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Vertebroplasty and Kyphoplasty

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croscopy. The anatomy section focuses on MR microscopy characterizing mouse brain development, fetal development, and mouse phenotyping. The “Physiology” and “Pathophysiology” sections demonstrate the sensitivity of MR imaging experimental methods to characterize normal physiology as well as pathologic conditions. Examples of some areas covered include ischemia, tumor physiology, and tissue perfusion using investigative MR imaging methods, including perfusion imaging, functional MR imaging, proton and phosphorus spectroscopy, diffusion imaging, and exogenous contrast agents. The final section, “Novel Contrast Agents and Mechanisms,” describes new exogenous contrast agents, including hyperpolarized xenon gas, superparamagnetic iron-oxides and manganese, and the new areas of investigation these agents provide. Although the book focuses on methods and biologic applications, it wisely does not cover all applications of MR imaging to maintain the focus. This text covers the essentials of MR imaging and MR spectroscopy and provides relevant research and application examples demonstrating the utility of MR imaging.

The book was written for an audience with limited MR imaging exposure and provides a concise overview of the physics, engineering, and biology involved. The text is very accurate, with an occasional poor choice in wording, which may lead the readers to incorrect assumptions. The references are both current and comprehensive and would aid the reader who requires more detail on a topic or methodologies on particular experiments. Not only are the references comprehensive but also well described in the text, thus eliminating a time-consuming search of the expansive reference list. Most books in this area focus on either the clinical utility or the physics and engineering behind MR imaging. This text fits into neither category and focuses instead on the cutting edge and current biologic research in the area. Although this text is unlikely to be a primary textbook to either clinicians or physicists, it is a nice addition to the libraries of both groups.

The biggest criticism about this book is related to the images and their captions. Although many of the images on the companion CD are in vivid color and clearly demonstrate the point, they are, unfortunately, converted to gray-scale for the text. In many cases, the gray-scale counterparts in the text do not convey the message of the text and serve to confuse the reader. Furthermore, no effort was made to alter the text, resulting in the images being described in color when none is present. In addition, there are no disclaimers in the figure captions stating that the color images are

available on the CD. The quality of the figure captions and legends varies from chapter to chapter, but overall these captions and legends are descriptive as well as relevant. However, some chapters have captions that are entirely too descriptive, and the excessive content should have been removed and placed in a proper location in the text.

Although the text is well written and organized, the teaching value of the book is

limited. The clinical utility of the text is minimal because of the focus of the book on experimental MR imaging and MR spectroscopy in animal models. This book may be a good reference for a research neuroradiologist interested in using the MR imaging techniques described, but a clinical neuroradiologist would have little need for such a book. Moreover, the teaching usefulness to a biomedical engineering or medical physics audience is also limited because of the lack of specific mathematical or engineering detail provided. The audiences that will benefit most from this text, as acknowledged by the editor, are biologic scientists in the fields of neuroscience, physiology, and other related fields who may be unaware of the experimental sensitivity that MR imaging provides.

This book provides a resource for scientists and students who are interested in using MR imaging by providing a thorough qualitative description of the fundamentals of MR imaging along with reviews of several important and cutting-edge MR imaging research areas. For MR imaging scientists and experts, this text may provide an easy-to-read review on subjects unfamiliar to them, along with comprehensive references providing the link to the more specific details these professionals require. I believe that this book will impart to the reader how powerful MR imaging and MR spectroscopy can be in areas of biologic research and not just their clinical diagnostic utility. I would recommend this book to anyone interested in the experimental utility of MR imaging.

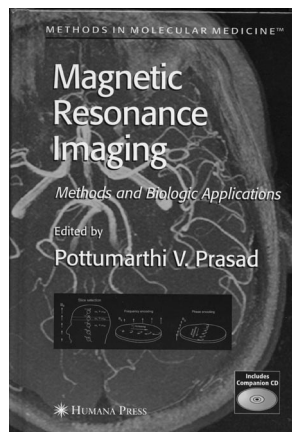
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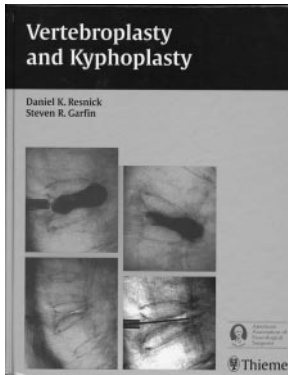
Vertebroplasty and Kyphoplasty

D.K. Resnick, S.R. Garfin, eds. New York: Thieme; 2005, 138 pages, 37 tables, 140 illustrations, \$99.95.

With the marked increase in number of vertebroplasty and, more recently, kyphoplasty procedures performed during the last decade, a textbook is needed that sums and organizes the vast amounts of research and clinical experience that deal with these often interchangeable techniques. Although there is already a book written that deals with vertebroplasty, the emerging field of kyphoplasty is new enough that most of its published work is confined to the journals. Daniel Resnick and Steven Garfin have compiled a book with a stated purpose of exploring these procedures in a “comprehensive, fair, and balanced fashion.” Unfortunately, though an admirable ambition, the book does not seem to meet these goals.

