POWERED BY bmc

RT
Retina Today

MARCH 2025 VOL. 20, NO. 2
RETINATODAY.COM

eyetube

Diversity and Inclusion in Retina

Nurturing growth, connection, and a better future for all.

With guest editors
Avni P. Finn, MD, MBA, and
Courtney Crawford, MD, FACS, FASRS

THE REALITY OF WOMEN IN RETINA | TRIAL ENROLLMENT: DIVERSITY OPPORTUNITIES | LGBTQIA+ INCLUSION AND CARE

SUBSCRIBE FOR FREE

UNITY® VCS | CS

Vitreoretinal
Cataract &
Cataract Systems

Experience Extraordinary

Superior Efficiency for Vitreoretinal and Cataract Surgery.*

*Based on bench testing.

Reference: 1. Alcon data on file, 2024.

Alcon

RETINA MEETINGS:
2025 AND BEYOND

The American Society of Retina Specialists will convene at the Long Beach Convention & Entertainment Center, July 30 – August 2.

Looking to present an interesting case, boost your continuing education, or find networking opportunities? These conferences are the place to be!

APRIL 2025
38th Mid-Winter Sarasota Vitreo-Retinal Update Course
April 3 – 5
Ritz Carlton
Sarasota, Florida

MAY 2025
ARVO
May 4 – 8
Calvin L. Rampton Salt Palace Convention Center
Salt Lake City, UT

Retina World Congress
May 8 – 11
Marriott Harbor Beach Resort
Fort Lauderdale, FL

11th Annual Duke Fellows Advanced Vitreous Surgery Course & 23rd Duke Advanced Vitreous Surgery Course
May 15 – 17
Washington Duke Inn
Durham, NC

Southeastern Vitreoretinal Conference
May 30 – 31
Emory Conference Center Hotel
Atlanta, GA

JUNE 2025
11th Annual Pacific Retina Club & 12th Annual International Retinal Imaging Symposium
June 5 – 7
UCLA Meyer & Renee Luskin Conference Center
Los Angeles, CA

Clinical Trials at the Summit
June 21
Las Vegas, NV

International Maculart Meeting
June 29 – July 1
Novotel Paris Centre Tour Eiffel
Paris, France

JULY 2025
15th Annual Mass Eye and Ear Vitrectomy Course
July 11 – 12
Boston, MA

ASRS
July 30 – August 2
Long Beach Convention & Entertainment Center
Long Beach, CA

AUGUST 2025
26th Annual Advanced Vitreoretinal Techniques & Technology Symposium and Fellows' Course
August 22 – 24
Chicago, IL

SEPTEMBER 2025
Euretina
September 4 – 7
Le Palais des Congres
Paris, France

The Retina Society
September 10 – 13
The Ritz-Carlton Chicago
Chicago, IL

Advances in Pediatric Retina
September 18 – 20
Durham, NC

OCTOBER 2025
AAO
October 17 – 20
Orange County Convention Center
Orlando, FL

NOVEMBER 2025
22nd European VitreoRetinal Society Meeting
November 13 – 16
Cancun, Mexico

DECEMBER 2025
FloRetina
December 4 – 7
Fortezza da Basso
Florence, Italy

2026 SAVE THE DATES
Atlantic Coast Retina Club & Macula:
Philadelphia, January 8 – 10
Aspen Retinal Detachment Society Meeting:
Snowmass, CO, February 28 – March 5
ARVO: Denver, May 3 – 7
ASRS: Montreal, Canada, July 15 – 18
AAO: New Orleans, October 9 – 12

To find links to each of these meetings, visit our online conference calendar at **retinatoday.com/calendar/2025.**

Retina Today (ISSN 1942-1257) © 2025 Bryn Mawr Communications LLC is published January/February, March, April, May/June, July/August, September, October, and November/December by Bryn Mawr Communications LLC, 125 East Elm Street, Suite 400, Conshohocken, PA 19428. Subscription is free to all applicable US retina physicians. All others, applicable subscription charges apply. For subscription information call +1 800 492 1267 (US only) or e-mail retinatoday@bmctoday.com. Pending periodical postage paid at Wayne PA and additional entry offices. POSTMASTER Please send address changes to Bryn Mawr Communications LLC, 125 East Elm Street, Suite 400, Conshohocken, PA 19428. Bryn Mawr Communications LLC provides certain customer contact data, which may include customer names, addresses, phone numbers and e-mail addresses, to third parties for promotional and/or marketing purposes. If you do not wish Bryn Mawr Communications LLC to make your contact information available to third parties for any marketing purposes, please contact us at 800-492-1267 or e-mail us at retinatoday@bmctoday.com. This publication is intended for health care professionals and providers only. The information contained in this publication, including text, graphics and images, is for informational purposes only and is not intended to be a substitute for professional medical advice. Bryn Mawr Communications LLC, via its Editors and the Publisher, accepts no responsibility for any injury or damage to persons or property occasioned through the implementation of any ideas or use of any product described herein. While great care is taken by the Publisher and Editors to ensure that all information is accurate, it is recommended that readers seek independent verification of advice on drug or other product usage, surgical techniques and clinical processes prior to their use. The opinions expressed in this publication are those of the authors and are not attributable to the sponsors, the publication or the Editorial Board. References made in articles may indicate uses of medical equipment or drugs at dosages, for periods of time and in combinations not included in the current prescribing information. Inclusion of advertising material in this publication, or in supplements thereof, does not constitute any representation or guarantee by Bryn Mawr Communications LLC of the quality of such products or of the claims made by the manufacturers.

SYFOVRE®
(pegcetacoplan injection)
15 mg / 0.1 mL

Save more retinal tissue

Through Year 2, in OAKS and DERBY, SYFOVRE slowed GA lesion growth vs sham pooled.[1]

SYFOVRE slowed GA lesion growth with **increasing effects over time up to 42%** in Year 3 (GALE) vs projected sham in patients without subfoveal lesions[1,2]

- Through Year 2 (OAKS and DERBY), SYFOVRE slowed GA lesion growth (mm^2) vs sham pooled by 22% (3.11 vs 3.98) and 18% (3.28 vs 4.00) monthly, and by 18% (3.26 vs 3.98) and 17% (3.31 vs 4.00) EOM[1,2]
- Through Year 3 (GALE), SYFOVRE slowed GA lesion growth (mm^2) vs sham pooled/projected sham by 25% (4.46 vs 5.94) monthly and 20% (4.74 vs 5.94) EOM. The greatest differences were observed in Year 3[2]
  - Reductions in patients without subfoveal lesions at baseline through Year 3: 32% (5.10 vs 7.54 (n=95)) monthly and 26% (5.60 vs 7.54 (n=104)) EOM. In this subset of patients, there was a 42% reduction with monthly SYFOVRE in Year 3 vs projected sham

SE in trials (monthly, EOM, sham pooled/projected sham): OAKS: 0.15, 0.13, 0.14; DERBY: 0.13, 0.13, 0.17; GALE (total population): 0.16, 0.16, 0.19; GALE (without subfoveal): 0.26, 0.31, 0.41[1,2]

EOM=every other month; GA=geographic atrophy; SE=standard error.

GALE Trial Limitations: GALE is an ongoing open-label, multi-center extension study, subject to patient dropouts over time. The analysis for the first year of GALE utilized a projected sham and may not reflect rate of change of all patients with GA. Projected sham assumes linear growth rate from Months 24-36 (GALE Year 1) based on the average of the mean rate of change of each 6-month period of sham treatment in OAKS and DERBY and natural history studies, which have shown there is a high correlation between prior 2-year growth rates of GA lesions and subsequent 2-year growth rates. This is a prespecified analysis but there is no statistical testing hierarchy, therefore the results on the individual components need cautious interpretation. Open-label studies can allow for selection bias.[2,3]

Discover more at SyfovreECP.com

INDICATION

SYFOVRE® (pegcetacoplan injection) is indicated for the treatment of geographic atrophy (GA) secondary to age-related macular degeneration (AMD).

IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

- SYFOVRE is contraindicated in patients with ocular or periocular infections, in patients with active intraocular inflammation, and in patients with hypersensitivity to pegcetacoplan or any of the excipients in SYFOVRE. Systemic hypersensitivity reactions (e.g., anaphylaxis, rash, urticaria) have occurred.

WARNINGS AND PRECAUTIONS

- **Endophthalmitis and Retinal Detachments**
  - Intravitreal injections, including those with SYFOVRE, may be associated with endophthalmitis and retinal detachments. Proper aseptic injection technique must always be used when administering SYFOVRE to minimize the risk of endophthalmitis. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay and should be managed appropriately.
- **Retinal Vasculitis and/or Retinal Vascular Occlusion**
  - Retinal vasculitis and/or retinal vascular occlusion, typically in the presence of intraocular inflammation, have been reported with the use of SYFOVRE. Cases may occur with the first dose of SYFOVRE and may result in severe vision loss. Discontinue treatment with SYFOVRE in patients who develop these events. Patients should be instructed to report any change in vision without delay.
- **Neovascular AMD**
  - In clinical trials, use of SYFOVRE was associated with increased rates of neovascular (wet) AMD or choroidal neovascularization (12% when administered monthly, 7% when administered every other month and 3% in the control group) by Month 24. Patients receiving SYFOVRE should be monitored for signs of neovascular AMD. In case anti-Vascular Endothelial Growth Factor (anti-VEGF) is required, it should be given separately from SYFOVRE administration.
- **Intraocular Inflammation**
  - In clinical trials, use of SYFOVRE was associated with episodes of intraocular inflammation including: vitritis, vitreal cells, iridocyclitis, uveitis, anterior chamber cells, iritis, and anterior chamber flare. After inflammation resolves, patients may resume treatment with SYFOVRE.
- **Increased Intraocular Pressure**
  - Acute increase in IOP may occur within minutes of any intravitreal injection, including with SYFOVRE. Perfusion of the optic nerve head should be monitored following the injection and managed as needed.

ADVERSE REACTIONS

- Most common adverse reactions (incidence ≥5%) are ocular discomfort, neovascular age-related macular degeneration, vitreous floaters, conjunctival hemorrhage.

Please see Brief Summary of Prescribing Information for SYFOVRE on the adjacent page.

