
Preface

Through the ages of exploration and enlightenment the heart has kept its fascination as the metaphor of life. Its firm entrenchment in human emotion and consciousness and the overwhelming socioeconomic importance of its diseases make noninvasive visualization and diagnosis of the heart and its diseases the coveted “holy grail” of medical imaging.

Imaging of the heart has always been technically challenging, because of the heart’s continuous motion. The introduction and ongoing technical improvement of fast ECG-synchronized computed tomography (CT) scanning of the heart has enabled imaging of the elusive but cardinal cardiac anatomy and pathology with a combination of speed and spatial resolution that is hitherto unparalleled by other noninvasive imaging modalities. Accordingly, considerable interest has been directed in recent years at the beneficial utilization of CT for noninvasive interrogation of the coronary arteries and for imaging studies of anatomic and functional sequelae of ischemic heart disease, such as cardiac perfusion, motion, and viability. The current and potential future roles of CT for these and other applications are the subject matter of this book.

CT of the Heart, however, does not claim to have all of the answers. CT of the heart is a nascent but rapidly evolving field, and the act of condensing expert knowledge and experience in the format of a book can only result in a snapshot of the status quo at a certain point in time. Novel iterations of existing technology and profoundly new concepts of medical imaging are already on the horizon. The benefits and indications of integrating CT into the diagnostic algorithm of heart disease is intensely researched and discussed: to date, the diagnostic value of CT coronary calcium measurements and the exact role of this marker for cardiac risk stratification remain unclear and controversial. We are only beginning to understand the usefulness and potential clinical application of CT angiography for noninvasive detection of coronary artery stenosis. Cross-sectional assessment of the coronary artery wall for noninvasive identification, characterization, and quantification of atherosclerotic lesions and dis-

ease burden is a promising and exciting but yet untested concept.

Within *CT of the Heart*, the reader will be exposed to a variety of expert opinions on the respective topics. Some authors will assume a more optimistic or a more conservative perspective on cardiac CT applications. Because of the lack of large-scale clinical studies, only future experience will show who may be right. It is a declared goal of this book to showcase the full scope of current developments, research, and scientific controversy regarding the principles and applications of CT of the heart. Truth is most likely to be found in the equilibrium of opinions. The publisher and I have striven to maintain this equilibrium by providing a platform for differing opinions and for different technical approaches to CT of the heart. To mitigate commercial overtones and bias, which so often accompany the first steps of a potentially important new technology, contributions of users and/or developers of all cardiac CT manufacturers were included. Scientists representing different companies graciously disregarded commercial divisions and agreed to co-author chapters in order to provide the reader with a truly balanced view on cardiac CT technology.

Accordingly, *CT of the Heart* is the work of many. I am indebted to Dr. Christopher Cannon, the series editor, and to Paul Dolgert of Humana Press for entrusting me with the role of editor. I am grateful to my chairman, Dr. Philip Costello, for his unfailing guidance, support, and friendship. I feel very, very honored by all the kindness that my many friends in the cardiac imaging community have shown me by volunteering their time, their knowledge, their experience, and the vision that went into their respective contributions. All authors are highly respected experts in their fields and this book would never have come to pass without their incredible support, for which I am so grateful. Finally I would like to thank Tracy Catanese and Craig Adams of Humana Press for so efficiently and expertly steering the production of *CT of the Heart*.

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