

CONTENTS

Foreword xiii

Preface The Millennium of the Motion Segment xv

Part I Fundamentals

Chapter 1 Refuse to Fuse: The Evolution of Spinal Stabilization Technology 3
William C. Welch; James H. Maxwell; Steven L. Griffith

Chapter 2 Nonfusion: Not Up to the Task 9
Christopher M. Bono; Steven R. Garfin

Chapter 3 Nonfusion: The Physiologic Solution 27
Dilip K. Sengupta; Harry N. Herkowitz

Chapter 4 Biomechanics of the Motion Segment and Adjacent Segments 39
John M. Dawson; Markus Fröhlich; Steven L. Griffith

Part II Clinical Applications

Cervical Disc Replacement

Chapter 5 The Cervical Disc: Theory, Biomechanics, and Animal Studies 69
*Paul C. McAfee; William C. Welch; Bryan W. Cunningham;
Anton E. Dmitriev; Nianbin Hu; Andrew Cappuccino; Luiz Pimenta*

Chapter 6 U.S. Trials and Surgical Technique 87
*Jeffrey D. Klopfenstein; Nicholas Theodore; Stephen M. Papadopoulos;
Volker K.H. Sonntag*

Thoracic Reconstruction

- Chapter 7 Pain, Biomechanics, and Thoracic Restoration Technique 105
Daisuke Togawa; Isador H. Lieberman
- Chapter 8 Vertebral Body Reconstruction Using a Porous Containment System 125
Stephen D. Kuslich; James H. Maxwell

Lumbar Total Disc Replacement

- Chapter 9 Concept and Objectives 143
Hassan A. Serhan; Andrew P. Dooris; Richard M. Toselli
- Chapter 10 The Unconstrained Implant 163
Lumbar Total Disc Replacement: CHARITÉ Artificial Disc 164
Hamid Miraliakbar; John J. Regan
Long-Term Follow-up 195
Jean-Philippe Lemaire; Xavier Chiffolot; Fabien D. Bitan
- Chapter 11 The Semiconstrained Implant 205
Rick B. Delamarter; David M. Fribourg
- Chapter 12 The Metal-on-Metal Implant 227
Hallett H. Mathews, Lukas Eisermann
- Chapter 13 The Single Metal-on-Metal Ball-and-Socket Implant 251
Thomas J. Errico

Lumbar Disc Augmentation Technologies

- Chapter 14 Lumbar Nucleus Replacement 269
John E. Sherman; Hansen A. Yuan; Qi-Bin Bao; Bruce R. Bowman
- Chapter 15 Repair of the Anulus Fibrosus (Anuloplasty) After Lumbar Discectomy 283
Joseph C. Cauthen III; John E. Sherman; Reginald J. Davis; Walter C. Peppelman, Jr.; Kenneth S. Yonemura; Steven L. Griffith

Chapter 16 Posterior Soft Stabilization Systems: Concept and Objectives 301
Dilip K. Sengupta; Harry N. Herkowitz

Chapter 17 Motion-Preserving Posterior Lumbar Spinal Instrumentation
System 313
William C. Welch; Peter C. Gerszten; Steven L. Griffith

Part III Future Considerations

Chapter 18 Future Considerations in Nonfusion With Total Disc Arthroplasty 335
Robert G. Watkins; Stephen M. Green; Matthew A. Keary

Index 373