OAKS and DERBY Trial Design: SYFOVRE safety and efficacy were assessed in OAKS (N=637) and DERBY (N=621), multi-center, 2-year, Phase 3, randomized, double-masked trials. Patients with GA (atrophic nonexudative age-related macular degeneration) with or without subfoveal involvement, secondary to AMD were randomly assigned (2:2:1:1) to receive 15 mg/0.1 mL intravitreal SYFOVRE monthly, SYFOVRE every other month, sham monthly, or sham every other month, for 2 years. Change from baseline in the total area of GA lesions in the study eye (mm^2) was measured by fundus autofluorescence (FAF).[1,2]

GALE Trial Design: GALE (N=790) is a multi-center, 3-year, Phase 3, open-label extension study to evaluate the long-term safety and efficacy of pegcetacoplan in subjects with geographic atrophy secondary to age-related macular degeneration. Patients enrolled in GALE include those who completed OAKS or DERBY after 2 years and 10 patients from Phase 1b Study 103. Patients with GA (atrophic nonexudative age related macular degeneration) with or without subfoveal involvement, secondary to AMD were assigned to receive 15 mg/0.1 mL intravitreal SYFOVRE monthly or SYFOVRE EOM for 3 years. The first visit was required to be within 60 days of the final visit in OAKS and DERBY.[2]

References: 1. SYFOVRE (pegcetacoplan injection) [package insert]. Waltham, MA: Apellis Pharmaceuticals, Inc.; 2024. **2.** Data on file. Apellis Pharmaceuticals, Inc. **3.** Sunness JS, Margalit E, Srikumaran D, et al. The long-term natural history of geographic atrophy from age-related macular degeneration: enlargement of atrophy and implications for interventional clinical trials. *Ophthalmology*. 2007;114(2):271–277. doi:10.1016/j.ophtha.2006.09.016.

Apellis

SYFOVRE® (pegcetacoplan injection), for intravitreal use
BRIEF SUMMARY OF PRESCRIBING INFORMATION
Please see SYFOVRE full Prescribing Information for details.

INDICATIONS AND USAGE

SYFOVRE is indicated for the treatment of geographic atrophy (GA) secondary to age-related macular degeneration (AMD).

CONTRAINDICATIONS

Ocular or Periocular Infections
SYFOVRE is contraindicated in patients with ocular or periocular infections.
Active Intraocular Inflammation
SYFOVRE is contraindicated in patients with active intraocular inflammation.
Hypersensitivity
SYFOVRE is contraindicated in patients with hypersensitivity to pegcetacoplan or to any of the excipients in SYFOVRE. Systemic hypersensitivity reactions (e.g., anaphylaxis, rash, urticaria) have occurred.

WARNINGS AND PRECAUTIONS

Endophthalmitis and Retinal Detachments
Intravitreal injections, including those with SYFOVRE, may be associated with endophthalmitis and retinal detachments. Proper aseptic injection technique must always be used when administering SYFOVRE in order to minimize the risk of endophthalmitis. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay and should be managed appropriately.
Retinal Vasculitis and/or Retinal Vascular Occlusion
Retinal vasculitis and/or retinal vascular occlusion, typically in the presence of intraocular inflammation, have been reported with the use of SYFOVRE. Cases may occur with the first dose of SYFOVRE and may result in severe vision loss. Discontinue treatment with SYFOVRE in patients who develop these events. Patients should be instructed to report any change in vision without delay.
Neovascular AMD
In clinical trials, use of SYFOVRE was associated with increased rates of neovascular (wet) AMD or choroidal neovascularization (12% when administered monthly, 7% when administered every other month and 3% in the control group) by Month 24. Patients receiving SYFOVRE should be monitored for signs of neovascular AMD. In case anti-Vascular Endothelial Growth Factor (anti-VEGF) is required, it should be given separately from SYFOVRE administration.
Intraocular Inflammation
In clinical trials, use of SYFOVRE was associated with episodes of intraocular inflammation including: vitritis, vitreal cells, iridocyclitis, uveitis, anterior chamber cells, iritis, and anterior chamber flare. After inflammation resolves patients may resume treatment with SYFOVRE.
Increased Intraocular Pressure
Acute increase in IOP may occur within minutes of any intravitreal injection, including with SYFOVRE. Perfusion of the optic nerve head should be monitored following the injection and managed as needed.

ADVERSE REACTIONS

Clinical Trials Experience
Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.
A total of 839 patients with GA in two Phase 3 studies (OAKS and DERBY) were treated with intravitreal SYFOVRE, 15 mg (0.1 mL of 150 mg/mL solution). Four hundred nineteen (419) of these patients were treated in the affected eye monthly and 420 were treated in the affected eye every other month. Four hundred seventeen (417) patients were assigned to sham.
The most common adverse reactions (≥5%) reported in patients receiving SYFOVRE were ocular discomfort, neovascular age-related macular degeneration, vitreous floaters, and conjunctival hemorrhage.

Table 1: Adverse Reactions in Study Eye Reported in ≥2% of Patients Treated with SYFOVRE Through Month 24 in Studies OAKS and DERBY

Adverse Reactions	PM (N = 419) %	PEOM (N = 420) %	Sham Pooled (N = 417) %
Ocular discomfort*	13	10	11
Neovascular age-related macular degeneration*	12	7	3
Vitreous floaters	10	7	1
Conjunctival hemorrhage	8	8	4
Vitreous detachment	4	6	3
Retinal hemorrhage	4	5	3
Punctate keratitis*	5	3	<1
Posterior capsule opacification	4	4	3
Intraocular inflammation*	4	2	<1
Intraocular pressure increased	2	3	<1

PM: SYFOVRE monthly; PEOM: SYFOVRE every other month

*The following reported terms were combined:
Ocular discomfort included: eye pain, eye irritation, foreign body sensation in eyes, ocular discomfort, abnormal sensation in eye
Neovascular age-related macular degeneration included: exudative age-related macular degeneration, choroidal neovascularization
Punctate keratitis included: punctate keratitis, keratitis
Intraocular inflammation included: vitritis, vitreal cells, iridocyclitis, uveitis, anterior chamber cells, iritis, anterior chamber flare

Endophthalmitis, retinal detachment, hyphema and retinal tears were reported in less than 1% of patients. Optic ischemic neuropathy was reported in 1.7% of patients treated monthly, 0.2% of patients treated every other month and 0.0% of patients assigned to sham. Deaths were reported in 6.7% of patients treated monthly, 3.6% of patients treated every other month and 3.8% of patients assigned to sham. The rates and causes of death were consistent with the elderly study population.

Postmarketing Experience
The following adverse reactions have been identified during postapproval use of SYFOVRE. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure. Eye disorders: retinal vasculitis with or without retinal vascular occlusion. Systemic reactions: anaphylaxis, rash, and urticaria.

USE IN SPECIFIC POPULATIONS

Pregnancy
Risk Summary
There are no adequate and well-controlled studies of SYFOVRE administration in pregnant women to inform a drug-associated risk. The use of SYFOVRE may be considered following an assessment of the risks and benefits.
Systemic exposure of SYFOVRE following ocular administration is low. Subcutaneous administration of pegcetacoplan to pregnant monkeys from the mid gestation period through birth resulted in increased incidences of abortions and stillbirths at systemic exposures 1040-fold higher than that observed in humans at the maximum recommended human ophthalmic dose (MRHOD) of SYFOVRE (based on the area under the curve (AUC) systemically measured levels). No adverse maternal or fetal effects were observed in monkeys at systemic exposures approximately 470-fold higher than that observed in humans at the MRHOD.
In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2-4% and 15-20%, respectively.
Lactation
Risk Summary
It is not known whether intravitreal administered pegcetacoplan is secreted in human milk or whether there is potential for absorption and harm to the infant. Animal data suggest that the risk of clinically relevant exposure to the infant following maternal intravitreal treatment is minimal. Because many drugs are excreted in human milk, and because the potential for absorption and harm to infant growth and development exists, caution should be exercised when SYFOVRE is administered to a nursing woman.
Females and Males of Reproductive Potential
Contraception
Females: It is recommended that women of childbearing potential use effective contraception methods to prevent pregnancy during treatment with intravitreal pegcetacoplan. Advise female patients of reproductive potential to use effective contraception during treatment with SYFOVRE and for 40 days after the last dose. For women planning to become pregnant, the use of SYFOVRE may be considered following an assessment of the risks and benefits.
Pediatric Use
The safety and effectiveness of SYFOVRE in pediatric patients have not been established.
Geriatric Use
In clinical studies, approximately 97% (813/839) of patients randomized to treatment with SYFOVRE were ≥ 65 years of age and approximately 72% (607/839) were ≥ 75 years of age. No significant differences in efficacy or safety were seen with increasing age in these studies. No dosage regimen adjustment is recommended based on age.

PATIENT COUNSELING INFORMATION

Advise patients that following SYFOVRE administration, patients are at risk of developing endophthalmitis, retinal detachments, retinal vasculitis with or without retinal vascular occlusion and neovascular AMD. If the eye becomes red, sensitive to light, painful, or if a patient develops any change in vision such as flashing lights, blurred vision or metamorphopsia, instruct the patient to seek immediate care from an ophthalmologist. Patients may experience temporary visual disturbances associated either with the intravitreal injection with SYFOVRE or the eye examination. Advise patients not to drive or use machinery until visual function has recovered sufficiently.

Manufactured for:
Apellis Pharmaceuticals, Inc.
100 Fifth Avenue
Waltham, MA 02451

SYF-PI-20Dec2024-3.0

12/24 US-PEGGA-2400436 v1.0

BE SEEN


From our workforce and clinical trials to mentoring the next generation of ophthalmologists and retina specialists, it is imperative that we continue to foster diversity within our field. Our challenges include diversifying our workforce, recruiting more representative patient populations for clinical trials, and addressing the gender, ethnic, and financial disparities that exist.[1-4]

While this may be a difficult time to discuss diversity, equity, and inclusion (DEI) in ophthalmology and retina in the wake of recent Presidential Executive Orders in the United States, this is exactly the time when DEI discussions are the most needed. We have a growing number of women in retina,[5,6] and physicians who are underrepresented in medicine are increasing with each class of residents and retina fellows. There is increasing focus on recruiting more diverse patient populations for clinical trials, and we even have our first clinical trials underway dedicated fully to minority populations.[7]

Our retina community is stronger than ever, and through our work we can continue to identify barriers to care and train retina specialists who reflect our patient populations—and we know that diversity within health care teams leads to better problem-solving and improved health outcomes for underserved populations.[2]

This issue highlights all the hard work researchers and clinicians are putting in to understand the hurdles to DEI in our field and overcome them. The flagship article, *You Belong: The Value of Mentorship in Retina*, provides a discussion of mentoring in ophthalmology—not only how important it is, but also which organizations are making it a priority, who it is supporting, and how you can get involved. Another article, *The Reality of Women in Retina*, gives voice to the female leaders in our field who are blazing the trail for others to follow. Because so much work is underway to quantitatively understand the disparities in eye care, we thought it fitting to share a *Diversity Literature Review* to pull together some of the research on DEI that has been published in the last year. Other articles focus on LGBTQIA+ inclusion and care in ophthalmology, DEI efforts in clinical trial enrollment, and discrimination within the ophthalmology workforce.

