Contents

1. **Optical Coherence Tomography: Current Technology and Future Applications** 1
Ashok Garg (India)
• Classification of Optical Coherence Tomography (OCT) 1
• Mechanism 2 • Scanning Schemes 5

2. **Fundamentals of Optical Coherence Tomography** 10
AK Khurana, Aruj Khurana, Bhawna Khurana (India)
• Basic Scanning Procedures 12 • Basics of Optical Coherence Tomography for Posterior Segment Imaging 25 • Conventional Optical Coherence Tomography Versus Optical Coherence Tomography–Scanning Laser Ophthalmoscope (OCT-SLO) 27
• Basics of Optical Coherence Tomography for Anterior Segment Imaging and Biometry 28

3. **Intraoperative Anterior Segment Optical Coherence Tomography in Lamellar Corneal Transplantation Procedures** 31
Boris Malyugin, Ivan Drozdov (Russia)

4. **Analyze of the Cut Quality of the Newest Ziemers High Frequency FEMTO LDV Z6 PowerPlus for Femto-assisted Cataract Incisions** 40
Bojan Pajic, Iraklis Vastardis, Brigitte Pajic-Eggspuehler, Mirko Resan, Farhad Hafezi, Slobodanka Latinovic, Miroslav Vukosavljevic (Switzerland)
• Methods and Patients 41 • Discussion and Conclusion 45

5. **Applications of Anterior Segment Optical Coherence Tomography in Refractive Surgery** 46
Jorge L Alio, Alfredo Vega-Estrada, Angelo Rampone (Spain)
• OCT Applications in Keratoconus Surgery: Intracorneal Ring Segments 51

6. **Applications of Anterior Segment Optical Coherence Tomography in Keratoconus Management** 57
Angelo Rampone, Alfredo Vega-Estrada, Jorge L Alio (Spain)
• Applications of Optical Coherence Tomography Technology in the Diagnosis and Treatment of Keratoconus 57

7. Anterior Segment Optical Coherence Tomography in Corneal Disorders **66**
Prateek Gujar, Purendra Bhasin (India)
• Corneal Grafting 66 • Keratoprosthesis 68 • Phototherapeutic Keratectomy 69 • Ocular Surface Lesions 70 • Dry Eye Syndrome 70 • Contact Lens Fitting 70

8. Role of Anterior Segment Optical Coherence Tomography in Corneal Refractive Surgery **72**
Mirko Resan, Miroslav Vukosavljevic, Marko Kontic, Bojan Pajic (Switzerland)
• Principles of AS-OCT 72 • AS-OCT in LASIK Surgery 73

9. Optical Coherence Tomography Assisted Anterior Segment Surgery: A Future Perspective **77**
Gabor B Scharioth (Germany)

10. Role of Optical Coherence Tomography in Glaucoma Management **82**
Marko Kontic, Miroslav Vukosavljevic, Mirko Resan, Bojan Pajic (Switzerland)
• Macular Thickness 83 • Optic Nerve Head Topography 85 • Image Quality 88

11. Clinical Impact of Optical Coherence Tomography Examination for High Frequency Deep Sclerotomy, A Minimal Invasive Glaucoma Procedure **92**
Bojan Pajic, Brigitte Pajic-Eggspuehler, Farhad Hafezi, Miroslav Vukosavljevic (Switzerland)
• Methods 92 • OCT Findings 93 • Results 93 • Discussion 94

12. Detecting Glaucoma Progression on Optical Coherence Tomography **95**
Sumit Sachdeva, CS Dhull, Manisha Rathi (India)
• Optical Coherence Tomography 95 • Limitations 100 • Future Advancements 100

13. Spectral Domain OCT: What it has to Offer for Glaucoma Practitioners? **101**
Ahmad K Khalil (Egypt)
• Reproducibility 102

14. Pitfalls in the Interpretation of Optical Coherence Tomography in Glaucoma **118**
Ahmad K Khalil (Egypt)
• Sources of Artifacts 119

15. Optical Coherence Tomography and Glaucoma **123**
Noa Geffen, Dafna Goldenberg, Ehud I Assia (Israel)
• Problem Statement 124 • Retinal Nerve Fiber Layer OCT 124

16. Optical Coherence Tomography in Neuro-ophthalmology **149**
Rohit Saxena, Digvijay Singh (India)
• Scanning Options 149 • Role of OCT in Various
• Neuro-ophthalmology Disorders 150

