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Emerging Techniques and Technology

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Hideyasu Oh Hyogo

Yusuke Oshima Osaka

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Hideyasu Oh

Hyogo Prefectural Amagasaki Hospital
Higashidaimotsu-cho 1-1-1
Amagasaki 660-0828 (Japan)

Yusuke Oshima

Vitreoretina & Cataract Surgery Center
Oshima Eye Clinic
1-12-8 Nishikanmuri, Takatsuki-city
Osaka 569-0055 (Japan)

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List of Contributors

Luis A. Acabá

University of Puerto Rico
140 de Diego Ave
00909 San Juan (Puerto Rico)
E-mail lacaba@me.com

J. Fernando Arévalo

The King Khaled Eye Specialist Hospital
Al-Oruba Street
PO Box 7191
Riyadh 11462 (Saudi-Arabia)
E-mail arevalo@jhmi.edu

Francesco Barca

U.O. Chirurgia Oftalmica
Azienda Ospedaliero Universitaria Pisana
via Paradisa 2
IT-56124 Pisa (Italy)
E-mail barcaf@hotmail.com

Maria H. Berrocal

Department of Ophthalmology
University of Puerto Rico
140 de Diego Ave
00909 San Juan (Puerto Rico)
E-mail mariaherrocal@hotmail.com

Anniken Burés-Jelstrup

Instituto de Microcirugía Ocular (IMO)
C Josep Maria Lladó, no 3
ES-08035 Barcelona (Spain)
E-mail nekinna13@hotmail.com

R.V. Paul Chan

Weill Cornell Medical College
New York Presbyterian Hospital
1305 York Avenue, 11th Floor
New York, NY 10021 (USA)
E-mail roc9013@med.cornell.edu

Steve Charles

Hamilton Eye Institute
University of Tennessee
6401 Poplar Avenue
Memphis, TN 38119 (USA)
E-mail scharles@att.net

David R. Chow

University of Toronto
St. Michaels Hospital
Toronto Retina Institute
Toronto, ON M5B 1W8 (Canada)
E-mail davidrchow@me.com

Carl Claes

Speelhofdreef 8
BE-2979 Schilde (Belgium)
E-mail claes.md@skynet.be

Yousef J. Cruz-Iñigo

Department of Ophthalmology
University of Puerto Rico
Rio Piedras Medical Center
00909 San Juan (Puerto Rico)
E-mail yousef.cruz@upr.edu

Manuel Díaz-Llopis

Faculty of Medicine
University of Valencia
Av Blasco Ibañez 17
ES-46010 Valencia (Spain)
E-mail manuel.diaz@uv.es

Rosa Dolz-Marco

Department of Ophthalmology
University and Polytechnic Hospital La Fe
Av Fernando Abril Martorell, 106
ES-46026 Valencia (Spain)
E-mail rosadolzmarco@gmail.com

Pravin U. Dugel

Retinal Consultants of Arizona
1101 E. Missouri Ave.
Phoenix, AZ 85014 (USA)
E-mail pdugel@gmail.com

Renaud Duval

Maisonneuve-Rosemont Hospital
5415 Boulevard de l'Assomption
Montréal, QC H1T 2M4 (Canada)
E-mail renaud.duval@gmail.com

Fiona J. Ehliès

Murray Ocular Oncology and Retina
6705 Red Road, Suite 412
Miami, FL 33143 (USA)
E-mail fehliès@murraymd.com

Ehab N. El Rayes

Retina Department
Institute of Ophthalmology
35 Salah Salem Street
Cairo 11371 (Egypt)
E-mail erayes1@hotmail.com

Hiroshi Enaida

Department of Ophthalmology
Saga University Faculty of Medicine
5-1-1 Nabeshima
Saga 849-8501 (Japan)
E-mail enaida2002@yahoo.co.jp

Roberto Gallego-Pinazo

Department of Ophthalmology
University and Polytechnic Hospital La Fe
Av Fernando Abril Martorell, 106
ES-46026 Valencia (Spain)
E-mail robertogallegopinazo@gmail.com

Enrico Giacomotti

Vitreoretinal Service Igea Clinic
IT-20122 Milan (Italy)
E-mail giacomotti@tin.it

Aaron S. Gold

Murray Ocular Oncology and Retina
6705 Red Road, Suite 412
Miami, FL 33143 (USA)
E-mail agold@murraymd.com

