

Contents

VOLUME ONE

SECTION 1: Introduction and Clinical Examination

Section Editor: Sureshwar Pandey

1. Introduction and Clinical Examination 1
Sureshwar Pandey
2. Damage Control Orthopedics 12
Anil Agarwal, Anil Arora, Sudhir Kumar
- SECTION 2: Basic Sciences
Section Editor: Anil Arora
3. Functional and Anatomy of Joints 19
Nagesh P Naik, Manish Chadha, Arun Pal Singh
 - 3.1 Joints: Structure and Function 19
Nagesh Naik, Manish Chadha, Arun Pal Singh
 - 3.2 Synovium Structure and Function 24
Nagesh Naik
4. Growth Factors and Fracture Healing 26
Anil Agarwal, Anil Arora
5. Metallurgy in Orthopedics 34
Aditya N Aggarwal, Manoj Kumar Goyal, Anil Arora
6. Pathophysiology of Spinal Cord Injury and Strategies for Repair 37
Manish Chadha
7. The Stem Cells in Orthopedic Surgery 47
Manish Chadha, Anil Agarwal, Anil Arora
8. Bone: Structure and Function 52
Gurunath S Wachche
9. Cartilage: Structure and Function 55
Gurunath S Wachche
10. Muscle: Structure and Function 59
Gurunath S Wachche
11. Tendons and Ligaments: Structure and Function 62
Gurunath S Wachche
12. Synovial Fluid 64
Surya Bhan, Aman Dua
13. Synovial Disorders 71
Surya Bhan, Aman Dua

14. Evidence-based Medicine and Research 78
Ashok K Shyam

SECTION 3: Diagnostic Imaging in Orthopedics

Section Editor: JK Patil

15. MRI and CT in Orthopedics 89
JK Patil
16. Musculoskeletal Ultrasound 135
JK Patil, Kiran Patnakar
17. Advances in Orthopedic Imaging 144
JK Patil, Priti Patil, Malini Lawande, Pramod Nagure
18. Nuclear Medicine in Orthopedics 149
Vikram R Lele, Parag Aland

SECTION 4: Metabolic Bone Diseases

Section Editor: Shishir Rastogi

19. Osteoporosis and Internal Fixation in Osteoporotic Bones 161
Sushrut Babhulkar
20. Vertebroplasty for Osteoporotic Fractures 189
Arvind Bhawe
21. Ochronosis 196
GS Kulkarni, P Menon, Milind G Kulkarni, Sagar Saxena
22. Gout 199
VM Iyer
23. Crystal Synovitis 207
Vidisha S Kulkarni
24. Rickets 208
KN Shah, Prasanna C Rathi
25. Scurvy and Other Vitamin-related Disorders 217
KN Shah
26. Mucopolysaccharidosis 219
RM Kulkarni, Mandar Agashe
27. Fluorosis 225
Gurunath S Wachche
28. Osteopetrosis 227
Gurunath S Wachche

SECTION 5: Endocrine Disorders

Section Editor: MH Patwardhan

29. Endocrine Disorders 231
Gurunath S Wachche
30. Hyperparathyroidism and Bone 233
MH Patwardhan, Parag Shah

SECTION 6: Bone and Joint Infections

Section Editor: SC Goel

31. Pyogenic Hematogenous Osteomyelitis: Acute and Chronic 243
SC Goel
32. Septic Arthritis in Adults 262
SC Goel, R Bhalla
33. Fungal Infections 266
Gurunath S Wachche
34. Miscellaneous Types of Infections 269
Gurunath S Wachche
- 34.1 Gonococcal Arthritis 269
Gurunath S Wachche
- 34.2 Bone and Joints in Brucellosis 270
Gurunath S Wachche
- 34.3 Congenital Syphilis 271
Gurunath S Wachche
- 34.4 *Salmonella* Osteomyelitis 272
Gurunath S Wachche
- 34.5 Hydatid Disease of the Bone 272
Gurunath S Wachche
35. Postoperative Infection 276
GS Kulkarni
36. Prevention of Surgical Site Infection in India 282
Sanjay B Kulkarni
37. AIDS and the Orthopedic Surgeon 294
SS Rajderkar, SA Ranjalkar

SECTION 7: Tuberculosis of Skeletal System

Section Editor: SM Tuli

38. Epidemiology and Prevalence 301
SM Tuli
39. Pathology and Pathogenesis 303
SM Tuli
40. The Organism and its Sensitivity 309
SM Tuli
41. Diagnosis and Investigations 310
SM Tuli

42. Evolution of Treatment of Skeletal Tuberculosis 316
SM Tuli
43. Antitubercular Drugs 318
SM Tuli
44. Principles of Management of Osteoarticular Tuberculosis 321
SM Tuli
45. Tuberculosis of the Hip Joint 330
SM Tuli
46. Tuberculosis of the Knee Joint 342
SM Tuli
47. Tuberculosis of the Ankle and Foot 349
SM Tuli
48. Tuberculosis of the Shoulder 353
SM Tuli
49. Tuberculosis of the Elbow Joint 355
SM Tuli
50. Tuberculosis of the Wrist 358
SM Tuli
51. Tuberculosis of Short Tubular Bones 360
SM Tuli
52. Tuberculosis of the Sacroiliac Joints 362
SM Tuli
53. Tuberculosis of Rare Sites, Girdle and Flat Bones 364
SM Tuli
54. Tuberculous Osteomyelitis 368
SM Tuli
55. Tuberculosis of Tendon Sheaths and Bursae 372
SM Tuli
56. Tuberculosis of Spine: Clinical Features 374
SM Tuli
57. Tuberculosis of Spine: Radiographic Appearances and Findings on Modern Imaging 379
SM Tuli
58. Tuberculosis of Spine: Differential Diagnosis 391
SM Tuli
59. Tuberculosis of Spine: Neurological Deficit 397
AK Jain
60. Management and Results 416
SM Tuli
61. Surgery in Tuberculosis of Spine 430
SS Babhulkar, SM Tuli
62. Operative Treatment 439
SM Tuli
63. Relevant Surgical Anatomy of Spine 453
SM Tuli

64. Atypical Spinal Tuberculosis 456
Anil Jain
65. The Problem of Deformity in Spinal Tuberculosis 460
S Rajsekharan

SECTION 8: Systemic Complications in Orthopedics

Section Editor: Sunil G Kulkarni

66. Shock 469
Uday Phatak
67. Crush Syndrome 472
V Paramshetti
68. Disseminated Intravascular Coagulation 476
Uday Phatak
69. Thromboembolism 479
Uday Phatak
70. Fat Embolism Syndrome: Adult Respiratory Distress Syndrome 481
Milind G Kulkarni, Fouad Tariq Aziz
71. Orthopedic Manifestations of Sickle Cell Hemoglobinopathy 484
SS Babhulkar
72. Gas Gangrene and Tetanus 490
Uday Phatak
72.1 Gas Gangrene 490
72.2 Tetanus 491