17. Optical Coherence Tomography in Macular Vascular Diseases Management **154**
Dragana Ristic, Biljana Draganic-Rascanin, Miroslav Vukosavljevic, Bojan Pajic (Switzerland)
• Arterial Obstructive Disease 154 • Clinical Signs and Symptoms 154 • Diagnosis 155 • Tomographic Findings 155 • Venous Obstructive Disease 156 • Clinical Signs and Symptoms 156 • Central Retinal Vein Occlusion 156 • Branch Retinal Vein Occlusion 156 • Diagnosis and Therapy 156 • Tomographic Findings 157

18. Choroidal Imaging with Optical Coherence Tomography **159**
Jose Maria Ruiz-Moreno, Inaki Flores-Moreno, Javier Antonio Montero, Jorge Ruiz-Medrano (Spain)
• Choroid in Healthy Patients 161 • Choroid in High Myopia 162
• Choroid in Glaucoma 164 • Choroid in Macular Hole 165
• Choroid in Uveitis 166 • Choroid in Diabetic Patients 167

19. Optical Coherence Tomography in Vitreomacular Interface Diseases and Macular Hole **173**
Nenad Petrovic, Miroslav Vukosavljevic, Bojan Pajic (Switzerland)
• Stages 173 • Case 1 174 • Case 2 174 • Case 3 177

20. Role of Optical Coherence Tomography in Diabetic Macular Edema Management, AMD and Macular Dystrophies **179**
Biljana Draganic-Rascanin, Miroslav Vukosavljevic, Bojan Pajic (Switzerland)
• Retinal Artery Occlusion 181 • Stargardt's Disease 181
• Best's Disease 183

21. Clinical Value of Optical Coherence Tomography from Vitreoretinal Surgeons Point of View **187**
Miroslav Vukosavljevic, Nenad Petrovic, Bojan Pajic (Switzerland)
• Practical Considerations 187

22. Postoperative Optical Coherence Tomography Changes after Macular Hole Surgery **197**
Javier Antonio Montero, Jose Maria Ruiz-Moreno (Spain)
• Intraoperative Changes 197

23. Retinal and Choroidal Thickness in High Myopia **208**
Ignacio Flores-Moreno, Jorge Ruiz-Medrano, Jose Maria Ruiz-Moreno (Spain)
• Visual Acuity in High Myopia 210

24. Optical Coherence Tomography and Vitreoretinal Interface **214**
Lalit Verma, Arindam Chakravarti (India)
• Optical Coherence Tomography Levels of Vitreoretinal Pathologies 214 • Vitreomacular Adhesion 216 • Vitreomacular Traction 217 • Macular Hole 217 • Pseudohole Macula 219 • Lamellar Macular Hole 219 • Epiretinal Membrane 220 • Intraoperative Optical Coherence Tomography: A Role in the Future? 221

25. Optical Coherence Tomography in Age-related Macular Degeneration **225**
T Mark Johnson (USA)
• Background 225 • Optical Coherence Tomography in Diagnosis of Age-related Macular Degeneration 225 • Optical Coherence Tomography in Therapy of Age-related Macular Degeneration 231

26. Optical Coherence Tomography in Diabetic Retinopathy **233**
T Mark Johnson, James Osher (USA)
• Background 233 • VitreoMacular Traction 235

27. Optical Coherence Tomography in Vitreoretinal Interface Disorders **240**
T Mark Johnson (USA)
• Background 240 • Epiretinal Membrane 242 • Macular Hole 243 • Pars Plana Vitrectomy 245 • Future Directions 245

28. Clinical Use of Optical Coherence Tomography in Management of Vitreoretinal Traction **247**
Nur Acar, Pelin Kaynak (Turkey)

29. Optical Coherence Tomography and Idiopathic Central Serous Chorioretinopathy **258**
Larissa Stival, Joao Nassaralla (Brazil)

30. Optical Coherence Tomography in Birdshot Chorioretinopathy **265**
Miguel Hage Amaro, Joao Nassaralla (Brazil)
• Required Characteristics 265 • Supportive Findings 265
• Exclusion Criteria 265

31. Optical Coherence Tomography in Hypertension and Associated Retinal Vascular Disorders **269**
Saurabh Luthra, Shrutanjoy Mohan Das, Neeraj Sanduja (India)
• Malignant Hypertension 269 • Branch Retinal Artery Occlusion 269 • Central Retinal Artery Occlusion 269
• Branch Retinal Vein Occlusion 269 • Central Retinal Vein Occlusion 271 • Retinal Arterial Macroaneurysm 273

Index *285*