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Pediatric Gastrointestinal Imaging and Intervention

Second Edition

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Techniques for Investigation of the Pediatric

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Preface

The burgeoning of new modalities and their subsequent clinical application over the last decade has necessitated another reappraisal of the imaging required for every organ system in children, and the gastrointestinal tract is no exception in this regard. Hence, the need for updating this book from its first edition in 1989. The gastrointestinal tract can now be imaged by a wide variety of radiological modalities and techniques, including sonography, plain films, fluoroscopy, computed tomography (CT), nuclear medicine, angiography, interventional studies, and magnetic resonance (MR). In most pediatric hospitals, all of the latest imaging modalities are available, including modern fluoroscopic units with digital hard or soft copy, sonography with colour Doppler, SPECT Nuclear Medicine Imaging Cameras, spiral CT scanners, MR scanners, and digital angiographic units.

In this text the gastrointestinal tract refers to all intraabdominal structures excluding the genitourinary tract and adrenal glands. Our purpose is to review the clinical and radiological features across the spectrum of imaging modalities for each clinical diagnosis affecting the gastrointestinal tract, and to consider the most appropriate imaging modality for each situation. The information in this book constitutes a distillate of our combined knowledge, and also reflects the great assistance of many other experts as contributing authors here as well as those cited in the literature. We are deeply indebted to both groups.

The first two chapters, kindly provided by Drs. Catherine Chen, Peter Kim, Jonathan Teitelbaum, and Allan Walker, provide an introductory overview of the common clinical findings related to the gastrointestinal tract as encountered by pediatric gastroenterologists and pediatric surgeons. In Chapter 3, we have provided an overview of the different techniques of examination that we and others use with a section provided by Dr. Helen Nadel on Nuclear Medicine. Many techniques are markedly different from those performed in adults, and this section should be particularly helpful to residents, fellows, and adult radiologists that perform examinations in children. Pediatric radiologists may also find it interesting to compare these techniques with their own.

In the next two chapters, new additions to this edition, two experts in their

fields, namely Drs. Margaret Marcon and Peter Chait, review the current applications of endoscopy and interventional radiology respectively. These areas are rapidly changing and should be of great interest to all in this field.

In the remaining nine chapters, each region of the gastrointestinal tract, from esophagus to spleen, is discussed in turn, with respect to normal and abnormal radiological findings. Common and rare abnormalities are illustrated by various modalities, and for each condition the modality of choice is discussed. Which modality to use will depend, of course, on the available equipment and expertise as well as the clinical problem itself. These sections are the core of the book and cover the broad range of diseases likely to be met by radiologists, gastroenterologists, pediatric surgeons, and pediatricians.

For the purposes of this book, the ideal modality is defined as that which provides sufficient information rapidly enough to ensure proper patient management with minimum patient discomfort, radiation exposure, and cost. This is based primarily upon our experience at the Hospital for Sick Children in Toronto, the British Columbia Children's Hospital in Vancouver, and other pediatric hospitals listed for the remaining contributors.

This book should be useful to residents, fellows, and adult and pediatric radiologists and interventional radiologists as well as of interest to many other physicians caring for children including pediatricians, gastroenterologists, hepatologists, pediatric surgeons, and paediatric oncologists. For those so inclined, an extensive bibliography is included to serve as a basis for further study. Our aim is to assist a varied group of clinicians and radiologists in making safe, accurate, and rapid diagnoses that result in expeditious management of pediatric patients.

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Acknowledgments

We are grateful to the many colleagues and friends who supported us while this second edition was in progress. Many other authors have helped with this second edition and we are grateful to them all for their valuable contributions as listed in their respective chapters. Any omissions in the text are not due to their considerable efforts but must be shouldered by us.

Without the current and former members of the general divisions of radiology and ultrasound in our hospitals who performed many of the studies that make up our total experience, this book would not have been possible. These radiologists include many of the new authors within this edition and also Drs. Doug Alton, Pat Burrows, Alan Daneman, Robyn Cairns, Peter Liu, David Manson, Don Newman, Bernard Rielly, Michael Sargent, and Dan Wilmot. A special mention should be made of all the students and fellows who provided the inspiration to delve more deeply into many areas with their continual enthusiasm. We value their friendship, helpful advice and encouragement. In addition, Dr. Derek Harwood-Nash was always so encouraging to academic endeavor that he helped form our method of practice. It was a very sad day indeed when we lost such a mentor in such an early and unexpected way.

Many support staff have been involved. We are particularly grateful to Kerri Detz, Abby MacInnes, Cheryl Wattam, Linda Halpert, and Lori Fearon, and most recently Laurie Taylor. The Visual Education Department of The Hospital for Sick Children, Toronto, and in particular Lou Scaglione and Mary Casey, prepared many of the illustrations.

A very special mention must go to Debbie Kerrigan, our contrast procedure nurse at The Hospital for Sick Children, Toronto. Debbie helped organize a teaching file collection, from which many of the illustrations have been taken. In addition, she labelled all the pictures and accompanying slides a Herculean task, which she performed not only efficiently, but with an excellent sense of humor and remarkable cheerfulness. It is a real pleasure to know her and her husband Alasdair and to be their friends.

We would also like to thank the staff at BC Decker, and especially Diane Dent, Paul Donnelly, Drew McCarthy, and Jennifer Therriault, for all their help and understanding in bringing this book to a conclusion.

Finally, a deep thank you for our long-suffering families, our wives Judy and Elizabeth, and our children, Charles, Rosemary, Henry, André, Laura, Michael and Jonathan who had to live through the rebirth of this book, the second edition.

"At last the albatross is no longer around our necks."

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*To Judy, Charles, Rosemary, Henry
and my parents, without whose support
neither edition would have been possible.
DAS*

*To Elizabeth, André, Laura, Michael and
Jonathan the inspiration for all I do.
PSB*

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