We have made a lot of progress, and focusing on the positives is what will get us through what feels like an insurmountable leap backward. Keep your chin up, support your colleagues and patients wherever you can, and remember that vision is a universal right for *everyone*. ■

– Avni P. Finn, MD, MBA, and Courtney Crawford, MD, FACS, FASRS

1. Montazeri F, Wang M, Atkuru A, Estrada MM, Liu YA, Emami-Naeini P. Racial, ethnic, and gender diversity in United States ophthalmology clinical trials. *Ophthalmol Sci*. 2023;4(1):100402.
2. Woreta FA, Gordon LK, Knight OJ, Randolph JD, Zebardast N, Pérez-González CE. Enhancing diversity in the ophthalmology workforce. *Ophthalmology*. 2022;129(10):e127-e136.
3. Maru JA, Wang J, Knight OJ, et al. Barriers in ophthalmology residency applications for students identifying as underrepresented in medicine: a San Francisco Match analysis. *J Surg Educ*. 2023;80(7):971-980.
4. Ali M, Menard M, Zafar S, Williams BK Jr, Knight OJ, Woreta FA. Sex and racial and ethnic diversity among ophthalmology subspecialty fellowship applicants. *JAMA Ophthalmol*. 2023;141(10):948-954.
5. Nahar A, Mahmoudzadeh R, Rama M, et al. Authorship trends of women in retina: a 25-year analysis. *Ophthalmol Retina*. 2023;7(2):164-170.
6. Reeves MR, Pasricha MV, Ludwig CA, et al. Trends in leadership and award recognition among women in the American Society of Retina Specialists. *J Vitreoretin Dis*. 2021;6(5):374-380.
7. A study to investigate Faricimab treatment response in treatment-naive, underrepresented patients with diabetic macular edema (ELEVATUM). Accessed February 24, 2025. clinicaltrials.gov/study/NCT05224102

Focus on the Patients

For those of you who want to concentrate on the clinic and your OR, this issue also boasts a robust lineup of clinical and surgical columns that share pearls on the following topics:

- Intraocular foreign bodies
- Uveitis in the OR
- Acute macular neuroretinopathy
- Neoplastic masqueraders of uveitis
- *KIF11*-associated retinopathy
- Multizonal outer retinopathy and retinal pigment epitheliopathy
- Coding for OCT imaging

TABLE OF CONTENTS

Diversity and Inclusion in Retina

©iStockphoto.com

FEATURED ARTICLES

DEPARTMENTS

RT Retina Today ONE TO Watch

ELIZABETH ROSSIN, MD, PHD

WHERE IT ALL BEGAN

I grew up in Newton, Massachusetts, and went to the Winsor School for high school. When I was younger, I was always interested in math and science. I loved physics and ultimately decided to get my undergraduate degree in engineering at the University of Pennsylvania before deciding to apply my interest in quantitative science to medicine. After college, I worked at the Broad Institute of MIT and Harvard in a multiple sclerosis lab and started to learn about the field of genetics. I then completed my MD and PhD at Harvard and trained in statistical genetics so I could study the genetics of human disease. I still believe in the promise of genetics, and in addition to my retina practice, I study the genetics of retinal diseases.

MY PATH TO RETINA

The retina was interesting to me from the moment I first saw it with the indirect ophthalmoscope as a medical student in the Mass Eye and Ear emergency department. On this rotation, Demetrios Vavvas, MD, PhD, conducted chart rounds after his clinic, and the enthusiasm with which he and his fellows discussed cases was infectious—there was no turning back. I kept an open mind during residency, but I was naturally drawn back to the challenge, complexity, and creativity of the field of retina.

SUPPORT ALONG THE WAY

I firmly believe that we are a product of the opportunities that we are fortunate enough to be presented with, and that means mentors play a critical role in our lives. Lucia Sobrin, MD, MPH, a uveitis specialist, vitreoretinal surgeon, and geneticist, has been a steadfast mentor at each and every step of my journey through academic ophthalmology. Dean Eliott, MD, a mastermind of medical and surgical retina alike, has been a guiding force for me and generations of retina surgeons. Joan W. Miller, MD, is a luminary to whom I have always looked up and who inspires me to keep working on my goals. Leo A. Kim MD, PhD, is a physician-scientist who has always supported my work through collaboration. Dr. Vavvas has provided unwavering encouragement since I was a medical student, and Janey Wiggs, MD, PhD, is a glaucoma specialist and world-renowned ocular geneticist who has inspired me to pursue genetics and academia since the early days. To this day, I continue to benefit from the frequent contact and support of all these mentors.

Dr. Rossin's advice: It is always possible to change; pick the path that feels right at the moment, and apply yourself fully. In the end, the path doesn't need to be straight.

AN EXPERIENCE TO REMEMBER

My most cherished experiences were when my two children were born! Levi was born in 2017, and Anna was born in 2021. ■

Elizabeth Rossin, MD, PhD, is an assistant professor of Ophthalmology at Harvard Medical School and a vitreoretinal surgeon at Mass Eye and Ear. She is a coinventor on three patents (unrelated to this article) and a consultant for Abbvie.

She can be reached at **elizabeth_rossin@meei.harvard.edu.**

RT NEWS

MARCH 2025

VOL. 20, NO. 2 | RETINATODAY.COM

ANTIDIABETIC DRUGS MAY CAUSE OPHTHALMIC COMPLICATIONS

Research shows nearly 2% of the US population received a prescription for semaglutide in 2023—and it may be associated with ophthalmic complications. A recent study looked into this concern and was unable to determine a causal link between these drugs and the ophthalmic complications reported. The researchers hypothesized that the rapid correction of hyperglycemia induced by these drugs, rather than a toxic effect of the drugs, could be associated with the ophthalmic complications reported.[1]

This retrospective case series included nine patients (five female and four male) who ranged from 37 to 77 years of age and were taking either semaglutide or tirzepatide.[1]

Of the total participants, seven developed nonarteritic ischemic anterior optic neuropathy, one developed bilateral papillitis, and one developed paracentral acute middle maculopathy. Atypical features included sequential ischemic optic neuropathy, bilateral disc swelling at presentation, and progressive vision loss.[1]

"Although a causal link between these drugs and observed complications cannot be established, these findings cannot rule out the possibility that rapid correction of hyperglycemia may be associated with the results reported," the investigators wrote in their paper.[1]

1. Katz BJ, Lee MS, Lincoff NS, et al. Ophthalmic complications associated with the antidiabetic drugs semaglutide and tirzepatide [published online ahead of print January 30, 2025]. *JAMA Ophthalmol*.

AI DEMONSTRATES EFFICACY WITH HOME OCT FOR WET AMD

Notal Vision recently announced the publication of pivotal study results evaluating the performance of its AI algorithm designed to estimate key biomarkers in wet AMD using its home-based OCT system.[1]

In the study, 387 participants were asked to self-image four times on each of two home OCT devices and once with an in-office OCT device during a single visit.[2] Results demonstrated that the AI algorithm exhibited strong repeatability and high concordance with expert graders. Notably, the repeatability of total retinal hyporeflective space volume estimates from successive home OCT images analyzed by the AI algorithm surpassed those of in-office imaging devices assessed by human experts. Furthermore, the agreement between AI and human graders in segmenting hyporeflective spaces was comparable with the inter-grader agreement among experts.[1]

These study results have been instrumental in securing the first FDA clearance for an AI algorithm applied to OCT images, according to Notal Vision.[1]

1. Study demonstrates efficacy of AI in enabling home OCT monitoring [press release]. Eyewire+. February 3, 2025. Accessed February 12, 2025. eyewire.news/news/study-demonstrates-efficacy-of-ai-in-enabling-home-oct-monitoring
2. Schneider EW, Heier JS, Holekamp NM, et al. Pivotal trial toward effectiveness of self-administered OCT in neovascular age-related macular degeneration. Report 2-artificial intelligence analytics. *Ophthalmol Sci*. 2024;5(2):100662.

NOMENCLATURE ESTABLISHED FOR OCTA FINDINGS IN RETINAL VASCULAR DISEASE

A recent study outlines consensus nomenclature for reporting OCT angiography (OCTA) findings in retinal vascular disease.[1] The researchers conducted a literature review of 58 papers and identified 51 quantitative and 108 qualitative terms, which formed the basis for a consensus-building process using a modified Delphi method. An expert panel refined the terminology that was then

AN **EYE** ON DEVICES

- **Norlase** has received FDA 510(k) clearance and a CE mark for Norlase LYNX, a battery-powered, pattern-scanning laser indirect ophthalmoscope. Features include a laser, scanner, and delivery system that are fully integrated into an ultralight headset; a full pattern palette with 2 × 2 to 5 × 5 grids, triple arcs, and circles; safety filters for enhanced visualization; and multilingual voice control of patterns and parameters.
- **AI Optics** has received FDA 510(k) clearance for Sentinel Camera, a handheld retinal imaging system. The company is also developing AI-based software for integration in the future to aid in the detection of retinal diseases.

included in a survey of 44 International Retinal Imaging Society members. The framework includes a generic term (*OCTA signal*), adjective terms, and descriptive/etiologic terms, all of which achieved strong consensus, leading to the overall acceptance of the framework.[1]

1. Munk MR, Turgut F, Faes L, et al. Standardization of optical coherence tomography angiography nomenclature in retinal vascular diseases: consensus-based recommendations [published online ahead of print January 31, 2025]. *Ophthalmol Retina.*

ONS-5010 ACHIEVES GOOD VISUAL OUTCOMES IN THE TREATMENT OF WET AMD

Outlook Therapeutics recently announced findings from the NORSE EIGHT trial evaluating ONS-5010 (Lytenava, bevacizumab-vikg) for the treatment of wet AMD. In the randomized, controlled, noninferiority study, newly diagnosed wet AMD patients randomly (1:1) received 1.25 mg ONS-5010 or 0.5 mg ranibizumab (Lucentis, Genentech/Roche) intravitreal injections.[1]

