

Foreword

Although in its third decade, CT scanning remains a highly dynamic field. Rapid developments in CT technology, particularly over the past 5 years, have challenged radiologists to transform organ- and disease-specific CT acquisition protocols to take full advantage of the capabilities of 4-, 8-, and 16-row CT scanners. At no time in the past 3 decades has there been a greater diversity in CT scanner capabilities amongst those currently in clinical use. Further challenging radiologists are the new applications made possible by these technologic improvements. CT angiography and cardiac CT, as well as evolving post-processing technologies are among the newest and most dynamic areas of CT practice.

As challenging as the incorporation of rapidly evolving CT techniques and applications is to the practicing radiologist, the process of learning the practice of body CT as a resident seems particularly challenging. When I performed my first rotation in body CT as a resident in 1990, CT was a “mature” technology. We acquired almost all body CT scans with contiguous 10-mm thick acquisitions regardless of anatomic region or disease in question. My education focused squarely on the development of a working knowledge of transverse cross-sectional anatomy, CT manifestations of disease processes, and the development of cogent differential diagnoses. While these specifics of CT education of 1990 still represent the cornerstones of CT education in 2003, there is simply far more to be learned today.

This book by Mathias Prokop, Michael Galanski, Aart van der Molen, and Cornelia

Schaefer-Prokop is perfectly suited to the task of helping residents achieve the needed competencies in body CT scanning to practice CT at its highest level. The authors are CT experts, who have established their reputations by embracing the technical developments of spiral and multi-row CT and using them to refine existing and develop new CT applications. This excellent text embodies the fresh perspective that they bring to a book on body CT. It is a terrific balance of CT techniques and interpretation in a comfortably paced, richly illustrated, comprehensive, and current textbook. After seven lucid chapters encompassing all aspects of CT principles and techniques, 18 organ-focused chapters cover the body from the neck through the musculoskeletal system. The authors have included clinically relevant CT anatomy, anatomic and disease-adapted techniques using single, 4- and 16-row CT scanners, disease manifestations, and image interpretation and have put special attention to new and advanced applications such as image processing, CT angiography and cardiac CT.

In an era of increasingly subspecialty-focused CT books, it is nice to see a manageable volume that encompasses the full spectrum of body CT. Both trainees in radiology as well as practicing radiologists wishing to bring their knowledge up-to-date will benefit greatly from this outstanding textbook.

Geoffrey D. Rubin, M.D.
Stanford University School of Medicine
Stanford, California

Preface

With the introduction of spiral scanning, and more recently, multislice technology, computed tomography has seen rapid technical advances and a growing number of new applications. The new technologies allow CT to defend its leading position as the cross-sectional imaging technique of choice for many indications. Multislice scanning, in particular, has transformed CT from a transaxial cross-sectional modality into a three-dimensional imaging tool.

The technical advances have yielded a substantial increase in diagnostic capabilities, improved accuracy and diagnostic confidence. Many indications that used to be the domain of projection radiography have been taken over by CT, among them diagnostic GI tests, skeletal tomography, and most intraarterial angiographic procedures. Improved 3D capabilities enable better guidance of surgical or interventional procedures, and have revolutionized the way we analyze disease processes.

At the same time, examinations have become more complex and demanding. The number of variable parameters has grown, and for each organ system the examination must be carefully adapted to the clinical question to obtain optimum results. New types of artifacts arise. Radiation exposure is gaining increased attention because the new techniques harbor the possibility both for dose reduction and for substantial dose increase. Knowledge of the underlying principles of image acquisition is essential for making choices appropriate for individual patients.

Given this background, a new book on body computed tomography was needed that would pay tribute to the new opportunities and demands and that reflects the current state of spiral and multislice technology, without neglecting the foundation of decades of experience in image analysis. This book reflects the current state of knowledge at the time of print, including scanning technique with 16-slice scanners. Technical principles and image interpretation

take up a large portion of this book: they are the prerequisite for taking full advantage of the technique while at the same time preventing mistakes. The suggested scan parameters form a sensible compromise between image quality, diagnostic yield, and radiation exposure.

The organ chapters are subdivided into pathologic entities, discussing the indications for CT in the context of other imaging modalities. CT anatomy is reduced to the most important features necessary for correct diagnostic evaluation of the images. Special emphasis was placed on the organ- and indication-specific choice of examination technique, interpretation criteria and organ-specific pathology. New or improved applications such as CT colonography, cardiac CT, and CT angiography are introduced; however, we elected not to enter the heated debate on CT screening, in particular whole body screening, as the body of evidence to support such practice is presently insufficient.

To optimize readability, an up-to-date section with suggestions for further reading was placed at the end of the book. This does not cover the long history of CT literature but focuses on newer literature dealing with spiral and multislice technology. A more extensive list is available on the product information page at the publisher's website (www.thieme.com; search for "Prokop").

Since its inception, CT has been a cornerstone in radiology. We believe that the concept of this book, with its emphasis on both diagnostic and technical aspects, pays tribute to the future challenges of our discipline. We hope to have contributed to a better understanding of this intellectually stimulating and powerful technique, and that this book will become a constant companion in the daily work of radiologists worldwide.

M. Prokop
C. Schaefer-Prokop

M. Galanski
A. J. van der Molen