

Abstract Submitted
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Cerebral aneurysms: relations between geometry, hemodynamics and aneurysm location in the cerebral vasculature TIZIANO PASSERINI, ALESSANDRO VENEZIANI, Emory University, LAURA SANGALLI, PIERCESARE SECCHI, SIMONE VANTINI, Politecnico di Milano — In cerebral blood circulation, the interplay of arterial geometrical features and flow dynamics is thought to play a significant role in the development of aneurysms. In the framework of the Aneurisk project, patient-specific morphology reconstructions were conducted with the open-source software VMTK (www.vmtk.org) on a set of computational angiography images provided by Ospedale Niguarda (Milano, Italy). Computational fluid dynamics (CFD) simulations were performed with a software based on the library LifeV (www.lifev.org). The joint statistical analysis of geometries and simulations highlights the possible association of certain spatial patterns of radius, curvature and shear load along the Internal Carotid Artery (ICA) with the presence, position and previous event of rupture of an aneurysm in the entire cerebral vasculature. Moreover, some possible landmarks are identified to be monitored for the assessment of a Potential Rupture Risk Index.

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