Book Review

Review of “Biomechanics and Mechanobiology of Aneurysms”. Edited by Tim McGloughlin

Aneurysms of the abdominal and thoracic aorta, as well as of the cerebrovascular circulation represent an area of active study among a diverse group of clinicians, scientists, and engineers both within academia and industry. In the United States alone, approximately, 40,000 patients undergo repair of an abdominal aortic aneurysm each year and that number is expected to increase as the population over the age of 65 years doubles in the coming decade. A far larger number of patients are at risk for aneurysmal disease and optimal approaches for screening and surveillance, as well as medical and surgical management remain areas of active investigation. The challenges of how to best manage thoracic and cerebrovascular aneurysms further magnify this challenge.

“*Biomechanics and Mechanobiology of Aneurysms*” is one of a series of volumes published by Springer in “*Studies in Mechanobiology, Tissue Engineering and Biomaterials*” and presents the unique nexus that aneurysmal disease holds among those who work at the interface of the biological, physical, and clinical sciences. This textbook is comprised of 13 chapters written by distinguished leaders in the field and has been expertly assembled and edited by Tim McGloughlin of the Departments of Mechanical, Aeronautical, and Biomedical Engineering at the University of Limerick.

This text provides a well-balanced overview of the epidemiology and pathophysiology of aneurysms, imaging technologies, and state-of-the-art summaries of aortic biomechanics. Particularly lucid chapters describe current computational approaches that have been used to more accurately define the mechanical responses of aneurysmal tissue, as well as evolving endovascular devices that have been used for treatment. Fluid–Structure Interaction (FSI) studies are a relatively recent development in this field and the description of this work will provide a solid foundation for those who are newly entering this area of focus. The clinical implications of these computational studies both in the areas of diagnosis and in device design are clearly discussed. The inclusion of chapters on thoracic and cerebral aneurysms, as well as animal models round out a very complete text. Overall, the assembly of chapters is logical and the writing quite clear. This contribution will provide a very helpful compilation of material and primary citations for any new student in this area whether entering through the doorways of clinical medicine, engineering, mathematical sciences, or vascular biology.

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