

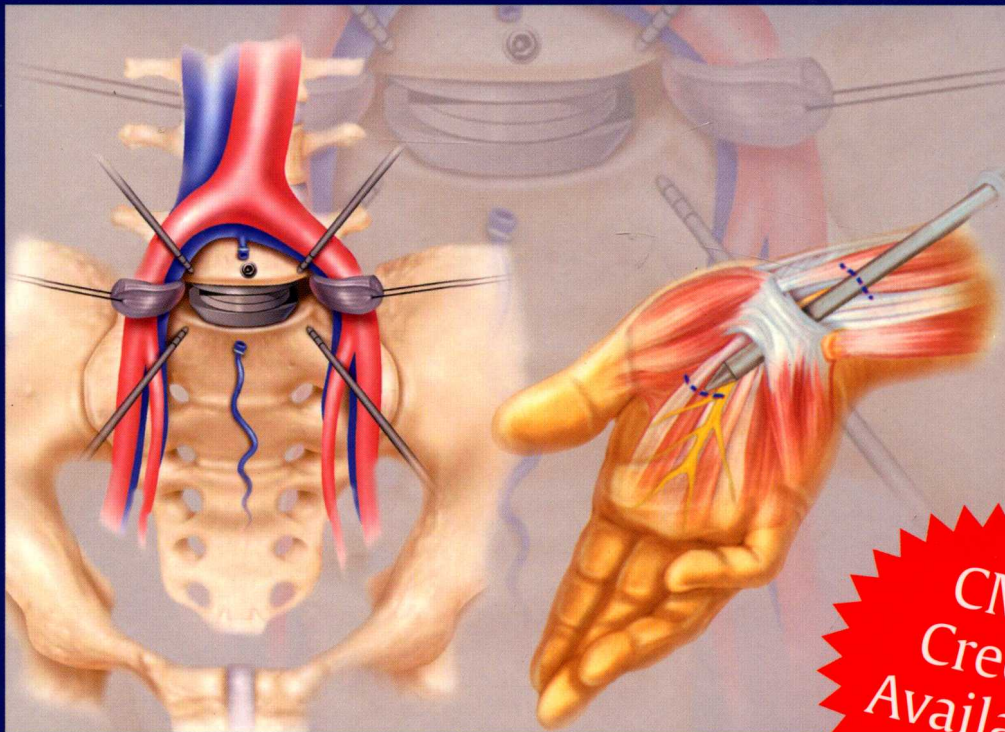
# Neurosurgical Operative Atlas

## Spine and Peripheral Nerves

Christopher E. Wolfla  
Daniel K. Resnick

Third Edition

plus e-content



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# Neurosurgical Operative Atlas

## Spine and Peripheral Nerves

Third Edition

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## Videos

- Video 14.1** This video describes sequential surgical steps and operative technique required to perform surgical decompressive laminectomy and posterolateral instrumentation and athrodesis for cervical spondylotic myelopathy.
- Video 19.1** This operative video discusses posterior cervical lateral mass fixation. Topics discussed include Mayfield pin placement, patient positioning, laminectomy technique, and instrumentation.
- Video 25.1.** The video demonstrates a case of a cervical laminoplasty to resect an intramedullary arteriovenous malformation using the pial resection technique. (Used with permission from Barrow Neurological Institute, Phoenix, Arizona.)
- Video 53.1** This video is an example of a L5-S1 Charite TDR implantation.
- Video 54.1** This video demonstrates the steps for sacral-alar-iliac screw fixation. (Reproduced with permission from Neurosurgical Focus, July, 2016, Technique and nuances of an S-2 alar iliac screw for lumbosacral fixation in patients with transitional and normal anatomy, Ohya J, Vogel TD, Dhall SS, Berven S, Mummaneni PV.)
- Video 63.1** This video illustrates and describes a submuscular transposition of the ulnar nerve at the elbow, including: the surgical approach, sequential steps, and operative technique.
- Video 65.1** When a generous supraclavicular and infraclavicular approach is done, a small segment of the brachial plexus, namely, the division, will remain hidden under the clavicle.
- Video 74.1** This video summarizes the various techniques for harvesting cutaneous nerves for grafting.



# Continuing Medical Education Credit Information and Objectives

## Learning Objectives

Upon completion of this activity, participants should be able to:

1. Discuss the performance of common surgical approaches to disorders of the spine and peripheral nerves.
2. Describe the perioperative management of patients with diseases affecting the spine and peripheral nerves
3. Explain common complication avoidance maneuvers.
4. Manage commonly encountered complications affecting patients treated for disorders of the spine and peripheral nerves.

