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Experimental Study of Flow Through Carotid Aneurysms
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There is evidence that traditional endovascular techniques like coiling are not effective for treatment of wide-neck cerebral aneurysms [1]. Flow Diverter Stents (FDS) have emerged as promising devices for treating complex aneurysms since they enable treatment of aneurysms that were considered untreatable before. Recent studies suggest a number of associated risks with FDS, including in-stent thrombosis, perianeurysmal edema, delayed hemorrhage, and perforator occlusions. Chong et. al. [2] simulated hemodynamic behavior using patient-specific data. From their study, it is possible to infer that the standard deviation of energy loss could be a good predictor for intervention success. The aim of this study is to investigate the flow in models of cerebral aneurysms before and after FDS insertion using PIV. These models will be based on actual clinical studies and will be fabricated with advanced additive manufacturing techniques. These data will then be used to explore flow parameters that could inform the likelihood of post-intervention aneurysm rupture, and help determine FDS designs that better suit any particular patient before its procedure. [1] T. Becske et al. J Neurosurg (2016): 1-8. [2] W. Chong et al. American J Neurorad35.1 (2014): 136-142.

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