Rush University Medical Center
Department of Ophthalmology

21st Annual

Residents and Alumni Day

June 13, 2025

RUSH UNIVERSITY MEDICAL CENTER

Sponsored Continuing Medical and Nursing Education

Credit by: Rush University Medical Center

RUSH UNIVERSITY MEDICAL CENTER
DEPARTMENT OF OPHTHALMOLOGY
21ST ANNUAL RESIDENTS AND ALUMNI DAY

Course Director:

Jonathan Rubenstein, MD

Deutsch Family Professor and Chairperson

Friday, June 13, 2025

Rush University Medical Center

Department of Ophthalmology

Hybrid Symposium

https://rush.zoom.us/j/95151087723?pwd=C5UjlFW7TJopwKWtlbnYQ8kLcD8FnQ.1

Meeting ID: 951 5108 7723

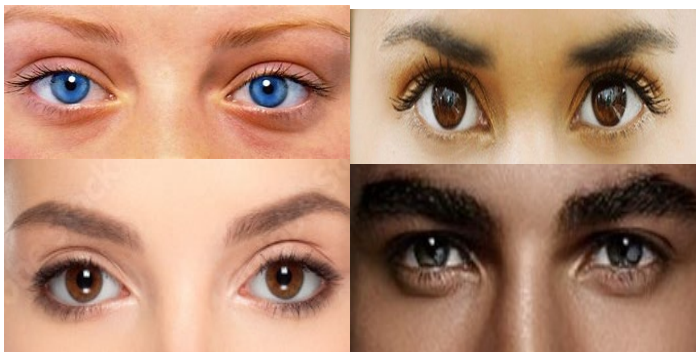
Passcode: 993898

Presented by:

The Department of Ophthalmology of Rush University

Sponsored for Continuing Medical and Nursing Education Credit by:

Rush University Medical Center



Room 500-Brainard Conference Room

WELCOME TO
RUSH UNIVERSITY MEDICAL CENTER

June 13, 2025

Dear Program Participant:

I am delighted to welcome you to the **21st Annual Rush Department of Ophthalmology Resident and Alumni Day** Academic Symposium. The purpose of this symposium series is to provide a forum to showcase the research activities and interests of the residents, faculty, and alumni of the Rush University Department of Ophthalmology. Although our department is private practice based and clinically oriented, research remains the backbone of any university program. The Ophthalmology Department here at Rush is committed to enhance its state-of-the-art clinical expertise with state-of-the-art clinical and basic science research. Research projects are required as part of our residency curriculum and this day highlights the research efforts of our residents, faculty, and alumni over the past year. We expect that this program will be both stimulating and useful in your day-to-day practices. Special thanks are extended to everyone presenting today, and particularly to our residents, fellows and students, all of whom have shown their commitment to continuing medical education and to our department. We also want to thank our Education Coordinator Sharee Walker-Knox, Administrative Manager, Mia Thomas-Parks, Residency Program Director, Anjali Tannan, MD and our Research Director Matthew MacCumber, MD and Lulu Halig our Research Coordinator, for their help in putting this program together.

Sincerely yours,

Jonathan B Rubenstein MD

Jonathan Rubenstein, MD

Deutsch Family Professor and Chairperson

THE DEPARTMENT OF OPHTHALMOLOGY OF RUSH UNIVERSITY

Rush Medical College, the first medical school in the city of Chicago, was founded in 1837, two days before the city of Chicago was incorporated. The medical school had a hiatus at the start of World War II but re-started in 1971.

Edward Lorenzo Holmes, M.D. became the first chairman of the department of Ophthalmology at Rush in 1869 after being invited to Rush from its founder, Daniel Brainard, MD. Subsequent chairs included: Ferdinand C. Hotz, MD 1898-1907; William H. Wilder, MD 1908-1922; EVL Brown, MD 1922-1946; Justin M. Donegan, MD 1947-1954; William F. Hughes, MD 1955-1978; William E. Deutsch, MD 1979-1996; Thomas A. Deutsch, MD 1996–2004; Kirk H. Packo, MD 2004-2020; Jonathan B Rubenstein, MD 2020-present.

The department of Ophthalmology now trains 3 residents per year. There are 35 active attending physician-teachers in the Eye Center with a total of 55 on the faculty. All nine sub-specialties in Ophthalmology are represented by our faculty and many have risen to prominent positions locally and nationally.

Graduates of our residency program have become both comprehensive Ophthalmologists and sub-specialists in private and academic practices throughout the country and have reached prominence in their communities and in organized Ophthalmology.

The teaching practice for the department of Ophthalmology, the Eye Center Physicians Ltd, is a multi-subspecialty and primary eye care resident run clinic supported by our Rush Ophthalmology faculty. It was established in 1977 in response to our institution’s need to deliver efficient, high-quality eye care for Rush and the local community and with a mission to improve subspecialty consultation to Chicagoland ophthalmologists.

THE DEPARTMENT OF OPHTHALMOLOGY OF RUSH UNIVERSITY

THE REGENSTEIN EYE CENTER

The Joseph and Helen Regenstein Eye Center houses the Department of Ophthalmology and was renovated last in 2005 with plans for new renovations very soon. The facility has state-of-the-art diagnostic and therapeutic instrumentation for both patient care and resident & student education.

THE MISSION STATEMENT OF THE REGENSTEIN EYE CENTER AT RUSH

The mission of the Eye Center at Rush is to provide an infrastructure for the training of ophthalmology residents, medical students, and fellows at Rush University Medical Center through the delivery of state of the art diagnostic and therapeutic patient care within all areas of ophthalmology with oversight by the finest ophthalmic practitioners in Chicago, utilizing the best equipment and techniques available, and by so doing further support the missions of the Rush Department of Ophthalmology and Rush University Medical Center.

REFERRALS

Referrals for any primary or subspecialty services can be made directly to the individual physicians or by calling the Regenstein Eye Center at **(312) 942-5315**.

ACKNOWLEDGEMENTS

This event is presented with **academic independence and impartiality.**

We extend our sincere appreciation to these sponsors and our exhibitors for their invaluable support. Their participation plays a vital role in the success of this educational initiative.
It has been made possible through the generous support of unrestricted educational grants provided by the following organizations:

AbbVie

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Regeneron

RxSight

Sight Sciences

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We encourage all attendees to visit the sponsor exhibits during scheduled breaks and lunch periods to explore the latest innovations, products, and services driving advancements in the field.

ACKNOWLEDGEMENTS

The Rush Department of Ophthalmology and its faculty extend their sincere thanks to our invited guest speakers for generously sharing their time and expertise in support of our educational mission.

VISITING FACULTY

Nicole Fram, MD
Managing Partner, Advanced Vision Care
Adjunct Assistant Professor, John A. Moran Eye Institute, University of Utah

Brian Larsen, MD, MBA
Retina Center of Chicago
Assistant Professor, Cook County Health System

Keye Wong, MD
Physician Partner
Retina Group of Florida

RUSH FACULTY

Elizabeth Berry-Kravis, MD
Professor, Department of Pediatrics
Rush University Medical Center

ACKNOWLEDGEMENTS

RUSH OPHTHALMOLOGY FACULTY

Vivek Chaturvedi, MD, FASRS
Associate Professor of Ophthalmology

Rachel Epstein, MD
Assistant Professor of Ophthalmology

Randy Epstein, MD
Professor of Ophthalmology

Nina Goyal, MD
Associate Professor of Ophthalmology

Anjali Hawkins, MD, PhD
Assistant Professor of Ophthalmology

Mathew W. MacCumber, MD, PhD
Professor of Ophthalmology
Research Director

Sam Minaker, MD, MS
Assistant Professor of Ophthalmology

Jonathan B. Rubenstein, MD
Chairman and Deutsch Family
Professor of Ophthalmology

Emily "Annie" Shepherd, MD
Assistant Professor of Ophthalmology

Neel Vaidya, MD
Assistant Professor of Ophthalmology

Vanee Virasch, MD
Assistant Professor of Ophthalmology

Anjali Tannan, MD
Assistant Professor of Ophthalmology
Residency Program Director

ACKNOWLEDGEMENTS

FELLOWS

Sarah Syeda, MD, PGY 6

Kevin Elwood, MD, PGY 5

RESIDENTS

Oscar Chen, MD, MS, PGY 4

Fred Crawford, MD, PGY 4

Stephanie Saadeh, MD, PGY 3

Terrence Murphy, MD, MPH PGY 3

Rishabh Gupta, MD, PGY 3

Erika Zheng, MD, PGY 2

Leah Doro, MD, PGY 2

Rohun Gupta, MD, PGY 2

Mohit Uppal, MD, PGY 2

Dylan Raikar, MD PGY 1

MEDICAL STUDENTS

Ali Akram, M2

Ankita Batra, M4

Mohan Bhadriraju, M4

Nikpreet Bopara, M4

Catherine Chang, M2

Andrea Cuamatzi-Castelan, M4

Suraj Desai, M4

Eduardo Herrera, MD - Recent Graduate

Adam Hidad, M3

Ashley Hong, M3

Fae Kayarian, MD - Recent Graduate

Emily Kettering, MPH

Iryna Kostirko, M3

Matthew Lim, M4

Madelyn Malvitz, M3

Marco Metry, M3

Opeyemi Obiwumi, MD - Recent Graduate

Qianyi Pu, MS, M3

Tejas Sekhar, M3

Saif R. Salih, MS, M2

Durdana Shah, M4

Jenny Shunyakova, M4

Gabriella Tran, M2

Caroline Wang, MSH, M2

Jessica Toledo, MS, M2

DEPARTMENT ADMINISTRATOR

Will Tsang, MHA, PMP

DEPARTMENT ADMIN MANAGER

Mia Thomas-Parks

EDUCATION COORDINATOR

Sharee Walker-Knox

RESEARCH COORDINATOR

Lulu Halig, OD, MS

MEDIA & AUDIO-VISUAL SYSTEMS

Kisung Woo, BFA

WAYNE WON WONG, MD LECTURESHIP

Wayne Won Wong, MD was born in Maui, Hawaii on March 31, 1914. He graduated from Baldwin High School in Maui prior to receiving his bachelor's degree at the University of Hawaii in Honolulu. He was accepted at The University of Chicago (Rush University) where he received his medical degree in 1940. His post-graduate training began at the Cook County Hospital in 1940. His internship and residency training were in ophthalmology and otolaryngology from 1940-1944. He was in Chicago at the time of the attack on Pearl Harbor on December 7, 1941. He attempted to enlist in the military but was turned down by the War Department because of a duodenal ulcer. Following completion of his residency he received additional training with Dr. Wayne Slaughter in plastic surgery and Dr. Frederick Mohs in skin cancer surgery at the University of Wisconsin at Madison.

He returned to his native Hawaii in 1948 where he began his practice in the metropolis of Honolulu. His practice was initially in both ophthalmology and otolaryngology, but he later concentrated only on ophthalmology. Although being isolated in Hawaii far from academic centers he took an active interest in bringing the latest thoughts and technology to Honolulu. He was the first in Hawaii to perform a cataract extraction with an intraocular lens implant though at the time, the concept of implanting a foreign material into the eye was "radical." He later became intrigued by the burgeoning field of vitreous surgery. He increased his education and exposure to these rapid developments by visiting leaders in the field at the Bascom-Palmer Eye Institute and the Mass Eye & Ear Infirmary. In April of 1977 he organized the first vitrectomy workshop in Hawaii with the faculty consisting of Conor O'Malley, Steve Charles, and Ron Michels.