María Gómez-Resa

Instituto de Microcirugía Ocular (IMO)
C Josep María Lladó, no 3
ES-08035 Barcelona (Spain)
E-mail mariagomezresa@hotmail.com

Jeffrey S. Heier

Ophthalmic Consultants of Boston
50 Staniford St., Ste. 600
Boston, MA 02114 (USA)
E-mail jsheier@eyeboston.com

Toshio Hisatomi

Department of Ophthalmology
Graduate School of Medical Sciences
Kyushu University
3-1-1 Maidashi, Higashi-ku
Fukuoka 812-8582 (Japan)
E-mail hisatomi@med.kyushu-u.ac.jp

Yasuhiro Ikeda

Department of Ophthalmology
Graduate School of Medical Sciences
Kyushu University
3-1-1 Maidashi, Higashi-ku
Fukuoka 812-8582 (Japan)
E-mail ymocl@patnol1.med.kyushu-u.ac.jp

Maiko Inoue

Department of Ophthalmology
Yokohama City University Medical Center
4-57 Urafune-cho, Minami-ku
Yokohama, Kanagawa 232-0024 (Japan)
E-mail maicoo@urahp.yokohama-cu.ac.jp

Makoto Inoue

Kyorin Eye Center
Kyorin University School of Medicine
6-20-2 Shinkawa, Mitaka
Tokyo 181-8611 (Japan)
E-mail inoue@eye-center.org

Tatsuro Ishibashi

Department of Ophthalmology
Graduate School of Medical Sciences
Kyushu University
3-1-1 Maidashi, Higashi-ku
Fukuoka 812-8582 (Japan)
E-mail ishi@eye.med.kyushu-u.ac.jp

Pravin Jain

Retina Foundation
Shahibag
380004 Ahmedabad (India)
E-mail jainpravin74@hotmail.com

Kazuaki Kadonosono

Department of Ophthalmology
Yokohama City University Medical Center
4-57 Urafune-cho, Minami-ku
232-0024 Yokohama, Kanagawa (Japan)
E-mail kado@med.yokohama-cu.ac.jp

Peter K. Kaiser

Cole Eye Institute
Cleveland Clinic
9500 Euclid Avenue
Cleveland, OH 44195 (USA)
E-mail pkkaiser@gmail.com

P. Ayumi Kawakami-Campos

Hospital Dr. Luis Sanchez Bulnes
Asociacion para Evitar la Ceguera en Mexico
Vicente Garcia Torres 46
Mexico City 04030 (Mexico)
E-mail ayumika@gmail.com

Michael A. Klufas

Weill Cornell Medical College
New York Presbyterian Hospital
1305 York Avenue, 11th Floor
New York, NY 10021 (USA)
E-mail mak2049@med.cornell.edu

Hiroshi Kunikata

Department of Ophthalmology
Tohoku University Graduate School of Medicine
1-1 Seiryomachi, Aoba-ku
Sendai 980-8574 (Japan)
E-mail kunikata@oph.med.tohoku.ac.jp

Anna Paula Lafeta

Speelhofdreef 8
BE-2979 Schilde (Belgium)
E-mail ap.lafeta@gmail.com

Timothy Y.Y. Lai

Department of Ophthalmology and Visual Sciences
The Chinese University of Hong Kong
Hong Kong Eye Hospital
147K Argyle Street
Kowloon, Hong Kong
E-mail tyylai@cuhk.edu.hk

Azeema Latiff

Murray Ocular Oncology and Retina
6705 Red Road, Suite 412
Miami, FL 33143 (USA)
E-mail alatiff@murraymd.com

Thomas C. Lee

Children's Hospital Los Angeles
4650 W. Sunset Blvd
Los Angeles, CA 90027 (USA)
E-mail ThLee@chla.usc.edu

Tamer H. Mahmoud

Department of Ophthalmology
Duke University Medical Center
2351 Erwin Road
Durham, NC 27710 (USA)
E-mail tamer.mahmoud@duke.edu

Carlos Mateo

Instituto de Microcirugía Ocular (IMO)
C Josep María Lladó 3
ES-08035 Barcelona (Spain)
E-mail carlosmateo@me.com

Virgilio Morales-Canton

Hospital Dr. Luis Sanchez Bulnes
Asociacion para Evitar la Ceguera en Mexico
Vicente Garcia Torres 46
Mexico City 04030 (Mexico)
E-mail vmoralesc@mac.com

Marco Mura

Academic Medical Center
University of Amsterdam
Meibergdreef 9
NL-1105AZ Amsterdam (the Netherlands)
E-mail m.mura@amc.uva.nl

Timothy G. Murray

Murray Ocular Oncology and Retina
6705 Red Road, Suite 412
Miami, FL 33143 (USA)
E-mail tmurray@murraymd.com

Manish Nagpal

Retina Foundation
Shahibag
38004 Ahmedabad (India)
E-mail drmanishnagpal@yahoo.com

Shintaro Nakao

Department of Ophthalmology
Graduate School of Medical Sciences
Kyushu University
3-1-1 Maidashi, Higashi-ku
Fukuoka 812-8582 (Japan)
E-mail shintaro.nakao@yahoo.com

Hideyasu Oh

Hyogo Prefectural Amagasaki Hospital
Higashidaimotsu-cho 1-1-1
Amagasaki 660-0828 (Japan)
E-mail hideyasu@kuhp.kyoto-u.ac.jp

Shunsuke Osawa

Okanami General Hospital
1734 Uenokuwamachi, Iga
Mie 518-0842 (Japan)
E-mail s.osawa1108@gmail.com

Yusuke Oshima

Vitreoretina & Cataract Surgery Center
Oshima Eye Clinic
1-12-8 Nishikanmuri, Takatsuki-city
Osaka 569-0055 (Japan)
E-mail yusukeoshima@gmail.com

Samir N. Patel

Weill Cornell Medical College
New York Presbyterian Hospital
1305 York Avenue, 11th Floor
New York, NY 10021 (USA)
E-mail snp2002@med.cornell.edu

Fabio Patelli

Head Vitreoretina Service Igea Clinic
Director Milano Retina Center
Carones Ophthalmology Center
Via Pietro Mascagni 20
IT-20122 Milan (Italy)
E-mail Fabio@patelli.it

Paolo Radice

Vitreoretina Service Fatebenefratelli Ophthalmic
Hospital
IT-20122 Milan (Italy)
E-mail p.radice@hotmail.it

Kourous A. Rezaei

Illinois Retina Associates
Ingalls Hospital Professional Building
71 West 156th Street
Harvey, IL 60426 (USA)
E-mail karezaei@yahoo.com

Stanislao Rizzo

U.O. Chirurgia Oftalmica
Azienda Ospedaliero Universitaria Pisana
via Paradisa 2
IT-56124 Pisa (Italy)
E-mail stanislao.rizzo@gmail.com

Hiroyuki Shimada

Department of Ophthalmology
Surugadai Hospital of Nihon University
Surugadai, Kanda, Chiyodaku
Tokyo 101-8309 (Japan)
E-mail sshimada@olive.ocn.ne.jp

Peter Stalmans

Department of Ophthalmology
University Hospitals Leuven
Kapucijnenvoer 33
BE-3000 Leuven (Belgium)
E-mail peter.stalmans@uzleuven.be

George Trichonas

Cole Eye Institute
Cleveland Clinic
9500 Euclid Avenue
Cleveland, OH 44195 (USA)
E-mail gtrichonas@gmail.com

Victor M. Villegas

Murray Ocular Oncology and Retina
6705 Red Road, Suite 412
Miami, FL 33143 (USA)
E-mail vvillegas@murraymd.com

Andrea C. Wildner

Murray Ocular Oncology and Retina
6705 Red Road, Suite 412
Miami, FL 33143 (USA)
E-mail awildner@murraymd.com

Matthew T. Witmer

Retinal Consultants of Arizona
1101 E. Missouri Ave.
Phoenix, AZ 85014 (USA)
E-mail mwitmer@retinalconsultantsaz.com

S. Chien Wong

Moorfields Eye Hospital
162 City Road
London EC1V 2PD London (UK)
E-mail chien22@yahoo.com

Glenn Yiu

Department of Ophthalmology
Duke University Medical Center
2351 Erwin Road
Durham, NC 27710 (USA)
E-mail gyiu@post.harvard.edu

Shigeo Yoshida

Department of Ophthalmology
Graduate School of Medical Sciences
Kyushu University
3-1-1 Maidashi, Higashi-ku
Fukuoka 812-8582 (Japan)
E-mail usyosi@gmail.com

Preface

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.

*Hideyasu Oh, Amagasaki
Yusuke Oshima, Osaka*

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Hideyasu Oh, Amagasaki