Microincision Vitrectomy Surgery
Emerging Techniques and Technology

Volume Editors

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Since Robert Machemer, MD, first pioneered closed-eye vitrectomy, the evolution of vitrectomy surgery has rapidly progressed. Numerous advances in the technologies and techniques have been made for the establishment and refinement of this surgical modality. Of these, enormous advances in minimizing the size of the surgical equipment for carrying out sutureless vitrectomy may be the most remarkable advancement in modern vitrectomy surgery. Visualization techniques have also made huge progress, i.e. the introduction of wide-viewing systems in conjunction with chandelier illumination and the utilization of vital dyes to better visualize transparent intraocular tissue such as the vitreous and membranes. Thanks to the recent advancements, we can now routinely achieve less invasive surgery and consequently have earlier recovery with improved safety.

This volume starts with the fundamentals of microincision vitrectomy surgery by introducing both the mechanics and the physics of the newer-generation vitrectomy machines. The following chapters describe the discrete gauge systems, namely the 23-, 25-, and – the latest – 27-gauge systems. In the second section, both individualized and requisite settings, techniques, and technology are discussed in detail. These include illumination, wide-viewing systems, and surgical adjuvants. The third section focuses on the practical management of specific diseases, and includes more than 10 chapters dedicated to giving surgeons thorough plans with concrete strategies.

Since the development of microincision vitrectomy surgery continues at a dizzying pace, our principal endeavor is to encompass all of the recent advancements obtained in this field so that both comprehensive ophthalmologists and vitreoretinal specialists can quickly review and catch up with the most up-to-date knowledge and have some surgical pearls as well. We wish all readers enjoyment with this book, which can be used as a quick reference for specific diseases and as a sophisticated guide to understand the latest advances in vitreous surgery technology.

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The publication of this book is made possible by a number of key opinion-leading authors as well as the dedicated support of the publisher. I am extremely grateful for my colleague (and also co-editor) Dr. Yusuke Oshima for allowing me to share and invite his unrivaled network of leading surgeons from all over the world as well as for his critical review of the manuscript.

I was fortunate enough to start my career as a vitreoretinal fellow at Tenri Yorozu Hospital (Nara), where I could learn from and be trained by so many outstanding surgeons, not only specialized in vitreoretinal diseases, but also in cataract and glaucoma. I would also like to thank Prof. Nagahisa Yoshimura (Kyoto), Prof. Satoki Ueno (Kanagawa), Prof. Ryoji Yamakawa (Fukuoka), Prof. Hitoshi Takagi (Kanagawa), Dr. Morio Okada (Okayama), and Dr. Mihori Kita (Kyoto) for giving me the opportunity to work with and share their knowledge with me. Although the progress in this field is rapid and the advancements are huge, one thing they all taught me was the importance of safe and less invasive surgery. With this principle we will not be easily lost even in hard cases, and it is also the principle which we still rely on to find our way through the myriad of information. Finally, my special thanks go to my colleagues, Dr. Shunsuke Osawa, Dr. Makoto Inoue, and Dr. Hiroshi Kunikata, for their insightful discussions.

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