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Challenging Cases in Spine Surgery

AJNR Am J Neuroradiol 2006, 27 (10) 2226a-2228
<http://www.ajnr.org/content/27/10/2226a>

This information is current as
of August 8, 2025.

BOOK REVIEW

Head and Neck Imaging: Case Review Series, 2nd ed.

D.M. Yousem, A. Carolina, B.S. da Motta, eds. New York: Mosby: 2006. 336 pages, 350 illustrations, \$44.95.

This second edition of *Head and Neck Imaging* with 200 new cases is intended as an accompaniment to the popular *Neuroradiology: The Requisites* (Mosby: 2003), which my residents seem to be carrying around all the time. All of these cases are cross-referenced to that textbook. As an aside, Dr. Yousem's publishing output is indeed impressive when considering the personal adversity that he describes in the forward to this book. The book is organized in a teaching case format. Initially, several images are presented on a page, pertaining to 1 or 2 cases, and are accompanied by precisely 4 questions. The questions may or may not pertain to the imaging findings but rather to that particular diagnosis. On the following page, the 4 questions are briefly answered and a discussion/commentary ensues, followed by references. The first section is referred to as "Opening Round Cases," which are intended as bread and butter pathologic entities that, format notwithstanding, probably do provide a good preparation for the kind of lesions one might encounter in Louisville. The second section is "Fair Game" cases, which are regarded as somewhat more advanced but yet still within what might be presented in a board setting. The last section includes "Challenging Cases," which are more difficult.

My main issue with this book is that there is not a single annotation, nary an arrow. In addition, the images are not reshown with a legend that describes the imaging findings. In some cases, the imaging findings are not even addressed. For example, a sinonasal undifferentiated carcinoma of the maxillary sinus, with completely nonspecific imaging findings, is not labeled or described, and the site of tumor is not provided. In fact, the lesion presented does not even demonstrate the "characteristic" imaging findings as purported in the very brief commentary section. Some lesions (ie, thyroglossal duct cyst) have relatively inapparent imaging findings, which though they might be apparent to an experienced radiologist, might be less so to novices. The lack of annotation in such cases is particularly curious because the reader may not be certain that he or she has found the lesion. Another criticism is that because the diagnosis is frequently provided in the second or third of the 4 questions, unless the reader studiously obscures the questions, he really has no opportunity to consider the differential diagnosis. On page 33, a cystic nodal metastasis is described in question 1; therefore, the teaching value of the case is drastically diminished. In case 53, an example of perineural spread, there is no description of the primary site, of the imaging findings involved, or of the affected nerves. The commentary, though not inaccurate, is completely dissociated with and has no bearing on the imaging presented. In my opinion, these issues seriously detract from the utility of this book as a learning tool.

Another curiosity is an apparent emphasis on statistics that I regard to be of dubious value. Could anyone want or need to

remember that 10% of sialadenitis occurs in the submandibular gland, that a 15% protein concentration of sinus contents will produce T1-weighted signal hyperintensity, or what the percentage of sinonasal cancers are adenocarcinoma? One especially useless statistic is "What is the rate of growth of aggressive basal cell carcinoma—Answer: 10%." I have absolutely no idea what this means, much less how it could help a radiologist.

One of the editors' stated purposes is to mirror and prepare for the certificate of added qualification (CAQ) experience. However, it is not clear to me that this book actually fulfills that goal. Many of the questions are fairly esoteric and would probably not be asked by a reasonable CAQ examiner.

It is unclear to me that this book will fill any specific niche. Most of the images are of fairly good quality and the disease entities reasonable. However, the lack of annotation and the lack of obvious correlation between the images presented and the discussion of those disease entities detracts from what could have been a much better book.

