

rather than critical review. The inclusion of a DVD demonstrating the various movement disorders was a good idea; however, again the quality of the videos and written description varied greatly between chapters.

*Daniel L. Keene  
Ottawa, Ontario, Canada*

**AO SPINE MANUAL. PRINCIPLES AND TECHNIQUES (VOLUME 1). CLINICAL APPLICATIONS (VOLUME 2). DVD-ROM. 2007.** By Max Aebi, Vincent Arlet, John K. Webb. Published by George Thieme Verlag. 1300 pages. Price C\$640.

The AO Spine Manual is a comprehensive two volume set compiled by three editors and over 50 authors from the AO Spine Group. This publication represents a huge amount of information collected from many of the world's leaders in spinal surgery. Volume 1 is dedicated to an overview of spinal biomechanics, basic bone biology, surgical anatomy, and instrumentation techniques. Volume 2 consists of a systematic review of disease processes affecting the spine and the surgical treatments available. The DVD contains text and illustrations chapter by chapter from both volumes, as well as a number of videos depicting surgical techniques.

These books have numerous high quality illustrations in each chapter that include color intraoperative pictures, color pathology slides, colored drawings, and radiological images demonstrating preoperative, intraoperative and postoperative data. The intraoperative video clips are crisp and largely free of blood contamination. These graphic aids greatly enhance the reader's learning experience. In addition, Volume 2 systematically addresses common spinal problems through clinical case presentations. This is a unique approach for a text book and makes this publication a much more interactive learning experience.

Two major limitations pertain to (1) a focused musculoskeletal approach to spinal disorders, and (2) the AO affiliation with Synthes. While appropriate for discussions about rods and screws, the musculoskeletal ("bones-only") approach precludes any attempt to examine neuroanatomy, neurophysiology, and neuropathology of the spine. Hence, for example, the finer diagnostic and prognostic significances of radiculopathy and myelopathy are completely ignored. Important considerations to spinal surgeons such as spinal cord injury and cauda equina syndrome cannot be found. In addition along these more traditional musculoskeletal lines, biomechanics and biology sections focus primarily on the lumbar spine ignoring issues specific to the cervical spine.

Other more specific concerns were noted with respect to neurological issues. We were surprised how the editors and Dr. PW Pavlov (Netherlands) chose to depict cervical vertebrectomy in the setting of myelopathy. First, the reader should note that cervical spondylotic myelopathy is a clinical diagnosis based on a constellation of predominantly upper motor neuron signs and symptoms. It is not a radiographic diagnosis. Second, as depicted in the video clip, the use of an osteotome and hammer to remove bone from the anterior cervical spine should not be considered an appropriate surgical technique. In viewing the video it is

immediately apparent what magnitude of force from these blows is being directly transmitted to an already insulted, fragile, and compressed spinal cord under direct bony contact. Given the availability and safety of high speed drills and intra-operative magnification for use in this setting, precipitation of a new neurological deficit by osteotome impaction is (in our opinion) medically indefensible - at least in North America.

Also, with respect to complications in spine surgery and management of perioperative spinal cord injury, the reader should be aware that there is absolutely no evidence that methylprednisolone has a beneficial effect on outcome in this setting. The authors apparently make inferences from controversial traumatic spinal cord injury studies, despite the known harmful side effects of this drug in high doses. In our opinion the recommendation of methylprednisolone administration according to NASCIS II doses as a prophylactic neuroprotective agent in high risk procedures is irresponsible.

The relationship between Synthes and AO is not properly disclosed within the text. Yet because of this relationship only Synthes instrumentation and techniques are presented and discussed. It will be clear to the reader that no single instrumentation company can provide perfect solutions to all spinal problems. Yet unabashedly product-specific (Synthes) brand names are widely quoted in almost all of the techniques chapters. This inherent bias is a serious limitation significantly restricting the scope of this two volume set to any person who wishes to have a broader overview of products in the spine industry.

The reader will also realize that much of the text is based on traditional AO concepts without regard to the field of spinal surgery as a whole. For example classification of thoraco-lumbar fractures is detailed only through the cumbersome AO system, one not widely utilized today for obvious reasons.

In conclusion as a "nuts and bolts" textbook the AO Spine Manual goes a long way to providing both the novice and accomplished spine surgeon with valuable information on current state-of-the-art surgery techniques and technology. The authors and editors should be congratulated on the interactive case-based format of many of their chapters. However, as the definitive treatise on spinal surgery this publication falls far short of other less biased texts that are currently readily available. In our opinion it would be far more appropriate for this two volume set to be called the "AO/Synthes Spine Monogram".

*Najmedden Attabib, R. John Hurlbert  
Calgary, Alberta, Canada*

**THE BRAIN ATLAS: A VISUAL GUIDE TO THE HUMAN CENTRAL NERVOUS SYSTEM. THIRD EDITION. 2008.** By Thomas A. Woolsey, Joseph Hanaway, Mokhtar H. Gado. Published by Wiley. 254 pages. Price C\$66.

This neuroanatomy textbook is the very successful outcome of a collaboration among an anatomist, a neurologist and a neuro-radiologist. The book is divided into five parts. In Part 1, in only 13

pages, they provide an overview of the nervous system—its cells, the division into the central and peripheral nervous systems, and they tell the reader how to use the book. Their reference list cites classical neuroanatomy tomes like Brodal's *Neurological Anatomy in Relation to Clinic Medicine* and Haymaker, Anderson and Nauta's landmark *The Hypothalamus* although whether the modern medical student or resident, brought up in the digital age with access to on-line materials, would ever venture into the dusty stacks to look at a "real book" is a moot point.

The illustrations and photographs in Part II – The CNS and Its Blood Vessels—are clear, well-labeled and, as in all sections of the book, the identified objects are listed at the bottom of the each page in alphabetic order to assist with easily finding structures for which one might be looking. The prosections of the brainstem are excellent and illustrate structures clearly. The arterial supply of the spinal cord is covered to two nicely-illustrated pages.

Part III makes use of brain slices in coronal, sagittal and axial sections as well as introducing a few MR images to provide further clarity. Here again the labeling is clear and the judicious use of colour helps show vascular territories.

Initially, I found myself mildly annoyed by the fact that in Part IV—Histological Sections—the sections through the brainstem were all "upside-down", at least compared to how I had learned them back when the earth was still cooling. Then I realized that I often had the same annoyance when looking at CT and MRI scans because of having to "mentally flip" the imaging to match the way I had learned things in the neuroanatomy and neuropathology labs. For today's learner, who is brought up on CT and MRI, this new convention clearly makes the most sense and the authors actually make that point in their introduction.

Part V provides some very well-illustrated diagrams of CNS pathways as well as an excellent two pages on Organization of the Hypothalamus.

This book is a well-designed atlas; however, for those who are studying neuroanatomy for the first time, it will need to be used in conjunction with a text that provides explanation of the function of the structures and pathways so elegantly illustrated. For the resident in neurology or neurosurgery, and for the fellow in neuroradiology, this text would make a valuable and relatively inexpensive addition to their library.

*Paul E. Cooper*  
*London, Ontario, Canada*