ONS-5010 demonstrated mean BCVA improvements of +3.3, +4.2, and +5.5 letters at months 1, 2, and 3, respectively. The difference in mean BCVA between ONS-5010 and ranibizumab was -1.009 letters, meeting the noninferiority margin at month 3. ONS-5010 was generally well-tolerated, with overall ocular adverse event rates comparable with those seen with ranibizumab. Safety results were consistent with previously reported safety results from the other NORSE clinical trials.[1]

Based on the completed analysis of the 12-week results, Outlook Therapeutics plans to resubmit the Biologics License Application to the FDA for ONS-5010.[1]

1. Outlook Therapeutics presents results from NORSE EIGHT trial evaluating ONS-5010 for the treatment of wet AMD [press release]. Eyewire+. January 24, 2025. Accessed February 12, 2025. bit.ly/4aZSs9I

K8 IMPLANT REDUCES GA LESION GROWTH

Inflammasome Therapeutics recently reported 3-month results from a clinical trial of its K8 implant in patients with geographic atrophy (GA). The study demonstrated significant efficacy and safety following a single injection of K8.[1]

In the initial cohort of five patients with bilateral GA, the K8 implant reduced the mean growth of GA lesions by 66% compared with the untreated contralateral eyes. Lesion growth reduction was observed irrespective of disease patterns, lesion location, or other AMD characteristics. No drug-related intraocular or systemic safety concerns were identified.[1]

Given these results, the trial has been expanded to include 30 patients, with participants receiving a second K8 injection at the 3-month mark during the 6-month study.[1]

1. Inflammasome Therapeutics announces positive topline data from K8 implant trial for GA [press release]. Eyewire+. January 16, 2025. Accessed February 12, 2025. bit.ly/41hwyLZ

FDA APPROVES EXPANDED LABELS FOR TWO RETINA THERAPIES

Avacincaptad pegol (Izervay, Astellas) can now be dosed beyond 12 months to treat GA secondary to AMD, after the FDA approved the company's resubmission of the supplemental new drug application. The label update is based on the positive results from the GATHER2 trial, which evaluated the drug's safety and efficacy through 2 years. In the trial, treatment reduced the rate of GA lesion growth over 2 years, with benefits observed as early as 6 months.[1]

The FDA also approved the port delivery system (PDS) with ranibizumab 100 mg/mL (Susvimo, Genentech/Roche) for the treatment of diabetic macular edema. The approval is based on 1-year data from the phase 3 PAGODA trial, which showed that patients who received the PDS (refilled every 6 months) achieved noninferior improvements in vision compared with those receiving monthly ranibizumab injections. The PDS was first approved by the FDA for the treatment of wet AMD in 2021.[2] ■

1. FDA expands label for Izervay for GA allowing for no limitation on duration of dosing [press release]. Eyewire+. February. 13, 2025. Accessed February 14, 2025. bit.ly/4134nii
2. FDA approves Susvimo for diabetic macular edema (DME) [press release]. Eyewire+. February 4, 2025. Accessed February 14, 2025. eyewire.news/news/fda-approves-susvimo-for-diabetic-macular-edema-dme

Eyewire+ Pharma Update

- In a phase 2 trial, the vorolanib intravitreal insert **(Duravyu, Eyepoint Pharmaceuticals)** for the treatment of diabetic macular edema (DME) met its primary endpoint of extended time to first supplement injection for both doses under investigation (1.34 mg and 2.7 mg).
- N-acetylcysteine amide tablets **(NPI-001, Nacuity)** was granted Fast Track Designation and Orphan Drug Designation by the FDA. This drug is in development to target and treat oxidative stress, a key factor in retinitis pigmentosa.
- A preclinical in vivo model of **SBL03 (SeaBeLife)**, a topical therapy in development for the treatment of necrotic retinal cell death in geographic atrophy, demonstrated significant protection of retinal cell structure and function in SBL03-treated eyes versus control.
- **Formycon/Klinge Biopharma** announced European Commission approval of **FYB203**, a biosimilar to aflibercept (Eylea, Regeneron), for the treatment of wet AMD, DME, choroidal neovascularization, and macular edema following retinal vein occlusion.
- **4D Molecular Therapeutics** announced positive interim results from its phase 2b clinical trial of **4D-150**, a therapy in development for the treatment of DME, showing good safety and tolerability and promising initial efficacy data at 32 weeks.

Want more retina news from *Eyewire+*?

THE 25TH ANNUAL AVTT AND FELLOWS' COURSE: A SUMMARY

Fellows and faculty gathered in Chicago for 3 days of education and hands-on learning.

BY FRANK MA, MD, PHD, AND NANCY FAUX, MD

The 25th Annual Advanced Vitreoretinal Techniques & Technology (AVTT) Symposium and Fellows' Course was held on August 9 – 11, 2024, at the InterContinental Chicago. The course was organized by William F. Mieler, MD, and included local faculty from the University of Illinois, Chicago; Northwestern University; the University of Chicago; and other retina, uveitis, and oncology specialists from around the country. Although the course was geared toward second-year vitreoretinal surgical fellows, first-year fellows, medical retina fellows, residents, and practicing ophthalmologists also joined in to learn from the expert faculty.

THE PRACTICE OF RETINA

The first day focused on best practices in vitreoretinal medicine, with discussions on ethics, leadership, and different types of practices. George A. Williams, MD, spoke about prior authorizations and risk management for the retina surgeon: not if but when you will face an audit. R.V. Paul Chan, MD, MSc, MBA, discussed leadership and global ophthalmology, including the AAO Leadership Development Program, and Jennifer I. Lim, MD, presented on the importance of advocacy, citing a recent example of South Dakota's expansion of optometric lasers and injections.

In the afternoon, Peter K. Kaiser, MD, took the stage to discuss vitrectomy fluidics, followed by Yannek I. Leiderman, MD, PhD, who shared ways fellows can prepare for peak surgical performance—it begins prior to and outside of the OR, he said.

Next, attendees headed to the wet lab where residents and fellows practiced techniques on different vitrectomy machines with various instructors (Figures 1 and 2). The day concluded with dinner and a breathtaking boat cruise along the shores of Lake Michigan and on the Chicago River.

CLINICAL TIPS AND TRICKS

Day two kicked off with presentations on imaging. David Sarraf, MD, discussed the use of en face OCT in macular diseases, and Jasmine H. Francis, MD, FACS, gave pearls on distinguishing benign from malignant tumors. There were several talks on surgical techniques, including top tips for managing dislocated IOLs shared by Dr. Williams; Judy E. Kim, MD; and Felix Y. Chau, MD. Sunil K. Srivastava, MD, discussed the management of tractional retinal detachments, and Dr. Chau shared his insights into endoscopic surgery.

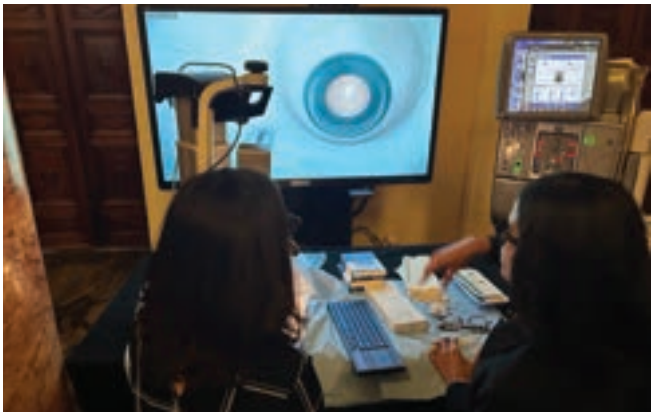


Figure 1. During the wet lab, Alexis K. Warren, MD, a recent graduate of the University of Illinois, Chicago's fellowship program and on faculty at the University of Chicago, works with University of Illinois, Chicago resident Patricia Bai, MD, at a wet lab station.

The most exciting part of the day had to be the engaging and often humorous debates between colleagues and friends scattered throughout the program, with topics including the role of AI in retina practice (between Alexis K. Warren, MD, and Amani A. Fawzi, MD), corticosteroid usage for diabetic macular edema (between Dr. Warren and Justine Cheng, MD), the role of internal limiting membrane removal in epiretinal membrane peels (between Robert A. Hyde, MD, PhD, and Dr. Mieler), and vitrectomy for visually significant floaters (between Michael J. Heiferman, MD, and Dr. Chau). The energizing highlight of the day was the final debate between Dr. Williams and Dr. Mieler, who discussed their views on 3D heads-up displays in the retina OR. While

(Continued on page 22)

VALEDA®

Light Delivery System

The First and Only FDA-Authorized Treatment for Dry AMD that Improves Vision

It's Time for Patients to See Their Future

MyValeda.com

LumiThera®

Rx Only

Refer to the Valeda User Manual for indications for use and important safety information.

FELLOWS' FOCUS

A STRONG FELLOWSHIP FINISH

Here's some advice for soon-to-be attendings.

BY NIKHIL BOMMAKANTI, MD; MEERA D. SIVALINGAM, MD; JORDAN D. DEANER, MD; YOSHIHIRO YONEKAWA, MD; SONIA MEHTA, MD; AND ALLEN C. HO, MD

The final months of vitreoretinal training provide an invaluable opportunity to refine skills and prepare for the transition to independent practice. I asked the attending physicians at Wills Eye Hospital—Meera D. Sivalingam, MD; Jordan D. Deaner, MD; Yoshihiro Yonekawa, MD; Sonia Mehta, MD; and Allen C. Ho, MD—how we can make the most of this critical time.

NIKHIL BOMMAKANTI, MD: HOW CAN SECOND-YEAR FELLOWS OPTIMIZE THE REMAINDER OF THEIR TRAINING?

Dr. Yonekawa: In the first year of fellowship, you master medical retina and learn the basics of surgery. The first half of the second year is about becoming independent in the OR, conquering typical cases, and learning the complex ones. The second half is about adding finesse to typical cases and tackling complex ones. At the end of your training, take a step back to ensure you understand the fundamental concepts of retina, and fill in any gaps you identify.

Dr. Deaner: Get into the OR every chance you can, and take on the complex cases. Understand the decision and indication for surgery, the steps of surgery, and the intra-operative hurdles and potential complications. Document and record complex cases. Watch your attendings carefully; there's always something new to be learned.

Dr. Ho: Stay hungry. Think and observe critically while assisting, and keep refining your surgical skills. Don't just focus on techniques; pay attention to how your mentors communicate with patients. Continue to dive into learning and keep up with medical advances in retina.