Dr Wong had a wonderful family life. He was married to Mabel Lee on October 2, 1948, and together they had five children. Dr. Wong passed away on April 8, 1982. He is survived by his children: Marc Wong, MD, Rush Class of 1977, Deen Wong, MD and Jan Wong, MD, Rush Class of 1978, Keye Wong, MD, Rush Class of 1982, and Li-Ann Wong, and four grandchildren: Carrie Wong, David Wong, Brendon Wong and Lindsay Wong.

Wayne Won Wong, MD

Wong Family, Honolulu, HI, 1957

Key, Lucy and their children

16TH ANNUAL WAYNE WON WONG, MD LECTURER

Nicole Fram, MD

Nicole Fram is a board-certified, fellowship-trained and nationally recognized ophthalmologist in refractive and complex cataract surgery; laser and lens based refractive surgery, anterior segment reconstruction, corneal transplantation and external disease. She is the managing partner of Advanced Vision Care in Los Angeles, CA and an adjunct assistant professor at the John A. Moran Eye Institute at the University of Utah. Dr. Fram completed her residency at the prestigious Wills Eye Hospital and served as the co-chief resident, followed by a fellowship in Cornea and External disease at Francis I. Proctor Foundation, University of California, San Francisco (UCSF).

Academically, she has authored numerous peer reviewed articles and textbook chapters in the areas of cataract and corneal disease. Dr. Fram recently chaired the Cataract Subcommittee for the American Academy of Ophthalmology (AAO); she is an active member of the American Society of Cataract and Refractive Surgeons (ASCRS) cataract and nominations committees and is editor of the Cataract Consultation Section of the Journal of Cataract and Refractive Surgery (JCRS).

Dr. Fram is passionate about being an early adopter in implementing innovative medical and surgical techniques to advance the field of Ophthalmology. She participates in multiple clinical trials and investigator-initiated research in the areas of cataract and corneal disease. Dr. Fram lectures both nationally and internationally and enjoys teaching innovative surgical techniques to colleagues, residents and fellows.

THE SUNNY B PATEL, MD LECTURESHIP

Sunny B Patel

The Sunny B Patel, MD lectureship is named after one of our former residents, Sunny Patel, who tragically died in October of 2020. He was a second-year ophthalmology resident at the time.

Sonny originally grew up in Las Vegas NV as part of the devoutly Hindu immigrant family from India. He did his first year of undergraduate work at University of Nevada in Las Vegas and then transferred to the University of Cincinnati where he got his bachelor's degree. He then went on to medical school at the University of Cincinnati and ophthalmology residency here at Rush.

Sunny was extremely bright, extremely hard working and well loved by his fellow residents, staff and attendings. He had a great sense of humor and showed the promise to be an excellent ophthalmologist. Therefore, his death was a shock to everyone.

As a way of remembering Sunny, we renamed the Rush Alumni Lectureship in his honor as the **Sunny B Patel, MD Memorial Lecture.**

THE SUNNY B PATEL, MD LECTURE

Brian Larsen, MD, MBA

Dr. Larsen is a vitreoretinal surgeon who has been practicing in the Chicagoland area for over 13 years. Born in the Chicago suburbs, he completed his undergraduate degree at the University of Illinois. It was while attending the Chicago Medical School that he first was exposed to the field of Ophthalmology. After ranking Rush his number one choice for residency, he was thrilled to match at one of the best programs in the nation. With such a strong faculty he found it difficult to decide on a career path but ultimately was influenced by training alongside a world class retina department.

After completing a vitreoretinal surgery fellowship at the Medical College of Wisconsin, Dr. Larsen returned to Chicago where he became a partner at the Chicago Eye Consultants.

While building his private practice, Dr. Larsen is honored to have served as part of the Loyola Ophthalmology faculty where he was awarded teacher of the year. Additionally, Dr. Larsen has been a faculty member in the Cook County Health System for over 10 years, where he is grateful for the opportunity to teach and collaborate with residents and vitreoretinal surgery fellows. Having completed an MBA at the Kelley School of Business in 2024, Dr. Larsen founded the Retina Center of Chicago where he is passionate about providing personalized quality patient care.

RUSH DEPARTMENT OF OPHTHALMOLOGY
21ST ANNUAL RESIDENTS AND ALUMNI DAY AGENDA

June 13, 2025

MORNING SESSION

8:00 AM – Welcome & Introduction

Jonathan B. Rubenstein, MD

8:05 AM – Follow-Up Adherence and Barriers to Care for Pediatric Ophthalmology Patients at a Tertiary Care Center

Fred Crawford, MD; Suraj Desai; Ashley Hong; Anjali Hawkins, MD, PhD

8:20 AM – The Safety and Efficacy of Intraoperative Wavefront Aberrometry Without the Use of Ophthalmic Viscoelastic Devices

Oscar Chen, MD, MS; Rachel Epstein, MD; Randy J. Epstein, MD; Mohit Uppal, MD; Jonathan Rubenstein, MD; Anjali Tannan, MD

8:35 AM – Patient-Reported Outcome Measure Reveals Previously Unrecognized Color Vision Deficit in Birdshot

Gabriella Tran; Jenny Shunyakova; Alan Palestine, MD; Lynn Hassman, MD, PhD

8:50 AM – Greening the OR: Reducing Cataract Surgery Material & Medication Waste

Terrence Murphy, MD, MPH; Durdana Shah; Anjali Tannan, MD

9:05 AM – Prevalence Of Epiretinal Proliferation After Idiopathic Epiretinal Membrane Surgery in Pseudophakic Eyes

Rishabh Gupta, MD; Ashley Hong; Omar Dajani, MD; Vivek Chaturvedi, MD, FASRS

9:20 AM – Comparing Tonometry Devices in Corneal Edema After Cataract Surgery

Matthew Lim; Oscar Chen, MD, MS; Nikpreet Boparai; Marco Metry; Anjali Tannan, MD

9:35 AM – **Live Exhibitors Breakout Session**

9:50 AM – Surgical Management of Iris Defects

Nicole Fram, MD

RUSH DEPARTMENT OF OPHTHALMOLOGY
21ST ANNUAL RESIDENTS AND ALUMNI DAY AGENDA

June 13, 2025

10:05 AM – Relationship Between Dry Eye Disease and Gut Microbiota Composition
Stephanie Saadeh-Jackson, MD; Emily Kettering, MPH; Jonathan Rubenstein, MD

10:20 AM – Triple or Staged? Comparing Outcomes in Corneal Endothelial Keratoplasty
Erika Zheng, MD; Opeyemi Obiwumi, MD; Mohan Bhadriraju; Gabriella Tran; Vanee Virasch, MD; Anjali Tannan, MD; Jonathan Rubenstein, MD

10:35 AM – Closure Rates in Large Macular Holes Using Fibrin Sealant with/without Adjunct Patches
Adam Hidad; Robert J. Lowe, MD; Christabel Chan, MD; Rohan Chanda; Amy Zhou; Sam Mansour, MD

10:50 AM – Epiretinal Membrane After Proliferative Vitreoretinopathy Repair
Sarah Syeda, MD; Vivek Chaturvedi, MD, FASRS

11:05 AM – L-DOPA Inhibits Choroidal Angiogenesis in the Choroidal Sprouting Assay
Andrea Cuamatzi-Castelan; Jeremy A. Lavine, MD, PhD

11:20 AM – Introduction to the 16th Annual Wayne Won Wong, MD Memorial Lecture
Jonathan B. Rubenstein, MD

11:25 AM – **Wong Memorial Lecture: Management of Mal-positioned and Malfunctioning IOLs**
Nicole Fram, MD – Managing Partner, Advanced Vision Care; Adjunct Assistant Professor, John A. Moran Eye Institute, University of Utah

11:55 AM – **Lunch Break & Exhibits**

Featuring:

AbbVie · Alcon · Amgen · Apellis · Bausch & Lomb · Dompe · Glaukos · Johnson & Johnson · Regeneron · RxSight · Sight Sciences · Zeiss

RUSH DEPARTMENT OF OPHTHALMOLOGY
21ST ANNUAL RESIDENTS AND ALUMNI DAY AGENDA

June 13, 2025

AFTERNOON SESSION

12:55 PM – Introduction to the Sunny B. Patel, MD Memorial Lecture

Jonathan B. Rubenstein, MD

1:00 PM – **Sunny B. Patel, MD Memorial Lecture: Healing and Leading – Should Physicians Consider an MBA?**

Brian Larsen, MD, MBA – Retina Center of Chicago; Assistant Professor, Cook County Health System

1:30 PM – Genetic Susceptibility in Hydroxychloroquine Retinopathy

Mohan Bhadriraju; Damla Oncel, MD; Mathew MacCumber, MD, PhD

1:45 PM – How NON-exudative AMD Became an Exciting Frontier

Brian Larsen, MD, MBA

2:00 PM – **Live Exhibitors Breakout Session**

2:15 PM – Effects of Posterior Capsular Opacification and Timing of YAG Capsulotomy on LAL Outcomes

Rohun R. Gupta, MD; Neel Vaidya, MD

2:30 PM – Intraocular Pressure After Intravitreal Injection with and without Topical Brimonidine

Leah Doro, MD; Eduardo Herrera,MD; Anjali Hawkins, MD, PhD

2:45 PM – Hyperacute ERM After RD Repair: OCT Characteristics, Progression, and Outcomes

Kevin Elwood, MD; Rishabh Gupta, MD; Madelyn Malvitz; E. Annie Shepherd, MD; Vivek Chaturvedi, MD, FASRS

3:00 PM – ERM Formation After Laser Treatment for Retinal Tear

Fae Kayarian, MD; Iryna Kostirko; Sarah Syeda, MD; Vivek Chaturvedi, MD, FASRS

RUSH DEPARTMENT OF OPHTHALMOLOGY
21ST ANNUAL RESIDENST AND ALUMNI DAY AGENDA

June 13, 2025

3:15 PM – Impact of Calcium Channel Blocker Use on Glaucoma Severity

Ankita Batra; Dylan Raikar, MD; Ali Akram; Nina Goyal, MD; Anjali Hawkins, MD, PhD

3:30 PM – What Causes “Catastrophic” Submacular Hemorrhages in AMD?