BOOK REVIEW

Challenging Cases in Spine Surgery

M. Abdulhak and S. Marzouk, eds. New York: Thieme: 2006. 208 pages, 186 illustrations, \$99.95.

Spinal surgery is a "complex" discipline, in which, it might be argued, technology has outstripped clinical wisdom. Perhaps the easiest cases for clinical decision making involve unstable fractures, symptomatic tumors, and infections. Much more difficult are cases of axial spinal pain and those in which a previous surgery has been performed with poor results. Many terms loosely applied in the daily vernacular of spinal surgery such as "micromotion" have never been rigorously defined and yet are used to justify the decision to perform major surgery. There are many causes of the current dilemma in spinal surgery, which might be defined as the rampant application of expensive and invasive technology to poorly understood but widely prevalent problems. Not the least cause is likely to be financial, with spinal instrumentation manufacturers reaping huge profits. Our discipline has a real need for skepticism and standardization, and if we do not take these needs seriously, it is likely that others will do it for us.

Ultimately the average spinal surgeon has only 2 bullets in his or her gun, decompression and fixation leading to fusion. These 2 simple maneuvers are applied to complex problems of pain that are now known to involve molecular and structural changes at multiple levels of the neuraxis, the nerve root, dorsal horn, thalamus, and limbic system, and that are further complicated by pharmacotherapy.

Perhaps one of the worst transgressions of spinal surgeons is the evaluation and reporting of their own results by using nonstandardized terms. In a world filled with placebo and subtle psychological influences, the unblinded self-reporting of the results of elective spinal surgery is not very useful, and when this is published, it only fuels an already troubled, uncritical, and nonsystematic discipline.

Enter *Challenging Cases in Spine Surgery*, in which a patient with “pain on lumbar flexion,” 2 previous surgeries, and a listhesis at L3–4, gets 16 pedicle screws instead of 4. It is well said that “when you have a hammer everything looks like a nail.” With respect to its treatment of spinal pain conditions, this book exemplifies what is worst about spinal surgery. This is unfortunate because the presentation of tumors, congenital abnormalities, inflammatory conditions, and trauma is generally good. There are several interesting and unusual cases such as angioliopoma, pelvic giant cell tumor, pelvic ganglioneuroma, and spinal teratoma.

This textbook is organized into 6 sections that include 87 case examples that cover the main clinical problems that present to spinal surgeons. The book is easy to read and each case report is brief. This feature, however, is also a weakness because the brevity leads to a very limited analysis of the variability in the presentation of the clinical entities and the multiple variables that go into therapeutic decision making, especially for elective cases. The brief case format of the book may be useful to neurosurgery, orthopedic, or neuroradiology trainees preparing for oral examinations. Unfortunately, the overly brief format greatly detracts from the utility of the book to the serious student of spinal surgery. The text is basically accurate, though the editors at Thieme are to be held culpable for the very poor grammar in this book, exemplified in phrases such as “the redo nature of this case.” Multiple ill-defined terms that exist in the vernacular of clinical spinal surgery are used without a glossary. Insofar as the book jacket states “Learn the most advanced techniques for complex spine surgery!” and “seeking. . . the underlying principles in the most demanding cases in spine surgery” and the preface states that “the focus is on the thought process and reasoning that accompanies the management of these cases” and “the student looking for more detail,” one wonders what havoc the editors may have wrought on a more thorough initial manuscript. The treatment of rheumatoid arthritis is less than 250 words (case 18)!

I had real concerns that the highly aggressive approach to axial spinal pain and revision surgery evidenced in the case series might be seen to reflect the general clinical decision making of spine surgeons, which in my opinion it does not. Cases in point included purported scoliosis (case 51) presented without presurgical films demonstrating the curve, leaving the reader to take at least the radiologic indication for surgery on faith. A nonunion diagnosed at 5 months was revised with anterior lumbar interbody fusion with bone morphogenetic protein (BMP) in a cage. Many surgeons would think it was too early to make the diagnosis of nonunion. In case 47, a 44-year-old obese woman who is a heavy smoker presents with low back pain. She is diagnosed with lumbar (anterior column) instability on the basis of “Modic end-plate changes.” This patient failed a previous surgery and undergoes L3–S1 instrumented fusion. Her outcome is not described, but the discussion is focused on which criteria are reliable to diagnose successful fusion. Whether Modic type I and II changes reflect spinal instability has not been conclusively proved. It would be important to know how much benefit the patient could obtain from smoking cessation and weight loss before subjecting her to revision surgery.