Dr. Mehta: Learn how to manage complications and improve OR efficiency. Discuss the best surgical approach to complex cases with your attendings. After the case, discuss what made it difficult, and explore ways to improve your technique. Sometimes, what appears to be a complex case might involve routine surgery in an eye with unique features; there are often tips and tricks to simplify these cases.

Dr. Sivalingam: Plan cases as if you were the attending. Afterward, reflect on the differences between your plan and the actual approach. This habit strengthens your decision making, preparing you for independent practice.

DR. BOMMAKANTI: WHAT DO YOU WISH YOU HAD FOCUSED ON MORE DURING THE FINAL MONTHS OF YOUR TRAINING?

Dr. Ho: I wish I had better understood that patients really want you to know who they are as a person. Understanding the patient in a wider context may help create a better understanding of their needs and fears and may engender more trust and compliance with the care you recommend.

Dr. Deaner: Get to know the instrumentation. Ideally, use and become proficient with the wide array of vitrectomy machines during fellowship. Ask your local representatives to show you how to set up and break down the machines.

Dr. Mehta: Familiarize yourself with the vitrectomy system you'll be using post-fellowship. If you haven't used the system before, schedule a demo with a representative, and record your preferred settings on the machine. Note the surgical trays and instruments you like to use. Also, make it a priority to complete any pending research endeavors. For ongoing projects, send a summary to your supervising attending and transfer data files to the team member taking over.

Dr. Yonekawa: Imagine yourself post-fellowship; pinpoint the resources that could be useful, and document them. Organize and inventory your knowledge and resources.

Dr. Sivalingam: Make a concerted effort to actively seek out cases and surgical techniques you didn't encounter often during fellowship.

DR. BOMMAKANTI: WHAT OVERLOOKED SKILLS SHOULD FELLOWS DEVELOP BEFORE GRADUATING?

Dr. Ho: Find your niche. Foster relationships with mentors, and keep those lines of communication fresh and active.

Dr. Mehta: If you're joining a practice that participates in clinical trials, spend time with your attendings to learn how to discuss clinical trials with patients.

Dr. Sivalingam: Ask your attendings to walk you through how they bill surgical cases and different types of patient office visits. This essential skill is often not actively taught in residency or fellowship.

Dr. Deaner: Learn how to establish a referral network and work well with referring doctors. Take the time to introduce yourself, discuss your training, and establish a means of communication. Keep those lines of communication open.

Dr. Yonekawa: Figure out what kind of advice each of your attendings can provide so you know who to call if you need help.

DR. BOMMAKANTI: WHAT CHALLENGES DO NEW ATTENDINGS FACE IN THEIR FIRST YEAR?

Dr. Yonekawa: Remember to stay humble. The learning process is never-ending, and your new practice and patients will have a lot to offer you when it comes to knowledge. Don't be crushed by failures, but don't ignore them either. Continue to provide the best care you can.

Dr. Ho: In the last half of fellowship, imagine you are on your own, and challenge yourself to make independent decisions. Also, make sure you are licensed and credentialed with provider plans as soon as possible.

Dr. Sivalingam: I found counseling surgical patients more challenging than expected as a new attending. Setting realistic expectations and reviewing what to expect during the recovery period is important. Pay attention to how different attendings counsel, and analyze what is and is not effective. Take advantage of every opportunity you can to practice with your own patients.

Dr. Deaner: The most challenging part of my first year of practice was making big decisions on my own. Without a supervising doctor to back you up, making the final decision can feel daunting. To prepare, practice making clinical and surgical plans independently prior to getting your supervising attending's input. Always remember the basics. There will be cases that appear to be overwhelmingly complex, but even they can be broken down and conquered systematically.

Dr. Mehta: New attendings often find it challenging to effectively communicate with patients and set realistic expectations. Prepare for this by observing your attendings in these discussions and learning key takeaways. Don't hesitate to reach out for guidance on how they would handle a particular situation. One of the greatest aspects of medicine is the opportunity for lifelong learning, and discussing challenging cases is a valuable way to continue growing.

DON'T LOSE SIGHT

The final months of fellowship are a time to refine surgical skills, build competencies, and prepare for the challenges of independent practice. Stay curious, stay humble, and embrace every opportunity to learn. And remember: This is only the beginning! ■

NIKHIL BOMMAKANTI, MD
- Vitreoretinal Surgery Fellow, Mid Atlantic Retina, Wills Eye Hospital, and Clinical Professor of Ophthalmology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia
- nbommakanti@midatlanticretina.com
- Financial disclosure: None

MEERA D. SIVALINGAM, MD
- Vitreoretinal Surgeon, Mid Atlantic Retina, Wills Eye Hospital, Philadelphia
- msivalingam@midatlanticretina.com
- Financial disclosure: None

JORDAN D. DEANER, MD
- Vitreoretinal Surgeon, Mid Atlantic Retina, Wills Eye Hospital, and Assistant Professor of Ophthalmology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia
- jdeaner@midatlanticretina.com
- Financial disclosure: Consultant (ANI Pharmaceuticals, Eyepoint Pharmaceuticals)

YOSHIHIRO YONEKAWA, MD
- Vitreoretinal Surgeon, Mid Atlantic Retina, Wills Eye Hospital, and Associate Professor of Ophthalmology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia
- Editorial Advisory Board Member, *Retina Today*
- yyonekawa@midatlanticretina.com
- Financial disclosure: Consultant (Alcon, Apellis, Bausch + Lomb, Genentech, Versant Health); Research Grant Support (EyeBio, Genentech, Kyowa Kirin, Ocugen, Regeneron)

SONIA MEHTA, MD
- Vitreoretinal Surgeon, Mid Atlantic Retina, Wills Eye Hospital, and Associate Professor of Ophthalmology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia
- smehta@midatlanticretina.com
- Financial disclosure: Consultant (Merck); Speaker/Ad Board (Abbvie, Astellas, Genentech/Roche)

ALLEN C. HO, MD
- Director of Retina Research, Mid Atlantic Retina, Wills Eye Hospital, and Professor of Ophthalmology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia
- Chief Medical Editor, *Retina Today*
- acho@midatlanticretina.com
- Financial disclosure: Consultant/Grant Funding (Adverum, Apellis, Asclepix, Astellas, Clearside, Genentech/Roche, Gyroscope, Kodiak, Lineage, Regenxbio)

INTRODUCING MORR

Multizonal outer retinopathy and retinal pigment epitheliopathy—a newly recognized ocular condition—has distinct features that set it apart from other retinal diseases.

BY PRITHVI RAMTOHUL, MD

Recently, advances in multimodal imaging have allowed retina specialists to identify and characterize previously unrecognized diseases. One such discovery is multizonal outer retinopathy and retinal pigment epitheliopathy (MORR), a condition that presents with disctint clinical and imaging features.[1]

Although initially misclassified under the broad umbrella of acute zonal occult outer retinopathy (AZOOR), MORR stands apart as a unique entity.[2] With its hallmark outer retinal and retinal pigment epithelium (RPE) alterations, striking changes observed on fundus autofluorescence (FAF), and a distinct progression pattern involving both the peripapillary and far-peripheral retina, MORR demands attention from the retina community. In this article, I introduce the clinical features and imaging characteristics of MORR and discuss its significance in retinal diagnostics and patient management.

BACKGROUND: AZOOR AND MORR

AZOOR was first described in 1992, characterized by rapid loss of outer retinal function in one or more zones and often presenting with scotomata, photopsia, and minimal fundoscopic changes.[3] Over time, AZOOR has been applied to a variety of retinal conditions with similar symptoms, leading to diagnostic confusion. The advent of multimodal imaging has provided a clearer understanding of diseases that affect the outer retina, including MORR.[2]

MORR was identified through a retrospective review of patients previously diagnosed with AZOOR. MORR is defined by a unique pattern of outer retinal disruption, particularly affecting the RPE and photoreceptors, and is marked by distinct imaging features that allow it to be differentiated from AZOOR and other white-dot syndromes. With a chronic and progressive nature, MORR affects multiple retinal zones and demonstrates a characteristic pattern of disease progression, making early recognition and management essential for retina specialists.[1]

CLINICAL PRESENTATION AND MULTIMODAL IMAGING

MORR primarily affects middle-aged adults, with most cases presenting bilaterally. Key symptoms include bilateral scotomata, photopsia, and lesions in the peripapillary and far-peripheral retina. Unlike AZOOR, which can be occult and challenging to detect early, MORR exhibits well-defined fundoscopic changes that can be visualized on imaging, even in the initial stages of the disease.[1] Funduscopic examination of MORR typically shows a peripapillary lesion characterized by a well-defined, yellow-gray zone of RPE alterations and bordered by a thin demarcation line of pigmentary changes.

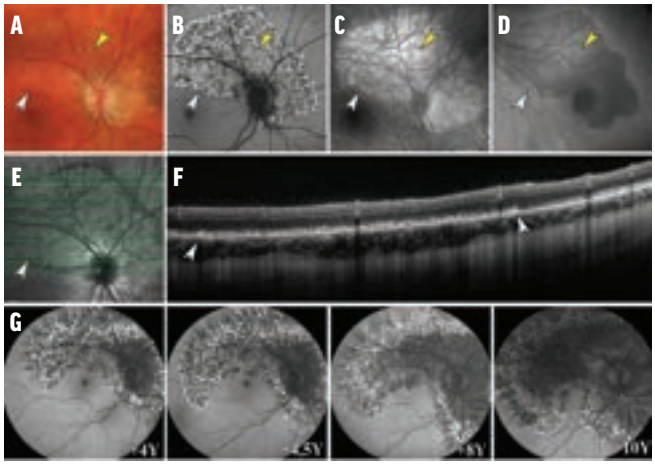


Figure 1. At baseline, color fundus photography (A) of the right eye shows a peripapillary lesion characterized by a well-demarcated yellow-gray core of RPE alterations (yellow arrowhead) bordered by a thin hyperpigmented demarcation line (white arrowhead). The FAF image (B) shows the peripapillary lesion characterized by a speckled hyperautofluorescent core (yellow arrowhead) surrounded by a thin, continuous, hyperautofluorescent demarcation line (white arrowhead). Intermediate-phase FA (C) shows a hyperfluorescent peripapillary core (window defect, yellow arrowhead) and blockage of the pigmented demarcation line (white arrowhead). Note the absence of optic disc or retinal vascular staining or leakage. Late-phase ICG angiography (D) shows hypofluorescence of the peripapillary core (reduced RPE uptake, yellow arrowhead). The demarcation line shows no distinctive features on ICG angiography (white arrowhead). The near-infrared reflectance image (E) shows the peripapillary lesion with hyperreflective changes within the demarcation line (white arrowhead). The corresponding OCT B-scan (F) shows RPE disruption at the core, including RPE thickening interspersed with focal RPE atrophy (between white arrowheads). The hyperautofluorescent demarcation line colocalizes with focal RPE mottling (white arrowheads). The ellipsoid zone is attenuated but still visible above the areas of RPE alterations. Follow-up FAF images (G) acquired up to 10 years later show centrifugal extension of the hypoautofluorescent core and shifting of the demarcation line toward the periphery. Note the episodic pattern of progression.