Keye Wong, MD

3:45 PM – Emerging Therapies for Retinal Degeneration in Neuronal Ceroid Lipofuscinoses

Iryna Kostirko; Rishabh Gupta, MD; Leah Doro, MD; Mathew MacCumber, MD, PhD

4:00 PM – Flicker ERG Reveals Postreceptoral Visual Processing Deficits in Fragile X Syndrome

Tejas C. Sekhar; Qianyi Pu, MS; Mary T. Stanley, MD; Elizabeth Berry-Kravis, MD, PhD

4:15 PM – **Final Comments**

Jonathan B. Rubenstein, MD

4:20 PM – **Adjourn**

POSTER PRESENTATIONS

June 13, 2025

Invisible in Sight: A Systematic Review of Asian American Representation in US-Based Glaucoma Research

Ali A. Akram; Jessica D. Toledo, MS; Tejas C. Sekhar

Investigating Atopic Dermatitis as a Contributor to Proliferative Vitreoretinopathy

Catherine Chang; Mathew MacCumber, MD, PhD

Beyond the Model Minority: Unveiling the Research Gaps in Diabetic Retinopathy Among Asian Americans

Saif R. Salih, MS; Jessica D. Toledo, MS; Tejas C. Sekhar

Understanding Eye Drop Nonadherence for Patients with Glaucoma and Chronic Dry Eye Disease: A Mixed-Methods Study

Jessica Toledo, MS; Tejas C. Sekhar

Examining Visual Acuity and Adverse Events Trends Across 10 Injections of Pegcetacoplan and Avacincaptad Pegol in Eyes with AMD

Caroline Wang, MHS; Samuel Minaker, MD, MS; Mathew MacCumber, MD, PhD

CONTINUING MEDICAL EDUCATION

OVERVIEW

The **21st Annual Rush Department of Ophthalmology Resident and Alumni** Day has been designed to provide an open forum for faculty, residents and alumni to present results of individual research and clinical observations as well as an opportunity to share information on new therapies or techniques in a specialty area.

AUDIENCE

Rush ophthalmology residents, faculty, staff, alumni, and Chicagoland eye care professionals.

OBJECTIVES

Based upon your participation in this educational activity you intend to incorporate the following objectives into your practice of medicine:

1. Understand the barriers to care for pediatric ophthalmology patients.
2. Recognize color vision deficits in Birdshot Retinopathy.
3. Understanding the concept of greening the operating room to reduce medical waste.
4. Understand the effects of various types of intraocular pressure measurements in patients with corneal edema after cataract surgery.
5. Recognize the relative success and safety of staged versus sequential endothelial keratoplasty and cataract surgery.
6. Learn the Incidence of Epiretinal formation after vitreoretinopathy surgery.
7. Learn the effects of posterior capsule opacification and the timing of YAG laser treatment after light adjustable lens surgery.
8. Understand the management of intraocular pressure intravitreal injections with and without topical therapy.
9. Learning the effects on visual acuity and adverse events with newer generation VEGF inhibitors on AMD.
10. Understand genetic susceptibility in hydroxychloroquine retinopathy.

CONTINUING MEDICAL EDUCATION

ACCREDITATION AND DESIGNATION

In Support of Patient Care, Rush University Medical Center is accredited by the American Nurses Credentialing Center (ANCC), the Accreditation Council for Pharmacy Education (ACPE), and the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing education for the healthcare team. Rush University Medical Center designates this live for a maximum of 6 AMA PRA Category 1 Credit(s)™. Physicians should claim only credit commensurate with the extent of their participation in the activity.

ANCC CREDIT DESIGNATION – NURSES

The maximum number of hours awarded for this CE activity is 6 contact hours. Rush University is an approved provider for physical therapy (216.000272), occupational therapy, respiratory therapy, social work (159.001203), nutrition, speech-audiology, and psychology by the Illinois Department of Professional Regulation. Rush University designates this live activity for (6) Continuing Education credit(s).

This activity is being presented without bias and with commercial support.

UNAPPROVED USES OF DRUGS/DEVICES

In accordance with requirements of the FDA, the audience is advised that information presented in this continuing medical education activity may contain references to unlabeled or unapproved uses of drugs or devices. Please refer to the FDA approved package insert for each drug/device for full prescribing/utilization information.

DISCLOSURE INFORMATION

FACULTY

Vivek Chaturvedi, MD, FASRS*

Rachel Epstein, MD*

Randy Epstein, MD

- *Alcon*

Nicole Fram, MD

- *Zeiss, Abbie, Alcon, Alderya, Aurion, BVI, Glaukos, JNJ, RxSight, Tarsus, Dompe, Orasis, OSRX, Tarsus, MST, LayerBio, OSRX*

Anjali Hawkins, MD, PhD*

Brian Larsen, MD MBA

- *Alimera, Regeneron, Apellis*

Mathew MacCumber, MD, PhD

- *Regeneron, Genentech, Novartis, Apellis, Iveric Bio/Astellas, Cardinal Health, Ocular Therapeutix, EyePoint Therapeutics, Covalent Medical*

Sam Minaker, MD*

Jonathan B. Rubenstein, MD

- *Alcon*

Anjali Tannan, MD*

Vanee Virasch, MD*

Keye Wong, MD*

***No Conflicts of Interest to Disclose**

DISCLOSURE INFORMATION

FELLOWS

Sarah Syeda, MD*

Kevin Elwood, MD*

RESIDENTS

Oscar Chen, MD, MS*

Fred Crawford, MD*

Stephanie Saadeh, MD*

Terrence Murphy, MD, MPH*

Rishabh Gupta, MD*

Erika Zheng, MD*

Leah Doro, MD*

Rohun Gupta, MD*

Mohit Uppal, MD*

Dylan Raikar, MD*

MEDICAL STUDENTS

Ali Akram*

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Madelyn Malvitz*

Marco Metry*

Opeyemi Obiwumi, MD*

Qianyi Pu, MS*

Tejas Sekhar*

Saif R. Salih, MS*

Durdana Shah*

Jenny Shunyakova*

Gabriella Tran*

Caroline Wang, MSH*

Jessica Toledo

***No Conflicts of Interest to Disclose**

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Follow-Up Adherence and Barriers to Care for Pediatric Ophthalmology Patients at a Tertiary Care Center

AUTHORS: Fred Crawford, MD; Suraj Desai; Ashley Hong; Anjali Hawkins, MD, PhD

PURPOSE: Many pediatric ophthalmology conditions can lead to irreversible vision loss if not recognized and treated early and appropriately. There is also a notable shortage of pediatric ophthalmologists in the United States, making it increasingly difficult for parents and patients to receive timely and appropriate ocular care. Therefore, our study evaluates the current referral system for new pediatric patients sent to a tertiary care ophthalmology center, the types of ocular pathology, the severity of conditions requiring treatment, and adherence to follow-up. This research will allow us to provide solutions to this challenging issue.

METHODS: A retrospective chart review was conducted in eligible patients. A query was made of the Rush University Eye Center Physicians (RU ECP) database to identify patients aged 1 day to 18 years old from January 1st 2018 to December 31st 2023, using “New” patient billing codes. The chart review focused on general demographics (age, race, gender), referral source and chief complaint, diagnoses, stratification of patients based on whether treatment intervention was required, types of treatment interventions, adherence to the treatment regimen, and adherence to scheduled follow-up appointments.

RESULTS: A total of 1328 patients were identified between January 1st 2018 and December 31st 2023, with an average age at presentation of 5.7 years. Of these, 549 patients were seen in the pre-COVID period (January 1st 2018 to March 31st 2020), and 779 patients were seen during COVID (April 1st 2020 to December 31st 2023). The most common follow up diagnosis classifications among all were general non-vision threatening conditions (20%), strabismus (29%), refractive (11%), amblyopia (9%). The overall non-adherence rate was ~59% over the 6

(continued)

year study. Most patients (69%) who did not adhere to follow up recommendations did not need treatment. However, the other 31% of patients who did not adhere to follow up had treatment and/or testing recommendations that included glasses (22%), patching (3%), imaging/ophthalmology testing (3%), prescription medications (1%) and surgery (1%).

After stratifying by pre-COVID and during the COVID pandemic, the primary diagnosis classification were similar between groups. However, follow-up adherence rates differed as pre-COVID follow-up adherence was 35%, whereas during the COVID period it increased to 44%. Among patients who were adherent to initial follow-up, the average number of total visits was 4.35 (SD = 3.5). However, 301 of these patients (~55%) were not adherent to their most recent office visit, while 240 patients (~44%) remained adherent. 116 patients (14%) who were initially non-adherent to their recommended follow-up returned for care after the suggested follow-up interval,

indicating that 671 patients (~86%) never returned to ECP. 541 patients (~40%) adhered to the initial follow-up appointments over the entire five-year period.

Among patients who were adherent to their initial follow-up, 27 patients required surgical interventions to treat their ocular disease. Only 11 patients remained adherent to their most recent outpatient appointment.

CONCLUSIONS: Non-adherence to pediatric ophthalmologic conditions can have significant—and sometimes, permanent—consequences for a child's vision. Interestingly, follow-up adherence rates did not change significantly during the COVID pandemic, suggesting that other barriers play a role. It is important to investigate other factors contributing to non-adherence and develop strategies to improve follow-up rates and prevent the progression of pediatric ocular morbidity.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: The Safety and Efficacy of Intraoperative Wavefront Aberrometry without the Use of Ophthalmic Viscoelastic Devices

AUTHORS: Oscar Chen, MD, MS; Rachel Epstein, MD; Randy Epstein, MD; Mohit Uppal, MD; Anjali Tannan, MD; Jonathan Rubenstein, MD

PURPOSE: To evaluate the safety and efficacy of balanced salt solution (BSS) versus ophthalmic viscoelastic devices (OVD) for intraoperative aberrometry (IA) during phacoemulsification.

METHODS: A retrospective study compared refractive outcomes obtained using BSS versus OVD for re- pressurization prior to performing IA measurements in eyes undergoing phacoemulsification cataract surgery. Primary endpoints included mean absolute error (MAE) for eyes with spherical intraocular lenses (IOLs) and mean post-operative residual refractive astigmatism (RRA) for eyes with toric IOLs. BSS was designated as non-inferior to OVD if both the final MAE for spherical IOLs and the RRA for toric IOLs were ≤ 0.5D. All IA measurements were performed with the Alcon Optiwave Refractive Analysis ORA® system, and VerifEye+ software.

RESULTS: The study included 312 eyes. All surgeries were uncomplicated. For spherical IOLs, the BSS group (n=104) exhibited a MAE of 0.38 ± 0.34 D, compared to MAE of 0.43 ± 0.41 D in the OVD group (n=95). For toric IOLs, the BSS group (n=58) showed an RRA of 0.39 ± 0.36 D, while the OVD group (n=55) had an RRA of 0.25 ± 0.34 D. Statistical analysis with Equivalence Testing model revealed no significant difference between the BSS and OVD groups for either IOL type ($p < 0.0001$).

CONCLUSIONS: BSS was found to be non-inferior to OVD when using IA to determine IOL power both in terms of MAE and RRA. Utilizing BSS in place of OVD for IA could potentially reduce complications which can be associated with the use of OVD.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Patient-Reported Outcome Measure Reveals Previously Unrecognized Color Vision Deficit in Birdshot

AUTHORS: Gabriella Tran; Jenny Shunyakova; Alan Palestine, MD; Lynn Hassman, MD, PhD,

PURPOSE: Birdshot chorioretinopathy (BSCR) is a chronic posterior uveitis that can significantly impact visual function and quality of life. We aimed to characterize 1) BSCR-specific visual defects using the Michigan Retinal Degeneration Questionnaire (MRDQ), a patient-reported outcome measure of visual function across seven physiologically relevant visual function domains, and 2) psychosocial aspects of quality-of-life using the Michigan Vision-related Anxiety Questionnaire (MVAQ).

METHODS: The MRDQ and MVAQ were administered to patients with BSCR (n=21) and a retrospective chart review was performed to correlate these results with clinical features. A graded response model was used to convert patient responses to survey questions into scores within domains (7 for MRDQ and 2 for MVAQ) that represent discrete visual function. These scores were compared between patients with and without retinal vasculitis, and patients with disease duration longer and shorter than 5 years duration.