In case 48, the use of BMP is described in a patient with

dynamic film evidence of instability following a pedicle screw fixation. Neither these dynamic views nor postoperative films evidencing successful fusion are provided, and the clinical outcome is not described. Case 14, a young man with L1 and L4 burst fractures, would have been treated nonoperatively in a cast or well-fitted brace by many spine surgeons. The images provided do not show the upper extent of his instrumentation, but it appears to extend from at least T11 to S1. In case 23, a patient with neck pain following a motor vehicle crash is diagnosed with “cervical spondylotic disease” and undergoes a C4 corpectomy. Neck pain can arise from many etiologies, and few surgeons consider it an adequate indication for spinal fusion. Many spine surgeons would have treated cases 28 and 29 with posterior as opposed to anterior surgery. In case 71, a patient who is developing autofusion at T10–11 in the absence of deformity is subjected to a 7-level T6 through T12 pedicle screw fusion for mechanical back pain. Multiple bone biopsies and laboratory data proved the infection was resolved preoperatively. This is perhaps the most questionable of all of the cases presented in the book. The natural history of a segmental osteomyelitis that is proceeding to autofusion is eventual pain resolution. Thoracic pedicle screws are risky to place, and each screw is an independent risk event. The decision making in this case seems quite questionable, and at a minimum, further justification is needed. The outcomes of the procedure are not always stated and range among very vague statements such as “performed with success,” “pain free,” and “preoperative pain resolved.”

The images are generally representative and of adequate quality, but many of the cases lack both presurgical and post-surgical images. In a few examples, there was a lack of coherence between the text, figure legend, and the radiographic image. A case in point is 43, in which the text states that the patient had an acute deficit with a myelographic block but only a minimally compressive lesion is shown on postmyelogram CT. In case 22, it is stated that a patient has cervical spondylosis, “mostly at C3–C4 and C4–C5,” but surgery is performed at C3–4 and C5–6. In case 44, a patient has presented with foot-drop, and sagittal T2- and axial T1-weighted images correlate poorly, the former showing no canal stenosis and a minimal spondylolisthesis. In multiple cases, preoperative films are not shown (eg, case 46).

This book compares unfavorably with other texts aimed to educate spinal practitioners, such as *50 Challenging Spinal Pain Syndrome Cases* by LGF Giles (Butterworth-Heinemann Medical, 2002), which, though also relatively brief, is better written and more thorough in representing the clinical work-up. The book compares very poorly with the main textbooks in spinal surgery, such as those of Benzel, Menezes and Sonntag, and Herkowitz et al. There is little if any discussion of differential diagnosis in the book. The treatment of traumatic, inflammatory, and neoplastic conditions is reasonable. Only a very limited number of references are provided, though these are generally relevant. The emerging role for stereotaxic radio-surgery in the spine is not described.

I do not recommend this book other than as a set of cases that can be rapidly reviewed in preparation for an oral examination. This book is a real discredit to thinking spine surgeons who want to move elective spinal surgery for axial pain to a more rational and rigorous footing. Furthermore, I think the

book provides evidence that it is possible to be too brief and that medical editors should consider the potential ill effects of distilling very complex problems into a few sentences. Because the tools of spine surgery are powerful and invasive, the decision-making process behind their use should be represented in a lucid and balanced manner.

