50th ANNIVERSARY

ARDS2022

THE ASPEN RETINAL DETACHMENT SOCIETY

"Oh vitreous where is thy humor?"

50th ANNUAL

Aspen Retinal Detachment Society Meeting

CELEBRATING
50 YEARS
(1973-2022)

MARCH 5-9, 2022 • SNOWMASS, COLORADO

Beaumont

ACCREDITATION AND CREDIT DESIGNATION

JOINTLY ACCREDITED PROVIDER™
INTERPROFESSIONAL CONTINUING EDUCATION

In support of improving patient care, this activity has been planned and implemented by Beaumont Health, Medical Conference Planners Intl., and Aspen Retinal Detachment Society. Beaumont Health is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Beaumont Health designates this live activity for a maximum of ***12.0 AMA PRA Category 1 Credit(s)™.*** Physicians should claim only the credit commensurate with the extent of their participation in the activity.

50th ANNIVERSARY

ARDS2022

Dear Colleagues,

Welcome to the 50th Anniversary of the Aspen Retinal Detachment Society (ARDS) Annual Meeting. This year marks a half-century for one of the top long-format meetings focused on vitreoretinal surgical diseases.

Speakers at ARDS have been remarkable leaders in the field of retina, and many of our most significant advances were first discussed at this meeting. Remarkably, nothing has stopped the ARDS meeting – much like our specialty overall, we have continued through pandemic, economic turmoil, and terrorism.

Last year's ARDS required special planning to ensure our members and supporters safety but went off without a hitch. For this 50th ARDS, safety will again be paramount but will not impact our unique focus on outstanding presentations with integral, incredible discussion.

To address concerns from our sponsors, we have extended the meeting to include morning sessions (for those interested) that will be case-based interactive discussion. Our Named Lectures, The Founders Lecture will highlight Dr. Culver Boldt's focus on Surgical Vitreoretinal Training over three decades, while the Taylor Smith & Victor Curtin Lecture will address advances in ocular oncology over a three-decade span. Both lectures will highlight advances that were the focus of ARDS speakers over the last 50 years. Finally, our speakers truly represent the ARDS commitment to both advancement and education within our field. Dr. Carl Regillo will launch our meeting with an update on pharmacologic therapy via the port delivery system for neovascular AMD, Carl Awh will address advanced optimizing outcomes during PDS implantation addressing issues related to the device and its placement, Bailey Freund will present new imaging findings from High Resolution Optical Coherence Tomography and Joan Miller will look to the future of next generation treatments for early and intermediated AMD. AND THAT IS JUST THE FIRST DAY!

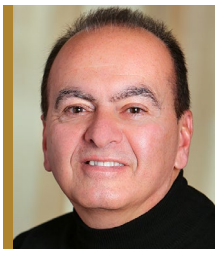
Drs. Judy Kim and Aleksandra Rachitskaya will discuss advances in diabetic retinopathy management and the impact of advanced imaging on vitreoretinal surgery while Steve Charles will RAPIDLY discuss everything vitreoretinal. As always, the long format lectures will be followed by interactive discussions from our members and each day will include a specialty panel discussing the real-world impact of medical and surgical advances in retina.

The 50th Anniversary in 2022 will recognize a meeting that is unique in our field. Focused on outstanding speakers capable of integrating research advances, both surgical and medical, into the immediate world of clinical care, these presentations and panels deliver state-of-the-art information from top practitioners with insightful interactive discussions.

For the ARDS leadership, the uniqueness of this meeting, its caliber and impact, owe much to the incredible individuals who have spoken over these five decades but ALSO to our amazing members whose targeted questions and impactful comments anchor ARDS at its clinical roots.

Best regards,

Timothy G. Murray, MD, MBA
Program Director



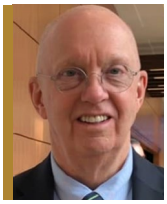
Donald J. D'Amico, MD
Program Director

Karen Baranick
President
Medical Conference Planners Intl.

Guest Faculty

Carl C. Awh, MD, FASRS
Tennessee Retina
Nashville, TN

H. Culver Boldt, MD
University of Iowa
Iowa City, IA
FOUNDERS LECTURE



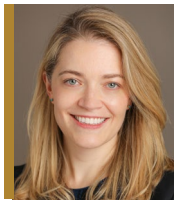
Steve T. Charles, MD
Charles Retina Institute
Germantown, TN

K. Bailey Freund, MD
Vitreous Retina Macula
Consultants of New York
New York, NY

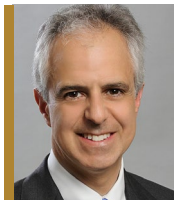
Judy E. Kim, MD, FARVO, FASRS
Medical College of Wisconsin
Milwaukee, WI

Joan W. Miller, MD
Massachusetts
Eye and Ear Infirmary
Boston, MA

Timothy G. Murray, MD, MBA
Murray Oculuar Oncology
and Retina
Miami, FL
TAYLOR SMITH & VICTOR CURTIN LECTURE

