimental or other numerical results would be needed to assure the accuracy of the simulation.

Reference

Tezduyar, Tayfun E. "Patient-Specific Computer Modeling of Arterial Dynamics and Blood Flow." Team for Advanced Flow Simulation and Modeling. Rice University, n.d. Web. 16 June 2017.

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