SECTION 9: Orthopedic Rheumatology

Section Editor: Manish Khanna

Introduction
Manish Khanna

73. Rheumatoid Arthritis: Etiopathogenesis, Clinical Features and Management 495
Manish Khanna
74. Ankylosing Spondylitis and Other Seronegative Spondyloarthropathies 502
Bhaskar Borgohain, S Lahkar
75. Surgical Management in Rheumatoid Arthritis 509
Manish Khanna, Rashmi Chopra
76. Crystal Deposition Disorders 515
G Omkarnath
77. Juvenile Rheumatoid Arthritis 535
Pradeep Agarwal, Manish Khanna

SECTION 10: Peripheral Nerve Injuries

Section Editors: Mukund R Thatte, Anil Bhatia

78. Injuries of Peripheral Nerve 547
Mukund R Thatte, RL Thatte
79. Electrodiagnostic Assessment of Peripheral Nerve Injuries 553
KA Mansukhani, Mukund R Thatte
80. Painful Neurological Conditions of Unknown Etiology 560
Mandar Agashe, Mukund R Thatte
81. Management of Adult Brachial Plexus Injuries 563
Mukund R Thatte, Anil Bhatia, RL Thatte
82. Injection Neuritis 578
Mandar Agashe, Mukund R Thatte
83. Median, Ulnar and Radial Nerve Injuries 580
Vidisha S Kulkarni
84. Tendon Transfers 586
Mukund R Thatte, RL Thatte
85. Entrapment Neuropathy in the Upper Extremity 595
Mukund R Thatte
86. Affections of Sciatic Nerve 601
Sunil G Kulkarni
87. Peroneal Nerve Entrapment 603
Sunil G Kulkarni
88. Anterior Tarsal Tunnel Syndrome 606
Vidisha S Kulkarni
89. Lateral Femoral Cutaneous Nerve Entrapment 608
Mandar Agashe, Mukund R Thatte

VOLUME TWO

SECTION 11: Bone Tumors

Section Editors: Ajay Puri, Prakash Naik

90. Principles of Management of Bone Tumors 613
Ajay Puri
91. Radiology of Bone Tumors 622
Khushboo Pilania, Bhavin Jankharia
92. Role of Nuclear Imaging 634
Venkatesh Rangarajan, Nilendu Purandare, Sneha Shah, Archi Agrawal
93. Pathology of Bone Tumors 638
Sujit Joshi, Yogesh Panchwagh

94. Benign Cartilage Tumors	641	110. Principles of Fractures and Fracture Dislocations	757
<i>Dominic K Puthoor, Wilson Iype</i>		<i>GS Kulkarni, Sujay M Kulkarni</i>	
95. Other Benign and Miscellaneous Bone Tumors	653	111. Stress Fractures	769
<i>Ashish Gulia, Ajay Puri</i>		<i>Milind G Kulkarni, Madhura Kulkarni, Achut Rao</i>	
96. Giant Cell Tumor of Bone	664	112. Principles of Two Systems of Fracture Fixation: Compression System and Splinting System	771
<i>Ajay Puri, Ashish Gulia</i>		<i>GS Kulkarni, Nitish Arora</i>	
97. Common Malignant Bone Tumors	667	113. Recent Advances in Internal Fixation of Fractures	799
<i>Ajay Puri, Ashish Gulia</i>		<i>U Holz, I Lorenz</i>	
98. Chemotherapy in Bone Tumors	675	114. Nonoperative Treatment of Fractures of Long Bones	813
<i>Girish Chinnaswamy</i>		<i>DK Taneja</i>	
99. Current Status of Megaprotheses in Limb Salvage	679	115. Treatment of Fracture of Shaft of Long Bones by Functional Cast	820
<i>Mayilvahanan Natrajan</i>		<i>GS Kulkarni</i>	
100. Role of Allografts and Bone Substitutes	681	116. Open Fractures	825
<i>Rajesh Malhotra, Ravijot Singh</i>		<i>S Rajasekaran, J Dheenadhayalan, A Devendra, P Ramesh</i>	
101. Metastasis of Long Bones	689	117. Negative Pressure Wound Therapy (Vacuum-assisted Closure)	845
<i>Sudhir K Kapoor, Saurabh Kapoor, Pradeep Singh</i>		<i>GS Kulkarni, Madhura Kulkarni</i>	
102. Spinal Tumors and Spinal Metastasis	696	118. Soft Tissue Coverage for Lower Extremity	852
<i>S Rajasekaran</i>		<i>S Raja Sabhapathy</i>	
103. Multiple Myeloma	711	119. Bone Grafting and Bone Substitutes	860
<i>Ajay Puri, Ashish Gulia</i>		<i>GS Kulkarni, P Rathi</i>	
104. Soft Tissue Sarcomas	714	120. Polytrauma: Management of Orthopedic Injuries (Damage Control Orthopedics)	872
<i>Ajay Puri</i>		<i>Dhiren Ganjawala, Pankaj Patel</i>	
105. Cancer Pain Management	717	121. Abdominal Trauma	876
<i>PN Jain</i>		<i>BD Pujari</i>	
106. Palliative Care and Quality of Life in Advanced Bone and Soft Tissue Cancer	721	122. Chest Trauma	880
<i>Mary Ann Muckaden, Jayita Deodhar, Shrikant Atreya</i>		<i>HK Pande</i>	
SECTION 12: Biomaterial		123. Trauma to the Urinary Tract	885
<i>Section Editor: Nagesh Naik</i>		<i>S Purohit</i>	
107. Biomechanics and Biomaterials in Orthopedics	727	124. Head Injury	889
<i>Vikas Agashe, Nagesh Naik</i>		<i>Sanjay Kulkarni</i>	
108. Implants in Orthopedics	730	125. Fractures of the Mandible	891
<i>Anand J Thakur, Mandeep Dhillon</i>		<i>AA Kulkarni</i>	
108.1 Metals and Implants in Orthopedics	730	126. Temporomandibular Joint Disorders	897
<i>Anand J Thakur</i>		<i>AA Kulkarni</i>	
108.2 Bioabsorbable Implants in Orthopedics	738	127. Compartment Syndrome	902
<i>Mandeep Dhillon</i>		<i>GS Kulkarni, Nitish Arora</i>	
SECTION 13: Fractures and Fracture Dislocation: General Considerations		128. Anesthesia in Orthopedics	912
<i>Section Editor: GS Kulkarni</i>		<i>BM Diwanmal, Sandeep M Diwan</i>	
109. Fractures Healing	743	128.1. Orthopedic Anesthesia and Postoperative Pain Management	912
<i>GS Kulkarni</i>		<i>BM Diwanmal</i>	

