

Preface

Although the ability to evaluate MRI studies is critical to the practice of orthopaedic surgery, most orthopaedic surgeons learn this skill in an informal fashion and with experience throughout their training and in clinical practice. As a result, we may not have a thorough understanding of the science and physics of MR imaging and the various pulse sequences that are available for obtaining the images. Many of us—those in general orthopaedic surgery practice as well as those in subspecialties such as sports medicine, spine surgery, hand and upper extremity surgery, foot and ankle surgery, and orthopaedic oncology—prefer to read our patients' MR imaging studies ourselves rather than rely solely on the "official" radiologist's report. We learn to make preoperative, intraoperative, and postoperative decisions based on those readings. However, unlike radiologists who are trained to evaluate MRI studies in a systematic fashion, we may be more likely to rely on our anatomic expertise and experience, which may not be the most effective method.

MRI for Orthopaedic Surgeons will help teach orthopaedic surgeons how to systematically evaluate and interpret MR imaging studies of the musculoskeletal system. Although there are many excellent books that focus on MR imaging of the musculoskeletal system, this one is unique in that it is written by orthopaedic surgeons and radiologists specifically for orthopaedic surgeons. As such, it is clinically oriented and presents the information from a perspective and at a level that an orthopaedic surgeon will appreciate. It is also an excellent reference for radiologists and others—such as physical medicine and rehabilitation clinicians, rheumatologists, and nonoperative musculoskeletal care specialists—who read musculoskeletal MR images and who would like to gain a better appreciation of the associated clinical aspects.

My desire to create this book stems from my interest and background in musculoskeletal imaging and from my recognition of the fact that the ability to accurately evaluate MR imaging studies is critical to the practice of orthopaedic surgery. Along these lines, my colleagues and I have developed

instructional materials and lectures for the orthopaedic surgery residents at our institution to teach them how to systematically evaluate MR imaging studies of the musculoskeletal system. In doing so, we realized that many of the textbooks and other resources on the topic of musculoskeletal MRI are written by radiologists and directed toward radiologists and radiologists in training. This perceived void of imaging resources for orthopaedic surgeons led me to compile and edit this textbook.

MRI for Orthopaedic Surgeons is organized into five sections: 1) core concepts, 2) upper extremity, 3) lower extremity, 4) spine, and 5) special considerations. Each of these five sections, or each chapter, can be read independently, but the textbook is best read in sequential chapter order. In particular, before reading the chapters on individual anatomic areas, the clinician should review Chapter 2, Normal MRI Anatomy of the Musculoskeletal System. That chapter provides a moderately comprehensive evaluation of the key anatomic structures and concepts with which one should be familiar when reviewing an MR imaging study of a particular region; it also serves as a reference point when evaluating the pathology images in a region-specific chapter.

The book features two different types of chapters: region-specific and concept-specific. The region-specific chapters (for example, The Shoulder and The Cervical Spine) share a common organization, with sections on specialized pulse sequences and protocols, traumatic pathology, degenerative pathology, infectious conditions, and postoperative findings. The concept-specific chapters (for example, Advanced Techniques in Musculoskeletal MRI) are organized in a fashion that best suits the individual chapter's content and the goal of providing orthopaedic surgeons with the information they need to maximize their proficiency in evaluating and interpreting MR imaging studies.

MRI for Orthopaedic Surgeons contains more than 700 MR images and 130 artist's drawings that have been carefully selected and created to help illustrate and teach the essential anatomy and pathology that an orthopaedic surgeon,

other clinician, or radiologist should be able to recognize and define when evaluating an MRI study of the musculoskeletal system. As such, much of the material can be learned effectively by reviewing the images and illustrations along with the associated figure legends.

Most of the chapters have been authored by both orthopaedic surgeons and radiologists. Some, such as the region-specific chapters, have orthopaedic surgeons as the primary authors, with radiologists as co-authors for accuracy and clarity from their standpoint. Others (for example, Essentials of MRI Physics and Pulse Sequences) have been written solely by radiologists, but the presentation of the material

has been specifically designed with an orthopaedic surgeon audience in mind. The collaboration between orthopaedic surgeons and radiologists that we have used to produce this textbook emulates the optimal relationship between these two subspecialties in clinical practice.

This book was envisioned to be a practical aid to develop and/or refine the skills needed to effectively and systematically evaluate MR imaging studies of the musculoskeletal system. I hope that it accomplishes this goal for you.

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