Virtual Colonoscopy
A Practical Guide
2nd Edition

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Foreword by
A. L. Baert

With 198 Figures in 355 Separate Illustrations, 146 in Color and 16 Tables

Springer
Foreword

Rapid progress in the technique and practice of virtual colonoscopy as well as the continuing clinical high interest for this radiodiagnostic procedure made this second edition, only 3 years after the publication of the first edition of this successful volume, necessary.

This new edition includes the latest study results and technical developments of this exciting noninvasive diagnostic modality for the evaluation of the colon. The technical presentation and lay out of the text and of the many new illustrations are impeccable.

The editors were again able to ensure the collaboration of many international leaders in the field and the book offers a very comprehensive overview of all aspects and issues of CT colonography with a focus on how to perform practically this examination, which requires meticulous technique starting from rigorous preparation, then the conduct of the study itself, and finally the interpretation of the results.

I am very much indebted to the editors and the collaborating authors for preparing this outstanding volume in a record short time period, which enabled them to include the latest technical advances in this rapidly evolving important radiological method. It is highly recommended to general and gastrointestinal radiologists as well as gastroenterologists as a most welcome update of their knowledge and as a practical guide in their daily practice. I am convinced that this second edition will meet the same success with our readership as the first one.

Leuven, Belgium

Albert L. Baert
Series Editor
The publication of this second revised edition of the practical guide on virtual colonoscopy less than 4 years after the publication of the first edition underscores the big interest for CT colonography. In the past 4 years, the promising expectations of the technique were confirmed by several large multicenter studies obtaining very good results for colorectal neoplasia detection. This was possible by establishing a state-of-the-art technique of CT colonography (CTC) in combination with image interpretation performed by experienced teams. This updated edition confirms the efforts of the international CTC community to promote this technique as a widely accepted imaging technique for exploring the colon for colorectal neoplasia. In the past 4 years, these efforts have been focused on the development and fine tuning of the state-of-the-art application of CTC in order to allow widespread implementation of a high-quality total colonic examination. All different aspects of the CTC technique are widely covered in this edition. In the past years, it also became obvious that a structured education is mandatory in obtaining sufficient expertise in CTC before starting the technique in a clinical practice. This expertise will prove invaluable for CTC to become a robust technique performed on a high scientific level by a large community of radiologists. Once this goal is achieved, it will be possible considering reimbursement of CTC and its use as tool for population-based screening for colorectal cancer.

We are very grateful to all authors of the first and second edition, who made both issues a very rich resource of information on CT colonography and to the series editor of this book, Professor Dr. A.L. Baert, who enabled this second revised edition.

Roeselare, Belgium

Philippe Lefere
Stefaan Gryspeerdt
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

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