Virtual colonoscopy or computed tomographic (CT) colonography is a recent radiological technique enabling detection of tumoral lesions in the colon. As in the past two decades its radiological predecessor, double-contrast barium enema (DCBE), has lost most of its adherents, CT colonography constitutes a real opportunity for gastrointestinal radiologists to play a preponderant role in the diagnosis and treatment of colorectal cancer and the adenoma. Since its introduction by David Vining in 1994, CT colonography has very rapidly shown its virtues as a possible substitute for DCBE. The first important study on CT colonography by Helen Fenlon from the Boston Medical Center, published in 1999 in the *New England Journal of Medicine*, reporting very good lesion detection, underscored this aspiration. Since then, CT colonography has markedly evolved by the refinement of existing techniques and the introduction of new ones: fecal tagging with the option of reducing the cathartic or laxative part of the preparation, the use of carbon dioxide to inflate the colon, the introduction of multidetector CT scanners producing spectacular images with isotropic resolution and reducing the examination time for the patient, the use of ultra-low-dose scan protocols reducing the radiation burden, improvement of the image postprocessing with fast three-dimensional functions, and computer-aided diagnosis (CAD). These technical improvements help both the radiologist and the patient. For the former, there is an improvement of the reading conditions, possibly improving diagnostic accuracy; for the latter, the preparation and examination are more comfortable.

Despite these improvements in technique, however, CT colonography has not yet been able to break through as an acceptable tool for colorectal cancer screening. This is because of the disappointing results in some recent large multicenter trials. Most probably suboptimal technique in preparation, colonic distension, scanning parameters, and image postprocessing was the main cause of this failure. In fact, each of these stages needs rigorous attention if one is to achieve optimal results like those obtained in another momentous study, performed by Perry Pickhardt and published in the *New England Journal of Medicine* in 2003. Based upon a meticulous technique of preparation with fecal tagging, colonic inflation, scanning parameters, and reading conditions, CT colonography obtained better scores than optical colonoscopy in this study. Furthermore, the examinations were interpreted by a team of radiologists experienced in CT colonography. This brings us to another important aspect of CT colonography. As was the case with DCBE, the degree of experience needed to adequately read and interpret CT colonography should not be underestimated.
In experienced hands, CT colonography seems to be ripe for prime-time colorectal cancer screening. However, it is not yet ready for widespread application of screening for the aforementioned reasons. CT colonography is now at an important crossroad, and serious efforts should be undertaken to take it to the level of being a widely accepted screening method for colorectal cancer. To fulfill this goal, tremendous efforts are being undertaken in both Europe and the United States to educate radiologists with workshops, data banks, and numerous scientific publications.

With contributions from several leaders in the field, this book, entirely dedicated to this exciting technique, sets out to be a guide for both the beginner and the experienced CT colonographer. It provides the reader with a wealth of information on all the prerequisites to perform state-of-the-art CT colonography.

We want to express our sincere gratitude and appreciation to all the renowned radiologists experienced in CT colonography who have contributed to this volume. We also thank Professor Albert L. Baert, who gave us the unique opportunity to edit this book and to bring it to a successful conclusion.

We hope that the reader will enjoy this work and will find it a help when performing CT colonography.

Roeselare, Belgium

Philippe Lefere
Stefaan Gryspeerdt
Virtual Colonoscopy
A Practical Guide
Lefere, P.; Gryspeerdt, S. (Eds.)
2010, XII, 253 p., Hardcover
ISBN: 978-3-540-79879-8