



# Operative Techniques in **SPINE SURGERY**

FOURTH EDITION

ALEXANDER R. VACCARO  
ELI M. BARON



## PROCEDURE 8

### Cervical Total Disk Replacement

James W. Griffin and David H. Lammie

#### INDICATIONS

Neck pain, radiculopathy, and/or myelopathy caused by cervical disk herniation, and mild cervical spondylosis at the level(s) treated.

#### CONTRAINDICATIONS

- Cervical instability with greater than a loss of two vertebrae or a degree of angular motion on dynamic radiographs or an absolute contraindication.
- Bony canal stenosis and facet joint degeneration on relative contraindications.

#### PREOPERATIVE CONSIDERATIONS

- History and physical examination findings about cervical disk herniation findings.
- Review of preoperative radiographs of both preoperative and postoperative using a high-resolution computed tomography (CT), and magnetic resonance imaging (MRI) to be discussed (Fig. 8.1 and 8.2).
- Preoperative of symptomatic findings may be difficult to establish pathologic (Fig. 8.3).

#### Imaging/Imaging

- History and physical examination findings about cervical disk herniation findings.
- Review preoperative radiographs of both preoperative and postoperative using a high-resolution computed tomography (CT), and magnetic resonance imaging (MRI) to be discussed (Fig. 8.1 and 8.2).
- Preoperative of symptomatic findings may be difficult to establish pathologic (Fig. 8.3).



FIGURE 8.1 (A) Anteroposterior and (B) lateral radiographs.

# Nonfusion Surgical Techniques In Spine Surgery An Issue Of Orthopedic Clinics

**Christopher DeWald, Ronald DeWald**



## **Nonfusion Surgical Techniques In Spine Surgery An Issue Of Orthopedic Clinics:**

*Hot Topics in Orthopedics, An Issue of Orthopedic Clinics* Frederick M. Azar, 2021-04-08 This volume of Orthopedic Clinics will focus on Common Complications in Orthopedic Surgery Edited by members of a distinguished board from the Campbell Clinic including Dr Frederick Azar as editor in chief each issue features several articles from the key subspecialty areas of knee and hip hand and wrist shoulder and elbow foot and ankle pediatrics and trauma Wall & Melzack's Textbook of Pain Stephen McMahon, FMedSci, FSB, Martin Koltzenburg, MD, FRCP, Irene Tracey, Dennis C. Turk, PhD, 2013-06-21 2014 BMA Medical Book Awards Highly Commended in Anaesthesia category Apply the latest scientific and clinical advances with Wall Melzack's Textbook of Pain 6th Edition Drs Stephen McMahon Martin Koltzenburg Irene Tracey and Dennis C Turk along with more than 125 other leading authorities present all of the latest knowledge about the genetics neurophysiology psychology and assessment of every type of pain syndrome They also provide practical guidance on the full range of today's pharmacologic interventional electrostimulative physiotherapeutic and psychological management options Benefit from the international multidisciplinary knowledge and experience of a who's who of international authorities in pain medicine neurology neurosurgery neuroscience psychiatry psychology physical medicine and rehabilitation palliative medicine and other relevant fields Access the complete contents online anytime anywhere at [www.expertconsult.com](http://www.expertconsult.com) Translate scientific findings into clinical practice with updates on the genetics of pain new pharmacologic and treatment information and much more Easily visualize important scientific concepts with a high quality illustration program now in full color throughout Choose the safest and most effective management methods with expanded coverage of anesthetic techniques Stay abreast of the latest global developments regarding opioid induced hyperalgesia addiction and substance abuse neuromodulation and pain management identification of specific targets for molecular pain and other hot topics

**Spinal Deformities** Christopher DeWald, Ronald DeWald, 2024-10-02 The definitive authoritative textbook on spinal deformities from the Scoliosis Research Society Spinal Deformities The Comprehensive Text Second Edition edited by renowned spinal deformity surgeons Christopher J DeWald and his father Ronald L DeWald is a long awaited authoritative one stop resource that covers the breadth and depth of this specialized field The first edition textbook edited by Ronald DeWald attempted to help formulate a Scoliosis Research Society SRS core curriculum for spinal deformity to meet the educational needs of both aspiring and seasoned spine deformity surgeons This second edition edited by father and son expands and reorganizes the core curriculum concept Since the publication of the first edition in 2003 significant advancements have been made in this field This book reflects greater understanding of the mechanics of correction new implants and techniques that improve three dimensional correction emergence of innovative growing constructs for early onset scoliosis and introduction of minimally invasive and nonfusion approaches The textbook features 81 chapters organized into six comprehensive sections Spinal Anatomy and Evaluation Spinal Pathologies Pediatric and Adolescent Spinal Deformity