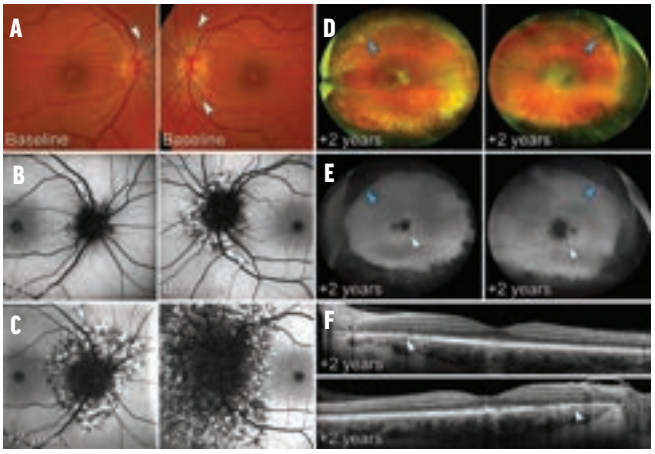


Figure 2. At baseline, color fundus photography (A) of the right eye shows a subtle peripapillary gray lesion of the RPE (white arrowhead). The left eye shows a more apparent peripapillary gray lesion of the RPE surrounded by an orange demarcation line (white arrowheads). FAF (B) of the right eye shows a subtle peripapillary lesion with hyperautofluorescent features (white arrowhead). The left eye shows a peripapillary lesion with a speckled hyperautofluorescent core surrounded by a thin, continuous, hyperautofluorescent demarcation line (white arrowhead). At 2 years, FAF images (C) of the right and left eye show centrifugal progression of the peripapillary lesions characterized by a hypoautofluorescent core surrounded by a large interrupted demarcation line with fringe-like hyperautofluorescent features radiating outwards (white arrowhead). Ultra-widefield pseudocolor fundus photographs (D) of the right and left eye show far-peripheral lesions characterized by well-demarcated 360° annular zones of RPE atrophy accompanied by large spots of RPE hyperpigmentation (blue arrowheads). The ultra-widefield FAF images (E) of the right and left eye show peripapillary lesions (white arrowheads) and far-peripheral annular lesions (blue arrowheads). OCT B-scans (F) through the fovea of the right and left eye show peripapillary RPE disruption and attenuation of the ellipsoid zone (white arrowheads).

Multimodal imaging is crucial in diagnosing MORR. On FAF imaging, peripapillary lesions are characterized by a speckled hyperautofluorescent core surrounded by a demarcation line of hyperautofluorescence, which can be continuous or interrupted with fringe-like hyperautofluorescent features radiating outward. In more advanced cases, this demarcation line becomes thinner and less defined as the disease progresses.

OCT imaging provides additional insights into MORR's progression. Early lesions typically show RPE disruption, with areas of focal RPE atrophy interspersed with intact tissue. As the disease advances, OCT imaging reveals complete RPE atrophy, loss of the ellipsoid zone, and thinning of the outer nuclear layer. Importantly, the inner retina remains unaffected, helping to distinguish MORR from other retinal degenerations. Fluorescein angiography (FA) typically shows a window defect due to the disruption of the RPE (Figure 1).[1]

Additionally, ultra-widefield imaging plays a key role in detecting far-peripheral lesions, which are often missed by standard imaging techniques. Far-peripheral lesions can be identified in the early stages of the disease and may act as an important diagnostic marker (Figures 2 and 3).[1]

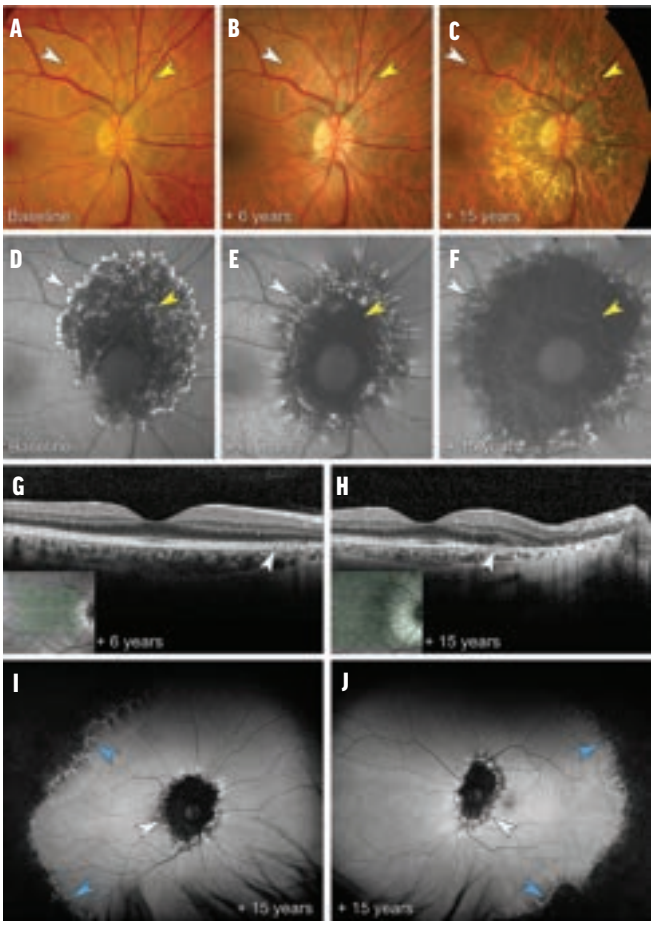


Figure 3. At baseline, color fundus photography (A) of the right eye shows a well-demarcated yellow-gray core of RPE alterations (yellow arrowhead) bordered by a thin, yellowish, drusen-like demarcation line (white arrowhead). At 6 years (B), the peripapillary lesion (yellow arrowhead) is stable, and attenuation of the demarcation line (white arrowhead) is noted. At 15 years (C), centrifugal progression of the peripapillary lesion is noted. The core (yellow arrowhead) shows extension of the RPE atrophy and increased visibility of the choroidal vasculature. The demarcation line is shifted toward the periphery (white arrowhead). At baseline, the FAF image (D) shows a speckled hyperautofluorescent core (yellow arrowhead) surrounded by a thin, continuous, hyperautofluorescent demarcation line (white arrowhead). At 6 years (E), extension of the hypoautofluorescent core (yellow arrowhead) is noted. The pattern of the demarcation line progresses into a larger interrupted border with fringe-like hyperautofluorescent features radiating outwards (white arrowhead). At 15 years (F), centrifugal extension of the hypoautofluorescent core (yellow arrowhead) is noted. The demarcation line is shifted toward the periphery (white arrowhead). Note the thinning of the demarcation line and the reduced amount of hyperautofluorescent features radiating outwards. At 6 years, the OCT B-scan (G) through the fovea shows subtle RPE alterations in the peripapillary area (white arrowhead). The overlying ellipsoid zone is attenuated. At 15 years (H), progression of the RPE atrophy toward the fovea (white arrowhead) is noted. At 15 years, ultra-widefield FAF images of the right (I) and left (J) eye show bilateral intermediate-stage peripapillary lesions (white arrowheads). Note the far-peripheral, annular hypoautofluorescent lesions bordered by an interrupted demarcation line with fringe-like hyperautofluorescent features (blue arrowheads).

NATURAL HISTORY AND PROGRESSION

MORR is a chronic, gradually progressive disease characterized by episodic bursts of rapid lesion expansion,

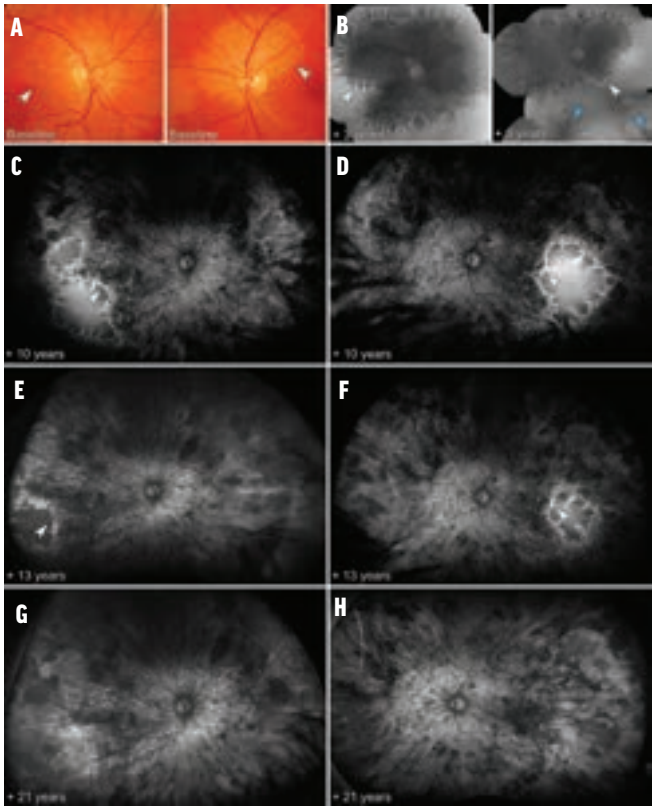


Figure 4. At baseline, fundus photography (A) of the right eye shows peripapillary RPE alterations involving the fovea (white arrowhead) and a well-demarcated, peripapillary yellowish-gray lesion surrounded by an orange demarcation line in the left eye (white arrowhead). At 3 years, FAF images (B) of the right eye show a peripapillary lesion with a hypoautofluorescent core and a large interrupted demarcation line with fringe-like hyperautofluorescent features (white arrowhead). The left eye shows lesion progression with a hypoautofluorescent core and a large interrupted demarcation line with fringe-like hyperautofluorescent features (white arrowhead). Note the far-peripheral lesions bordered by a large interrupted demarcation line with fringe-like hyperautofluorescent features (blue arrowheads). The ultra-widefield FAF images of the right and left eye, acquired at 10 (C and D), 13 (E and F), and 21 (G and H) years, show the peripapillary lesion (white arrowheads) with centrifugal extension of the hypoautofluorescent core and shifting of the demarcation line toward the periphery. Merging of the peripapillary and far-peripheral lesions resulted in complete outer retinal and RPE degeneration at the final visit.