BOOK REVIEW

Neurosurgery Practice Questions and Answers

M. Shaya, R. Nader, A. Nanda, eds. New York: Thieme: 2005. 229 pages, over 100 illustrations, \$39.95.

This book is intended as a review tool to aid in studying for the written portion of the neurosurgery board certification examinations. It consists of 805 questions written in the formats used by the board examinations and covering the major subjects for which the examinee is responsible. The neurosurgical trainee is expected to develop strong backgrounds in neuroanatomy, neurophysiology, neuropathology, neurology, neuroradiology, pharmacology, and general medicine. The neurosurgical written board examination includes questions on all of these topics arranged in random order, and this book imitates that structure, with no division into chapters or topics. The questions are in multiple-choice format, with some questions grouped around a single set of possible answers. What is included in this book that does not accompany the actual examination is the answer set. The back part of the book provides answers to all of the questions, with some degree of explanation and justification of most answers. Many of these explanations are quite detailed while remaining succinct. The answers do not include references; those the reader would need to find on his or her own.

The coverage of the applicable subject areas is comprehensive. In the "Preface," the first author explains that he was frustrated that there were no study questions he could use for examination preparation, so he created his own questions during his studies. The 805 questions included in the book were culled from his pool of over 2000 questions that he had developed as his own study aid. A "Foreword" by a prominent neurosurgical department chairman, Dr. Raymond Sawaya, describes the book as intending to "force the acquisition of factual knowledge and encourage the application of logic." The book does fulfill that description of objectives.

Illustrations are a major component of the book and are as varied as the subject matter, including line diagrams, neuroimaging, histopathology slides, photographs of physical findings, and intraoperative photographs; there are more than 100 illustrations. The illustrations are in gray-scale and clear, in fact, more consistently clear than this reviewer remembers those on the actual written board examinations of years past.

Many of the questions are illustrated with mostly well-printed neuroimaging. These include skull and spine radiographs, CT scans, MR images, radionuclide studies, and angiograms.

Anatomic questions cover vascular anatomy, cerebral and spinal anatomy, and peripheral nerve anatomy. Anatomic questions are presented with photographs, diagrams, and text alone. General medical questions tend to cover issues involved in the care of seriously ill neurosurgical patients. An example is a question asking what blood product is most appropriate for transfusion in a patient with Von Willebrand disease and traumatic hemorrhage. Some questions appropriately ask the examinee to bring different subjects together, for example, by showing a radiologic study of a tumor and asking about the source of the blood supply of the tumor. This is the type of synthesis of information required of the neurosurgical trainee and points out to the reader how to study the material and what types of questions to expect on the actual examination. As with the actual examination, it is difficult to be sure to which subject subscore some questions would be assigned.

Unfortunately, some clinical management questions are assigned answers that are presented as absolute, with explanations of rationale, when the correct answer could reasonably be debated. An example is the question that shows a small cerebral arteriovenous malformation in a superficial eloquent region of cortex in a patient who presents with a history of some degree of focal neurologic deficit, followed by an acute intracranial hemorrhage. The management option said to be correct is gamma knife treatment; however, many neurosurgeons would reasonably argue that surgical excision would be the best choice. The reader may also find it amusing and instructional to check for minor errors such as the answer choice printed "Foster-Kennedy syndrome." The correct eponym is "Foster Kennedy," without the hyphen; the name belongs to only 1 person.

As the authors intended, this book will be useful as either a study guide or as a practice test for trainees preparing for the written neurosurgical board examination. It is well done and can be recommended as a study tool for neurosurgical residents. The book is a convenient-sized paperback and could find a temporary home in a laboratory coat pocket for intermittent use in occasional downtime during a clinical day. We can infer that the collection of questions was beneficial to the first author's studying. Practicing neurosurgeons currently have demanding requirements for continuing medical education and might use this book for review purposes and to scout for particular topics on which they need refresher work. It may also be of use to neuroradiologists or anyone else training in the clinical neurosciences. There are enough questions that involve neuroimaging that it may be of genuine interest to neuroradiologists. The questions involving neuroimaging are mostly framed with clinical correlations that will help the neuroradiologist to keep the 2-dimensional images in a 3D clinical context. Dr. Sawaya's "Foreword" describes the book as a "practical teaching tool." That is a fair assessment.