A CFD Approach to Quantifying the Hemodynamic Forces in Giant Cerebral Aneurysms

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The Hemodynamics of Aneurysms

What is an aneurysm?
A localized, blood-filled dilation of a blood vessel caused by disease or weakening of the vessel wall.

The diagnostic implications:
1) High risk of hemorrhage
   - causing stroke or death
   - mortality rate: 68% (after 2 yrs.), 85% (after 5 yrs.)
2) Cerebral compression or distal thromboembolism
   - leading to progressive neurologic deficits

Figure 5: Geometry of aneurysm used in simulation

Wall Shear Stress Distribution

Velocity Distribution
No Blocked Inlets