interspersed with periods of relative stability. It follows a stereotypical pattern of progression, with peripapillary lesions extending centrifugally from the optic disc toward the periphery, while far-peripheral lesions progress centripetally. Over time, these two zones can converge, leading to widespread outer retinal and RPE atrophy (Figure 4).[1]

While some patients present with fovea-sparing lesions, many develop foveal involvement, causing significant visual impairment. The mean final BCVA in MORR is approximately 20/200, with some cases progressing to hand-motion vision.[1]

DIFFERENTIATING MORR FROM OTHER RETINAL DISEASES

One of the most significant challenges with MORR is differentiating it from other retinal conditions, such as AZOOR and idiopathic multifocal choroiditis. AZOOR typically involves a rapid onset of visual field loss and minimal fundoscopic changes, while idiopathic multifocal choroiditis presents with inflammatory chorioretinal lesions. MORR, however, is distinct in its imaging and clinical presentation.[2]

Unlike AZOOR, which may be difficult to detect early due to the absence of clear fundoscopic signs, MORR shows well-demarcated lesions on imaging from the onset. Its characteristic multizonal involvement, affecting both the peripapillary and far-peripheral retina, sets it apart from other conditions. In addition, genetic testing performed on MORR patients has not revealed any correlation with inherited retinal diseases, differentiating it from conditions such as autosomal dominant vitreoretinochoroidopathy.[1]

MANAGEMENT IMPLICATIONS

Recognizing MORR as a unique retinal condition carries significant implications for retina specialists. Early diagnosis is crucial in managing its progression and mitigating the risk of complications such as subretinal fibrosis and choroidal neovascularization. Multimodal imaging such as FAF and OCT plays a critical role in identifying MORR and allowing clinicians to monitor disease progression over time.[1]

While no standardized treatment protocol exists for MORR, immunosuppressive therapies, including corticosteroids and anti-TNF agents, have been used in some cases, although with limited effectiveness.[1] Long-acting intravitreal corticosteroid implants have shown promise in certain patients, offering temporary stabilization or even regression of the lesions. However, further research is needed to determine the most effective treatment approach for MORR.[1]

ATTENTION TO DETAIL

MORR represents a newly recognized clinical entity with distinct imaging characteristics that set it apart from other retinal diseases. Its hallmark features include both peripapillary and far-peripheral lesions, which follow a stereotypical progression pattern. This distinct combination of clinical presentation and imaging findings underscores the importance of early recognition of MORR, particularly with multimodal and ultra-widefield imaging techniques. ■

1. Ramtohul P, Marchese A, Introini U, et al. Multizonal outer retinopathy and retinal pigment epitheliopathy (MORR): a newly recognized entity or an unusual variant of AZOOR? *Retina*. 2023;43:1890-1903.
2. Cicinelli MV, Ramtohul P, Marchese A, et al. Latest advances in white spot syndromes: new findings and interpretations. *Prog Retin Eye Res*. 2023;97:101207.
3. Gass JDM. Acute zonal occult outer retinopathy. *Retina*. 2003;23(6 Suppl):79-97.

PRITHVI RAMTOHUL, MD
■ Research Fellow, Vitreous Retina Macula Consultants of New York, New York
■ Ophthalmologist and PhD Candidate, Department of Ophthalmology, North Hospital, AP-HM, University Aix-Marseille, Marseille, France
■ pramtohul@me.com
■ Financial disclosure: None

Delivering Innovations for Subretinal Injections

New Silicone-Free MicroDose™ SF Injection Kit

Our MicroDose™ products set the standard for reliability and control during high precision subretinal injections. With the launch of our new MicroDose™ SF, we have added critical features such as a silicone-free syringe, removable plunger rod and dead-space reduction stopper. Combine either MicroDose™ device with one of our market leading specialized cannulas and create the ideal system for your surgical needs.

Contact us today to find out more!

NEW!

3315 MicroDose™ SF Injection Kit

3275 MicroDose™ Injection Kit

Features

●	US FDA cleared for low-volume subretinal injections	●
●	Precise, pneumatically controlled injection using Alcon, DORC, or B+L vitrectomy consoles	●
●	1mL syringe ideal for low-volume injection	●
●	Luer lock syringe allows for a wide variety of subretinal cannula options	●
●	Syringe can be pneumatically filled	●
●	Syringe can be manually filled utilizing the removable plunger rod	
●	Silicone-free syringe eliminates risk of silicone droplets during injection	
●	Unique stopper design reduces dead-space to approximately 10 microliters	

MedOne®
www.medone.com

SURGICAL PROCEDURE FOR A METALLIC INTRAOCULAR FOREIGN BODY

Pearls for handling these intense cases of ocular trauma.

BY JELENA POTIC, MD, PHD, FEBO

Eye injuries are a significant cause of visual impairment and blindness in individuals of all ages.[1] These injuries, which may occur in isolation or as part of polytrauma, account for approximately 10% of all trauma cases.[1,2] The majority of eye injuries occur in men (92% to 100%), especially those from 29 to 38 years of age (66%).[2] Penetrating eye injuries with intraocular foreign bodies (IOFBs) represent 18% to 41% of all open-globe injuries and are commonly due to workplace accidents (54% to 72%), home incidents (30%), and activities such as hammering (60% to 80%), using power tools (18% to 25%), or handling weapons (19%).[1-6]

Accurate diagnosis and rapid treatment are critical, as the prognosis for visual recovery depends on the severity of the injury and the timeliness of medical intervention.[1] This review focuses on the surgical management of IOFBs, one of the most severe types of ocular trauma.

INITIAL EXAMINATION AND DIAGNOSIS

When evaluating a patient with a suspected penetrating eye injury involving an IOFB, obtaining a detailed history is essential. Clinicians should ask about the injury mechanism, time of occurrence, use of any protective equipment, and time elapsed until initial medical attention.[3,7] A thorough clinical examination must follow, but it's important to note that certain procedures, including applanation tonometry, gonioscopy, and scleral indentation, are contraindicated before primary treatment of any open-globe injuries.[3]

The entry wound's location is crucial for diagnosis, most commonly in the cornea (65%), sclera (25%), or limbus (10%).[3] IOFBs that enter through the sclera tend to cause more damage due to greater kinetic energy compared with corneal entry.[3,8] Scleral-entry IOFBs may also result in perforating injuries, potentially creating an exit wound toward the orbit. The shape of the entry wound can provide clues about the nature of the foreign object; sharp objects typically cause linear lacerations, while blunt objects create irregular wounds.[1,3,9]

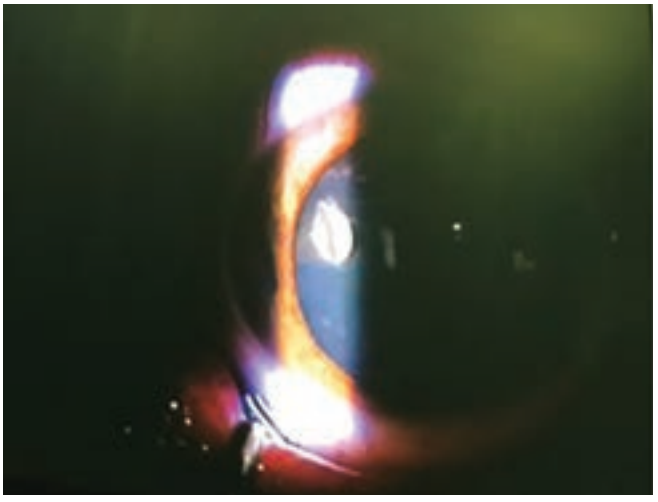


Figure 1. A careful examination revealed an IOFB in the anterior segment.

Be aware that, in rare cases, small IOFBs can cause self-sealing scleral entry wounds with a normal eye pressure and no conjunctival chemosis. It is not advisable to express your opinion concerning the final clinical outcome after eye trauma with IOFBs; even severely damaged eyes may eventually regain some functional vision, but this will likely only be known several months after the initial event.[10]

If an IOFB is suspected, a detailed examination of the anterior and posterior segments under mydriasis is required (Figure 1). If visualization is obstructed by opaque media, or an IOFB is suspected in the area of the ciliary body and iris root, further diagnostics (such as B-scan ultrasonography or CT scan) are necessary to locate and evaluate the IOFB.[11,12]

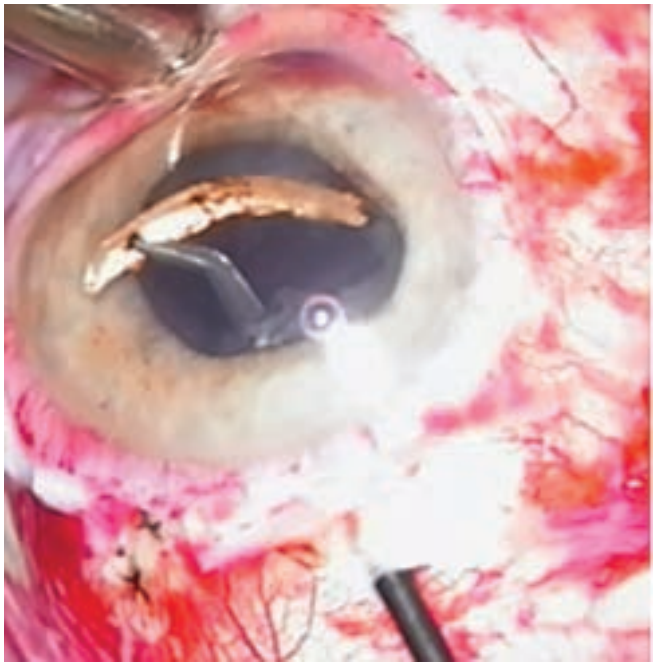


Figure 2. Metallic IOFB extraction from the posterior segment through a large sclerotomy.