RESULTS: Patients in our cohort demonstrated abnormal photosensitivity and color vision, with scores of 0.73 ± 1.3 and 0.66 ± 0.11 respectively. In contrast, mesopic peripheral function and scotopic function were less impaired (0.059 ± 0.09 and 0.082 ± 0.10 respectively). Photosensitivity was more abnormal in patients with retinal vasculitis (0.89 vs 0.71, p=0.50) and in more recently diagnosed patients (0.95 vs 0.35, p=0.017). MVAQ showed greater anxiety due to cone dysfunction (0.86) compared to rod dysfunction (0.86 vs 0.38, $p= 1.65 \times 10^{-5}$,), further supporting that cone-related visual function is more impacted than rod-related visual function.

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CONCLUSIONS: Analysis of the MRDQ/MVAQ parameters revealed previously unrecognized patterns in visual function among birdshot chorioretinopathy (BSCR) patients, specifically an impact on color vision, photosensitivity, and cone-related functions. Historic analysis of retinitis pigmentosa using MRDQ and MVAQ revealed preferential defects in mesopic peripheral function and contrast sensitivity. Thus, while both diseases affect photoreceptors, the MRDQ/MVAQ results suggest there are pathophysiologic differences between the two.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Greening the OR: Reducing Cataract Surgery Material Waste

AUTHORS: Terrence Murphy, MD, MPH; Durdana Shah; Anjali Tannan, MD

PURPOSE: Medical waste accounts for 10% of the United States' carbon footprint per year, with 70% stemming from the operating room. Each cataract surgery generates an estimated 181.9 kg of CO2. As the most common surgical procedure in the US and the world, there is ample opportunity for even minimal reductions in cataract surgery waste to reduce our carbon footprint. Our overall goal is to reduce waste and the carbon footprint of ophthalmic procedures in the operating room. This study aims to identify and quantify unused items in standardized cataract packs and offer practical solutions to waste reduction through customization.

METHODS: A prospective study was conducted, documenting unused items from 100 standalone phacoemulsification and intraocular lens implantation surgeries, excluding MIGS, complicated, and/or combined cases. A designated nurse and/or surgical scrub technician took photos of unused items after each case, and items were tallied. A utilization analysis and cost analysis were then conducted, and results were used to alter the standard Rush cataract pack by MEDLINE.

RESULTS: The Department of Ophthalmology conducts an average of 526 CEIOL cases per year. Of the 50 item types and 98 unique items included in the standard main operating room cataract kit, 32 item types had a utilization rate of 100%, 6 with a utilization rate between 90-99%, and 12 with <90%. Using this information, Rush's standard cataract pack was altered, removing 6 item types and 12 unique items. This has resulted in a reduction of 15 grams of waste and $1.32 of unnecessary cost for each case, and a total reduction of approximately 7.8 kg and $691.68 per year.

CONCLUSIONS: Our findings suggest that at least a modest benefit can be realized when optimizing standardized cataract surgical packs in the main operating room. Next steps include identifying reusable substitutes for single-use items commonly included in cataract packs.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Prevalence of Epiretinal Proliferation After Idiopathic Epiretinal Membrane Surgery in Pseudophakic Eyes

AUTHORS: Rishabh Gupta, MD; Ashley Hong; Omar Dajani, MD; Vivek Chaturvedi, MD, FASRS

PURPOSE: To analyze the prevalence of Epiretinal Proliferation (ERP), anatomic outcomes, and functional outcomes after uncomplicated idiopathic epiretinal membrane peel surgery in pseudophakic eyes.

METHODS: A retrospective chart review was conducted on patients within a Midwest multicenter retina practice between the dates of 1/1/2015 through 2/1/2025. Preset inclusion and exclusion criteria were utilized to include eyes with no significant past ocular history that underwent uncomplicated epiretinal membrane peel with pars plana vitrectomy only. OCT images were evaluated by two blinded expert graders. Statistical analysis was carried out using Microsoft Excel. This study was approved by the Rush University Medical Center Institutional Review Board.

RESULTS: 66 eyes were included from 66 patients. Average time for surgery to final follow up was 59 months (range, 13-124). Average final visual acuity was 0.36 (~20/80). Epiretinal proliferation (ERP) was present in 22 eyes by final OCT. Although eyes with ERP at final follow up displayed worse visual acuity, this was not statistically significant (p=0.26). Preoperative anatomic characteristics such as ERM stage, cystoid macular edema (CME), recurrent ERM, and cotton ball sign were analyzed, but did not correlate with final visual acuity or postoperative anatomic factors. Preoperative visual acuity showed a linear association with final visual acuity, and this was approaching statistical significance (p=0.06). Although final OCT ellipsoid disruption was correlated to decreased visual acuity, this did not reach statistical significance (p=0.09).

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CONCLUSIONS: Although studies on long term outcomes after ERM peel surgery have been published, there is limited data on long term incidence of epiretinal proliferation after membrane peel surgery and anatomic analysis of these OCTs. Additionally, limiting data collection to pseudophakic eyes allows us to remove the confounding variable of lens status to better illustrate functional outcomes. We herein show the prevalence of ERP in post peel eyes, long-term evolution of OCT biomarkers, and long-term functional data after epiretinal membrane peel surgery.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Comparing Goldmann, iCare, Tono-Pen, and Ocular Response Analyzer Measurements in Patients with Corneal Edema After Cataract Surgery

AUTHORS: Matthew Lim; Oscar Chen, MD, MS; Nikpreet Boparai; Marco Metry; Anjali Tannan, MD

PURPOSE: Goldmann applanation tonometry (GAT) remains the gold standard for intraocular pressure (IOP) measurement. However, changes in corneal properties—such as edema—can affect its accuracy. This study compares IOP measurements using GAT, iCare Rebound Tonometry (RT), Tono-Pen AVIA (TP), and the Ocular Response Analyzer (ORA) in patients with corneal edema following cataract surgery.

METHODS: This prospective, comparative study included patients from Rush University Eye Center Physicians and University Ophthalmology Associates who underwent cataract surgery. IOP measurements using GAT, RT, TP, and ORA were obtained from 101 eyes (101 patients) on postoperative day 1. ORA provided both corneal-compensated IOP (IOPcc) and Goldmann-correlated IOP (IOPg). Corneal edema was assessed via slit lamp examination and quantified by comparing preoperative and postoperative central corneal thickness (CCT). Exclusion criteria included age under 18, history of glaucoma or ocular hypertension, use of antiglaucoma medications, prior refractive surgery, or inability to complete testing. Exploratory plots, linear regressions, and paired t-tests were used to evaluate differences between the devices and GAT.

RESULTS: The average subject age was 73, with 75 females and 26 males. Postoperative CCT (598.5 ± 65.8 μm) was significantly higher than preoperative CCT (545.9 ± 35.1 μm; $p = 5.1 \times 10^{-6}$). No significant difference was found between GAT (16.3 ± 5.7 mm Hg) and RT (17.2 ± 6.9 mm Hg; $p = 0.085$). However, TP (18.5 ± 6.1 mm Hg), IOPcc (22.5 ± 8.2 mm Hg), and IOPg (20.5 ± 7.6 mm Hg) readings were significantly higher than GAT ($p < 0.001$ for each).

CONCLUSIONS: Among the tested devices, RT provided the closest approximation to GAT in patients with corneal edema after cataract surgery. Both TP and ORA tended to overestimate IOP. These findings may help guide clinicians in selecting the most accurate tonometer in the presence of postsurgical corneal changes.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Relationship between Dry Eye Disease and Gut Microbiota Composition

AUTHORS: Stephanie Saadeh-Jackson, MD; Emily Kettering, MPH; Jonathan Rubenstein, MD

PURPOSE: Recent studies have noted an emerging link between the gut microbiome and ocular surface diseases (OSD), particularly dry eye disease. Some studies suggest that an imbalance in the gut microbiota can trigger systemic inflammation that worsens OSD. Several papers exist outlining mouse model interventions, including probiotic supplements, to improve the microbiome that, in turn, improves the severity of dry eye disease. However, few papers exist that identify the specific commensal bacteria that prevail in human subjects with dry eye disease. Thus, the purpose of this project is to identify what commensal bacteria, when present, are linked with dry eye disease.

METHODS: First, patients with dry eye disease will be identified by confirming disease through documented slit lamp exam, tear breakup time and Schrimer's test. Second, such patients, in collaboration with our Gastroenterology department, will provide stool samples for analysis of bacterial genomic 16s rRNA from said samples. Main outcome for statistical analysis will be microbiome compositional differences among patients with dry eye disease and controls. The patient inclusion criteria will be any patient diagnosed with dry eye disease, meibomian gland dysfunction, and aqueous tear insufficiency (keratoconjunctivits sicca or Sjogrens' disease). The patient exclusion criteria will include any patients with thyroid eye disease, exposure keratopathy, lagophthalmos, other lid abnormalities (entropion, ectropion, floppy eyelid syndrome), any history of contact lens wear, neurologic conditions (such as stroke, Bell's palsy, Parkinson's, trigeminal nerve dysfunction), infectious keratitis, neurotrophic keratitis, nutrtitional deficiencies secondary to malnutrition, history of refractive surgery, history of recent antibiotic use within the 1 week, and history of gastrointestinal surgical intervention.

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RESULTS: Pending IRB approval and patient recruitment.

CONCLUSIONS: This project will contribute to the small but growing literature of assessing microbiota directly in human subjects with ocular surface disease. It is hoped that, by identifying any imbalances within microbiota, this can prompt proper probiotic supplementation in collaboration with our gastrointestinal physician colleagues for targeted symptom relief. This presents a new treatment approach for ocular surface disease via gut microbiota management that can lay the groundwork not only for management of dry eye but also for guiding future studies for prevention of other inflammatory eye conditions, such as uveitis, that have already been linked with inflammatory bowel disease.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Triple or Staged? Comparing Outcomes in Patients Undergoing Corneal Endothelial Keratoplasty

AUTHORS: Erika Zheng, MD; Opeyemi Obiwumi, MD; Mohan Bhadriraju; Grabriella Tran; Vanee Virasch, MD; Anjali Tannan, MD; Jonathan Rubenstein, MD

PURPOSE: Patients with corneal endothelial diseases who have concurrent, visually significant cataracts are at an increased risk of corneal decompensation due to thermal and mechanical stress experienced during phacoemulsification. Surgeons may choose to perform a combined “triple procedure” (phacoemulsification, intraocular lens implantation, and a DMEK or DSEK) for faster recovery and reduced surgical burden. Or, surgeons may opt for staged procedures, allowing healing between surgeries. While triple procedures are thought to offer more rapid visual rehabilitation, staged approaches are associated with fewer complications, such as the need for re-bubbling or endothelial cell loss. The literature presents conflicting evidence regarding the optimal surgical approach, leaving the choice largely to surgeon experience and preference.

Corneal surgeons at University Ophthalmology Associates (UOA) and Chicago Cornea Consultants (CCC) use both approaches. This study hopes to 1) identify the outcomes of both approaches and 2) compare these outcomes.