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# Foreword

Since the initiation of my neurosurgical and orthopaedic training, the realm of spinal surgery has undergone a complete transformation. This evolution not only encompasses surgical techniques, clinical and diagnostic evaluation, but also the “thought process” underlying our understanding of spinal pathology and health. The amount of information, knowledge and skill that a good spinal surgical specialist requires is staggering. As surgeons, where the rubber meets the road is in the operating room. The focus of this treatise is the *operative* management of spinal and peripheral nerve pathologies. The emergence of minimally invasive techniques, navigation, radiosurgery, and instrumentation has advanced the frontiers of spinal surgery. Drs. Wolfa and Resnick are to be commended for assembling an outstanding text, the third edition of *Neurosurgical Operative Atlas: Spine and Peripheral Nerves*.

This book is an excellent compendium of the surgical treatment of spinal and peripheral nerve pathology, ranging from a straightforward discectomy to complex multiplanar deformity. The breadth and depth of the topics covered in this book are simply phenomenal. As I read the text I was particularly struck by the blend of operative topics. These include complex approaches that I learned during my fellowship, such as the High Anterior Cervical Retropharyngeal Approach to the Craniovertebral Junction, which frankly seems to be a lost art and thus remarkably germane. Conversely, other topics are the most up-to-date minimally invasive deformity correction techniques which

are constantly evolving as this text is published. What also struck me was the precision and expertise brought to each of the seventy-four chapters. Without fail, each topic is vividly illustrated, which is essential in a “surgical atlas.” This is a beautiful book and simply a pleasure to read cover to cover or to leisurely peruse through topics of interest.

The four main sections—Cervical, Thoracic, Lumbosacral, and Peripheral Nerve—are well outlined, clearly defined, and include approaches (both open and minimally invasive), instrumentation, junctional issues (which are always problematic), and a few atypical yet interesting topics. Among the latter are vertebral artery management, penetrating wounds, sacrectomy, and image guidance. The Peripheral Nerve section is approachable and manageable to most competent surgeons, with topics on both upper and lower extremity issues, plexus, and nerve transfers.

This book is a must for those surgeons in training at both resident and fellow level. However, it is also a must for even the most experienced surgeon. The pearls, pitfalls, and nuances contained within this text will educate even the most talented among our colleagues. For the practicing spinal surgeon, this book will be invaluable in optimizing the care of patients who entrust their lives to our hands.

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# Preface

Spine surgery represents between 70% and 80% of the average neurosurgical practice. Techniques and technologies are advancing at a rapid rate and basic concepts regarding the natural history of spinal disorders are still being elucidated. The recent attention to sagittal balance, the idea of measuring pelvic parameters in patients with neck pain, and the appreciation of the many downstream effects of spinal surgery are all concepts which have expanded greatly since the second edition of this atlas was published. Technical advances including the use of robotic screw placement techniques and the proliferation of lateral approaches to the spine have appeared in just the last few years. The recognition of potential limiting drawbacks to previously available technologies such as BMP and interspinous spacers has also recently changed the practice of spine surgery. This third edition of the *Neurosurgical Operative Atlas: Spine and Peripheral Nerves* incorporates these evolving concepts and techniques and is a valuable resource representing the state of the art in 2017.

The major purpose of this atlas is to provide a quick reference and road map for a specific procedure. We are grateful to the many authors who have taken the time and made the effort to produce succinct and well-illustrated chapters for this atlas of spinal and peripheral nerve procedures. The text has been substantially updated for the third edition, and more content related to minimally inci-

sional techniques, deformity assessment and correction, and new technology have been included. Furthermore, the section on spinal tumors has been expanded and reorganized to provide the reader with easy-to-find and updated information. The more novice neurosurgeon is encouraged to use this text as a resource for case preparation—for example, a quick review by the resident the night before an unfamiliar procedure. More experienced surgeons may employ the text as a source of expert “pearls,” or tips for improving the safety, accuracy, and efficiency of a previously mastered skill. Some portions of the text are timeless. Anatomical descriptions do not change, nor do basic surgical principles. Other portions require frequent updates as new technologies and concepts continue to radically alter our ability to treat disorders of the spine and peripheral nervous system. Transplant technologies, robotics, and our evolving understanding of the natural history of spinal disorders will almost certainly alter the practice of spinal surgery over the next decade. It is this rapid pace of evolution that makes spine surgery so academically and professionally appealing; the ability to substantially ameliorate pain and improve the lives of our patients is what makes spine surgery so personally appealing.

*Christopher E. Wolfla, MD*

*Daniel K. Resnick, MD*



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