Contents

1. Ophthalmoscopy **1**
Pukhraj Rishi, Tarun Sharma
- Principles of Ophthalmoscopy 1
- Method of Examination 3
- Fundus Drawing Color Code (Peter Morse) 7
- Indirect Ophthalmoscopy in Operating Room 10
- Direct Ophthalmoscopy 14
- Wide Angle Viewing System 17

2. Fundus Fluorescein Angiography **23**
Pradeep Venkatesh
- Procedure of Fundus Fluorescein Angiography 25
- Indications 26
- Phases of Fundus Fluorescein Angiography 26
- Interpretation of Fundus Fluorescein Angiography 27

3. Indocyanine Green Angiography **33**
Rajesh Ramanjulu, Mahesh Shanmugam, Pradeep Sagar BK
- History 33
- Phases of Indocyanine Green Angiography 34
- Adverse Reactions 35
- Applications in Ophthalmology 36
- Diagnostics Applications 36
- Polypoidal Choroidal Vasculopathy 39
- Central Serous Chorioretinopathy 50
- Inflammatory Lesions of the Choroid 54
- Tumors 54
- Therapeutic Application 55

4. Fundus Autofluorescence: Overview and Applications in Retinal Practice **57**
Anand Rajendran, Vinay PG, Vishal MY
- Demonstration of Fundus Autofluorescence 57
- Fundus Autofluorescence Imaging Modalities 58
- Assessing the Fundus Autofluorescence Image 59
- Clinical Applications of Autofluorescence 61
- Classification of Fundus Autofluorescence Patterns in Early AMD 64
- Retinal Pigment Epithelium Tears 67
- Idiopathic Macular Telangiectasia 67
- Chorioretinal Inflammatory Disorders 69
- Acute Posterior Multifocal Placoid Pigment Epitheliopathy 69
- Acute Syphilitic Posterior Placoid Chorioretinitis 70

- Multifocal Choroiditis and Panuveitis 70
- Acute Zonal Occult Outer Retinopathy 70
- Birdshot Chorioretinopathy 70
- Perspectives in Imaging Technologies 71

5. Choroidal Imaging with Enhanced Depth Imaging and Swept-source Optical Coherence Tomography 73

James A Eadie, Suresh R Chandra

- Imaging of the Normal Choroid 74
- EDI and SS-OCT Imaging in Glaucoma 76
- Choroidal Imaging in Central Serous Chorioretinopathy 76
- Choroidal Imaging in Uveitis 78
- Choroidal Imaging in Age-related Macular Degeneration 79
- Choroidal Changes in Retinal Vein Occlusions 80
- Choroidal Imaging in Myopic Eyes 80
- Choroidal Changes in Inherited Retinal Degenerations 81
- Retinal and Choroidal Tumors Imaged with OCT 82

6. Diabetic Retinopathy: An Update 89

Dhananjay Shukla

- Diabetes Pandemic: Repeatedly Revising Estimates 89
- Pathogenesis 89
- Clinical Features of Diabetic Retinopathy 94
- Natural Course and Grading of Diabetic Retinopathy 97
- Differential Diagnosis of Diabetic Retinopathy 98
- Imaging in Diabetic Retinopathy 102
- Screening for Diabetic Retinopathy 106
- Medical Management of Diabetic Retinopathy 107
- Vitrectomy 110
- Summary and Future Directions 114

7. Diabetic Macular Edema 119

Peter N Youssef, Suresh R Chandra

- Pathogenesis 123
- Treatment 125

8. Diabetic Papillopathy 140

Michael M Altaweel, Richard E Appen, Suresh R Chandra

- Case Presentation 140
- Demographics 146
- Symptoms 146
- Examination 146
- Investigation 147
- Pathophysiology 149
- Differential Diagnosis 149
- Prognosis 151
- Management 152

9. Hypertensive Retinopathy **154**
Shreyas Temkar, Bhavya G, Pradeep Venkatesh
- Ocular Manifestations 154

10. Recent Advances in the Management of Retinal Vein Occlusions **160**
Deependra Vikram Singh, Yog Raj Sharma
- Pathogenesis 160
- Recent Advances in the Management of Retinal Vein Occlusion 162
- Epidemiology 162
- Diagnosis 163
- Systemic Work-up 166
- Interventions for Retinal Vein Occlusion 169

11. Current Concepts in Central Serous Chorioretinopathy **184**
Neha Sinha, Sandeep Saxena
- Pathophysiology 184
- Epidemiology 186
- Signs and Symptoms 187
- Pathogenesis 188
- Laboratory Studies 188
- Treatment 196
- Complications 199
- Prognosis 199