METHODS: Currently, only UOA data is partially analyzed. A query of the UOA patient database identified eligble patients who underwent endothelial keratoplasty (either a DMEK or DSEK, CPT codes 65756 and/or 65757) between 1/1/2017- 12/31/2023. A similar query will be utilized to analyze patients from CCC over the same period.

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This chart review includes patients who underwent phacoemulsification with intraocular lens implantation and endothelial keratoplasty. Pre-operative data will include ocular co-morbidities. Post-operative data collected will include: uncorrected visual acuity (day 1, week 1, and month 1); best

corrected visual acuity at (3 and 12 months); refraction at (1, 3, and 12 months); endothelial cell counts; graft clarity; transplant failure rates; re-operation rates; pachymetry; and re-bubbling rates. Cases were excluded if the endothelial keratoplasty was not performed by one of the aforementioned UOA or CCC surgeons.

Procedures will be categorized per the following: “triple procedures” are those in which the phacoemulsification with intraocular lens implantation procedure is combined with the endothelial keratoplasty procedure. “Staged procedures” are those in which these procedures are performed sequentially. “Other procedures” are those that do not fall into either of the aforementioned categories, such as those in which an intraocular lens exchange takes place during endothelial keratoplasty in a pseudophakic eye. “Transplant failure” was defined as requiring a repeat transplant. A two proportion z-test will be used to compare the transplant failure rates between triple and staged procedures.

RESULTS: The query of the UOA database returned 310 unique patients, yielding 620 eyes, of which 47% (293/620) met the inclusion criteria. Of these, 63% (184 cases) were staged procedures, 25% (74 cases) were triple procedures, and 12% (35 cases) were other procedures. Transplant failure occurred in 43 of the 184 staged procedures and 13 of the 74 triple procedures. A two-proportion z-test yielded a p value of 0.39, no statistically significant difference in transplant failure rates between these two groups.

CONCLUSIONS: Preliminary data suggests no significant difference in transplant failure rates between triple and staged procedures. Additional data collection and subgroup analysis are ongoing, including additional cases from and analysis of subgroups with relevant comorbidities.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Closure Rates in Primary and Recurrent Large Macular Holes Following Fibrin Sealant Application with or without Adjunct Patches

AUTHORS: Adam Hidad; Robert J. Lowe, MD; Christabel Chan, MD; Rohan Chanda; Amy Zhou; Sam Mansour, MD

OBJECTIVE: To assess anatomical and functional outcomes in primary and secondary surgeries for large (> 800 μm diameter) full-thickness macular holes (FTMH) using a fibrin sealant (Tisseel™) with adjunctive amniotic membrane (AM) or internal limiting membrane patch (ILMP).

PURPOSE: While current techniques achieve excellent closure for small–medium FTMHs (< 800 μm), large or chronic holes (> 800 μm) remain refractory, with primary and recurrent closure rates as low as 50%. We evaluated a more extensive strategy tailored to these challenging cases, incorporating a fibrin sealant (Tisseel™) to stabilize tissue flaps or grafts and reduce dislodgement, thereby promoting cellular migration. Adjunctive AM or ILMP provides additional structural support and a pro-regenerative environment, potentially enhancing anatomical closure and postoperative visual recovery.

METHODS: We conducted a retrospective review of 41 eyes from 38 patients treated by a single vitreoretinal surgeon between 2013 and 2023 at The George Washington University and Virginia Retina Center. Inclusion criteria were primary large FTMHs or large holes that failed standard surgery (pars plana vitrectomy, posterior hyaloid removal, ILM peeling, gas tamponade). Secondary procedures applied Tisseel™ over the hole, followed by silicone oil or gas tamponade; AM or ILMP was used in select cases. We recorded demographics (age, sex), anatomical outcomes (OCT-confirmed closure rates at 3, 6, and 12 months; 6-month basal diameter [BD] changes for unclosed holes), and functional outcomes (best-corrected visual acuity [BCVA] in logMAR at pre-op and 3, 6, 12 months).

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Patients were grouped as: primary fibrin sealant (PTr, n=18), secondary fibrin sealant alone (STr, n=12), secondary fibrin sealant + AM (TAM, n=6), and secondary fibrin sealant + ILMP (TILMP, n=5).

RESULTS: Of 38 patients (27 female, 11 males; mean ± SD age 65.9 ± 9.6 years), closure rates improved in all groups at 3, 6, and 12 months (Figure). BCVA gains were observed at 6 and 12 months. Pre-operative mean ± SD BD were: PTr 1315.1 ± 595.3 μm; STr 1305.4 ± 614.7 μm; TAM 1570.5 ± 445.6 μm; TILMP 1487.2 ± 580.4 μm. For holes that remained open at 6 months, mean ± SD BD were: PTr 1310.2 ± 601.9 μm; STr 1502.6 ± 855.3 μm; TAM 754.7 ± 469.5 μm; TILMP 1478.1 ± 552.4 μm. (Table)

CONCLUSIONS: Fibrin sealant combined with AM or ILMP appears to be a promising adjunct for improving anatomical closure and visual outcomes in large, chronic FTMHs that are refractory to standard surgery. Although closure rates and BCVA modestly improved over 12 months, variability across modalities and inconsistent follow-up underscore the need for larger, prospective studies with standardized long-term monitoring to validate these preliminary findings and refine surgical techniques.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Epiretinal Membrane After Proliferative Vitreoretinopathy Repair

AUTHORS: Sarah Syeda, MD; Vivek Chaturvedi MD, FASRS

PURPOSE: Epiretinal membrane (ERM) formation after complex rhegmatogenous retinal detachment (RD) repair in the setting of proliferative vitreoretinopathy (PVR) can affect visual outcomes after repair. The purpose of this study is to identify features of ERM formation including timing and morphology in PVR and help identify characteristics of PVR surgical repair and risk factors that may contribute to ERM formation.

METHODS: A retrospective study was performed for those who had undergone complex retinal detachment repair and ERM peels between 2015 and 2023. Exclusion criteria included those with uveitic and diabetic tractional retinal detachments.

RESULTS: 686 patients with complex RD repair were identified, of these 44 had either concurrent or subsequent macular ERM peels. 12 were excluded based on the exclusion criteria. 32 eyes of 32 patients were included. Mean LogMAR best corrected visual acuity (BCVA) at time of initial RD presentation was 1.12. Average age of patient at time of ERM peel was 64.3 years old, 18 were male and 75% were Caucasian. The average number of days between RD diagnosis and initial RD surgery was 29 days (median 5 days). Mean BCVA at the time of initial PVR surgery was LogMAR 1.62. 11 (34%) patients had PVR at initial RD diagnosis. Of those patients who did not have PVR at initial diagnosis, the average time between initial RD repair and PVR surgery was 12 months (range 1-42 months). 62.5% (20 patients) had Silicone Oil (SO) as PVR tamponade which remained in the eye for an average of 6.8 months.

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The average time between first PVR surgery and ERM peel was 6.4 months. BCVA at time of ERM peel was LogMAR 1.36, and by final follow up, this improved to 1.08. Total mean follow-up time after ERM peel was 27 months. 56.3% of patients had stage 4 ERM, 28% had stage 3 ERM. The proportion of SO tamponade was equal between those who had stage 4, 3, and 2 ERMs (66.6%), however those with stage 4 ERM had a longer duration of SO retention; 7.8 months compared to 5 months in stage 3 ERMs. The proportion of patients who had PVR at initial RD diagnosis did not differ among the severity of ERM stages. BCVA prior to ERM peel correlated with both ERM stage and OCT CST ($p < 0.001$). Patients with stage 4 ERM had pre-membrane peel VA of LogMAR 1.706, which improved to 1.296, this change was statistically significant $p = 0.02$. While those patients with less severe ERMs did have improvement in vision after membrane peel, the change was not as significant. Patients with better ERM stages had both better visual acuity prior to membrane peel as well as at final follow up visit.

CONCLUSIONS: ERM formation after PVR necessitates additional surgery to achieve improved vision in those with complex RD repairs. This study reveals additional risk factors which portends a worse visual outcome and promotes worse stage of ERM formation.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: L-DOPA Inhibits Choroidal Angiogenesis in the Choroidal Sprouting Assay

AUTHORS: Andrea Cuamatzi-Castelan; Jeremy A Lavine, MD, PhD

PURPOSE: Patients with lower levels of retinal pigmentation (e.g., Caucasian race) have an increased susceptibility for age-related macular degeneration (AMD). Levodopa (L-DOPA) is a byproduct of melanin synthesis. L-DOPA can agonize GPR143 on retinal pigment epithelium (RPE) to reduce vascular endothelial growth factor (VEGF) and increase pigment epithelium-derived factor (PEDF) production. Furthermore, L-DOPA can be converted to dopamine, which binds the dopamine D2 receptor on endothelial cells to reduce VEGF receptor 2 signaling. Based upon these data, we hypothesized that endogenous and exogenous L-DOPA can reduce choroidal angiogenesis in the choroidal sprouting assay.

METHODS: Choroidal sprouting assays (CSA) were performed on wildtype (WT) and *Tyrosinase*-null (albino) male and female mice at 8 to 12 weeks of age. WT and albino eyes were dissected and the CSA performed on the same day. Explants were imaged and quantified from Day 5 to Day 7 using brightfield microscopy. Exogenous L-DOPA was tested at 0, 0.015 μM, 0.15 μM, 1.5 μM, 15 μM, and 150 μM in albino mice. Experiments were repeated a minimum of 3 times.

RESULTS: We found that WT and albino eyes demonstrated identical choroidal angiogenesis in the CSA. Next, we found that in albino eyes, L-DOPA had no significant effect on choroidal angiogenesis on Day 5. However, L-DOPA at 150 μM inhibited angiogenesis by 54.3% ($p<0.05$) on Day 6. On Day 7, L-DOPA reduced choroidal angiogenesis by 52.4% ($p<0.001$) at 1.5 μM, 28.8% ($p<0.05$) at 15 μM, and 66.4% ($p<0.001$) at 150 μM.

CONCLUSIONS: Our aim is to understand the role of endogenous and exogenous L-DOPA in AMD. Contrary to our hypothesis, we found that WT and albino mice have identical choroidal angiogenesis in the CSA, suggesting no significant effects of endogenous L-DOPA on the CSA. In agreement with our hypothesis, exogenous L-DOPA inhibited choroidal angiogenesis in albino eyes. Future studies will investigate if wildtype eyes are less responsive to exogenous L-DOPA compared to albino eyes in the CSA.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: More Than Meets the Eye: Genetic Susceptibility in Hydroxychloroquine Retinopathy

AUTHORS: Mohan Bhadriraju; Damla Oncel, MD; Mathew MacCumber, MD, PhD

PURPOSE: To present a case of hydroxychloroquine (HCQ)-induced retinal toxicity potentially exacerbated by a heterozygous mutation in the LRAT gene, highlighting the intersection of pharmacologic exposure and genetic susceptibility.

OBSERVATIONS: A 70-year-old Caucasian female with CREST syndrome and a remote history of HCQ use presented with bilateral blurry vision and intermittent photopsias. Fundus examination revealed bull's-eye maculopathy, and multimodal imaging confirmed retinal pigment epithelium (RPE) damage consistent with HCQ retinopathy. The patient had discontinued HCQ four years prior to her initial presentation. Despite cessation, her vision continued to decline over the following years, with optical coherence tomography showing progressive ellipsoid zone disruption. Given the delayed yet progressive course of retinopathy, genetic testing was performed and revealed a heterozygous mutation in the LRAT gene, which encodes lecithin retinol acyltransferase, a critical enzyme in the visual cycle responsible for vitamin A storage and regeneration of visual chromophores.

