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# Mechanical assessment of arterial dissection in health and disease: advancements and challenges

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## Abstract

Arterial dissection involves a complex series of coupled biomechanical events. The past two decades have witnessed great advances in the understanding of the intrinsic mechanism for dissection initiation, and hence in the development of novel therapeutic strategies for surgical repair. This is due in part to the profound advancements in characterizing emerging behaviors of dissection using state-of-the-art tools in experimental and computational biomechanics. In addition, researchers have identified the important role of the microstructure in determining the tissue’s fracture modality during dissection propagation. In this review article we highlight a variety of approaches in terms of biomechanical measurements, computational modeling and histological/microstructural analysis used to characterize a dissection that propagates in healthy and diseased arteries. Notable findings with quantitative mechanical data are reviewed. We conclude by discussing some unsolved problems that are of interest for future research.

Keywords: Aorta; Dissection; Aneurysm; Fracture Energy; Microstructure

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