Mechanics as a convenient tool for characterizing morphology of aneurysms

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Attempts to simulate the biomechanical events – be that blood flow or wall tension - within patient-specific aneurysms are always going to be limited by our inability to measure the variability in boundary conditions. Consequently, sophistication in modeling is unlikely to improve upon the fidelity in predictions made about such biomechanical events within a population of study subjects. Instead, a more productive endeavor would be to see such biomechanical simulations as an attempt at differentiation of study subjects based on the only input variable that tends to be known a priori, with any level of certainty – namely, morphology. Metrics derived form biomechanical simulations of aneurysms with differing morphologies but under similar boundary conditions are therefore merely metrics of morphology itself, only that they quantify morphology within some basis in physics of aneurysm pathogenesis. Biomechanical metrics from a large population study will be presented and discussed from a perspective of morphological assessment.

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