CONCLUSION: This case illustrates a potential synergistic interaction between HCQ toxicity and a genetic variant in LRAT, which may impair retinoid metabolism and amplify retinal damage. It underscores the importance of early and intensified ophthalmologic screening in patients with suspected genetic risk factors and supports consideration of genetic testing in atypical or progressive cases of HCQ retinopathy.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Effects of Posterior Capsular Opacification and Timing of YAG Capsulotomy on Refractive Outcomes with the Light Adjustable Lens

AUTHORS: Rohun R. Gupta, MD; Neel Vaidya, MD

PURPOSE: To investigate how posterior capsular opacification (PCO) affects refractive outcomes in patients receiving the Light Adjustable Lens (LAL) and to determine the optimal timing of YAG capsulotomy relative to the LAL adjustment process.
Methods: This retrospective, single center study will include adult patients who underwent cataract surgery with implantation of the RxSight Light Adjustable Lens from January 2018 to December 2024, subsequently developing PCO requiring YAG capsulotomy. Patients will be categorized based on the timing of YAG capsulotomy relative to the LAL adjustment period: before adjustment, during the adjustment period, and after the lock-in treatment. A control group of LAL patients without PCO will also be analyzed. Data will be collected on demographic variables, surgical details, timing and severity of PCO, refractive measurements, and postoperative complications. Primary outcomes will include changes in spherical equivalent refraction, refractive stability post-YAG capsulotomy, and refractive comparisons among timing groups. Statistical analyses will include paired t-tests, ANOVA, and multiple regression analysis.

ANTICIPATED RESULTS: Results will detail refractive changes associated with PCO and YAG capsulotomy in LAL patients, highlighting differences based on timing. Data will provide insights into refractive stability, and optimal timing for capsulotomy.

CONCLUSIONS: Findings from this study aim to establish possible evidence-based guidelines for managing PCO in LAL patients, thereby optimizing visual outcomes and refractive stability.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Intraocular Pressure after Intravitreal Injection with and without Topical Brimonidine.

AUTHORS: Leah Doro, MD, Eduardo Herrera, Anjali Hawkins, MD, PhD

PURPOSE: The aim of this study was to assess the effectiveness of topical pressure lowering medication, specifically brimonidine eye drops, in reducing intraocular pressure (IOP) following intravitreal injections (IVI) in patients without existing ocular hypertension (OHT) or primary open angle glaucoma (POAG). This was compared to measurements of intraocular pressure following injection without additional intervention, which is currently the standard of care.

METHODS: Clinic patients of the Rush Eye Center receiving intravitreal injections who met inclusion/exclusion criteria were enrolled in an interventional study. A sample of 5 patients per group (10 total) was obtained. Patients were randomly divided into a treatment and control group. The treatment group received topical brimonidine immediately prior to intravitreal injection, while the control group received an artificial tear drop. IOP was obtained using a Tonopen prior to injection as a baseline, 1 minute following injection, and every 15 minutes thereafter until normalization of pressure. The following parameters were collected: baseline CCT, age, gender, race, indications for intravitreal injection, history of glaucoma or ocular hypertension, and history of corneal disease. Two sample t-tests were used to determine if there was a difference in the IOP between the two groups at each time point.

RESULTS: There were no statistically significant differences in IOP at any time point between the treatment and control groups. All patients had the greatest increase in IOP immediately after injection; a mean increase of 25.6mmHg in the brimondine group and 24.4mmHg in the control group. All patients in the treatment group had normalization of IOP (defined as IOP less than or equal to 23mmHg) at the 15-minute time point, while only two patients in the control group had IOP normalization at the 15-minute time point, though these

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differences were not statistically significant. All patients had normalization of pressure by the 45minute time point. There were no adverse events reported in either group.

CONCLUSIONS: This study does not provide sufficient evidence to support the use of topical brimondine prior to IVI to reduce injection-related IOP elevation in eyes without glaucoma or ocular hypertension, though there is some indication that there may be utility in the use of topical IOP lowering therapy to increase the rate of IOP normalization as this relationship approached statistical significance. The lack of statistical significance may be due to a small sample size versus a true lack of effect. All patients in both groups had relatively rapid normalization of IOP, suggesting that the risk of IVI-related IOP elevation is minimal in eyes without pre-existing IOP-related pathology. Future research considerations include an identical study with larger sample sizes, a similar study design that includes patients with POAG or ocular hypertension, and a study looking at differences in IOP with different IVI volumes.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Hyperacute Epiretinal Membrane (ERM) After Retinal Detachment (RD) Repair: Optical Coherence Tomography (OCT) Characteristics, Progression, and Surgical Outcomes of Membrane Peel

AUTHORS: Kevin Elwood, MD; Rishabh Gupta, MD; Madelyn Malvitz; E. Annie Sheperd, MD; Vivek Chaturvedi, MD, FASRS

PURPOSE: To understand the OCT characteristics and progression of ERMs that develop shortly following uncomplicated RD repair and analyze these membrane peel (MP) surgical outcomes.

METHODS: Reviewed charts of primary rhegmatogenous RD repairs from 2015-2022 at a retina-only group practice that developed OCT-proven ERM following RD repair and underwent subsequent ERM and internal limiting membrane peeling within 1 year. Only patients with multiple OCTs in time prior to ERM surgery were included.

RESULTS: 40 eyes met inclusion criteria. ERM was first noticed following RD repair at a mean of 69 days (range 26-182). A median of 3 OCTs were obtained between RD repair and MP. Mean of 171 days (range 92-359) were between RD repair and MP. Mean initial ERM stage on OCT was 3.48; median was stage 4. Mean final ERM stage on OCT prior to MP surgery was 3.75. Mean logMAR visual acuity (VA) on first OCT-proven ERM visit was 0.81. Mean last pre-MP logMAR VA was 0.84. Mean final post MP logMAR VA was 0.34. Mean central foveal thickness (CFT) on initial OCT was 497 microns (range 289-816). Mean CFT on final pre-peel OCT was 573 microns (range 299-866). Average change in CFT from initial OCT to final pre-peel OCT was +76.05 microns (range (-)164-461). A linear regression model comparing these characteristics to final post-MP logMAR VA showed increased number of pre-operative OCTs, increased days from RD repair to MP, worse pre-peel VA, and increase in CFT over time had worse final VA ($p<0.05$). Multivariate regression model of these factors showed only time from RD repair to MP was associated with worse final logMAR VA ($p<0.05$).

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CONCLUSIONS: ERMs that develop rapidly following uncomplicated RD repair are typically advanced on presentation causing distortion of foveal architecture. Over time, there is often slight worsening in VA and OCT characteristics including ERM stage and CFT. Increased time from RD repair to membrane peel is associated with worse final logMAR VA.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Epiretinal Membrane Formation after Laser Treatment for Retinal Tear

AUTHORS: Fae Kayarian, MD; Iryna Kostirko; Sarah Syeda, MD; Vivek Chaturvedi, MD, FASRS

PURPOSE: Epiretinal membrane (ERM) formation after laser treatment for a retinal tear can affect visual outcomes. The purpose of this study is to identify the features of ERM formation after laser treatment for retinal tears, including morphology and timing of development and help identify risk factors that may contribute to ERM formation.

METHODS: A retrospective study was performed to identify patients who had undergone laser treatment and epiretinal membrane peels between 2015 and 2025. Data collected included vision at initial ERM formation, prior to ERM peel, as well as 6 months post ERM peel and final visual acuity. OCT morphology of ERM was also collected as well as number of retinal surgeries prior to ERM peel.

RESULTS: 75 patients with retinal tears were identified, of these 58 had subsequent ERM peels. Mean LogMAR visual acuity at the time of initial ERM presentation was 0.57. The average age of patient at the time of ERM peel was 61.7 years old. 29/58 were male and 95% were Caucasian. The average number of days between laser treatment for retinal tears and ERM peel was 617. days (median 319). Mean best-corrected visual acuity (BCVA) at the time of ERM peel was LogMAR 0.55, and by final follow-up visual acuity improved to 0.34. BCVA prior to ERM peel was negatively correlated with OCT central subfield thickness (CST) ($p=0.035$). There was no significance between final BCVA after ERM peel and OCT CST ($p>0.05$).

30 patients had an ERM peel within 1 year of laser treatment for retinal tears and 28 patients had an ERM peel after 1 year. The average number of days for patients who had laser treatment within 1 year of ERM peel was 143.4, and after 1 year was 1107. The average number of days after laser treatment that an ERM was noted was 103.9 with treatment within 1 year and 682.8 with treatment

(Continued)

after 1 year. The difference in BCVA between initial and final visits in patients with laser treatment within 1 year and those after 1 year was not significant ($p>0.05$).

CONCLUSION: ERM formation after laser treatment for retinal tears requires surgery to achieve improved vision. This study reveals characteristics that may contribute to ERM development, including increased OCT thickness. Understanding the timing, morphology, and visual impact of ERMs in this context can help guide monitoring and treatment decisions to optimize outcomes.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Impact of Calcium Channel Blocker Use on Glaucoma Severity

AUTHORS: Ankita Batra; Dylan Raikar, MD; Ali Akram; Nina Goyal, MD; Anjali Hawkins, MD, PhD

PURPOSE: Glaucoma is a chronic condition that results in optic nerve degeneration and progressive vision loss. Elevated intraocular pressure (IOP) remains one of the most important modifiable risk factors. Pressure-lowering drugs, such as calcium channel blockers (CCBs), are used extensively in clinical practice to prevent progression of the disease. Previous research has shown that long-term systemic use of CCBs, especially dihydropyridine CCBs, is associated with a significantly higher risk of developing primary open-angle glaucoma (POAG). It is proposed that CCBs may affect optic nerve head perfusion and retinal ganglion cell health. This study aims to identify and replicate a relationship between systemic CCB use and increased glaucoma severity.

METHODS: We conducted a secondary analysis of data from a previous study to address an additional clinical question. A prospective cross-sectional study involving 202 eyes diagnosed with various stages of primary open-angle glaucoma (POAG) or glaucoma suspect (GS) was conducted. Glaucoma severity was classified categorically using a standardized scale: glaucoma suspect (1), mild POAG (2), moderate POAG (3), and severe POAG (4). Patients classified with ocular hypertension (0) were excluded from categorical analyses due to limited sample size (n=4). Patients were grouped based on medication usage: use of non-dihydropyridine CCBs, use of dihydropyridine CCBs, or neither medication use. Subgroup analyses explored the impact of medication duration, specifically comparing patients who used CCBs for at least 90 days, as well as timing relative to glaucoma diagnosis. A categorical analysis assessed differences in glaucoma severity distributions between medication usage groups.