The textbook, published by Thieme under the seal of the American Association of Neurologic Surgeons, is composed of a variety of chapters, which, as in most multi-authored books, have a range of quality. The chapter “Mechanisms of Pain Relief Following Vertebroplasty and Kyphoplasty” is well written and deals with an important, though still somewhat poorly understood, component of these procedures. Although relatively short, the author summarizes and explains the possible mechanisms of pain relief, from tissue toxicity and fracture stabilization to the benefits of high temperatures on existing pain fibers and tumor tissue. In addition the chapter “Com-





plication Avoidance and Management in Percutaneous Vertebroplasty” is well written, concise, and unbiased, offering advice to the beginner and the more experienced practitioner. A nice review of the pros and cons of each technique is included in the chapter “Vertebroplasty and Kyphoplasty: Advantages and Disadvantages.” Chapters 7 and 8, dealing with patient selection and work-up

and kyphoplasty technique and hints, respectively, are also quite useful and thorough, though the latter does attempt a few jabs at vertebroplasty that seem outside the stated scope of the chapter.

Similarly, the relatively short chapter “Outcome Measurements for Vertebroplasty and Kyphoplasty” is interesting and helpful when summarizing the differing methods that have been used as outcome measurements, though because of the nature of the publishing industry, the book cannot report on some of the more recent articles dealing with this topic. However, as in many of the chapters, an unbalanced bias toward kyphoplasty appears to rear its head and casts a pall over some of the book. In this example, after stating, incorrectly, that no large series or prospective trials regarding vertebroplasty have been performed, the authors tout the advantages of manufacturer-supported studies without mentioning any negatives to a situation in which the company selling a product is also paying for the clinical trials. Possibly, the reason for the absence of the larger vertebroplasty studies is that the latest article cited is from early 2001, but from a book with a 2005 copyright date. I would expect the chapters to have been updated before publication, especially when dealing with a rapidly advancing field that has a very high number of articles published each year.

Besides the lack of recent data, the other somewhat troubling issue is the relative lack of radiologists as authors, leading to a distinct surgical bias in many chapters. I would expect a book dealing with vertebroplasty, which was developed and is primarily performed by radiologists, to include more radiologist authors. The book as a whole would have benefited from a more balanced, and therefore unbiased, collaboration. Many of the chapters portray kyphoplasty as a distinctly superior procedure, by using “evidence” that is dubious at best, which is unfortunate, because some other parts of the book provide a more balanced and unbiased view, objectively listing the evidence available. As it is, there are many passages in the “Techniques” sections that will cause eyebrows to rise and mouths (and possibly temples) to twitch in many radiology reading rooms as the book is read. Some examples include the statement that the ideal place to perform these procedures would be in an operating room, as well as an emphasis on prevertebroplasty venography (which 1 chapter states changes the injection technique in ~30% of cases) and a recommendation to inject 5–10 mL into each vertebral body because “it is not likely that 3 mL achieves the goal of vertebral stability.” In addition,

the vertebroplasty training and credentialing chapter, describes “appropriate training” as going to a course or spending time watching an expert, though it does admit that hospitals may actually require some proctored cases.

Ultimately, the unevenness of the book is a major detriment. Some parts are worthwhile, whereas other chapters seem biased; and unfortunately, the data, as evidenced by the dates in the chapter bibliographies, often seem dated. Instead of a flowing book with chapters that lead the reader through the procedures and evidence, the book has been constructed as a loose collection of articles, many of which contain duplicate information, whereas others contradict statements made elsewhere in the book. Although there are a number of chapters that could be useful to the practicing radiologist, especially those practicing kyphoplasty, radiologists involved in spine intervention will probably want to wait for a more balanced, up-to-date, and better constructed book to be published.

BOOKS BRIEFLY NOTED

Harrison’s Neurology in Clinical Medicine

S.L. Hauser, S.A. Josephson, J.D. English, J.W. Engstrom, eds.
Hightstown, NJ: McGraw-Hill; 2006, 691 pages, 100+ illustrations, \$64.95.

For someone wanting a brief and simple review of neurology, this segment from *Harrison’s Principle of Internal Medicine* may be of value. There are 65 authors/coauthors and 43 separate chapters, among them a 14-plate chapter on imaging in neurologic disorders. That chapter is a superficial overview of neuroradiology and would be of interest only to someone who is neither a radiologist nor involved primarily in clinical neurology.

The material in this 691-page soft-cover book covers all major neurologic diseases and could be used as a quick source of key information. The layout of each of the chapters is pleasing, with clear subdivisions, abundant tables, and key facts highlighted in boxes. The clinical manifestations, neurologic findings, differential considerations, imaging (although unfortunately highly limited), laboratory findings, and treatment constitute the main portions of each chapter. This book has important information on vascular disease, tumors, infection, toxic/metabolic disorders, genetic diseases, degenerative disorders, psychiatric problems, muscle/peripheral nerve disease, movement disorders, demyelinating diseases, and trauma, along with specific clinical syndromes.

An added feature of the book is a segment entitled “Review and Self-Assessment.” It consists of 44 questions (with multiple-choice answers); it is followed by an answer section and reference back to specific parts of the book. It would be of value for a neuroradiologist to take this test before reading parts of the book to see how much neurology he or she remembers (or has forgotten). It could be an incentive to read the book cover to cover.