128.2	Local Anesthesia and Pain Management in Orthopedics <i>Sandeep M Diwan</i>	926	141.	Fracture Management <i>RM Kulkarni</i>	1096
129.	Medical Aspects <i>S Sane, BS Diwan</i>	935	142.	Nonunion of Fractures of Long Bones <i>GS Kulkarni, Rajiv Limaye</i>	1100
129.1	Medicolegal Aspects in Orthopedics <i>S Sane</i>	935	143.	Corrections of Deformity of Limbs <i>Dror Paley</i>	1118
129.2	Medical Practice and Law <i>BS Diwan</i>	938	143.1	Normal Lower Limbs Alignment and Joint Orientation	1118
SECTION 14: Intramedullary Nailing			143.2	Radiographic Assessment	1124
<i>Section Editor: Anand J Thakur</i>			143.3	Frontal Plane Mechanical and Anatomic Axis Planning	1126
130.	Intramedullary Nailing of Fractures <i>Anand J Thakur</i>	945	143.4	Translation and Angulation—Translation Deformities	1128
131.	Plate Fixation of Fractures <i>GS Kulkarni, Anand J Thakur</i>	978	143.5	Oblique Plane Deformities	1146
131.1	Bone Screws	978	143.6	Sagittal Plane Deformities	1153
131.2	Plating	984	144.	Calculating Rate and Duration of Distraction for Deformity Correction <i>JE Herzenberg</i>	1168
131.3	Locking Plate	989	145.	Bowing Deformities <i>RM Kulkarni</i>	1171
131.4	Precontoured (Special Plating) <i>Anand J Thakur</i>	1005	146.	Osteotomy Consideration <i>Dror Paley</i>	1182
SECTION 15: External Fixator			147.	Taylor Spatial Frame <i>Milind Chaudhary</i>	1193
<i>Section Editor: Anand J Thakur</i>			148.	Ortho-SUV Frame <i>Mangal Parihar, Viktor Vilensky, Leonid Solomin</i>	1199
132.	External Fixation <i>Anand J Thakur</i>	1013	149.	Management of Fibular Hemimelia Using the Ilizarov Method <i>RM Kulkarni, Rajiv Negandhi</i>	1205
133.	Unilateral Dynamic Axial Fixator <i>Hiranya Kumar Seenappa, Manoj Kumar Shukla</i>	1035	150.	Foot Deformities <i>GS Kulkarni</i>	1213
134.	Management of Trauma by Joshi's External Stabilization System <i>BB Joshi, BB Kanaji, Ram Prabhoo, Rajesh Rohira</i>	1045	151.	Multiple Hereditary Exostosis <i>RM Kulkarni</i>	1230
SECTION 16: Ilizarov Methodology			152.	Limb Length Discrepancy <i>DK Mukherjee, Mandar Agashe</i>	1233
<i>Section Editor: GS Kulkarni</i>			153.	Limb Lengthening in Achondroplasia and Other Dwarfism <i>RM Kulkarni, Milind Chaudhary</i>	1253
135.	The Magician of Kurgan: Professor GA Ilizarov <i>HR Jhunjhunwala</i>	1059	154.	Postoperative Care in the Ilizarov Method <i>Mangal Parihar</i>	1259
136.	Biomechanics of Ilizarov Ring Fixator <i>GS Kulkarni</i>	1060	155.	Problems, Obstacles, and Complications of Limb Lengthening by the Ilizarov Technique <i>Dror Paley</i>	1264
137.	Biology of Distraction Osteogenesis <i>J Aronson, GS Kulkarni</i>	1071	156.	Complications of Limb Lengthening: Role of Physical Therapy <i>Arvind Bhawe</i>	1278
138.	Operative Technique of Ilizarov Method <i>Milind G Kulkarni</i>	1078	157.	Aggressive Treatment of Chronic Osteomyelitis <i>GS Kulkarni, Muhammad Tariq Sohail</i>	1281
139.	Advances in Ilizarov Surgery <i>SA Green</i>	1087			
140.	Bone Transport <i>GS Kulkarni</i>	1094			

158. **Thromboangiitis Obliterans** 1286
GS Kulkarni
159. **Late Effects of Poliomyelitis Management of Neglected Cases** 1292
VM Agashe
160. **Management of Neglected Cases of Poliomyelitis Presenting for Treatment in Adult Life** 1296
JJ Patwa

SECTION 17: Arthroscopy

Section Editors: Anant Joshi, Dinshaw Pardiwala, GS Kulkarni

161. **Introduction** 1305
Dinshaw Pardiwala
162. **Diagnostic Knee Arthroscopy** 1307
P Sripathi Rao, Kiran KV Acharya
163. **Loose Bodies in the Knee Joint** 1313
Sanjay Garude
164. **Arthroscopy in Osteoarthritis of the Knee** 1317
J Maheshwari
165. **Anterior Cruciate Ligament-deficient Knee** 1319
Yathiraj BR, Sujit Kadrekar, Dinshaw Pardiwala
166. **Failed Anterior Cruciate Ligament Reconstruction and Revision Surgery** 1326
Sujit Kadrekar, Yathiraj BR, Dinshaw Pardiwala, Anant Joshi
167. **Posterior Cruciate Ligament Deficient Knee** 1332
Yathiraj BR, Sujit Kadrekar, Dinshaw Pardiwala
168. **Posterolateral Rotatory Instability of the Knee** 1337
Sujit Kadrekar, Yathiraj BR, Dinshaw Pardiwala
169. **Allografts in Knee Reconstructive Surgery** 1344
Sujit Kadrekar, Yathiraj BR, Dinshaw Pardiwala
170. **Shoulder Arthroscopy: Introduction, Portals and Arthroscopic Anatomy** 1352
Clement Joseph, David V Rajan
171. **Superior Labrum Anterior and Posterior: Tears of Shoulder** 1360
Sujit Kadrekar, Yathiraj BR, Dinshaw Pardiwala

SECTION 18: Trauma Upper Limb

Section Editors: J Dheenadhayalan, Vidisha S Kulkarni

172. **Fractures of the Shoulder Region** 1369
GS Kulkarni, Ankit Varshneya, Vidisha S Kulkarni, RM Kulkarni

- 172.1 **Fractures of the Clavicle** 1369
Ankit Varshneya
- 172.2 **Fractures of the Scapula** 1374
GS Kulkarni, Ankit Varshneya, Vidisha S Kulkarni, RM Kulkarni
173. **Injuries of the Shoulder Girdle** 1376
GS Kulkarni, Milind Kulkarni, J Dheenadhayalan
- 173.1 **Acute Traumatic Lesions of the Shoulder Sprains, Subluxation and Dislocation** 1376
GS Kulkarni, Milind Kulkarni
- 173.2 **Fractures of Proximal Humerus** 1381
J Dheenadhayalan
174. **Fractures of the Humerus** 1396
KP Srivastava, Madhura Kulkarni