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RESULTS: A total of 82 eyes received only dihydropyridine CCBs while 25 eyes received only non-dihydropyridine CCBs. When comparing these groups, the use of dihydropyridine CCBs demonstrated significantly higher glaucoma severity (p=0.005). Amongst the dihydropyridine CCB

group, 37% were classified as severe compared to 4% in the non-dihydropyridine CCB group. There was no statistical significance in glaucoma severity amongst those who used either CCB vs. neither medication (p=0.18). Although this was not statistically significant, there are more patients in all categories of severity taking CCBs compared to those patients that are not taking either medication. However, if either type of CCB or a combination was taken for at least 90 days, a statistically significant association with glaucoma severity was observed (p = 0.034).

CONCULSIONS: Dihydropyridine CCB use is associated with increased glaucoma severity. Subgroup analyses are currently in progress. Patients with POAG who are on systemic CCBs may require closer monitoring for disease progression. While associations have been observed, further studies are necessary to fully understand the relationship between CCB use and glaucoma severity.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: What causes “catastrophic” submacular hemorrhages in AMD?

AUTHOR: Keye Wong, MD

PURPOSE: Submacular hemorrhages can cause significant visual compromise even in patients with prior centero-involving pathology. Some have proposed that continuous VEGF-suppression may prevent such events. This presentation purposes to shed light on this controversy.

METHODS:

1. A retrospective review of patients was performed on patients with submacular hemorrhages performed at Retina Associates of Sarasota in whom vitrectomy with injection of subretinal tPA. The interval between the last injection and symptomatic onset of submacular hemorrhage was recorded.
2. A retrospective review of 462 patients treated at Retina Associates of Sarasota in 2008 for wet AMD with anti-VEGF injections was performed. All chart drawings, notes and correspondence were reviewed for evidence of new hemorrhage.
3. A literature review was also performed.

RESULTS:

A. Betweenn 2005-2008 41 patients underwent tPA-VTX’s while on Pagaptanib. Between 2008 – 2011 11 patients underwent tPA-VTX’s while on ranibizumab.
B. During 2008 there were 462 patients Rx’d with anti-VEGF Rx for wet AMD. New hemorrhages were noted in 19. Neither hemorrhage frequency nor size correlated with treatment interval.
C. Literature review suggests no relationship between extended treatment interval and onset of submacular hemorrhage. However more “potent” anti-VEGF agents may be associated with less hemorrhage.

(Continued)

D. **CONCLUSIONS:** Although more “durable” anti-VEGF agents may be associated with less risk of submacular hemorrhage an extended treatment interval does not appear to be a causative risk factor.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Emerging Therapies for Retinal Degeneration in Neuronal Ceroid Lipofuscinoses

AUTHORS: Iryna Kostirko; Rishabh Gupta, MD; Leah Doro, MD; Mathew MacCumber, MD, PhD

PURPOSE: To describe two emerging therapies targeting retinal degeneration in neuronal ceroid lipofuscinoses (NCLs) through case presentations of a CLN1 patient treated with the first intravitreal use of TSHA-118 gene therapy and a CLN2 patient preparing to receive intravitreal enzyme replacement therapy with cerliponase alfa. These cases highlight the potential of novel interventions to preserve vision in pediatric neurodegenerative disorders.

METHOD: We present two pediatric cases of NCLs. Case 1 is a patient with the CLN1 subtype who received intravitreal gene thearpy with TSHA-118 in the left eye as part of an investigator-led expanded access compassionate use protocl at Rush university. Pre and post-treatment evaluations included OCT, full-field ERG, and clinical examination. Case 2 is a patient with the CLN2 subtype, who is scheduled to receive intravitreal enzyme replacement therapy with cerliponase alfa (Brineura). Retinal assessment was performed using OCT and clinical examination.

RESULT: Case 1: Intravitreal gene therapy with TSHA-118 did not prevent further vision loss. Pre-treatment OCT showed retinal damage consistent with CLN1. Post-treatment evaluation revealed no adverse ocular side effects aside form transient intraocular pressure elevation. OCT demonstrated continued retinal thinning consistent with disease progression, and ERG showed progressive retinal dysfunction. The advanced disease stage at the time of treatment and low approved investigational dose of TSHA-118 may have contributed to the lack of visual improvement. Case 2: The patient has not had any changes in vision. Pre-treatment clinical examination and OCT did not show any significant abnormalities. The patient is scheduled to receive intravitreal enzyme replacement therapy with cerliponase alfa.

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CONCLUSION: Inherited retinal disease are largeley incurable, however the treatment landscape is quickly evolving. Gene and enzyme replacement therapies offer targeted approaches aimed at

preserving vision and slowing disease progression. These case presentations highlight the potential of two emerging therapies for retinal degeneration in NCLs. TSHA-118 has shown promise in pre-clinical studies for CLN1, and this case marks its first intravitreal use in a human. Cerliponase alfa is FDA approved for intraventricular use in CLN2 and has shown potential in a compassionate use study, encouraging individual treatment. These novel approaches represent promising avenues for addressing retinal degeneration in neurodegenerative disease and expanding the role of targeted therapy in inherited retinal conditions.

PRESENTATION ABSTRACTS AND SUMMARIES

TITLE: Flicker Electroretinography Reveals Postreceptoral Visual Processing Deficits in Fragile X Syndrome

AUTHORS: Tejas C. Sekhar; Qianyi Pu, MS; Mary T. Stanley, MD; Elizabeth Berry-Kravis, MD, PhD

PURPOSE: Fragile X syndrome (FXS), the most common inherited cause of intellectual disability, presents with multisystem involvement including sensory and visual processing impairments. Despite growing recognition of visual dysfunction in FXS, objective tools to quantify these deficits are limited, particularly for use in clinical trials to evaluate emergent therapeutics. This study evaluated the ability of portable electroretinography (ERG) to detect retinal signaling abnormalities in individuals with FXS and assessed the feasibility of handheld ERG for biomarker acquisition in real-world clinical settings.

METHODS: 18 males with genetically confirmed FXS and 16 age-matched neurotypical controls underwent light-adapted flash and flicker ERG testing using the RETeval® handheld system. To optimize comfort and accessibility, testing was conducted without pharmacologic dilation and employed real-time luminance adjustments based on pupil size. Extracted parameters included flash a-wave and b-wave amplitude and latency as well as flicker fundamental amplitude and latency. FXS behavioral profiles were assessed using the validated Aberrant Behavior Checklist–Community (ABC-C), and exploratory analyses examined relationships between ERG success, behavioral scores, and mutation subtype (full vs. mosaic).

RESULTS: Flash ERG waveforms were largely comparable between groups, though FXS participants showed significantly prolonged a-wave latency ($p = 0.018$) and a trend toward reduced b-wave amplitude ($p = 0.075$), suggesting early retinal processing alterations. Flicker

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ERG revealed more pronounced abnormalities in FXS, with a 43% reduction in amplitude ($p = 0.017$) and a 4% increase in time-to-peak latency ($p = 0.011$), indicating impaired temporal

processing in postreceptoral bipolar cell pathways. Test success was significantly lower in FXS (flash: 36%, flicker: 29%) than controls (flash: 84%, flicker: 78%; $p < 0.0001$). Mosaic

individuals exhibited higher testability and milder behavioral symptoms than full mutation participants, indicating that feasibility may be influenced by behavioral phenotype and genetic subtype.

CONCLUSIONS: Handheld ERG can detect subtle yet specific retinal processing deficits in individuals with FXS, particularly through flicker paradigms sensitive to high frequency postreceptoral activity. Although flash b-wave amplitude did not reach statistical significance ($p = 0.075$), the observed trend toward reduced amplitude in FXS aligns with previous findings and may reflect early-stage post-photoreceptor vulnerability. Larger sample sizes or repeated measures may be necessary to clarify whether this trend reflects a reproducible physiological abnormality in FXS. While feasibility remains a challenge, especially in those with severe behavioral phenotypes, tailored ERG-compatible accommodations (e.g., pre-visit desensitization training, tablet-based distraction stimuli) may improve test completion rates.

Overall, these findings support flicker ERG as a candidate sensory biomarker for FXS with potential applications in outcome measurement and utility in future neurodevelopmental clinical trials.

POSTER ABSTRACTS AND SUMMARIES

TITLE: Invisible in Sight: A Systematic Review of Asian American Representation in US-Based Glaucoma Research

AUTHORS: Ali A. Akram; Jessica D. Toledo, MS; Tejas C. Sekhar

PURPOSE: Glaucoma is a leading cause of irreversible blindness worldwide, characterized by progressive optic nerve damage and visual field loss. Asian Americans are one of the fastest growing racial groups in the United States. Despite this, Asian Americans remain underrepresented in ophthalmic research. This systematic review aims to assess the representation of Asian Americans in US-based glaucoma studies to identify patterns, biases, and critical research gaps, ultimately informing future research and clinical practice.

METHODS: A systematic search will be conducted using PubMed, Scopus, Google Scholar, and the Cochrane Library to identify studies on glaucoma prevalence among Asian Americans in the United States. Search terms will include “glaucoma,” “Asian American,” and comparable query variations, as well as geographic keywords to capture US-based studies. Eligible studies will consist of those reporting glaucoma prevalence, incidence, or outcomes with subgroup analyses for Asian Americans. Data on study design, population characteristics, geographic location, diagnostic criteria, and reported outcomes will be extracted.

RESULTS: As a systematic review currently in progress, data collection and analysis are ongoing. We hypothesize that our findings will reveal a significant underrepresentation of Asian Americans in US-based glaucoma studies. We anticipate that this underrepresentation will be particularly pronounced in subgroup analyses, with many studies potentially aggregating data in ways that obscure differences within this population. Additionally, we expect to identify common barriers to inclusion, such as limited recruitment, which may further limit the applicability of current evidence to this understudied group.

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CONCLUSIONS: Improving the representation of Asian Americans in glaucoma research is critical for addressing health disparities and ensuring equitable eye care. This review aims to highlight existing gaps in the literature and advocate for more inclusive research practices to better understand and address the ophthalmic needs of this patient population.

POSTER ABSTRACTS AND SUMMARIES

TITLE: Investigating Atopic Dermatitis as a Contributor to Proliferative Vitreoretinopathy

AUTHORS: Catherine Chang; Mathew MacCumber, MD, PhD

PURPOSE: Atopic Dermatitis (AD), commonly known as eczema, is a chronic inflammatory skin condition that has been linked to various eye conditions like blepharitis, keratoconus, iritis, cataracts, and retinal detachment (RD).[1] Studies have shown that AD patients are 2 to 12 times more likely to develop ocular diseases, RD being one of the most serious of these, potentially causing permanent vision loss if left untreated.[2,3] The pathogenesis and association between RD and AD are poorly understood, but studies have postulated consistent microtrauma like chronic eye rubbing and intrinsic weakness of anterior retina as potential causes of the higher incidence of RD in AD patients.[4] RD requires surgical intervention, but a major challenge to a successful surgery is proliferative vitreoretinopathy (PVR), a complication that leads to retinal scarring and increases the risk of recurrent detachment. Few studies have explored whether AD-specific inflammatory pathways contribute to higher PVR rates, surgical complications, or worse visual outcomes. One study in Korea shows promising correlation, revealing higher PVR and reoperation rate in AD patients. PVR occurred more frequently in the AD group (35%) than in the control group (12%) and there was a statistical difference (p= 0.0). Since PVR leads to recurrent RD, the reoperation rate was three times higher in the AD group (30% vs. 10%, p value = 0.001).5 My study aims to investigate the association between AD and PVR by conducting a retrospective review on patients within the Vestrum Health database (Corevitas, LLC).