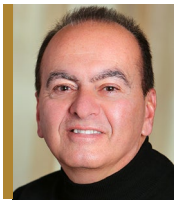


Aleksandra V. Rachitskaya, MD
Cole Eye Institute
Cleveland, OH



Carl D. Regillo, MD
Mid Atlantic Retina/
Wills Eye Hospital
Philadelphia, PA

Program Directors

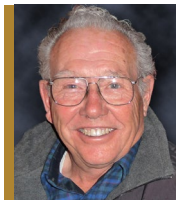


Donald J. D'Amico, MD
Weill Cornell Medicine
Ophthalmology
New York, NY

Timothy G. Murray, MD, MBA
Murray Ocular Oncology
and Retina
Miami, FL

Founders

William O. Edward, MD
1930-2012



Ottiwell W. Jones, III, MD
Spokane, WA

Meeting Planner

Karen Baranick
Medical Conference
Planners Intl.
Los Angeles, CA

FOUNDERS LECTURE

MONDAY, MARCH 7, 2022 • 6:55 PM

Surgical Training: Advances After Three Decades

H. CULVER BOLDT, MD

H. Culver Boldt, MD is a Professor in the Department of Ophthalmology and Visual Sciences at the University of Iowa. After graduating from Northwestern University's combined six-year BS/MD program, he received his ophthalmology residency training at the University of Iowa. He then completed three fellowships: the first in ophthalmic echography in Miami with Sandra Frazier Byrne; the second in medical retina at the Retina Vascular Center at Wilmer; and the third in surgical retina at the Medical College of Wisconsin. Following a brief appointment at Indiana University, he joined the faculty at Iowa in 1992, where he serves as the Marion and Frederick Fuerste Professor of Ophthalmology and Directors of the Ocular Echography and Ocular Oncology Services.

Early in his career, Dr. Boldt served in multiple capacities in the Collaborative Ocular Melanoma Study: as a clinical investigator, the Director of the COMS Photograph Reading Center, and as a member of the COMS Archives Committee. He has also acted as a site reviewer for photograph reading centers for the National Institutes of Health. He has published over 160 articles in peer-reviewed journals and 18 book chapters. He served for six years on the Retina Panel for the Preferred Practice Plans for the American Academy of Ophthalmology. For decades, he worked with the American Board of Ophthalmology, where he created hundreds of test items, examined for over 35 oral examinations, and served as an ABO Director for 8 years.

Dr. Boldt has served as the Director of the Vitreoretinal Service and the Fellowship Director at Iowa; and he has mentored over 70 fellows during his tenure. Recently, he was honored as the Clinician of the Year for the entire College of Medicine at Iowa– the only ophthalmologist to receive this award in its decades-long history. He is a member of the Macula Society, the American Society of Retina Specialists, and the International Ocular Oncology Society. He has participated as the principal investigator or sub-investigator for multiple NEI- and industry sponsored clinical trials for the treatment of retinal diseases and cancer. His clinical and research interests include the diagnosis and treatment of ocular neoplasms and the management of complex vitreoretinal detachments.

Founders Honorees

2012 Steve T. Charles, MD
2013 Joan W. Miller, MD
2014 Carl D. Regillo, MD
2015 Dean Eliott, MD
2016 Mark W. Johnson, MD
2017 Mark S. Humayun, MD, PhD
2018 Maria H. Berrocal, MD
2019 Allen C. Ho, MD, FACS
2020 Glenn J. Jaffe, MD
2021 Dennis P. Han, MD
2022 H. Culver Boldt, MD

TAYLOR SMITH & VICTOR CURTIN LECTURE

TUESDAY, MARCH 8, 2022 • 6:50 PM

Advances in Ocular Oncology – Three Decades Define Patient Care

TIMOTHY G. MURRAY, MD, MBA

Timothy G. Murray, MD, MBA is currently the Founding Director/CEO of Ocular Oncology and Retina of Miami Florida. Dr. Murray's early academic career was focused on the development of an integrated Ocular Oncology service beginning at the Bascom Palmer Eye Institute, Sylvester Comprehensive Cancer Center. In 2012, Dr. Murray founded the Ocular Oncology and Retina Center in Miami, Florida. Dr. Murray continues as Tenured, Professor Emeritus in Ophthalmology and Radiation Oncology with the Bascom Palmer Eye Institute/Sylvester Comprehensive Cancer Center.

Dr. Murray is a graduate of the Johns Hopkins School of Medicine in the combined BA/MD program in 1985, completed his Residency and Chief Residency at the University of California, San Francisco in Ophthalmology and completed both a surgical and research Fellowship in vitreoretinal surgery and ocular oncology at the Eye Institute, Medical College of Wisconsin. Dr. Murray expanded his health care focus when he graduated with a Master's in Business Administration (MBA) in 2005.

Dr. Murray has published over 500 peer reviewed articles and chapters in the field of vitreoretinal surgery and ocular oncology. Dr. Murray has been recognized with Honor and Senior Honor awards by the American Academy of Ophthalmology (AAO), the Association for Research in Vision and Ophthalmology (ARVO), the Retina Society, the American Society of Retinal Specialists (ASRS), and the International Society of Ocular Oncologists (ISOO).

Dr. Murray is the Past President of the American Society of Retina Specialists (and the Foundation of the ASRS), a past Executive Committee member of the Retina Society, and a member of the Macula Society, Club Jules Gonin and a Fellow of ARVO and ABO.

Dr. Murray continues to provide patient care, vitreoretinal education and research at both a national and international level focused on ocular oncology and complex retina.