SECTION 19: Injuries of Elbow

Section Editor: Prakash P Kotwal

175. **Fractures of Distal Humerus in Adults** 1411
Sudhir Babhulkar
176. **Injuries Around Elbow** 1431
Abhinav Agarwal, Prakash P Kotwal, Mohammed Sadiq
- 176.1 **Fractures of the Olecranon** 1431
Prakash P Kotwal, Abhinav Agarwal
- 176.2 **Sideswipe Injuries of the Elbow** 1436
Prakash P Kotwal, Abhinav Agarwal
- 176.3 **Monteggia Fracture Dislocation** 1440
Prakash P Kotwal, Mohammed Sadiq
177. **Dislocations of Elbow and Recurrent Instability** 1444
Alex Sonaru, Justin Gettings, Guido Marra
178. **Fractures of the Radius and Ulna** 1449
Prakash P Kotwal, Amit Singla

VOLUME THREE

SECTION 20: Trauma Lower Limbs and Pelvis

Section Editor: GS Kulkarni

179. **Fractures of Pelvic Ring** 1455
CJ Thakkar
180. **Fractures of Acetabulum** 1463
Ramesh Kumar Sen, Sujit Kumar Tripathy
181. **Fractures and Dislocations of the Hip** 1482
GS Kulkarni
- 181.1 **Protrusio Acetabuli** 1482
Kiran M Doshi
- 181.2 **Osteitis Condensans Ilii** 1484
Kiran M Doshi

182. Fractures of Neck of Femur <i>Milind G Kulkarni</i>	1485	195. Neglected Trauma in Spine and Pelvis <i>GS Kulkarni</i>	1710
183. Intertrochanteric Fractures of Femur <i>GS Kulkarni, Rajiv Limaye, Sunil G Kulkarni</i>	1520	SECTION 23: Hand	
184. Subtrochanteric Fractures of the Femur <i>Sudhir S Babhulkar</i>	1547	<i>Section Editor: Sudhir Warriar</i>	
185. Diaphyseal Fractures of the Femur in Adults <i>Pradeep Kothadia</i>	1558	196. Functional Anatomy of the Hand: Basic Techniques and Rehabilitation <i>Prakash P Kotwal, Vivek Shankar</i>	1715
186. Fractures of the Distal Femur <i>Narinder Kumar Magu</i>	1568	197. Examination of the Hand <i>Vidisha S Kulkarni</i>	1722
187. Extensor Apparatus Mechanism: Injuries and Treatments <i>Shiva Shankar Jha</i>	1584	198. Fractures of the Hand <i>Sudhir Warriar</i>	1731
188. Intra-articular Fractures of the Tibial Plateau <i>Sushrut Babhulkar, Amol Patil</i>	1597	199. Dislocations and Ligamentous Injuries <i>Sudhir Warriar</i>	1741
189. Diaphyseal Fractures of Tibia and Fibula in Adults <i>S Rajasekaran</i>	1616	200. Crush Injuries of the Hand <i>Aditya Kaushik, Ram Prabhoo</i>	1748
190. Pilon Fracture <i>Manan Gujarathi</i>	1642	201. Skin and Soft Tissue Cover in the Hand <i>Leena Jain, Samir Kumta, Rashmi Raut</i>	1758
SECTION 21: Injuries of the Spine		202. Flexor Tendon Injury <i>Sudhir Warriar</i>	1775
<i>Section Editor: Ketan Pande</i>			
191. Cervical Spine Injuries and their Management <i>Ketan Pande</i>	1669	203. Extensor Tendon Injuries <i>S Raja Sabapathy, Praveen Bhardwaj</i>	1784
192. Fractures and Dislocations of the Thoracolumbar Spine <i>Ketan Pande</i>	1671	204. Congenital Hand Anomalies <i>Mukund R Thatte, Nayana Nayak</i>	1796
SECTION 22: Neglected Trauma		205. Complex Regional Pain Syndrome (Sudecks Dystrophy) <i>Sandeep Diwan, Madhura Kulkarni</i>	1800
<i>Section Editor: GS Kulkarni</i>			
193. Neglected Trauma in Upper Limb <i>GS Kulkarni</i>	1675	206. Infections in the Hand <i>Anil Bhat</i>	1811
193.1 Displaced Neglected Fracture of Lateral Condyle Humerus in Children <i>GS Kulkarni</i>	1685	207. Volkmann's Ischemic Contracture <i>VK Pande, H Gehlot</i>	1823
193.2 Neglected Physeal Injuries <i>GS Kulkarni</i>	1688	208. Dupuytren's Contractures <i>Conor JC Gouk, Randy R Bindra</i>	1829
194. Neglected Trauma in Lower Limb <i>GS Kulkarni</i>	1690	209. Stiff Fingers and Wrist <i>Vidisha S Kulkarni, Raviraj Patil</i>	1836
194.1 Neglected Fracture: Neck of Femur, Miscellaneous and Other Fractures of Femur <i>GS Kulkarni</i>	1690	210. Disorders of the Nail <i>S Raja Sabapathy, R Raja Shanmugakrishnan</i>	1840
194.2 Neglected Fracture: Neck of Femur <i>GS Kulkarni</i>	1703	211. Tumors and Swellings <i>GA Anderson</i>	1847
194.3 Neglected Traumatic Dislocation of Hip in Children <i>GS Kulkarni</i>	1707	212. Hand Splinting <i>BB Joshi</i>	1858
		213. Amputations <i>Vidisha S Kulkarni, Emmanuel Bhore</i>	1876
		214. Arthrodesis <i>Binu P Thomas, Kiran Sasi P</i>	1887

215. **Fractures of Carpal Bones** 1897
Aashish Gulati, Joseph J Dias
216. **Carpal Instability** 1904
Sudhir Warriar
217. **Kienböck's Disease** 1914
Chong Jin Yeo, Gregory Ian Bain
218. **New Horizons in Hand Surgery** 1924
Randy R Bindra, Nicolas Dedy

SECTION 24: Injuries of Wrist

Section Editor: Prakash P Kotwal

219. **Surgical Anatomy of the Wrist** 1931
Prakash P Kotwal, Samarth Mittal, Bhavuk Garg
220. **Examination of the Wrist** 1937
Sureshwar Pandey
221. **Fracture of the Distal End Radius** 1944
Prakash P Kotwal, Vivek Shankar
222. **Distal Radioulnar Joint** 1960
Binu P Thomas, R Sreekanth