Adult Spinal Deformity Spondylolisthesis and Surgical Considerations and Complications From perioperative management to intraoperative neuromonitoring techniques the authors share strategies to enhance patient safety and optimize surgical outcomes Greatly expanded content covers anatomy etiologies pediatric and adult deformities surgical and nonsurgical treatments and potential pitfalls Key Features Sponsored by the SRS with 100% of contributions from members including senior surgeons Step by step instructions on diagnosis surgical planning operating room setup intraoperative techniques and management of complex complications Forty videos covering major techniques enhance understanding of surgical procedures and facilitate acquisition of practical skills This comprehensive reference and practical guide is essential reading for all spine deformity surgeons from residents and fellows to more advanced practitioners This book includes complimentary access to a digital copy on <https://medone.thieme.com> Publisher's Note Products purchased from Third Party sellers are not guaranteed by the publisher for quality authenticity or access to any online entitlements included with the product

**Orthopaedic Spine Surgery** W. Käfer, B. Cakir, T. Mattes, Heiko Reichel, 2008-03-11 Based on the instructional course of orthopaedic spine surgery the Ulm Spine Week which is held annually at the Department of Orthopaedics of the University of Ulm a panel of experts in the field of spine surgery is presenting a variety of issues related to the treatment of acquired disorders of the cervical thoracic and lumbar spine as well as to lumbar non fusion technology Motion Preservation Surgery of the Spine James J. Yue, Rudolph Bertagnoli, Paul C. McAfee, Howard S. An, 2008-06-11 New motion preserving devices are revolutionizing spine surgery but the learning curve for these operations is steep and great attention must be given to patient and device selection and the perfect execution of each procedure Only one reference spells out exactly how to perform these new techniques and its peerless author team comprised of key investigators involved in the devices actual clinical trials is uniquely qualified to help you get the best results These global leaders in this area discuss the advantages and disadvantages of the full range of non fusion technologies and present the step by step richly illustrated operative guidance you need to achieve optimal outcomes Select the best device and approach for each patient cervical total disc arthroplasty lumbar total disc arthroplasty lumbar partial disc replacement nucleus replacement lumbar posterior dynamic stabilization pedicle screw based lumbar posterior dynamic stabilization interspinous based lumbar facet replacement Produce optimal outcomes with detailed advice on advantages and disadvantages of each option indications and contraindications patient selection interpretation of imaging studies surgical anatomy and biomechanics surgical techniques tips and pearls See how to perform each technique thanks to step by step full color illustrations Nonfusion Technologies in Spine Surgery Marek Szpalski, 2007 Written by an international group of expert spine surgeons this volume thoroughly examines new nonfusion technologies for treating spinal degenerative conditions while preserving motion Major sections describe various surgical techniques and devices for nucleus pulposus replacement and total lumbar and cervical disc arthroplasty as well as other stabilization techniques Coverage includes indications and contraindications surgical

approaches and the latest clinical trial results Several chapters discuss nonsurgical and minimally invasive treatments including gene therapy nucleus pulposus regeneration and IDET Other chapters address economic and ethical issues including use of registries medical device regulation and outcome and cost of lumbar disc replacement versus lumbar fusion

*Dynamic Reconstruction of the Spine* Daniel H. Kim, Dilip K Sengupta, Frank P Cammisa, Do Heum Yoon, Richard Glenn Fessler, 2015-06-05 Thieme congratulates Frank P Cammisa on being chosen by New York magazine for its prestigious Best Doctors 2015 list *Dynamic Reconstruction of the Spine* Second Edition is the most up to date resource on the instrumentation technologies and fundamental science integral to achieving spine motion preservation and stabilization It is a completely revised text that includes not only the latest technologies and surgical approaches including MIS techniques but also significantly more detail on the clinical biomechanics of the spine than the previous edition Readers will appreciate the guidance this book provides on how to successfully adopt new technology find appropriate indications address common safety and efficacy issues and answer health economics questions for ethics committees and payers Key Features A substantial revision with entirely new chapters in three quarters of the book including a large section on basic as well as more advanced biomechanics topics Highly visual contains 20% more figures than the previous edition Discusses and explains current advances in genetic and molecular technologies used to repair the spinal disc Includes an unbiased critique of the pro cons clinical outcomes and comparative outcomes of different devices This new edition is an indispensable reference for orthopedic surgeons neurosurgeons and radiologists as well as residents and fellows seeking the latest information on the technologies used in spine motion preservation and stabilization **Master Techniques in**