Taylor Smith & Victor Curtin Honorees*

1983	Thomas M. Aaberg, Sr., MD	1993	Wayne E. Fung, MD	2003	Evangelos S. Gragoudas, MD	2013	Michael T. Trese, MD
1984	Robert E. Morris, MD	1994	Charles P. Wilkinson, MD	2004	Steve T. Charles, MD	2014	Julia A. Haller, MD
1985	Michael Shea, MD	1995	George W. Blankenship, MD	2005	Thaddeus P. Dryja, MD	2015	George A. Williams, MD
1986	Alexander Ray Irvine, Jr., MD	1996	Mary Lou Lewis, MD	2006	Jerry A. Shields, MD	2016	Neil M. Bressler, MD
1987	William H. Spencer, MD	1997	Donald J. D'Amico, MD	2007	Mark S. Blumenkranz, MD	2017	Gary W. Abrams, MD
1988	Victor T. Curtin, MD	1998	Stanley Chang, MD	2008	Allan E. Kreiger, MD	2018	Daniel F. Martin, MD
1989	Alan Bird, MD	1999	Harry W. Flynn, Jr., MD	2009	Alexander R. Gaudio, MD	2019	Yale L. Fisher, MD
1990	J. Donald M. Gass, MD	2000	Ian J. Constable, MD	2010	Carmen A. Puliafito, MD, MBA	2020	Carol L. Shields, MD
1991	Robert J. Brockhurst, MD	2001	Thomas R. Friberg, MD	2011	David W. Parke, II, MD	2021	Robert L. Avery, MD
1992	Stephen J. Ryan, MD	2002	William S. Tasman, MD	2012	J. Brooks Crawford, MD	2022	Timothy G. Murray, MD, MBA

**Prior to 2017, this lecture was known as the Taylor Smith Lecture.*

50th ANNIVERSARY

ARDS2022

PROGRAM AT A GLANCE

Saturday

MARCH 5

4:00 – 9:00 PM
Registration

6:00 – 9:00 PM
Welcome Dinner

Sunday

MARCH 6

7:30 – 9:00 AM

Satellite Symposium with Breakfast (non-CME)
A Treatment Option for Diabetic Retinopathy and Diabetic Macular Edema
Jeremy D. Wolfe, MD, MS
(Sponsored by Regeneron Pharmaceuticals, Inc.)

9:00 – 10:00 AM

Suprachoroidal Injection Training Wet Lab (non-CME)
(Sponsored by Bausch + Lomb)

3:30 – 4:00 PM
Break

3:30 – 7:30 PM
Exhibits

4:00 – 4:20 PM
Update on the Port Delivery System
Carl D. Regillo, MD

4:20 – 4:35 PM
Discussion

4:35 – 4:55 PM
Optimizing Outcomes with PDS: Tips and Techniques
Carl C. Awh, MD, FASRS

4:55 – 5:10 PM
Discussion

5:10 – 5:30 PM
New Imaging Findings from High-Res OCT
K. Bailey Freund, MD

5:30 – 5:45 PM
Discussion

5:45 – 6:15 PM
Break

6:15 – 6:35 PM
Future Treatments for Early and Intermediate AMD
Joan W. Miller, MD

6:35 – 6:50 PM
Discussion

6:50 – 7:30 PM

PANEL 1:
Advances and Controversies in AMD
Moderator:
Timothy G. Murray, MD, MBA
Panelists: Carl C. Awh, MD, FASRS
K. Bailey Freund, MD
Joan W. Miller, MD
Carl D. Regillo, MD

Monday

MARCH 7

7:30 – 9:00 AM

Satellite Symposium with Breakfast (non-CME)
A Case Series: Identifying Opportunities for Integration
Benjamin J. Thomas, MD and Lejla Vajzovic, MD, FASRS
(Sponsored by Allergan, an AbbVie Company)

9:00 – 10:00 AM
Case Discussion with Experts (non-CME)
Moderator:
Timothy G. Murray, MD, MBA

3:30 – 4:00 PM
Break

3:30 – 7:30 PM
Exhibits

4:00 – 4:20 PM
Diabetic Retinopathy Management
Judy E. Kim, MD, FARVO, FASRS

4:20 – 4:35 PM
Discussion

4:35 – 4:55 PM
Medium Term PFO for Inferior Retinal Detachments and Inferior, Nasal, and Temporal Giant Breaks
Steve T. Charles, MD

4:55 – 5:10 PM
Discussion

5:10 – 5:30 PM
Gene Therapies for Inherited Retinal Diseases: Imaging Advances that Impact Care
Aleksandra V. Rachitskaya, MD

5:30 – 5:45 PM
Discussion

5:45 – 6:15 PM
Break

6:15 – 6:55 PM

PANEL 2:
Surgical Advances in Complex Retina
Moderator:
Judy E. Kim, MD, FARVO, FASRS
Panelists: H. Culver Boldt, MD
Steve T. Charles, MD
Donald J. D'Amico, MD
Timothy G. Murray, MD, MBA
Aleksandra V. Rachitskaya, MD

6:55 – 7:00 PM
Introduction of Founders Lecture
Timothy G. Murray, MD, MBA

7:00 – 7:20 PM

FOUNDERS LECTURE
Surgical Training: Advances After Three Decades
H. Culver Boldt, MD

7:20 – 7:30 PM
Discussion

8:00 – 10:00 PM
Faculty Dinner

Tuesday

MARCH 8

7:30 – 9:00 AM

Satellite Symposium with Breakfast (non-CME)

Exploring A New Approach To The Treatment of Neovascular Age-Related Macular Degeneration (nAMD)

Aleksandra V. Rachitskaya, MD
(Sponsored by Genentech, Inc.)

9:00 – 10:00 AM

Case Discussion with Experts (non-CME)

Moderator:
Timothy G. Murray, MD, MBA

11:00 AM – 2:00 PM

NASTAR Ski Race and Lunch

3:30 – 4:00 PM

Break

3:30 – 7:30 PM

Exhibits

4:00 – 4:20 PM

Vitreoretinal Surgery for Inherited Retinal Disease

H. Culver Boldt, MD

4:20 – 4:35 PM

Discussion

4:35 – 4:55 PM

Membrane Peeling Without Forceps: How and Why

Carl C. Awh, MD, FASRS

4:55 – 5:10 PM

Discussion

5:10 – 5:30 PM

Faricimab for Neovascular AMD and DME

Carl D. Regillo, MD

5:30 – 5:45 PM

Discussion

5:45 – 6:15 PM

Break

6:15 – 6:35 PM

Artificial Intelligence and Retinal Imaging

Judy E. Kim, MD, FARVO, FASRS

6:35 – 6:50 PM

Discussion

6:50 – 6:55 PM

Introduction of Taylor Smith & Victor Curtin Lecture

Donald J. D'Amico, MD

6:55 – 7:20 PM

TAYLOR SMITH & VICTOR CURTIN LECTURE

Advances in Ocular Oncology – Three Decades Define Patient Care

Timothy G. Murray, MD, MBA

7:20 – 7:30 PM

Discussion

8:00 – 10:00 PM

Closing Dinner

Viceroy Snowmass
Toro Kitchen & Lounge

Wednesday

MARCH 9

7:30 – 9:00 AM

Satellite Symposium with Breakfast (non-CME)

Understanding the Impact of Complement-Mediated Lesion Growth in Geographic Atrophy

David Eichenbaum, MD and
Aleksandra V. Rachitskaya, MD
(Sponsored by Apellis Pharmaceuticals, Inc.)

9:00 – 10:00 AM

Case Discussion with Experts (non-CME)

Moderator:
Timothy G. Murray, MD, MBA

3:30 - 4:00 PM

Break

3:30 – 7:30 PM

Exhibits

4:00 – 4:20 PM

Short- and Long-Term Outcomes of Delays in Care in Patients Receiving Intraocular Injections

Aleksandra V. Rachitskaya, MD

4:20 – 4:35 PM

Discussion

4:35 – 4:55 PM

Neuroprotection for Retinal Disease

Joan W. Miller, MD

4:55 – 5:10 PM

Discussion

5:10 – 5:30 PM

How Understanding the Histologic Basis of Retinal Imaging Findings in AMD Can Improve Current and Future Patient Outcomes

K. Bailey Freund, MD

5:30 – 5:45 PM

Discussion

5:45 – 6:15 PM

Break

6:15 – 6:35 PM

Autologous Retinal Transplant

Steve T. Charles, MD

6:35 – 6:50 PM

Discussion

6:50 – 7:30 PM

PANEL 3:

Advanced Retinal Care: What Does the Future Hold?

Moderator: Joan W. Miller, MD
Panelists: Steve T. Charles, MD
K. Bailey Freund, MD
Timothy G. Murray, MD, MBA
Aleksandra V. Rachitskaya, MD

7:30 PM

Adjourn

Sunday | MARCH 6

4:00 – 4:20 PM

Update on the Port Delivery System

CARL D. REGILLO, MD

Port Delivery System (PDS) is a novel intraocular reservoir designed to deliver a high concentration preparation of ranibizumab in a sustained release fashion to reduce the burden of repeat intravitreal injections. The device is implanted surgically and refilled in the office with a special refill-exchange needle designed to completely replace the contents of the device with fresh drug. The Ladder phase 2 clinical trial showed that the high concentration arm of the study had a median time to refill of the device of approximately 16 months and showed visual and anatomic outcomes over a 22 month mean follow-up time frame that was equivalent to the monthly ranibizumab injection control group in recently diagnosed, previously treated nAMD patients. Serum PK analysis from the study showed detectable active drug in the serum for over 16 months. The Archway phase 3 study compared PDS with the high concentration ranibizumab preparation to monthly ranibizumab injections in a similar patient population with previously treated nAMD and patients randomized to PDS had the device filled every 24 weeks in this 2-year study with a primary endpoint of 36-40 weeks. The PDS group met the primary endpoint of being non-inferior to monthly injections in mean change in BCVA from baseline with equivalent visual acuity and anatomic outcomes that have held up well through the end of the study. Over 95% of PDS patients did not require any supplemental anti-VEGF injections over the study. Overall the PDS implant surgery and refill procedures were well tolerated. There were higher rates of vitreous hemorrhage and endophthalmitis with PDS compared to monthly injections (6.0 vs 3.6 % and 1.6 vs 0.6%, respectively) along with a 4.4% rate of conjunctival adverse events in the PDS arm. Long-term follow-up of patients from the phase 2 and 3 studies rolled over into the Portal extension study is showing excellent disease control out through 4 years with a low rate of new/ongoing PDS-related complications.