SECTION 25: Disorders of Wrist

Section Editor: Prakash P Kotwal

223. **De Quervain's Stenosing Tenosynovitis** 1975
Prakash P Kotwal, Samarth Mittal
224. **Carpal Tunnel Syndrome** 1979
Prakash P Kotwal, Samarth Mittal
225. **Chronic Tenosynovitis** 1986
Prakash P Kotwal, Samarth Mittal

SECTION 26: Diseases of Elbow

Section Editor: Parag Shah

226. **Introduction** 1993
Sudhir Babhulkar, Sureshwar Pandey, GS Kulkarni
- 226.1 **Anatomy and Biomechanics** 1993
Sudhir Babhulkar
- 226.2 **Clinical Examination and Radiological Assessment** 1999
Sureshwar Pandey, GS Kulkarni
227. **Arthroscopy of the Elbow: The Basics** 2008
Jeremy Burnham, Kevin Murr, Srinath Kamineni
228. **The Arthritic Elbow** 2015
Narayana Prasad, David Stanley
229. **Miscellaneous Lesion of the Elbow** 2022
Sudhir Babhulkar, Mark Yuhas, Srinath Kamineni

- 229.1 **Lateral and Medial Epicondylitis: Tennis and Golfer's Elbow** 2022
Mark Yuhas, Srinath Kamineni
- 229.2 **Pronator Teres Syndrome (Anterior Elbow Pain)** 2029
Sudhir Babhulkar
- 229.3 **Anterior Interosseous Syndrome** 2030
Sudhir Babhulkar
- 229.4 **Posteromedial Elbow Impingement** 2032
Sudhir Babhulkar
- 229.5 **Valgus Extension Overload Syndrome** 2033
Sudhir Babhulkar
- 229.6 **Triceps Tendon Rupture** 2034
Sudhir Babhulkar
- 229.7 **Biceps Tendon Rupture** 2036
Sudhir Babhulkar
230. **Stiff Elbow** 2041
Vidisha S Kulkarni, Madhura Kulkarni
231. **Abnormal Heterotrophic Calcification and Ossification** 2047
Vidisha S Kulkarni, Madhura Kulkarni
232. **Supracondylar Fracture of the Humerus in Children** 2055
Sudhir Babhulkar

SECTION 27: Diseases of Shoulder

Section Editor: Ashish Bhabhulkar

233. **Functional Anatomy of Shoulder Joint** 2069
Deepthi Nandan Adla
234. **Clinical Examination of Shoulder** 2079
Ashish Babhulkar
235. **Shoulder Positioning, Basic Portals and Beach Chair versus Lateral Decubitus Position** 2089
Amit Nath Misra
236. **Shoulder Instability** 2094
Shashank Misra
237. **Instability with Glenoid Bone Loss** 2106
Sanjay Garude
238. **Rotator Cuff Tears** 2108
Vivek Pandey, Ajay Singh Thakur
239. **Adhesive Capsulitis (Frozen Shoulder)** 2126
Shirish Pathak
240. **Acromioclavicular Joint Injuries** 2133
Ashish Babhulkar, Aditya Pawaskar
241. **Suprascapular Nerve Compression** 2139
Amol Tambe, Kanthan Theivendran, Marcus Bateman
242. **Shoulder Replacement in Proximal Humerus Fracture** 2144
Ashish Babhulkar, Pavan Desai

243. Tumors Around the Shoulder <i>Yogesh Panchwagh</i>	2154	258. Degenerative Diseases of Disc <i>Samir Dalvie, Yuvaraja</i>	2371
244. Shoulder Rehabilitation <i>Himani Kolhatkar, Ashish Babhulkar</i>	2164	259. Acute Disc Prolapsed <i>Gautam Zaveri, S Siddiqui, Srinivasa Moolya, Vishal Kundanani</i>	2380
SECTION 28: Cervical Spine			
<i>Section Editors: HS Chhabra, S Rajasekaran, Saumyajit Basu, Bhavuk Garg</i>			
245. The Cervical Spine: Anatomy, Movement, Biomechanics, Instability <i>Bharat R Dave, Amish Sanghvi, Devanand</i>	2177	260. Endoscopic Discectomy <i>Mohinder Kaushal, Jean Destandau</i>	2388
246. Surgical Approaches to the Cervical Spine <i>Satish Rudrappa, Vishal Kumar, Amit Chanduka, Bharath R, Swaroop Gopal</i>	2192	261. Newer Techniques in Lumbar Spine Surgery <i>Sajan K Hegde, Aditya Prasad Panda</i>	2394
247. Congenital Craniovertebral Anomalies <i>Sanganagouda S Patil, S Karunakaran, Abhay Nene, Saumyajit Basu</i>	2209	262. Surgery of Lumbar Canal Stenosis <i>Aravind Kumar, Kenny S David, Naresh Kumar</i>	2404
248. Cervical Disc Degenerative Disorders <i>Bhavuk Garg, Vikas Tandon</i>	2224	263. Spondylolisthesis <i>KV Menon, Prashant Kekre, Rajesh Parasnis</i>	2412
249. The Inflammatory Diseases of the Cervical Spine <i>Gururaj M Sangondimath, Ankur Nanda, Amit Narayan</i>	2246	264. Failed Back Surgery Syndrome <i>Shankar Acharya, Shailesh Hadgaonkar</i>	2421
250. Cervical Canal Stenosis <i>Bidre Upendra, Ketan Khurjekar</i>	2263	265. Complications in Spinal Surgery <i>Karthik Kailash, Subir N Jhaveri</i>	2429
251. Ossification of the Posterior Longitudinal Ligament <i>Amit Jhala, Deepu Banerji</i>	2272	266. Spinal Fusion <i>Arvind G Kulkarni, Shumayou Dutta, Pravin Kanabar</i>	2438
SECTION 29: Lumbar Spine Disorders			
<i>Section Editors: HS Chhabra, S Rajasekaran</i>			
252. Clinical Biomechanics of the Lumbar Spine <i>Jwalant Mehta, Ishwara Keerthi</i>	2281	267. Ankylosing Disorders including Ankylosing Spondylitis and Diffuse Idiopathic Skeletal Hyperostosis Syndrome <i>Ram Chaddha, Srikanthnara</i>	2447
253. Examination of Spine <i>Janardhana Aithala, Saurabh Kapoor</i>	2289	268. Postoperative Spinal Infection <i>Prasad Krishnan, Krishnamurthy Sridhar, K Venkatesan</i>	2450
254. Back Pain <i>VT Ingalhalikar, Laxmi Vas, Renuka Pai, Shubhada Kher, Anagha Vaze</i>	2310	269. Degenerative Scoliosis <i>Saumyajit Basu, Sreeramalingam Rathinavelu, Tarun Suri</i>	2458
255. Investigations for Spinal Pathology <i>Yogesh Pithwa, Neeraj B Vasavada</i>	2335	270. Adolescent Idiopathic Scoliosis <i>Suresh Pillai, Suryaprakash Rao</i>	2467
256. Rehabilitation of Low Back Pain/Conservative Care of Back Pain and Back School Therapy <i>HS Chhabra, Sahil Batra, Areena D'souza</i>	2349		
257. Psychological Aspects of Back Pain <i>Thomas J Kishen, Ajoy Prasad Shetty</i>	2366		

