Contents

1.	Fundamental Anatomic Aspects of the Lumbar Foraminal Zone Applied to the Transforaminal Procedures Pil Sun Choi Triangular Procedure Zone 1 Triangular Safety Zone 1 Vertebral Pedicle and its Relationship with Adjacent Neural Structures 2 Location of the Spinal Ganglion 2	1
2.	Philosophy of Minimally Invasive Spine Surgery Satish Gore	4
3.	Sacroiliac Joint Pain Syndrome: Anatomy, Diagnosis, and Treatment—Surgical Laser Thermoneurectomy John C Chiu Anatomy of SI Joint with Nutation 7 Articular Surface of SI Joint 8 Innervation of SI Joint 9 Pathoanatomy and Pathophysiology 9 Sacroiliac Joint Dysfunction Syndrome 10 How to Diagnose SIJ Dysfunction? 10 Common Tests 11 Options for Treatment 11 Surgical Procedure/Technique 11 Surgical Laser Thermoneurectomy (LTN) of SIJ 11	7
4.	Treatment for Sacroiliac Joint Pain: A Minimally Invasive Algorithmic Approach John C Chiu, Ali M Maziad Anatomy of SI Joint 18 Causes of SIJ Pain 18 Diagnosis 18 Treatment of SIJ Pain 19	18
5.	Role of Disc-Fx® for Annulonucleoplasty in the Management of Lumbar Disk Pathology Naresh Kumar, Shah Sambhav P, Shah Siddharth M Mechanism of Action 25 Indications 26 Contraindications 26 Instruments Required 26 Technique 26 Advantages 27 Disadvantages 28 Evidence 28	25
6.	Pearls and Tricks of Endoscopic Minimally Invasive Spinal Surgery John C Chiu, Ali M Maziad Surgical Indications 31 Contraindications 32 Anesthesia and Positioning 33	31

00 Prelims.indd 23 22-10-2014 11:09:59 AM

VVIV
AAIV

• Continuous Intraoperative Monitoring 33

	 Localization of Pathology by using Grid Positioning System 33 Surgical Equipment, Instruments (Fig. 6.4), and Preparation 34 Surgical Procedure 35 Case Illustrations 42 	
7.	Transforaminal Diskectomy on Difficult L4 – L5 and L5 – S1 Hernias Daniel Gastambide Difficult L4 – L5 Hernias 49 • Preliminary Points 49 • Tricks Concerning the Instruments 49 Difficult I5 – S1 Hernias 51 • Tips and Tricks about Transforaminal Diskectomy on L5–S1 with a High iliac Crest 51 • Introduction 51 • Operation 52 When to make a Fusion on a Far lateral Hernia? 58 Percutaneous lumbar Cages in the Case of Critical Spine Surgery 58 • Tips and Tricks 60 • Complications 60	49
8.	Prevention of Development of Postoperative Dysesthesia in Transforaminal Percutaneous Endoscopic Lumbar Diskectomy for Intracanalicular Lumbar Disk Herniations (Floating Retraction Technique) Jiyoung Cho, Ho-Yeon Lee, Sang-Ho Lee Indications 62 Goal of Surgery 62 Treatment Options and Critical Decision Points 62 Floating Retraction Technique 63	62
9.	Percutaneous Endoscopic Lumbar Diskectomy for Migrated Herniations Fujio Ito, Yasushi Miura, Motohide Shibayama, Shu Nakamura, Shoji Ikeda, Minoru Yamada, Tomohiko Yamada Materials 68 Surgical Techniques Developed 70 Results 74	68
10.	Percutaneous Posterolateral Endoscopic Treatment for Spinal Infection Manabu Ito Treatment Options for Spinal Infection 79 Surgical Procedures of PELD for Spinal Infection 80 Clinical Results 83	79
11.	Microendoscopic Decompression Using Tubular Retractor System for Lumbar Canal Stenosis Arvind G Kulkarni, Sambhav Shah Indications and Contraindications 86 Advantages 86 Disadvantages and Complications 87 Preoperative Workup 87 Technique 88 Postoperative Schedule 90 Key Points 91 Must Have Instruments 91	86

00 Prelims.indd 24 22-10-2014 11:09:59 AM

		Contents	XXV
12.	How Much Cement is Enough for Vertebroplasty to Reduce Adjacent Vertebral Fractures in Osteoporotic Vertebral Fractures? Arvind Bhave Materials and Methods 92 Clinical Examination 92 Investigations 92 Results 93	92	
13.	Key Points in Minimally Invasive Spine Stabilization for Thoracic and Lumbar Lesions with Spine Navigation Koji Sato Features and Structures of Percutaneous Instrument Systems 99 Preoperative Planning 99 Operating Table 99 Position of the Patient and Installation of the Imaging C-arm System 100 Use of the Surgical Imaging C-arm System 100 Use of the Spinal Navigation System 100 Key Points in the Insertion of Jamshidi or PAK Needles 100 Troubles with Guide Pins 102 How to use a Dilator, Oar, and Taps 102 Troubles with PPS 102 Troubles with Rod Insertion 103 Modification of Percutaneous Hooks 103 Lumbosacral Stabilization 103 Key Points in Multisegmental Stabilization 104 Facet Fusion Technique 104 Troubles with Damaged Instruments 104	99	
14.	Technique of Odontoid Screw Fixation for Type II Odontoid Fractures Arvind G Kulkarni, Abhilash N Dhruv Classification 105 Indications/Contraindications 105 Rationale 106 Examination and Evaluation/Pathology 106 Surgery 106 Procedure 107 Pearls 108 Pitfalls 109 Postoperative Management 109 Complications 109 Recent Advances 110	105	
15.	Anterior Foraminotomy for Cervical Disk Disease Janusz Bonkowski History of Anterior Foraminotomy 113 The Operation 113	112	
16.	Anterior Cervical Corpectomy for Cervical Spondylotic Myelopathy Ajoy P Shetty, Vishnu Prasath, Rishi M Kanna, S Rajasekaran Anterior Cervical Corpectomy and Fusion (ACCF) 121 Complications 131	119	

00 Prelims.indd 25 22-10-2014 11:09:59 AM

xxvi	Modern Techniques in Spine Surgery	
	 17. Acute Management of Patients with Spinal Cord Injury and Rehabilitation HS Chhabra, Rajat Mahajan, Shipra Chaudhary, Mohit Arora Recognition of Injury 138 Clinical Management 145 Acute Management of Dislocations 146 Spinal Cord Injury—Rehabilitation 146 Special Considerations 149 Key Points 150 	137
	 18. Laminoplasty with Suture Anchor Fixation Lance K Mitsunaga, Eric O Klineberg, Munish C Gupta Indications 154 Contraindications 154 Advantages of Laminoplasty 155 Disadvantages of Laminoplasty 155 Preoperative Workup/Planning 155 Patient Positioning, Preparation, and Draping 155 Key Procedural Steps 156 Foraminotomy 158 Arthrodesis 158 Wound Closure 158 Postoperative Management 159 Complications 159 	154
	 19. Motion Preservation Surgery in the Cervical Spine Kim-Soon Oh Relevant Anatomy 164 Relevant Biomechanics 165 Ideals of Motion Preservation 166 Adverse Results from Cervical Spine Artificial Disk Replacement 167 Minimizing Complications and Adverse Results 168 Afterword 173 	164
	 20. Idiopathic Scoliosis: Principles of Surgical Management A Mezentsev, D Petrenko, V Radchenko Preoperative Evaluation 176 Surgical Management of Infantile idiopathic Scoliosis 176 Surgical Management of Juvenile Idiopathic Scoliosis 177 Surgical Methods for Adolescent Idopathic Scoliosis 181 Complications 187 	175
	 21. Posterior Correction Techniques in Adolescent Idiopathic Scoliosis Suken A Shah Implant Properties 191 Correction Maneuvers 192 	191
	 22. Minimally Invasive Surgery of Pediatric Spinal Deformity Amer F Samdani, Ashish S Ranade Rationale 203 Indications 203 	203
	 23. Pedicle Subtraction Osteotomy: Surgical Technique Munish Gupta Surgical Indications 208 	207

00 Prelims.indd 26 22-10-2014 11:09:59 AM

Preoperative Planning 208Surgical Technique 209

		Contents	xxvii
24.	Management of Spinal Kyphotic Deformities HS Chhabra, Ameer S Theruvath Pathomechanics 213 Management 213	212	
25.	Lumbar Facet Syndrome Radchenko V, Dedukh N, Malyshkina S Background 222 Anatomical Sites and Pathomorphological Study 222 Structure of the Human Facet Joints at Different Age Periods 223 Facet Joint Changes and low Back Pain 225 Classification 227 Facet Blocks: Diagnosis and Management 227 Facet Denervation 228 Percutaneous Facet Joint Fusion 230 Clinical Example 231	222	
26.	Degenerative Lumbar Scoliosis: Controversial Issues and a New Challenge Myung-Sang Moon, Sung-Soo Kim, Bong-Jin Lee, Jeong-Lim Moon, Seog In Moon • Subject Gender and Age Incidences 234 • Clinical Type Classification 235 • Surgical Management 241 • Decompression Surgery 242	233	
27.	Degenerative Lumbar Kyphosis: Pathogenesis and Global Standard for Management Myung-Sang Moon, Sung-Soo Kim, Bong-Jin Lee, Min Geun Yoon, Jeong-Lim Moon Characteristic Features 256 Pitfalls in Diagnosis 261 Treatment 261	256	
28.	Sagittal Spinal Alignment and its Clinical Implication Myung-Sang Moon, Sung-Soo Kim, Bong-Jin Lee, Min Geun Yoon, Jeong-Lim Moon Significance of Sagittal Alignment 274 Interpretation of Standing 275 Curvature and low Back Function 277 Sagittal Spinal Curve Measurement 278 Factors Affecting the Alignment 279 Posture and Spinal Diseases 279 Abnormal Sagittal Curve and Function 279 Definition and Measurement of Balanced Sagittal Alignment 281	272 272	
29.	Instability of Lumbar Spine—Diagnosis, Assessment, and Management Myung-Sang Moon, Sung-Soo Kim, Jeong-Lim Moon, Sung-Sim Kim, Hanlim Moon Pathogenesis 292 Assessment of Clinical Instability 294 Classification 294 Diagnosis 296 Prognosticating Factors of Instability 299 Treatment 300 Surgical Management 300 Stabilization Surgery 303	291	
30.	Lateral Access to the L5–S1 and Adjacent Disks by Retracting the Psoas Muscle Jin-Fu Lin Materials and Methods 310 Results 313	310	

00 Prelims.indd 27 22-10-2014 11:09:59 AM

	ern Techniques in Spine Surgery
31.	Lumbar Spinal Stenosis—Current View Myung-Sang Moon, Sung-Soo Kim, Jeong-Lim Moon, Jang-Cheol Sihn Regional Anatomy and Amplitude 317 Nerve Root Pathophysiology 320 Clinical Symptoms 321 Neurological Characteristics 322 Diagnosis 323 Management 325
32.	Combined Lumbosacral Fusion in One Stage Using Anterior Then Posterior Approach: Surgical Technique and Results Barrey CY, Boissiere L, D'acunzi G, Perrin G Case Series 330 Results 333
33.	Surgical Results of Dynamic Nonfusion Stabilization with the Segmental Spinal Correction System for Degenerative Lumbar Spinal Diseases with Instability: Minimum 2-year Follow-up Hideki Ohta, Yoshiyuki Matsumoto, Yuichirou Morishita, Tsubasa Sakai, George Huang, Hirotaka Kida, Yoshiharu Takemitsu Methods 338 Results 338 Case Presentation 339
34.	Pyogenic Spinal Infection—Current Views in Diagnosis and Management Myung-Sang Moon, Sung-Soo Kim, Bong-Jin Lee, Young-Wan Moon, Jeong-Lim Moon Pathogenesis 344 Clinical Manifestations 344 Laboratory Studies 344 Treatment in General 349 Various Forms of Pyogenic Spondylodiskitis 351
35.	Tuberculosis of Spine—Current Views in Diagnosis and Management and Global Standard Myung-Sang Moon, Sung-Soo Kim, Jeong-Lim Moon, Jang-Cheol Sihn Immunity and Tuberculosis 366 Clinical Manifestations 367 Classification Based on Staging of Tuberculosis 368 Management 368 Myobacterium tuberculosis and its Behavioral Characteristics 369 Nutritional Therapy 370 Surgical Treatment 371
36.	Sacropelvic Fixation Ioannis Avramis, Nicholas Pirnia, Munish Gupta Historical Background 385 Sacral and Pelvic Anatomy 386 Biomechanics 389 Sacral Fixation 389 Jackson Intrasacral Rod Technique 390

00 Prelims.indd 28 22-10-2014 11:09:59 AM

Chopin Plate/Colorado II Sacral Plate 392
 Complications of Sacral Fixation 392

• Complications of Pelvic Fixation 396

Pelvic Fixation 393S2 Alar Iliac Screw 395

		Contents xxix
37.	Surgery for Sacrum Tumors Mehmet Zileli Pathology 399 Clinic 399 Surgery 400 Fixation Systems 402 Surgical Technique 403 Radiotherapy and Chemotherapy 404 Outcome 404	399
38.	Novel Interlaminar Dynamic Stabilization Concept and Device (IntraSPINE) for the Treatment of Early and Late Degenerative Problems in the Lumbar Spine Darwono A Bambang Degenerative Cascade of the Lumbar Spine 412 Treatment of Lumbar Degenerative Cascade 412 Middle Column of the Spine 415 Dynamic Interlaminar Device 416 Surgical Technique 418 Case Studies 425	412
Inde	x	433

00 Prelims.indd 29 22-10-2014 11:09:59 AM