4:35 – 4:55 PM

Optimizing Outcomes with PDS: Tips and Techniques

CARL C. AWH, MD, FASRS

The pivotal clinical trials that led to the recent FDA approval of the Port Delivery System with Ranibizumab (PDS) for the treatment of neovascular AMD demonstrated compelling potential benefits. However, treatment with the PDS was associated with a higher rate of endophthalmitis in the PDS treatment arms compared to the intravitreal injection arms (2% vs. 0.6%). Patients treated with the PDS were also at risk for the novel complications of conjunctival erosion or conjunctival retraction over the implant. Notably, the majority of endophthalmitis cases in the PDS arms were associated with prior or concurrent conjunctival erosion or retraction. This suggests that techniques to mitigate conjunctival erosion or retraction may decrease the risk of endophthalmitis.

I will review and discuss methods to mitigate the risk of endophthalmitis and other adverse events reported with PDS. Topics will include the following:

- Patient selection
- Suggested technique for implantation: a step-by-step review
- Identified risks associated with each implantation step
- Examples of incorrect surgical technique and the consequences
- Important considerations during follow-up
- Early intervention for suboptimal exam findings

Time permitting, I will also review and discuss aspects of the in-office PDS implant refill-exchange procedure, including the following:

- Recommended technique
- Patient positioning
- Illumination and magnification
- Challenging cases

Meticulous attention to detail during the implantation procedure, follow-up evaluations, and refill-exchange procedures may significantly reduce the risk of adverse events associated with PDS treatment, enhancing the potential benefits of this new technology for appropriate patients.

5:10 – 5:30 PM

New Imaging Findings from High-Res OCT

K. BAILEY FREUND, MD

The High-Resolution OCT (HighRes OCT) device is a recent development based on the Heidelberg SPECTRALIS platform which combines three superluminescent diodes to provide a center wavelength of 853 nm and a bandwidth of 137 nm (as compared to 880 nm and 45 nm respectively on the commercial SPECTRALIS device) to increase the optical axial resolution from approximately 7 µm to 3 µm in tissue. This enhanced resolution enables more precise identification of retinal structures. This talk will illustrate how HighRes OCT can help provide insights into mechanisms of retinal disease and its utility in refining clinical decision making.

6:15 – 6:35 PM

Future Treatments for Early and Intermediate AMD

JOAN W. MILLER, MD

The development of anti-vascular endothelial growth factor (VEGF) agents was a major breakthrough in treating neovascular age-related macular degeneration (AMD). Naturally, investigators and the drug development community turned to solving the greater problem of treating AMD at an earlier stage in order to prevent any vision loss. Despite important discoveries in the genetics of AMD, attempts to develop therapeutics directed at complement have been mixed. There remains a large unmet need in AMD, specifically, treatments for the early and intermediate forms of the disease, and for advanced non-neovascular AMD – geographic atrophy. Our group has proposed that early and intermediate AMD are actually composed of multiple, definable subtypes that follow different biological pathways. Eventually, these pathways converge to advanced stages and utilize shared pathways—angiogenesis in neovascular AMD, or cell death in geographic atrophy. Characterizing these subtypes, and their underlying molecular and cellular pathways, will be essential to developing effective therapies for early and intermediate AMD. By combining information such as validated systemic and imaging biomarkers with clinical data, genomics, and functional testing, we aim to characterize these early and intermediate AMD subtypes. With this improved understanding, we hope to identify druggable targets, which may lead to the development of successful therapeutic strategies. Ultimately, our goal is to develop improved prognostic information and more personalized therapies for the treatment of early and intermediate AMD.

6:50 – 7:30 PM

Panel 1: Advances and Controversies in AMD

MODERATOR:
TIMOTHY G. MURRAY, MD, MBA

PANELISTS:
CARL C. AWH, MD, FASRS
K. BAILEY FREUND, MD
JOAN W. MILLER, MD
CARL D. REGILLO, MD

This case-based panel will use clinical examples to focus our evaluation of the patient, assist in imaging interpretation of complex macular pathology, and discuss advanced therapeutic strategies for personalized patient care. Active ARDS participation will target the discussions to recent novel surgical and medical treatments including indications for sustained release novel drugs and devices.

Monday | MARCH 7

4:00 – 4:20 PM

Diabetic Retinopathy Management

JUDY E. KIM, MD, FARVO, FASRS

Diabetes is increasing throughout the world and diabetic retinopathy is increasing as a result. Therefore, we need to improve ways to manage diabetic retinopathy. In recent years, several clinical trials have brought new treatments and guidance on usage of these treatments. In this presentation, we will 1) review recent clinical trials on management of diabetic retinopathy and diabetic macular edema, 2) consider optimal ways to apply findings, and 3) discuss ways to improve current unmet needs to improve patient outcome.

4:35 – 4:55 PM

Medium Term PFO for Inferior Retinal Detachments and Inferior, Nasal, and Temporal Giant Breaks

STEVE T. CHARLES, MD

I introduced the concept of medium term PFO (mtPFO) for inferior retinal detachments over twenty years ago and have done over 1100 cases. By medium term I mean 14 days; the duration was chosen because laser retinopexy reaches maximum tensile strength in 7-10 days. It is clear that mtPFO is off label. The procedure is ideal for kids with inferior detachments because it eliminates the positioning requirement. It is ideal for adults with inferior retinal detachments because the patients can work, drive, fly and basically function normally. The procedure is advantageous for patients with prior refractive surgery or cataract surgery because unlike encircling scleral buckles it does not induce axial myopia (typically 2.75 diopters with encircling buckles according to Michels). mtPFO is also advantageous for young myopes without a PVD; instead of aggressive PVD creation which often causes iatrogenic retinal breaks, a slow, "gentle" PVD occurs during the two weeks the PFO is in the eye and the posterior vitreous cortex can be removed at the second procedure. mtPFO eliminates strabismus (50% of scleral buckles have increased phorias or tropias according to Michels), ocular surface disorder, pain, as well as buckle intrusion and extrusion complications associated with scleral buckles. I have expanded the indications for mtPFO in the last decade to include inferior, nasal and temporal giant retina breaks; thusly eliminating the not infrequent retinal slippage problems associated with PFO-gas or PFO-oil exchange. PFO-gas or PFO-oil exchange is required for superior giant breaks however.

5:10 – 5:30 PM

Gene Therapies for Inherited Retinal Diseases: Imaging Advances that Impact Care

ALEKSANDRA V. RACHITSKAYA, MD

The approval of gene therapy for biallelic *RPE65* mediated inherited retinal disease (IRD) has heralded a new era in treatment of IRDs. There are multiple ongoing gene therapy trials that focus on gene specific and gene agnostic approaches. The current talk will discuss the progress and challenges of gene therapy for IRDs with the focus on imaging techniques that impact care.

6:15 – 6:55 PM

Panel 2: Surgical Advances in Complex Retina

MODERATOR:
JUDY E. KIM, MD, FARVO, FASRS

PANELISTS:
H. CULVER BOLDT, MD
STEVE T. CHARLES, MD
DONALD J. D'AMICO, MD
TIMOTHY G. MURRAY, MD, MBA
ALEKSANDRA V. RACHITSKAYA, MD

Significant advances in retinal surgery have been made over the years to improve patient safety as well as anatomic and visual successes. However, controversies and different approaches exist in management of various retinal conditions. During this panel discussion, various surgical cases will be presented and questions will be posed for discussion and input by the expert panel as well as the audience in an interactive format. Through this format, we will explore different surgical approaches, pearls and pit falls, and pre- and post-operative management considerations.

7:00 – 7:20 PM

FOUNDERS LECTURE

Surgical Training: Advances After Three Decades

H. CULVER BOLDT, MD

Over the last three decades, the practice of vitreoretinal surgery has undergone dramatic changes. Improvements in technology allow us to address pathology that was previously beyond our ability to manage, and improve our management of previously treatable conditions. During this time, our training of vitreoretinal fellows has also changed dramatically. Some of our training concepts have remained constant, such as stressing a need to understand anatomy and pathology, fundamentals of surgical technique, patient-centric care, and attention to detail. Some technological advances have required significant changes for teacher and student, including: advanced vitrectomy platforms; MIVS; wide-field visualization; perfluorocarbon liquids; biologic stains; intraoperative OCT, and heads-up 3D displays. Surgical simulators have advanced to the point where they may be able to play a more important role in training. Potential advantages to task-specific training, as opposed to the more traditional "skin-to-skin" approach to teaching, will be discussed. Fellowship programs now have more uniform standards for teaching, such as established by the AUPO-FCC. In addition, changes in the fundamental nature of trainees have also influenced teaching strategies. For example, compared to past trainees, modern trainees generally have a shorter attention span, are perhaps more prone to anxiety in response to negative feedback, and use technology in a fluid manner to supplant the need for extensive rote memorization. Understanding our fellows, our changing field, and our technology should allow us to modify our teaching so we can best prepare our trainees for the future, and allow us to keep abreast with advances in our field.

Tuesday | MARCH 8

4:00 – 4:20 PM

Vitreoretinal Surgery for Inherited Retinal Disease

H. CULVER BOLDT, MD

Inherited retinal diseases previously were felt to be "untreatable", and have been orphan diseases in the vitreoretinal world. However, with advances in gene therapy, stem cell therapies, and retinal prostheses, patient with IRD's will likely be candidates for an increasing number of surgical interventions. As such, these patients are likely to be seen by vitreoretinal surgeons for an increasing number of surgical complications. The response to surgery will vary based on the IRD, the pathology created by the mutation, and the progression of the disease at the time of surgical intervention. For example, reduced RPE pump activity can impair resolution of a retinal detachment, or RPE migration into the retina may create an increased adhesion between the retina and RPE. This talk will discuss some of the pathophysiologic mechanisms to consider in vitreoretinal surgery in patients with IRD's, and show examples of some of these concerns. Also, a brief update on the status of stem cell therapy at the University of Iowa, including efforts with biodegradable scaffolds, multilayer grafts, and robots will be presented.

4:35 – 4:55 PM

Membrane Peeling Without Forceps: How and Why

CARL C. AWH, MD, FASRS

The Micro-Vacuum Pick (MVP) is a device and method for peeling ILM and ERM. The MVP is an alternative to forceps, with potential advantages over forceps. I will demonstrate techniques and applications using surgical videos.

The MVP utilizes active aspiration via the extrusion function of a vitrectomy machine, with linear foot pedal control of vacuum. The tip of the MVP has 3 main features: (1) a smooth Spatula, designed to elevate membranes; (2) a Vacuum Port just proximal to the spatula, small enough to occlude with membrane to create vacuum holding force but large enough to aspirate membranes out of the eye; and (3) two Micropicks, one on either side of the tip, to create a membrane edge or flap.

After an edge is created or identified, it is lifted with the spatula while low vacuum pulls the membrane to the port. When the port is occluded, vacuum is increased to "grasp" the membrane while the surgeon peels it from the retina. The vacuum level during peeling is typically up to 300 mm Hg. After membrane is peeled from the retina, higher vacuum (up to 600 mm Hg) is used to aspirate it from the eye.

A masked OCT analysis of 74 of my cases (36 with MVP, 38 with forceps) found significantly less superficial macular dimpling, which we term PIM (Peel-Induced Maculopathy), in cases performed with the MVP. There were no differences in visual acuity or macular hole closure rate and we did not perform microperimetry.

5:10 – 5:30 PM

Faricimab for Neovascular AMD and DME

CARL D. REGILLO, MD

VEGF-A and angiopoietin-2 (Ang-2) are upregulated in retinal and choroidal vascular diseases, including neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME). There is preclinical evidence in support of both growth factors synergistically driving vascular destabilization. Faricimab, is a dual acting (bispecific) antibody targeting both VEGF A and Ang-2. The global, phase 3 registration trials for farcimab in the treatment of nAMD and DME are now complete. Farcimab met the primary endpoint of being non-inferior to aflibercept in change in best-corrected visual acuity (BCVA) from baseline to approximately 1 year in these 2-year trials. In both clinical trial programs, farcimab was dosed at different treatment intervals ranging from every 8-16 weeks in the nAMD trials and every 4-16 weeks in the DME trials after the respective loading phase and aflibercept was dosed in a fixed every 8-week fashion per the FDA label. Disease control based on OCT was comparable between the two drugs in nAMD and favored farcimab in DME out to the primary endpoint and this was achieved with a fewer number of treatments with farcimab. The proportion of eyes dosed with farcimab at intervals 12 to 16 weeks in was over 70% for both nAMD and DME trials with approximately 50% at 16 week dosing as of the primary endpoint. The ocular safety of faricimab was similar to aflibercept with low rates of intraocular inflammation and no cases of retinal vasculitis or related occlusions. Complete two-year clinical trial data for both nAMD and DME programs will be available in 2022.

6:15 – 6:35 PM

Artificial Intelligence and Retinal Imaging

JUDY E. KIM, MD, FARVO, FASRS

As a part of the fourth industrial revolution, artificial intelligence (AI) has received considerable attention in many aspects of our lives. In retina, it holds significant promise and potential in advancing our field and patient care. There have been remarkable breakthroughs in the last few years in the use of AI to screen, diagnose, and grade ophthalmic disease. For instance, the first Food and Drug Administration approval of autonomous AI devices for health care was for screening of diabetic retinopathy. In this presentation, we will 1) discuss basics of AI, 2) review some of the AI algorithms and devices that have been developed for use in retina, including disease detection and treatment and predicting treatment needs, and 3) evaluate important issues to consider while incorporating AI into patient care.

6:55 – 7:20 PM

TAYLOR SMITH & VICTOR CURTIN LECTURE

Advances in Ocular Oncology - Three Decades Define Patient Care

TIMOTHY G. MURRAY, MD, MBA

Personalized treatment in ocular oncology has undergone significant shifts for the two most common primary intraocular malignancies: Uveal Melanoma and Retinoblastoma. A 30-year trend analysis will highlight transitions in care for ocular melanoma incorporating earlier tumor treatment, avoidance of enucleation, and integration of molecular genomics. Targeted anti-VEGF therapy has decreased tumor specific morbidity, virtually eliminated secondary enucleations, and improved anatomic and functional visual outcomes. Radiosparing treatment for small melanoma enables accurate molecular

(continued)

genomics, enhances anatomic outcomes, and eliminates radiation related complications of retinopathy, optic neuropathy, secondary glaucoma and cataract.

For retinoblastoma, arguably, even greater transitions have occurred shifting from enucleation, then external beam radiotherapy, and ending with advanced chemotherapy.

Even within chemotherapy management, the shift from systemic chemotherapy to intra-arterial chemotherapy has lowered enucleation rates dramatically. Over the last 5-years, increased utilization of intravitreal chemotherapy has targeted persistent vitreous seeding in retinoblastoma. Interestingly, regional differences in treatment highlight the lack of consensus within the field of ocular oncology. Even with these wide differences, retinoblastoma mortality has decreased from over 90% to less than 1% within the major treatment centers. Interestingly, enucleation as a sole primary therapy continues to carry a national mortality risk of 4%.

Nonetheless, ocular oncology treatments in both pediatric and adult patients have benefited from single institution research, in the absence of clinical trials data, to enhance patient survival, improve anatomic and ultimately visual function. Unifying the field of ocular oncology has the potential to broaden access to best-care practices for these life-threatening malignancies.

Wednesday | MARCH 9

4:00 – 4:20 PM

Short- and Long-Term Outcomes of Delays in Care in Patients Receiving Intraocular Injections

ALEKSANDRA V. RACHITSKAYA, MD

Intravitreal injections are the mainstay therapy for neovascular age-related macular degeneration, diabetic macular edema, and retinal vein occlusion with macular edema. Several pivotal clinical trials have demonstrated the effectiveness of frequent anti-vascular endothelial growth factor injections in improving and maintaining visual acuity in these disease states. The recent COVID-19 pandemic provided an unprecedented opportunity to examine the results of delay in care in many medical specialties. The current talk will focus on examining the short- and long-term effects of a delay in care on visual acuity in patients requiring intravitreal injections.

4:35 – 4:55 PM

Neuroprotection for Retinal Disease

JOAN W. MILLER, MD

Vision loss in retinal diseases such as age-related macular degeneration (AMD), inherited retinal disorders (IRDs) and retinal vascular disorders is ultimately caused by photoreceptor cell death. While anti-vascular endothelial growth factor (VEGF) treatments have revolutionized patient care for those with neovascular AMD, an unmet need remains for patients with geographic atrophy, high-risk intermediate AMD, and atrophy that is seen once neovascular AMD is controlled. Neuroprotection, an approach to slow or prevent photoreceptor death, could address this need, as well as the ultimate goal of preventing vision loss. Researchers are pursuing different approaches to neuroprotection, including: reduction of oxidative stress, modulation of the visual cycle, reduction of toxic materials, inhibition of pathologic protein activity, prevention of cellular apoptosis and/or necroptosis, direct activation of neurotrophic factors, and RPE replacement. In this talk, we will review these approaches to neuroprotection, including preclinical studies, as well as past and ongoing clinical trials. Neuroprotection holds promise for the prevention of vision loss in retinal diseases, with clinical development of several therapeutic agents showing progress. Neuroprotection may emerge as a new and welcome frontier in the treatment of retinal disease.

5:10 – 5:30 PM

How Understanding the Histologic Basis of Retinal Imaging Findings in AMD Can Improve Current and Future Patient Outcomes

K. BAILEY FREUND, MD

A histologic analysis of clinically well-documented eyes can validate recent imaging technology with anatomic ground truth and inform current and future treatment for AMD. As co-investigators for over a decade, Christine Curcio PhD and I have pursued this goal while collaborating with numerous colleagues and trainees in a series of clinicopathologic correlations of eyes with a wide spectrum of clinically relevant AMD features. This talk will highlight some of our recent work including histologic features of type 1 macular neovascularization (MNV) supporting its potential to maintain outer retinal structure long after failure of native choriocapillaris in eyes with AMD, the role of basal laminar deposit in driving various AMD phenotypes, and clinicopathologic correlations from eyes with type 3 MNV showing the lesions extending from the deep capillary plexus through defects in the retinal pigment epithelium.

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In summary, the capacity to combine currently available *in vivo* examination techniques with *ex vivo* histology offers the opportunity to broaden our understanding of AMD and other retinal diseases.

6:15 – 6:35 PM

Autologous Retinal Transplant

STEVE T. CHARLES, MD

Tamer Mahmoud developed the macular patch graft concept for large macular holes that failed with primary surgery. He utilized PFO-silicone oil exchange; but I introduced the concept of medium term PFO because silicone oil has a very low oxygen extraction ratio and PFO has three times the oxygen carrying capacity of hemoglobin enabling graft oxygenation from the anterior surface of the graft not just the choriocapillaris. Tamer Mahmoud initially believed that peripheral Mueller cells functioned as retina progenitor cells however this has not been validated above the teleost level. I have advocated donor sites very close to the macula so there would be some cone and photopic architecture. The success rate is 70-80% and excellent vision coupled with microperimetry data demonstrates that adaptive synaptogenesis take place. ProVisc should be used to make the donor site bleb. The graft should be significantly larger than the macular hole and cut with scissors. Minimal diathermy should be used for only larger vessels if needed and laser applied to donor site margins only after the graft is moved to the macula under PFO. The graft should not be lifted, it should be fully in contact with the retina as it is moved to the macular hole site. The PFO should be removed in 7-14 days. I have operated 75 cases.

6:50 – 7:30 PM

Panel 3: Advanced Retinal Care: What Does the Future Hold?

MODERATOR:
JOAN W. MILLER, MD

PANELISTS:
STEVE T. CHARLES, MD
K. BAILEY FREUND, MD
TIMOTHY G. MURRAY, MD, MBA
ALEKSANDRA V. RACHITSKAYA, MD

Retinal care has been revolutionized in the last two decades and advances in the retina field have often had important implications beyond our subspecialty. This includes advances in imaging technology, gene-based therapies, as well as in microsurgery and surgical imaging. Despite this great progress, there are many exciting opportunities on the horizon. What are the next important advances in retinal care? How will surgical techniques be advanced? Will robotics-assisted surgery enter widespread use? How will artificial intelligence be applied to imaging and other datasets to improve the management of patients with chronic diseases like AMD and diabetic retinopathy? Does retinal imaging have more to tell us about systemic and neurologic conditions of patients? While we have seen major advances in pharmacologic treatments of retinal disease, there is more opportunity. What will be the new additions to that armamentarium? How can we provide more long-term therapeutic activity? What is coming from gene-based and cell-based therapies? How will we deliver care to patients as medicine becomes more "patient-centric"? What is the future of home-based technologies? Many innovations that seem like "pie-in-the-sky" proposals, will likely become commonplace in our future. In this panel, we will discuss these questions and others to gain insight into the future of retinal care and the impact these new advances will have on our patients.

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