VOLUME FOUR

SECTION 30: The Hip

Section Editor: Sudhir Babhulkar

271. Surgical Anatomy of Hip Joint <i>Sudhir Babhulkar</i>	2495
272. Surgical Approaches to the Hip Joint <i>K Hardinge</i>	2498
273. Examination of the Hip Joint <i>Sureshwar Pandey</i>	2505
274. Biomechanics of the Hip Joint <i>Sudhir Babhulkar, Sushrut Babhulkar</i>	2523
275. Soft Tissue Lesions around the Hip <i>Sudhir Babhulkar, D Patil</i>	2525

276. **Girdlestone Arthroplasty of the Hip** 2527
Sudhir Babhulkar, Sushrut Babhulkar
277. **Osteotomies around the Hip** 2529
Sudhir Babhulkar, Sushrut Babhulkar
278. **Avascular Necrosis of Femoral Head and its Management** 2539
DP Baksi
279. **Pelvic Support Osteotomy by Ilizarov Technique in Children** 2546
RM Kulkarni

SECTION 31: Injuries of the Knee Joint

Section Editor: Sunil G Kulkarni

280. **Surgical Anatomy and Biomechanics of the Knee** 2553
Emmanuel Bhore
281. **Knee Injuries** 2560
Raviraj Patil, David V Rajan, Clement Joseph
Medial Collateral Ligament Injuries of the Knee 2579
David V Rajan, Clement Joseph
282. **Dislocations of Knee and Patella** 2585
DP Baksi

SECTION 32: Diseases of the Knee Joint

Section Editor: Shubhranshu S Mohanty

283. **Clinical Examination of Knee** 2593
Nirmal C Mohapatra, Shubhranshu S Mohanty
284. **Congenital Deformities of Knee** 2608
Shaligram Purohit, Kumar Kaushik Dash
285. **Disorders of Patellofemoral Joint** 2611
Ajay Chandanwale, Nikhil Sharma, Anoop Jhurani, Tushar Rathod
286. **Osteoarthritis of Knee and High Tibial Osteotomy** 2622
Shubhranshu S Mohanty, Kumar Kaushik Dash
287. **Osteochondritis Dissecans of the Knee** 2630
Nandan Rao, Prashant Kamble, Ketan Gandhi
288. **Miscellaneous Affections of Knee** 2634
Kumar Kaushik Dash, Tushar Rathod, Prashant Kamble, Nikhil Sharma, Shubhranshu S Mohanty
- 288.1 **Quadriceps Contracture** 2634
- 288.2 **Bursae Around the Knee** 2637
- 288.3 **Stiff Knee** 2639
- 288.4 **Hemophilic Arthropathy of the Knee** 2644

289. **Recent Advances in Knee Joint** 2646
Kumar Kaushik Dash, Shubhranshu S Mohanty

SECTION 33: Injuries of the Ankle and Foot

Section Editor: Mandeep Dhillon

290. **Functional Anatomy of Foot and Ankle: Surgical Approaches** 2657
JR Hanson, Sureshwar Pandey, Jitendra Mangwani
291. **Biomechanics of the Foot** 2666
Mark A Hardy
292. **General Considerations of the Ankle Joint** 2673
Mandeep Dhillon, Siddhartha Sharma, Nirmal Raj Gopinathan, Rajiv Shah, Sarvdeep Dhatt
- 292.1 **Examination of the Ankle Joint** 2673
Mandeep Dhillon, Siddhartha Sharma, Nirmal Raj Gopinathan
- 292.2 **Radiological Evaluation of the Foot and Ankle** 2681
Rajiv Shah, Sarvdeep Dhatt
293. **Fractures of the Ankle** 2694
RB Dalal, HK Sugathan
294. **Ligamentous Injuries around Ankle** 2707
Kartik Hariharan, Sanjit Singh
295. **Talar and Peritalar Injuries** 2715
Mandeep Dhillon, Siddhartha Sharma
296. **Injuries of the Midfoot** 2726
Vikas Agashe, Aditya Menon, Raju Gite
297. **Injuries of the Forefoot** 2735
Sampat D Patil, Sureshwar Pandey
298. **Tendon Injuries around Ankle and Foot** 2741
Sureshwar Pandey, Rajiv Limaye

SECTION 34: Disorders of Ankle and Foot

Section Editor: Rajiv Shah

299. **Pediatric Foot and Ankle Disorders** 2753
RM Kulkarni, Rajiv Negandhi, Mandeep Dhillon
- 299.1 **Metatarsus Adductus** 2753
RM Kulkarni, Rajiv Negandhi
- 299.2 **Congenital Vertical Talus** 2755
Mandeep Dhillon
300. **Hallux Valgus** 2761
Mark A Hardy, Jennifer L Prezioso, Eric J Lew, Lauren L Kishman
301. **First Metatarsophalangeal Disorders** 2783
Yogesh Nathadwarawala
- 301.1 **Hallux Rigidus** 2783

301.2	Hallux Varus	2785	318.	Fractures of the Shaft of the Radius and Ulna in Children	2902
301.3	Disorders of Sesamoids	2786		<i>Atul Bhaskar, Alaric Aroojis</i>	
302.	Disorders of Lesser Toe	2787	319.	Fractures around the Elbow in Children	2907
	<i>Jitendra Mangwani</i>			<i>Rujuta Mehta</i>	
302.1	Metatarsalgia	2790	320.	Fractures of the Distal Forearm, Fractures and Dislocations of the Hand in Children	2923
	<i>Rajiv Limaye</i>			<i>Atul Bhaskar</i>	
303.	Adult-acquired Flatfoot	2791	321.	Fractures of the Humeral Shaft in Children	2931
	<i>Rajiv Shah, Rajiv Limaye</i>			<i>Kevim Lim</i>	
304.	Pes Cavus	2795	322.	Fractures and Dislocations of the Shoulder in Children	2935
	<i>GS Kulkarni, Rajiv Shah</i>			<i>Mandar Agashe</i>	
305.	Heel Pain	2805	323.	Fractures and Dislocations of the Spine in Children	2941
	<i>Rajiv Shah, Pankaj Patel</i>			<i>Arvind Kulkarni</i>	
306.	Achilles Tendon Disorders	2810	324.	Fractures of the Pelvis in Children	2949
	<i>John S Lewis, Selene G Parekh</i>			<i>Mandar Agashe</i>	
307.	Ankle Arthritis	2815	325.	Fractures of the Proximal Femur in Children	2954
	<i>Christopher E Gross, Samuel B Adams, Selene G Parekh</i>			<i>Atul Bhaskar</i>	
308.	Disorders of Hindfoot and Midfoot Joints	2820	326.	Fracture Neck of Femur in Children	2962
	<i>Vinod Mishra</i>			<i>Rujuta Mehta</i>	
309.	Diabetic Foot	2824	327.	Fractures and Dislocations of the Knee	2982
	<i>Vinod K Panchbhavi, Shelton McKenzie</i>			<i>Premal Naik, Mallikarjun Balagaon</i>	
310.	Rheumatoid Foot Disorders	2829	328.	Immature Skeleton	2992
	<i>RB Dalal, R Rachha, Malhar Dave, Nikesh Shah</i>			<i>Rajiv Negandhi</i>	
310.1	Indian Perspective	2834	329.	Fractures and Dislocations of the Foot in Children	2995
	<i>Malhar Dave, Nikesh Shah</i>			<i>Atul Bhaskar</i>	
311.	Nerve Disorders in Foot and Ankle	2836	330.	Birth Trauma	3000
	<i>Ashish Shah, Kavita Iyenger</i>			<i>Chasnal Rathod</i>	
312.	Benign Tumors of the Foot and Ankle	2846	331.	The Battered Baby Syndrome (Child Abuse)	3008
	<i>Mahendra S Kudchadkar</i>			<i>Chasnal Rathod</i>	
313.	Charcot Neuroarthropathy	2852	SECTION 36: Pediatric Orthopedics: General		
	<i>Vinod K Panchbhavi, Shelton McKenzie</i>		<i>Section Editors: Premal Naik, Rajiv Negandhi</i>		
314.	Nail Disorders in Foot and Ankle	2861	332.	General Pediatric Orthopedics	3013
	<i>Mark A Hardy, Jennifer L Prezioso, Frank Luckino III, Kelly Bumpus</i>			<i>Premal Naik, Parmanand Gupta, Jayanth Sampath, Rajiv Negandhi, Hitesh Shah, Rujuta Mehta, Sandeep Diwan</i>	
315.	Orthotics in Foot and Ankle	2873	332.1	Clinical Examination of Child with Orthopedic Problem	3013
	<i>Virendra Shandilya, Nikesh Shah, Malhar Dave</i>			<i>Parmanand Gupta</i>	
315.1	Rational Prescription	2881	332.2	Gait Analysis	3021
	<i>Nikesh Shah, Malhar Dave</i>			i. Normal Gait	3021
316.	Recent Advances in Foot and Ankle	2882		<i>Jayanth Sampath, Rajiv Negandhi</i>	
	<i>Michael Aynardi, David Pedowitz</i>		SECTION 35: Pediatric Orthopedics: Trauma		
SECTION 35: Pediatric Orthopedics: Trauma			<i>Section Editor: Atul Bhaskar</i>		
317.	Physeal Injuries	2893			
	<i>Sandeep Patwardhan</i>				

- ii. **Abnormal Gait** 3025
Hitesh Shah
- 332.3 **Genetics in Pediatric Orthopedics** 3028
Rujuta Mehta
- 332.4 **Anesthetic Consideration in Pediatric Orthopedics** 3038
Sandeep Diwan
333. **Congenital Anomalies** 3042
Premal Naik, Ignacio Ponseti, Dhiren Ganjawala, Hitesh Shah, Atul Bhaskar, Tushar Agrawal, Yash Shah, Thomas Palocaren, RM Kulkarni, Rajiv Negandhi, Sandeep Patwardhan
- 333.1 **Congenital Talipes Equinovarus (Management of Clubfoot)** 3042
Ignacio Ponseti, Dhiren Ganjawala, Hitesh Shah
- 333.2 **Congenital Vertical Talus** 3056
Atul Bhaskar
- 333.3 **Congenital Knee Dislocation** 3060
Tushar Agrawal, Yash Shah
- 333.4 **Developmental Dysplasia of the Hip** 3066
Thomas Palocaren
- 333.5 **Congenital Coxa Vara** 3073
Thomas Palocaren
- 333.6 **Congenital Pseudarthrosis of Tibia** 3076
RM Kulkarni, Rajiv Negandhi
- 333.7 **Shoulders: Sprengel Shoulder** 3089
Sandeep Patwardhan
334. **Limb Deficiency** 3096
Premal Naik, Cherry Koovor, Thomas Palocaren, Rujuta Mehta, Mukund R Thatte
- 334.1 **Congenital Femoral Deficiency** 3096
Cherry Koovor
- 334.2 **Congenital Tibial Deficiency** 3102
Thomas Palocaren
- 334.3 **Congenital Radial Deficiency (Radial Club Hand)** 3104
Rujuta Mehta, Mukund R Thatte
335. **Bone and Joint Infections and Sequel** 3112
Premal Naik, Hitesh Shah, Narsimha Ramni, Maulin M Shah
- 335.1 **Neonatal Septic Arthritis** 3112
Hitesh Shah
- 335.2 **Neonatal Osteomyelitis** 3114
Narsimha Ramni
- 335.3 **Management of Sequelae of Childhood Bone and Joint Sepsis** 3118
Maulin M Shah
336. **Bone Dysplasia** 3129
Premal Naik, Jaideep Dhamale, Taral Nagda, Abhishek Kulkarni, Parag Tamhankar, Milind Chaudhary
- 336.1 **Osteogenesis Imperfecta** 3129
Jaideep Dhamale, Taral Nagda, Abhishek Kulkarni, Parag Tamhankar
- 336.2 **Achondroplasia** 3149
Milind Chaudhary
- 336.3 **Arthrogyrosis Multiplex Congenita** 3153
Premal Naik
337. **Regional Problems** 3160
Premal Naik, Sanjeev Sabharwal, Rajiv Negandhi, Jaideep Dhamale, Kirti Ramnani, Sandeep Vaidya, Manoj Padman, Anirban Chatterji
- 337.1 **Slipped Capital Femoral Epiphysis** 3160
Sanjeev Sabharwal
- 337.2 **Transient Synovitis** 3165
Rajiv Negandhi, Jaideep Dhamale
- 337.3 **Idiopathic Chondrolysis of Hip** 3167
Premal Naik
- 337.4 **Chondromalacia Patellae** 3170
Sandeep Vaidya
- 337.5 **Recurrent Patellar Dislocation** 3172
Manoj Padman
- 337.6 **Osgood-Schlatter** 3176
Manoj Padman
- 337.7 **Madelung Deformity** 3178
Anirban Chatterji
338. **Paralytic Disorders** 3179
Premal Naik, Viraj Shingade, Dhiren Ganjawala, Mandar Acharya, Kirti Ramnani, Venkatdass, Kapil Gangwal, Anil Bhatia
- 338.1 **Meningomyelocele** 3179
Viraj Shingade
- 338.2 **Cerebral Palsy** 3185
Dhiren Ganjawala
- 338.3 **Muscular Dystrophy** 3195
Kirti Ramnani
- 338.4 **Other Neurological Disorders** 3196
- i. **Spinal Muscular Atrophy** 3196
Kirti Ramnani
- ii. **Hereditary Motor and Sensory Neuropathies** 3197
Venkatdass
- iii. **Congenital Absence of Pain (Analgia)** 3201
Kirti Ramnani
- iv. **Friedreich's Ataxia** 3201
Kapil Gangwal
- v. **Obstetrical Palsy**
Anil Bhatia
339. **Perthes Disease** 3216
Hitesh Shah
340. **Angular Deformities in Lower Limb** 3221
GS Kulkarni, RM Kulkarni, Rajiv Negandhi
341. **Toe Walking** 3229
GS Kulkarni, RM Kulkarni, Rajiv Negandhi