12. Proliferative Vitreoretinopathy **203**
Ajit Majjhi
- Pathogenesis 203
- Terminology and Classification 204
- Risk Factors 206
- Clinical Features 207
- Investigations 207
- Management 209

13. Diagnostic Procedures in Retinopathy of Prematurity **219**
Yog Raj Sharma, Parijat Chandra, Rajni Sharma, Rajvardhan Azad
- Retinopathy of Prematurity Classification 219
- Retinopathy of Prematurity Screening and Treatment 224

14. Macular Dystrophies **235**
Nidhi Relhan, Subhadra Jalali
- Definition of Hereditary Macular Dystrophies 235
- Classification 237
- Autosomal Dominant Macular Dystrophies 237
- Autosomal Recessive Macular Dystrophies 245
- X-linked Recessive Diseases 248
- Management of Heredomacular Dystrophy 252

15. Management of Age-related Macular Degeneration 256
Nazimul Hussain, Supriya Dabir, Anjali Hussain
- Demographic Factors 256
- Management of Dry Age-related Macular Degeneration 258
- Management of Active Wet Age-related Macular Degeneration 264

16. Polypoidal Choroidal Vasculopathy 279
Lingam Gopal, Mayuri Bhargava, Su Xinyi
- Demographics 279
- Clinical Presentation 279
- Symptomatology 280
- Types 280
- Investigations 281
- Diagnosis 283
- Age-related Macular Degeneration and Polypoidal Choroidal Vasculopathy 284
- Management 284
- End Point of Treatment 290
- Results 291
- Prognosticating Factors 292
- Genetics 292
- Challenges and Future Direction 293

17. Macular Phototoxicity 297
Dhananjay Shukla
- Photochemical Injuries: Pathogenetic Mechanism 298
- Agents of Phototoxicity 298
- Factors Affecting Vulnerability to Phototoxicity 301
- Diagnosis of Acute and Chronic Macular Phototoxicity 302

18. Chloroquine Retinopathy: Diagnosis 306
Aljoscha Steffen Neubauer
- Premaculopathy 306
- Early Maculopathy 306
- Established Maculopathy 307
- Advanced Maculopathy 307
- Final-stage Maculopathy 307
- Mechanism of Chloroquine Toxicity 308
- Corneal Deposits 309
- Visual Field Testing 310
- Color Vision 310
- Electrooculogram 312
- Electroretinogram and Multifocal Electroretinogram 313

19. Macular Hole 318
Meena Chakrabarti, Arup Chakrabarti, Sonia S John
- Pathogenesis of Macular Holes 319
- Staging of Macular Holes 320
- Etiology of Macular Holes 324
- Investigations 325

20. Macular Hole Surgery **340**
Abhinav Dhami, Dhanashree Ratra, Tarun Sharma
- Epidemiology 340
- Pathophysiology 341
- Classification of Idiopathic Macular Hole 342
- Ocular Manifestations 344
- Clinical Evaluation 344
- Differential Diagnosis 347
- Natural Course 347
- Treatment Options 347
- Complications 351
- Prognosis 352

21. Giant Retinal Tears **356**
Lingam Gopal
- Etiology 356
- Giant Retinal Tear versus Giant Dialysis 357
- Variables in Clinical Presentation 357
- Management 357
- Results 361

22. Management of Rhegmatogenous Retinal Detachment by Vitreoretinal Surgical Techniques **364**
Yog Raj Sharma, Soman Nair
- Technique of Vitreoretinal Surgery 364

23. Microincisional Vitrectomy Surgery **373**
Lingam Gopal, Mohammed Naseer, Tengku Ain Kamalden
- Relevant Anatomy 373
- History of Evolution of Vitreous Instrumentation 374
- Instrumentation and Fluidics in Microincisional Vitrectomy Surgery 374
- Procedures 377
- Advantages of Microincisional Vitrectomy Surgery 378
- Limitations of Microincisional Vitrectomy Surgery 379
- Problems with Small Gauge Vitrectomy 380

24. Retinal Cyst: Management **384**
Yog Raj Sharma, Soman Nair
- Classification of Retinal Cysts 384
- Congenital Retinal Cysts 385
- Acquired Retinal Cysts 385
- Pseudocystic Vitelliform Macular Degeneration 390

25. Retinoblastoma **392**
Fairooz P Manjandavida, Santosh G Honavar
- Genetics 393
- Classification and Staging 393
- Clinical Features 394
- Diagnosis 396
- Management 396

26. Radiation Retinopathy **406**
Karobi Lahiri Coutinho
- Etiology 406
- Radiation Therapy 406
- Risk Factors 407
- Comorbidities 407
- Pathogenesis 408
- Diagnosis 408
- Differential Diagnosis 410
- Management 411

Index *415*