**Orthopaedic Surgery: The Spine** Albert J. Todd, Thomas A. Zdeblick, 2022-11-21 Part of the highly regarded Master Techniques in Orthopaedic Surgery series The Spine Fourth Edition is a concise lavishly illustrated reference covering the most advanced successful surgical techniques for the spine all in step by step detail Edited by Drs Todd J Albert and Thomas A Zdeblick this fully revised edition presents the preferred techniques of surgical masters illustrated with sequential surgeon s eye view intraoperative photographs as well as superb drawings by noted medical illustrators New contributing authors and new and rewritten chapters keep you fully up to date with recent changes in the field *Manual of Spine Surgery* Uwe

Vieweg, Frank Grochulla, 2012-10-23 The success of any spinal operation depends on good definition of the indications consideration of the contraindications technical and organizational factors good operating technique and correct preoperative preparation and positioning of the patient These points are presented in this book as clearly as possible and are illustrated with detailed high quality artwork Minimally Invasive Spine Surgery Frank Phillips, Isador Lieberman, David Polly, 2014-06-23 Over the past decade minimally invasive techniques have developed rapidly and are widely applied in the management of spine disorders With the development of enabling technologies including specifically designed spinal retractor systems intraoperative imaging and navigation technologies and real time neural monitoring minimally invasive

spine surgery MISS techniques are safe effective and reproducible Indeed studies have confirmed the clinical and economic advantages of these procedures Minimally Invasive Spine Surgery includes detailed discussions of enabling technologies surgical techniques including posterior decompression and fusion approaches to specific diseases and conditions as well as strategies to manage the unique risks and complications of MISS Generously illustrated this will be an essential reference for orthopedic surgeons neurosurgeons and all health care professionals who treat the spine **Surgical Techniques for the Spine** Thomas R. Maher, Andrew A. Merola, 2003 This guide provides step by step instructions to nearly 60 different spinal procedures describing the most advanced techniques available today Each chapter is written by top international experts who offer insights based on years of clinical experience Spine Surgery 2-Vol Set E-Book Edward C. Benzel, 2012-05-14 Build a solid foundation of knowledge based on the fundamentals and employ step by step instruction from Spine Surgery Edited by Edward C Benzel this best selling medical reference explores the full spectrum of surgical techniques used in spine surgery and delivers the comprehensive cutting edge guidance you need to achieve successful outcomes Online access thorough updates contributions by leading international authorities an abundance of detailed illustrations and procedural video clips provide everything you need to avoid and manage complex problems Glean essential up to date need to know information in one comprehensive reference that explores the full spectrum of surgical techniques used in spine surgery Hone your surgical skills and technique with intraoperative videos and more than 800 outstanding illustrations demonstrating each technique step by step Grasp and apply the latest knowledge from more than 25 brand new chapters as well as extensive revisions or total rewrites to the majority of existing chapters to present all of the most up to date information available on every aspect of spine surgery including motion preservation technologies endovascular management back pain and psychosocial interactions biomechanics and more Consult with the best Renowned neurosurgery authority Edward C Benzel leads an international team of accomplished neurosurgeons and orthopedic surgeons many new to this edition who provide dependable guidance and share innovative approaches to surgical techniques and complications management Equip yourself to address increasing occurrences of pain among aging and physically active patients Access the information you need where you need it on your laptop or mobile device via expertconsult.com with fully searchable text a wealth of procedural videos online updates from the experts downloadable image gallery and links to PubMed

**Treatment of Complex Cervical Spine Disorders, An Issue of Orthopedic Clinics** Frank M. Phillips, Safdar N. Khan, 2012-01-28 This issue will serve as a review of current ideas and surgical trends in the management of complex cervical spine disorders Each chapter will discuss surgical techniques will illustrative cases and end on a very contemporary evidence based review of the literature *Essentials of Spine Surgery* Alpaslan Şenköylü, Federico Canavese, 2022-11-14 This concise textbook covers the full spectrum of spine surgery related topics in a comprehensive yet easy to follow readily accessible format Addressing trauma deformity degeneration oncology and infections both in pediatric and adult patients it

provides a broad overview of this complex surgical discipline Subdivided into four parts each chapter exhaustively addresses a clinical problem ranging from signs and symptoms physical examination through differential diagnoses and classification to treatment options possible complications and follow ups In appendix the reader will find relevant classifications indexes questionnaires and quality of life assessments Didactical videos complement the book illustrating essential basic spine surgery techniques in the daily practice Written by an international panel of experts this practical and handy guide is an invaluable tool for trainees of both orthopedic surgery and neurosurgery spine fellows and junior spine surgeons