METHODS: A retrospective case-control review of patients who were diagnosed with atopic dermatitis were matched to a control cohort without AD. Mixed-effects Cox regression models were;

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used to assess the risk of PVR and RRD. Additionally, a logistic regression model from a prior RRD and metformin study was re-run with the presence of eczema at baseline included as a covariate.

RESULTS: 22,132 eyes from patients with AD were compared to 110,296 control eyes without. Mixed-effects Cox regression analysis showed that eczema was not significantly associated with the increased risk of proliferative vitreoretinopathy (PVR), with an odds ratio of 0.92 (95% CI: 0.58- 1.41 p = 0.718). Further, AD was incorporated at baseline as an adjustment variable for a previously developed logistic regression model. The inclusion of eczema did not significantly affect the odds of developing PVR, matching the Cox model findings.

CONCLUSIONS: Unlike prior literature that has reported some association between PVR and AD, our current analysis did not find a significant association between AD and increased risk of PVR. Given these findings diverge from previous studies, this lack of correlation is somewhat unexpected.

POSTER ABSTRACTS AND SUMMARIES

TITLE: Beyond the Model Minority: Unveiling the Research Gaps in Diabetic Retinopathy Among Asian Americans

AUTHORS: Saif R. Salih, MS; Jessica D. Toledo, MS; Tejas C. Sekhar

PURPOSE: Diabetic retinopathy (DR), a microvascular complication of chronic hyperglycemia and poor metabolic control, is a leading cause of vision loss in the United States and disproportionately affects minority populations due to higher diabetes prevalence and ongoing barriers to healthcare access. While its burden is well-documented in the general population, the extent to which it affects Asian American adult communities remains unclear due to systemic gaps in both national health datasets and clinical research. A preliminary analysis of the Vision and Eye Health Surveillance System (VEHSS) dataset revealed a dearth of disaggregated data for Asian Americans, with individuals often grouped under broad “Other” racial categories. To better understand this pattern, we paired our database analysis with a review of the current literature to evaluate the degree of inclusion and specificity regarding Asian Americans in DR-related studies. This project seeks to underscore the consequences of such omissions and advocate for improved representation in research that guides public health policy and clinical practice.

METHODS: We conducted a secondary data analysis using VEHSS data on diabetic retinopathy in adults, stratified by race, age, and gender. Both self-reported and exam-based DR diagnoses were extracted and reviewed. Concurrently, a systematic review was conducted across major databases to identify published studies on diabetic retinopathy in Asian American populations, with emphasis on study design, inclusion criteria, and racial subgroup representation.

RESULTS: Individuals of Asian descent were grouped into a broad “Other” category that combined multiple racial minorities, obscuring any meaningful analysis of DR prevalence within this group. This categorical exclusion was consistent across both diagnostic sources and severely limited our ability to

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assess the burden of DR among Asian American adults. From 10,320 potential ophthalmic entries in VEHSS (2005–2008), only 476 (4.6%) met inclusion criteria. Of these, 30.7% were race/ethnicity-agnostic, while stratified studies included 28.6% white, 21.2% Black, 19.1% Hispanic, and just 0.4% “Other,” which included Asian-only data—further highlighting their underrepresentation.
The dual use of self-reported and exam-based metrics introduced additional inconsistencies in diagnosis capture, further complicating prevalence estimates and demographic comparisons. Our ongoing literature review echoed these findings: the majority of DR studies either excluded Asian Americans or failed to disaggregate Asian subgroups, often combining East, South, and Southeast Asians into a single category or omitting them entirely due to small sample sizes.
The systematic underrepresentation of Asian Americans in VEHSS and scientific literature presents a major barrier to achieving equity in diabetic retinopathy care. The absence of a dedicated racial category in VEHSS underscores a broader trend of invisibility that affects not only data-driven policy but also clinical awareness and funding priorities. Without comprehensive and disaggregated data, Asian American individuals may be at risk for underdiagnosis and inadequate screening. Future research must prioritize inclusion of this diverse and growing population to ensure equitable ophthalmologic outcomes and informed public health policy.

CONCLUSIONS: The systematic underrepresentation of Asian Americans in VEHSS and scientific literature presents a major barrier to achieving equity in diabetic retinopathy care. The absence of a dedicated racial category in VEHSS underscores a broader trend of invisibility that affects not only data-driven policy but also clinical awareness and funding priorities. Without comprehensive and disaggregated data, Asian American individuals may be at risk for underdiagnosis and inadequate screening. Future research must prioritize inclusion of this diverse and growing population to ensure equitable ophthalmologic outcomes and informed public health policy.

POSTER ABSTRACTS AND SUMMARIES

TITLE: Understanding Eye Drop Nonadherence for Patients with Glaucoma and Chronic Dry Eye Disease: A Mixed-Methods Study

AUTHORS: Jessica Toledo, MS; Tejas Sekhar

PURPOSE: Nonadherence to eye drop regimens in glaucoma and chronic dry eye disease (DED) is a widespread, multifactorial issue that undermines treatment efficacy and leads to preventable vision loss and chronic symptoms. While existing literature has primarily focused on quantitative measures of adherence, few studies have examined the lived experiences and contextual barriers patients face when using topical ocular medications. This study aims to identify and characterize behavioral, physical, psychosocial, and systemic factors contributing to eye drop nonadherence in patients with glaucoma, DED, or both. It also seeks to explore the potential role of assistive devices and patient-centered design in improving adherence.

METHODS: This cross-sectional, mixed-methods study will recruit 50 adult patients from the Rush Eye Center Physicians outpatient clinic using Epic electronic health record searches and ICD-10 codes to identify individuals who have used prescription and/or lubricating eye drops for six months or more. All participants will have a diagnosis of at least one chronic ocular condition (glaucoma, DED, or both). After providing electronic consent via REDCap, participants will complete a single, 30–45-minute semi-structured virtual interview conducted via Microsoft Office Teams. The interview guide explores themes such as medication routine, perceived efficacy, physical challenges, health literacy, financial burden, provider communication, and experiences with eye drop devices. Interviews will be recorded, transcribed, and thematically analyzed using Dedoose qualitative software. A structured codebook, developed through iterative piloting and expert input, will guide coding. Thematic saturation will determine the endpoint of analysis.
In addition to qualitative analysis, demographic and clinical data (e.g., age, education,

(Continued)

RESULTS: As a prospective study, data collection comorbidities, type of eye drops) will be collected via REDCap and used to explore patterns in adherence behaviors. Subgroup comparisons will be conducted between patients
using prescription-only drops, lubricant-only drops, or both.
and analysis are ongoing. We hypothesize that patients using both prescription and lubricating eye drops will report the greatest barriers to adherence, including regimen complexity, physical difficulty administering drops, and limited perceived benefit. We anticipate that social support, routine integration, and prior education from providers will emerge as key facilitators. Additionally, we expect patients to express preferences for assistive device features (e.g., ergonomic grip, compatibility with various bottle types) that may improve usability and adherence.

CONCLUSIONS: This study uses a patient-centered, qualitative approach to illuminate the real-world challenges and strategies surrounding eye drop adherence in glaucoma and DED patient populations. By capturing patient perspectives across varying regimens and diagnoses, the study seeks to inform more effective educational, technological, and clinical interventions. The findings may guide the design of future adherence-promoting tools and improve counseling strategies in ophthalmic care. Ultimately, this research aims to reduce preventable vision loss and associated barriers by addressing the complex factors underlying nonadherence.

POSTER ABSTRACTS AND SUMMARIES

TITLE: Examining Visual Acuity and Adverse Events Trends Across 10 Injections of Pegcetacoplan and Avacincaptad Pegol in Eyes with AMD

AUTHORS: Caroline Wang, MHS; Samuel Minaker, MD, MS; Mathew MacCumber, MD, PhD

PURPOSE: To characterize the adverse outcomes and visual acuity trends of Avacincaptad Pegol and Pegcetacoplan injections in patients with Neovascular Age-Related Macular Degeneration (nAMD), Geographic Atrophy (GA), and in nAMD/GA eyes stratified by Baseline Visual Acuity (BVA).

METHODS: We examined a cohort of 4,355 unique eyes injected with Avacincaptad Pegol and a cohort of 7,982 eyes injected with Pegcetacoplan from March 2023 to December 2024. We calculated the average LogMAR value of each cohort across the first 10 injections. We stratified cohorts into ‘eyes with GA only’, eyes with nAMD/GA’, and ‘eyes with nAMD/GA and GA only’. Eyes with nAMD/GA were also stratified by BVA into ‘20/50 or better’, ‘20/60 to 20/150’, or ‘20/160 or worse’. Adverse events were counted over the 10 injections and CNV incidence was calculated as the incidence over 1 year of injections or over 10 injections.

RESULT: Across 10 injections of Avacincaptad Pegol in eyes with nAMD/GA, we observed a non-significant decrease in average LogMAR from 0.56 to 0.53. Similar trends were observed in all other cohorts. In eyes with nAMD/GA stratified by BVA, we noticed a slight non-significant increase in average LogMAR across 10 injections for ‘20/50 or Better’ and ‘20/60 to 20/150’ cohorts, but a constant average LogMAR in the ‘20/160 or Worse’ group.

Across 10 injections of Pegcetacoplan in eyes with nAMD/GA, we observed a non-significant increase in average LogMAR from 0.59 to 0.65. We observed similar trends in all other cohorts. In eyes with nAMD/GA stratified by BVA, we observed a non-significant increase in the average LogMAR for all three cohorts.

Table 1. Demographics

	Avacincaptad pegol	Pegcetacoplan
Average Age	82	82
Gender		
Male	31.4%	31.8%
Female	62.4%	68.3%
NA	2.6%	5.3%
Race		
White	62.4%	68.3%
Asian	0.1%	0.3%
Black/African American	0.1%	0.2%
Native American/Alaskan	0.1%	0.2%
Other	34.5%	24.4%
Baseline Average LogMAR, Standard Deviation	0.563 ± 0.47	0.618 ± 0.52

CONCLUSIONS: While the Avacincaptad Pegol cohort demonstrated a nonsignificant increase in average LogMAR, the Pegcetacoplan cohort demonstrated a nonsignificant decrease. Other cohorts showed similar trends. Rates of CNV development and adverse event counts were higher in eyes injected with Pegcetacoplan.

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RUSH UNIVERSITY MEDICAL CENTER

GRADUATION AND ALUMNI DINNER

We look forward to celebrating our Residents and Fellows at the graduation dinner on Friday, June 13th at 6:00 PM. Please see the Evening Program for a detailed outline of the night's events. This year's event will take place at:

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EVENING PROGRAM

6:00 PM – 7:00 PM	Cocktails & Hors d ’Oeuvres	*Ivy Room Courtyard*
7:00 PM – 7:30 PM	Graduation Program	*Ivy Room Ballroom*

Welcome: Dr. Rubenstein

Recognition of Graduates:

Sarah Syeda, MD

Oscar Chen, MD, MS

Fred Crawford, MD

7:30 PM – 8:30 PM	Dinner Service	*Ivy Room Ballroom*
8:30 PM – 8:45 PM	Award Presentation	
9:00 PM – 10:00 PM	Graduation Party	*Ivy Room Lower Level*

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Notes: