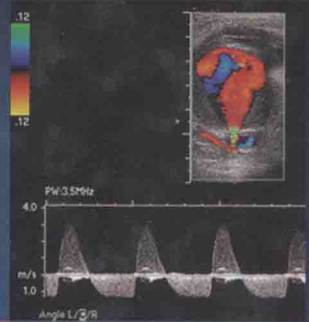


VOLUME ONE

DIAGNOSTIC ULTRASOUND

4TH EDITION



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DIAGNOSTIC ULTRASOUND

FOURTH EDITION

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*In memory of **my parents, Drs. Ruth and Raymond Masters**, who encouraged me to enjoy the intellectual challenge of medicine and the love of making a difference in patients' lives.*

CMR

*To a lifetime of **clinical colleagues, residents, and fellows** who have provided me with a wealth of professional joy. And **to my wonderful family**, for your love and never-ending support.*

SRW

*To **Cathy, Nicholas, Ben, and Laurie**, for all the love and joy you bring to my life. You are all I could ever hope for.*

JWC

*To **Alex, Becky, and Julie**—your love and support made this work possible.*

DL

Preface

The fourth edition of *Diagnostic Ultrasound* is a major revision. Previous editions have been very well accepted as a reference textbook and have been the most commonly used reference in ultrasound education and practices worldwide. We are pleased to provide a new update of images and text with new areas of strength. For the first time we are including video clips in the majority of chapters. The display of real-time ultrasound has helped to capture those abnormalities that require a sweep through the pathology to truly appreciate the lesion. It is similar to scrolling through images on a PACS and has added great value to clinical imaging. Daily we find that cine or video clips show important areas between still images that help to make certain a diagnosis or relationships between lesions. Now we rarely need to go back to reevaluate a lesion with another scan, making patient imaging more efficient.

We are pleased to announce that a new editor, Deborah Levine, has joined us, providing expertise in fetal imaging, in both obstetrical sonography and fetal MRI. Prenatal diagnosis is one of the frontiers of medicine that continues to grow as a field and has pushed our understanding of what happens to the fetus before we see a lesion at birth. These antecedents of disease in children and adults help us to arrange care for patients long before the mother goes into labor.

Approximately 90 outstanding new and continuing authors have contributed to this edition, and all are recognized experts in the field of ultrasound. We have replaced at least 50% of the images without increasing the size of the two volumes, so new value has been added to all of the chapters, particularly for obstetrics and gynecology. The fourth edition now includes over 5000 images, many in full color. The layout has been exhaustively revamped, and there are highly valuable multipart figures or key figure collages. These images all reflect the spectrum of sonographic changes that may

occur in a given disease instead of the most common manifestation only.

The book's format has been redesigned to facilitate reading and review. There are again color-enhanced boxes to highlight the important or critical features of sonographic diagnoses. Key terms and concepts are emphasized in boldface type. To direct the readers to other research and literature of interest, comprehensive reference lists are organized by topic.

Diagnostic Ultrasound is again divided into two volumes. Volume I consists of Parts I to III. Part I contains chapters on physics and biologic effects of ultrasound, as well as more of the latest developments in ultrasound contrast agents. Part II covers abdominal, pelvic, and thoracic sonography, including interventional procedures and organ transplantation. Part III presents small parts imaging including thyroid, breast, scrotum, carotid, peripheral vessels, and particularly MSK imaging. Newly added is a chapter on musculoskeletal intervention.

Volume II begins with Part IV, where the greatest expansion of text and images has been on obstetric and fetal sonography, including video clips for the first time. Part V comprehensively covers pediatric sonography.

Diagnostic Ultrasound is for practicing physicians, residents, medical students, sonographers, and others interested in understanding the vast applications of diagnostic sonography in patient care. Our goal is for *Diagnostic Ultrasound* to continue to be the most comprehensive reference book available in the sonographic literature with a highly readable style and superb images.

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To all of our outstanding authors who have contributed extensive, newly updated, and authoritative text and images. We cannot thank them enough for their efforts on this project.

To Sharon Emmerling in Denver, Colorado, whose outstanding secretarial and communication skills with authors and editors have facilitated the review and final revision of the entire manuscript. Her enthusiastic attention to detail and accuracy has made this our best edition ever.

To Gordana Popovich and Dr. Hojun Yu for their artwork and schematics in Chapter 8, The Gastrointestinal Tract.

To Dr. Hojun Yu for his schematics on liver anatomy in Chapter 4, The Liver.

To Lisa Barnes, developmental editor at Elsevier, who has worked closely with us on this project from the very beginning of the fourth edition. We also thank the enthusiastic participation of many other Elsevier experts including **Rebecca Gaertner**, Elsevier's guiding hand overseeing the project. She has patiently worked with us through all the final stages of development and production. It has been an intense year for everyone, and we are very proud of this superb edition of *Diagnostic Ultrasound*.

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