**Operative Techniques in Spine Surgery** John Rhee, Scott Boden, 2021-05-28 Derived from Sam W Wiesel and Todd J Albert's four volume Operative Techniques in Orthopaedic Surgery this single volume resource contains a comprehensive authoritative review of operative techniques in spine surgery In one convenient place you'll find the entire Spine section as well as relevant chapters from the Oncology and Pediatrics sections of Operative Techniques in Orthopaedic Surgery Superb full color illustrations and step by step explanations help you master surgical techniques select the best procedure avoid complications and anticipate outcomes Written by global experts from leading institutions Operative Techniques in Spine Surgery Third Edition clearly demonstrates how to perform the techniques making this an essential daily resource for residents fellows and practitioners

**Nonfusion Techniques for the Spine** James Maxwell, Steven Griffith, William Welch, 2006-04-30 Nonfusion Techniques for the Spine Motion Preservation and Balance presents information on spine surgery implants and highlights the state of the art in total artificial discs It addresses the features and benefits of the debate between motion sparing devices versus motion eliminating devices and emphasizes the fundamental basic biomechanical principles applied to spinal implant development In addition this book offers valuable pearls of wisdom from developers and clinical users Motion Preservation Individual chapters dedicated to specific spinal implants that are being used in clinical practice and investigative studies as well as those on the horizon are included Informative chapters on lumbar discs are written by the developers of the products and or the lead clinical investigators These individuals are experts on the nuances and technical aspects of the devices featured Through the book's balanced approach to the pros cons and limitations of each technology readers will find this an essential resource for determining which device is best suited for each individual patient A Unique Collaboration A rare meeting of the minds provides the great allure of this book and gives it an individuality all its own One of the book's strongest attributes is its collaborative nature The editors researchers and engineers from industry and academia are teamed with contributing spine surgeons and medical professionals Nonfusion Techniques for the Spine Motion Preservation and Balance effectively captures this unique collaboration and results in a book with clinical and scientific viewpoints Biomechanics and Clinical Applications Weaving together biomechanics and clinical applications the book's two major divisions is an important feature of the overall book but also of each individual chapter The clinical needs and patient emphasis will guide a scientific engineer through the development process needed for new implants whereas the

scientific mathematical and engineering principles provide essential knowledge to clinicians The combination of these two thought processes is very powerful and provides a comprehensive look at the latest information on spine surgery implants Step by Step Technique For the spine surgeon interested in providing patients with the latest treatments and procedures in motion preservation technology this book is a must It is beautifully illustrated in four color throughout and packed with step by step surgical instructions that guide the reader through each surgical technique An accompanying DVD features the key techniques discussed in the book This book is uniquely positioned to appeal to the general practicing surgeon the academic professor and the industry researcher executive and is a must read for all involved in the field of spine surgery

Controversies in Spine Surgery, MIS versus OPEN Alexander R. Vaccaro, Richard G. Fessler, Fareem A.

Sandhu, 2018-04-06 Master spine surgeons Alexander R Vaccaro Richard G Fessler and a cadre of esteemed co editors have compiled the most comprehensive textbook to date detailing minimally invasive spine MIS versus open spine surgery techniques Controversies in Spine Surgery MIS versus OPEN Best Evidence Recommendations features debates by renowned experts on one of the most provocative topics in spine surgery Twenty four chapters systematically organized into four sections degenerative trauma tumor and other issues cover procedures and underlying pathologies backed by a large diverse body of literature MIS and open approaches are thoroughly compared and contrasted in each chapter Evidence is presented and analyzed in an objective manner with opposing sides presenting differing opinions and techniques resulting in a synchronous collection of pros and cons Every chapter is masterfully summed up by the book's editors each of whom have varying stances on the topics at hand This unique duel and duet discussion enables readers to assimilate information benefit from the balanced harmony between divergent opinions and reach their own conclusions Key Highlights Comparative risks benefits complications and outcomes for a full spectrum of lumbar thoracic and cervical procedures MIS versus open approaches for lumbar stenosis synovial cysts lumbar adjacent segment degeneration degenerative scoliosis flatback syndrome thoracic disc herniation and dural tears Tumor resection and stabilization quality of life issues and potential advantages and risks of MIS techniques Key differences in MIS versus open operations such as radiation exposure and costs Analysis of 3 D navigational imaging to improve outcomes and reduce radiation exposure and operating time This book is a tremendous evidence based tool to guide spine surgeons as they make important decisions on selecting the most optimal spine surgery techniques It is a must have resource for all resident and veteran orthopaedic surgeons and neurosurgeons who specialize in treating patients with spine conditions Alexander R Vaccaro MD PhD FACS MBA is Richard H Rothman Professor and Chairman Department of Orthopaedic Surgery and Professor of Neurosurgery Thomas Jefferson University and Hospitals and President The Rothman Institute Philadelphia Pennsylvania USA Richard G Fessler MD PhD is Professor Department of Neurosurgery Rush University Medical Center Chicago Illinois USA Faheem A Sandhu MD PhD is Professor of Neurosurgery Director of Spine Surgery and Co Director Center for Minimally Invasive Spine Surgery Department of