SECTION 37: Microsurgery

Section Editor: Samir Kumta

342. **Microvascular Surgery** 3233
Samir Kumta, Satish Bhat, Manik Menezes

SECTION 38: Arthroplasty

Section Editor: Javahir A Pachore

- 343. Total Hip Arthroplasty 3249**
Javahir A Pachore, HR Jhunjunwala, Vikram Shah, Shrinand V Vaidya, Prashant P Deshmane, Kanniraj Marimuthu, P Suryanarayan, Baldev Dudani, Ashok K Shyam, Pankush Arora, Arjun Veigus
- 343.1 Cemented Hip Arthroplasty: An Overview 3249**
Javahir A Pachore, HR Jhunjunwala, Vikram Shah
- 343.2 An Overview of Uncemented Total Hip Arthroplasty and Recent Advances 3300**
Shrinand V Vaidya, Prashant P Deshmane
- 343.3 Revision Total Hip Arthroplasty 3304**
Kanniraj Marimuthu, P Suryanarayan
- 343.4 Bipolar Hip Arthroplasty 3316**
Baldev Dudani, Ashok K Shyam, Pankush Arora, Arjun Veigus
- 344. Total Knee Arthroplasty 3320**
Hemant Wakankar, Sushrut Babhulkar, AV Gurava Reddy, Sachin Tapasvi, Chirag Thonse, Mahesh Kulkarni, Siddharth Shah, Arun Mullaji, Harish Bhende, Parag Sancheti, Ashok K Shyam, Sunny Gugale, Khalid Alquwayee, Fares S Haddad, Bassam A Masri, Donald S Garbuz, Clive P Duncan, Vikram Shah, Kalpesh Shah, Ashok Rajgopal, Attique Vasdev
- 344.1 Overview and Basic Concepts 3320**
Hemant Wakankar
- 344.2 Indications and Contraindications 3328**
Sushrut Babhulkar
- 344.3 Preoperative Evaluation 3331**
AV Gurava Reddy
- 344.4 Prosthesis Designs Consideration 3334**
Sachin Tapasvi, Chirag Thonse
- 344.5 Primary Total Knee Arthroplasty: Approaches and Incision Considerations 3341**
Mahesh Kulkarni
- 344.6 Correction of Varus and Valgus Deformity During Total Knee Arthroplasty 3345**
Siddharth Shah, Arun Mullaji
- 344.7 Soft Tissue Balancing in Total Knee Replacement 3349**
Harish Bhende
- 344.8 Unicompartmental Knee Arthroplasty 3355**
Arun Mullaji, Siddharth Shah
- 344.9 Complications of Total Knee Arthroplasty 3360**
Siddharth Shah, Arun Mullaji
- 344.10 Long-term Results of Total Knee Arthroplasty 3367**
Parag Sancheti, Ashok K Shyam, Sunny Gugale
- 344.11 Approaches for Revision Knee Arthroplasty Surgery 3374**
Khalid Alquwayee, Fares S Haddad, Bassam A Masri, Donald S Garbuz, Clive P Duncan

- 344.12 Principles of Revision TKR for Aseptic Loosening 3379**
Hemant Wakankar
- 344.13 Infected Total Knee Replacement 3381**
Vikram Shah, Kalpesh Shah
- 344.14 Results of Revision Total knee Arthroplasty 3386**
Ashok Rajgopal, Attique Vasdev
- 345. Shoulder Arthroplasty 3391**
Amit Nath Misra, SKS Marya
- 346. Total Elbow Arthroplasty 3407**
DP Baksi
- 347. Ankle Arthroplasty 3415**
Rajiv Limaye

SECTION 39: Arthrodesis

Section Editor: Sudhir Kumar

- 348. Shoulder Arthrodesis 3419**
Sudhir Kumar, IK Dhammi
- 349. Hip Arthrodesis 3426**
AK Jain, IK Dhammi
- 350. Knee Arthrodesis 3435**
IK Dhammi
- 351. Ankle Arthrodesis 3441**
Sudhir Kumar, AK Jain, IK Dhammi
- 352. Retrograde Tibial Nailing for Arthrodesis of Ankle and Subtalar Joints 3449**
GS Kulkarni

SECTION 40: Amputations

Section Editor: Nagesh Naik

- 353. Amputations 3459**
R Siwach, AS Rao, Sujay M Kulkarni

SECTION 41: Rehabilitation: Prosthetics and Orthotics

Section Editor: Nagesh Naik

- 354. Prosthetics and Orthotics: An Introduction 3483**
Nagesh Naik
- 355. Upper Extremity Prosthesis 3490**
Nagesh Naik
- 356. Rehabilitation of Adult Upper Limb Amputee 3497**
Nagesh Naik
- 357. Lower Limb Prosthesis 3503**
Nagesh Naik

358. Upper Limb Orthoses <i>Nagesh Naik</i>	3520	363. Disability Process and Disability Evaluation <i>Nagesh Naik</i>	3568
359. Lower Limb Orthoses <i>Nagesh Naik</i>	3529	364. Wheelchair and Mobility Aids <i>Nagesh Naik</i>	3571
360. Physical Therapy and Therapeutic Exercises <i>Nagesh Naik</i>	3541	365. Spinal Orthoses <i>Nagesh Naik</i>	3574
361. Orthopedic Rehabilitation <i>Nagesh Naik</i>	3553	366. Elbow Rehabilitation <i>Hari Ankem</i>	3585
362. Rehabilitation of Spinal Cord Injury <i>HC Goyal, Nagesh Naik</i>	3557	<i>Index</i>	<i>I-1</i>