CONTENTS

1. Principles and Technology **1**
David Huang, Yali Jia

- Optical Coherence Tomographic Angiography Methods 1
- Split-Spectrum Amplitude-Decorrelation Angiography 1
- Optovue Angiovue Technology 1
- Clinical Applications of OCTA Technology 2

2. Terminology **3**
David Huang, Yali Jia

- Structural Optical Coherence Tomography 3
- Quantification of Neovascularization 6

3. Practical Problems of OCT Angiography: Tips and Tricks **8**
Marco Rispoli

- Practical Tips for Everyday OCTA Examination 8
- Mistakes to be Avoided 9
- How to Fix Some Practical Problems: Concepts and Rules 12

4. Artifacts in OCT Angiography **18**
Marco Rispoli

- Movement Artifacts 18
- Flow Projection Artifacts 21
- Segmentation Errors 21
- False-positive Flow 24
- False-negative Flow 24
- Low-intensity Imaging 26
- Nonvascular Flow Signal 26

5. OCT Angiography of Normal Retinal Vascular Structure **29**
Maria Cristina Savastano, Bruno Lumbroso

- Retinal Vascular Networks 31

6. OCT Angiography Quantitative Assessment **36**
Marco Rispoli

- Flow Area 37
- Nonflow Area, Vascular Dropout Area 37
- Flow-density Map 38

- Flow Speed 41
- Other Optical Coherence Tomography Angiography Quantitative Parameters 41

7. Choroidal Neovascularization in Age-related Macular Degeneration (Exudative and Nonexudative Choroidal Neovascularization) **42**
Bruno Lumbroso, Marco Rispoli

- Optical Coherence Tomography Angiography in Everyday Clinical Use for Choroidal Neovascularization 42
- Classification 42
- Choroidal Neovascularization Evaluation 45
- Exudative Choroidal Neovascularization: Type 1, Type 2, Type 3 and Type 4 (Mixed) Choroidal Neovascularization 45
- Exudative Choroidal Neovascularization Evolution 61
- Nonexudative Choroidal Neovascularization 65
- Choroidal Neovascularization Management 72

8. Exudative Choroidal Neovascularization Monitoring after Treatment 75
Bruno Lumbroso, Marco Rispoli

- Immediate Evolution after Treatment 75
- Maturation 81
- Recurrences 83
- Vascularized Fibrous Scar 85
- Management of Choroidal Neovascularization 90

9. Optical Coherence Tomography Angiography in Dry Age-related Macular Degeneration 92
Maria Vittoria Cicinelli, Eric Souied, Francesco Bandello, Giuseppe Querques

- Drusen 93
- Reticular Pseudodrusen 95
- Geographic Atrophy 95
- Prognostic Implications 97

10. Choroidal Neovascularization Activity Features 101
Bruno Lumbroso, Marco Rispoli

- Exudative Choroidal Neovascularization: Active or Quiescent? 101
- Nonexudative Choroidal Neovascularization: Active or Quiescent? 110

11. OCTA Features in Polypoidal Vasculopathy 113
Luca Di Antonio, Leonardo Mastropasqua

12. Choroidal Neovascularization Other Etiologies: Myopia **123**
Bruno Lumbroso, Marco Rispoli
- Neovascular Membranes in Myopia 123

13. OCT Angiography Other CNV not from AMD **127**
Maddalena Quaranta-El Maftouhi, Adil El Maftouhi
- Type 1 Choroidal Neovascularization in Chronic Central Serous Chorioretinopathy 127
- Polypoidal Choroidal Vasculopathy 128
- Angioid Streaks and Choroidal Neovascularization 132
- Choroidal Neovascularization in Multifocal Choroiditis 136
- Pseudovitelliform Reticular Dystrophy and Choroidal Neovascularization 138

14. Diabetic Retinopathy and Optical Coherence Tomography Angiography **141**
Maria Cristina Savastano, Bruno Lumbroso
- Optical Coherence Tomography Angiography in Everyday Clinical Management of Nonproliferative Diabetic Retinopathy and Proliferative Diabetic Retinopathy 141
- Structural Optical Coherence Tomography and *En Face* Optical Coherence Tomography 144
- Optical Coherence Tomography Angiography 144
- Mild and Severe Nonproliferative Diabetic Retinopathy 147
- Diabetic Diffuse and Cystoid Macular Edema 153
- Quantitative Analysis Applications 154
- Management of Early (Background) Nonproliferative Diabetic Retinopathy 156
- Management of Diabetic Macular Edema in Nonproliferative Diabetic Retinopathy 156
- Preretinal or Prepapillary Neovascularization in Proliferative Diabetic Retinopathy 159

15. Branch and Central Vein Occlusions **164**
Marco Rispoli
- Optical Coherence Tomography Angiography in Everyday Clinical Management of Central Retinal Vein Occlusion and Branch Vein Occlusion 164
- Fluorescein Angiography 165
- Structural Optical Coherence Tomography Features 165
- Optical Coherence Tomography Angiography 165
- Branch Retinal Vein Occlusion Quantitative Assessment 170
- Central Retinal Vein Occlusion 177

- Management of Retinal Vein Occlusions 180
- Retinal Artery Occlusions 183

16. Other OCT Angiography Clinical Applications—Miscellaneous Retinal Disorders 189
Bruno Lumbroso, Macro Rispoli

- Von Hippel-Lindau 189
- Coats' Disease 191
- Osteoma 191
- Hamartoma 192
- Radiation Retinopathy 192

17. Fluorescein and Optical Coherence Tomography Angiography: A Progressive Transition 197
Bruno Lumbroso, Marco Rispoli

- Fluorescein Angiography 198
- Optical Coherence Tomography Angiography 199
- General Comments 200
- Nonperfused Areas in Fluorescein Angiography and in Optical Coherence Tomography Angiography 204
- Choroidal Neovascularization 205
- Conclusions: Features Added by Optical Coherence Tomography Angiography on Traditional Fluorescein Angiography 205

18. How to Write an Optical Coherence Tomography Angiography Report 207
Bruno Lumbroso, Marco Rispoli

- Optical Coherence Tomography Angiography Report Sheet 208
- Optical Coherence Tomography Angiography Screenshots and Scans Attached to Report 209
- Optical Coherence Tomography Angiography Clinical Written Report 210
- Comparison and Follow-up 215

Suggested Reading *217*

Index *219*