Neurosurgery MedStar Georgetown University Hospital Washington DC USA Jean Marc Voyadzis MD is Co Director Center for Minimally Invasive Spine Surgery and Associate Professor of Neurosurgery MedStar Georgetown University Hospital Washington DC USA Jason C Eck DO MS is an Orthopaedic Spine Surgeon Center for Sports Medicine and Orthopedics Chattanooga Tennessee USA Christopher K Kepler MD MBA is an Associate Professor and Orthopaedic Spine Surgeon Department of Orthopaedic Surgery Thomas Jefferson University and Hospitals and The Rothman Institute Philadelphia Pennsylvania USA An award winning international medical and scientific publisher Thieme has demonstrated its commitment to the highest standard of quality in the state of the art content and presentation of all its products Founded in 1886 the Thieme name has become synonymous with high quality and excellence in online and print publishing **Spine Surgery** Alexander R. Vaccaro, Todd J. Albert, 2016 Updated edition of bestseller from master spine surgeons uncovers tricks of the trade Thieme congratulates Todd Albert on being chosen by New York magazine for its prestigious Best Doctors 2017 list Written by world renowned masters in spine surgery this expanded third edition details all the major procedures and newest technical innovations in the field Experts share clinical pearls gleaned from years of surgical experience and ongoing refinement of techniques Throughout 21 well organized sections the essential elements of a full spectrum of cervical thoracic lumbar and sacroiliac joint procedures are distilled into 112 concise easy to understand chapters From deformities to spinal tumors the text facilitates a greater understanding of surgical nuances and potential complications encountered in standard to complex cases The authors share insights for improving patient safety and outcome such as reducing radiation exposure during fluoroscopy minimizing intraoperative blood loss and utilization of the surgical microscope Updated pain management content encompasses varied strategies including injections steroids and nerve blocks Special Features More than 400 stunning full color illustrations diagrams and photographs replace black and white images from the previous edition Online access to 40 videos in which surgeon authors share personal tips and demonstrate how to deftly navigate challenging real life cases Highlights include up close and personal footage shot in the OR and cadaver simulations Greatly expanded section on minimally invasive technologies covers AxiaLIF Presacral Interbody Fusion SI Joint Fusion and the use of both Robotics and Endoscopy Up to date and comprehensive this book is an outstanding resource for orthopedic and neurosurgical fellows and residents as well as clinicians specializing in spine surgery **Operative Orthopaedics** Willis Cohoon Campbell, 1963

*Mastering Orthopedic Techniques Spine Surgery* Garg Bhavuk, Malhotra Rajesh, 2013-12-15 Spine surgery has come to the age into the new millennium This is an efficient technical guide designed easy to use concise and accurate how to reference for spine surgeons and residents in training who wish to attack a broad range of challenges in techniques of spine surgery The world's foremost spine surgeons from USA UK Europe and Asia describe their preferred techniques in step by step approach explaining the indications and contraindications identifying pitfalls and potential complications Improvement in technology and innovation has given spine surgery a new vision as well as a practical proposition The book has been

written in an atlas format and this one of a kind book offers a comprehensive coverage of all practical aspects of operative spine surgery Covering the conventional as well as modern minimally invasive techniques to address various spine pathologies all masters in the field present a clear layout more than 400 high quality excellent illustrations and masterly tips and pearls to make a difficult spine surgery possible even for an average spine surgeon The detailed operative steps plus all the images make the book a handy companion for all involved in operative spine care

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