TREATMENT AND SURGICAL MANAGEMENT

The primary goal in managing IOFB-related injuries is to preserve the structural integrity of the eye and prevent complications such as endophthalmitis, retinal detachment, and metallosis.[1] Surgical intervention should be carefully planned following diagnosis along with preoperative measures, including anti-tetanus prophylaxis and broad-spectrum systemic antibiotics to cover Gram-positive and Gram-negative bacteria.[13,14]

Surgical Timing

The ideal timing of IOFB extraction is debated. Many studies recommend simultaneous primary injury treatment and IOFB removal within 24 hours, particularly in cases with signs of early endophthalmitis or in the presence of organic IOFBs.[1-3,12,15,16] Others have suggested delaying the extraction of metallic IOFBs, arguing that the high-speed entry sterilizes the object, thereby greatly reducing the risk of intraocular infection (Figure 2). Observing the patient clinically for up to 2 weeks will make it more likely that a complete intraoperative posterior vitreous detachment can be induced in young patients with an adherent posterior hyaloid, which will lower the risk of proliferative vitreoretinopathy (PVR).[1]

In rare cases, trying to extract the IOFB may be contraindicated. These are cases in which the IOFB is so deeply embedded within the sclera that the extraction may cause more damage to the scleral wall than is advisable.[17] In these cases, it has been shown that the fibrotic scar of the deeply embedded IOFB may preclude the development of siderosis.[17]

Vitrectomy Pearls

For posterior segment IOFBs, pars plana vitrectomy (PPV) is the preferred surgical technique.[16-19] Begin by repairing the entry wound, removing any damaged or opaque lens, and establishing an infusion line in the pars plana. In cases of complete intravitreal hemorrhage, perform the initial stage of the vitrectomy using an anterior chamber maintainer until the position of the pars plana infusion can be verified. The initial step is a core vitrectomy to isolate the IOFB from the surrounding vitreous (Figure 3A). If endophthalmitis is suspected at this stage, perform a vitreous biopsy to guide antimicrobial therapy.[1,12,20]

Next, grasp the IOFB using forceps or, if it is metallic and retains magnetic properties, an intraocular magnet, and remove it through an enlarged sclerotomy (Figure 3B and C). Throughout the procedure, use of heavy liquids such as perfluorocarbon should be considered to protect the retina, particularly the macula and optic nerve (Figure 3D). After IOFB removal, suture the sclerotomy, and perform a complete vitrectomy with removal of the posterior hyaloid to reduce the risk of retinal detachment and PVR. Apply endolaser photocoagulation to any retinal tears or around the IOFB impact site if the local situation warrants it. In cases of severe retinal injury or retinal detachment, intraocular gas or silicone oil should be used according to the extent of the pathology (Figure 3E).[1,12,20]

POSTOPERATIVE CARE AND COMPLICATIONS

Postoperative care includes both oral and topical antibiotic and antiinflammatory treatment, as well as close monitoring for complications such as endophthalmitis,

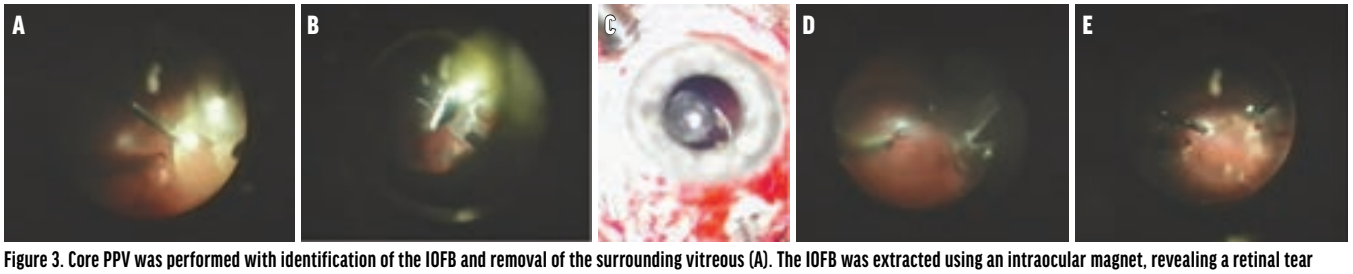


Figure 3. Core PPV was performed with identification of the IOFB and removal of the surrounding vitreous (A). The IOFB was extracted using an intraocular magnet, revealing a retinal tear with localized detachment at the IOFB site (B). The IOFB was removed through an enlarged sclerotomy following lens removal (C). Heavy fluids were injected to flatten the retina, facilitating precise endolaser photocoagulation (D). This was followed by removal of heavy liquids and instillation of silicone oil as a tamponade (E).

secondary glaucoma, retinal detachment, PVR, and sympathetic ophthalmia.[20-23] In pediatric patients, more frequent follow-up is required to prevent complications such as amblyopia and tissue reactions to sutures.[24-27]

ACT QUICKLY TO SPARE VISION

Timely IOFB extraction, ideally within 24 hours for nonmetallic IOFBs, is crucial to improve functional outcomes. Even with severe injuries, restoring partial visual function may be possible and can enhance a patient's quality of life. ■

Acknowledgments: The author would like to thank Thomas J. Wolfensberger, MD; Goran Damjanovic, MD; Igor Kovacevic, MD; and Theodor Stappler, MD, for providing the images for this article.

1. Kuhn F, Pieramici DJ. Ocular trauma: principles and practice. Thieme. 2011.
2. Jonas JB, Knorr HL, Budde WM. Prognostic factors in ocular injuries caused by intraocular or retrobulbar foreign bodies. *Ophthalmology*. 2000;107(5):823-828.
3. Loporchio D, Mukkamala L, Gorukanti K, Zarbin M, Langer P, Bhagat N. Intraocular foreign bodies: a review. *Surv Ophthalmol*. 2016;61(5):582-596.
4. Patel SN, Langer PD, Zarbin MA, Bhagat N. Diagnostic value of clinical examination and radiographic imaging in identification of intraocular foreign bodies in open globe injury. *Eur J Ophthalmol*. 2012;22(2):259-268.
5. Kuhn F, Morris R, Witherspoon CD, Mann L. Epidemiology of blinding trauma in the United States eye injury registry. *Ophthalmic Epidemiol*. 2006;13(3):209-216.
6. Greven CM, Engelbrecht NE, Slusher MM, Nagy SS. Intraocular foreign bodies: management, prognostic factors, and visual outcomes. *Ophthalmology*. 2000;107(3):608-612.
7. Yeh S, Colyer MH, Weichel ED. Current trends in the management of intraocular foreign bodies. *Curr Opin Ophthalmol*. 2008;19(3):225-233.
8. Brown IA. Intraocular foreign bodies: nature of injury. *Int Ophthalmol Clin*. 1968;8(1):147-152.
9. Potts AM, Distler JA. Shape factor in the penetration of intraocular foreign bodies. *Am J Ophthalmol*. 1985;100(1):183-187.
10. Coelho J, Ferreira A, Kuhn F, Meireles A. Globe ruptures: outcomes and prognostic analysis of severe ocular trauma. *Ophthalmologica*. 2022;245(4):376-384.
11. Kaushik S, Ichhpujani P, Ramasubramanian A, Pandav SS. Occult intraocular foreign body: ultrasound biomicroscopy holds the key. *Int Ophthalmol*. 2008;28(1):71-73.
12. Kovačević I, Stefanović I, Jovanović M, Potić J, Damjanović G. Pars plana vitrectomy with extraction of intraocular foreign body in patients with siderosis of the eye: Report of two cases. [Article in Serbian]. *Srpski arhiv za celokupno lekarstvo*. 2013;141(5-6):371-374.
13. Bhagat N, Nagori S, Zarbin M. Post-traumatic infectious endophthalmitis. *Surv Ophthalmol*. 2011;56(3):214-251.
14. Cornut PL, Boisset S, Romanet JP, et al. Principles and applications of molecular biology techniques for the microbiological diagnosis of acute post-operative endophthalmitis. *Surv Ophthalmology*. 2014;59(3):286-303.
15. Chaudhry IA, Shamsi FA, Al-Harthi E, Al-Theeb A, Elzaridi E, Riley FC. Incidence and visual outcome of endophthalmitis associated with intraocular foreign bodies. *Graefes Arch Clin Exp Ophthalmol*. 2008;246(2):181-186.
16. Demircan N, Soylu M, Yagmur M, Akkaya H, Ozcan AA, Varinli I. Pars plana vitrectomy in ocular injury with intraocular foreign body. *J Trauma*. 2005;59(5):1216-1218.
17. Wygnanski-Jaffe T, Desatnik H, Arazi T, Treister G, Moisseiev J. Metallic intraocular foreign body impacted in the retina: 12-year follow-up. *Retina*. 2000;20(2):222.
18. Weichel L, Yeh S. Techniques of intraocular foreign body removal. *Techniques in Ophthalmology*. 2008;6(3):88-97.
19. Mester V, Kuhn F. Ferrous intraocular foreign bodies retained in the posterior segment: management options and results. *Int Ophthalmol*. 1998;22(6):355-62.
20. Williamson TH. Vitreoretinal Surgery. Springer Science & Business Media. 2013.
21. Andreoli CM, Andreoli MT, Kloek CE, Ahuero AE, Vavvas D, Durand ML. Low rate of endophthalmitis in a large series of open globe injuries. *Am J Ophthalmol*. 2009;147(4):601-608.e2.
22. Soheilian M, Rafati N, Mohebbi MR, et al. Prophylaxis of acute posttraumatic bacterial endophthalmitis: a multicenter, randomized clinical trial of intraocular antibiotic injection, report 2. *Arch Ophthalmol*. 2007;125(4):460-465.
23. Ozbek Z, Arikan G, Yaman A, Oner H, Bajin MS, Saatci AO. Sympathetic ophthalmia following vitreoretinal surgery. *Int Ophthalmol*. 2010;30(2):221-227.
24. Gupta A, Rahman I, Leatherbarrow B. Open globe injuries in children: factors predictive of a poor final visual acuity. *Eye*. 2009;23(3):621-625.
25. Li X, Zarbin MA, Bhagat N. Pediatric open globe injury: a review of the literature. *J Emerg Trauma Shock*. 2015;8(4):216-223.
26. Liu X, Liu Z, Liu Y, et al. Determination of visual prognosis in children with open globe injuries. *Eye*. 2014;28(7):852-856.
27. Yang Y, Yang C, Zhao R, et al. Intraocular foreign body injury in children: clinical characteristics and factors associated with endophthalmitis. *Br J Ophthalmol*. 2020;104(6):780-784.

JELENA POTIC, MD, PHD, FEBO
- Vitreoretinal Surgeon, Jules-Gonin Eye Hospital, Fondation Asile des Aveugles, University of Lausanne, Switzerland
- Vitreoretinal Surgeon, Clinic for Eye Diseases, Clinical Center of Serbia, School of Medicine, University of Belgrade, Serbia
- jelena.potic@gmail.com
- Financial disclosure: None

AVTT AND FELLOWS' COURSE

(Continued from page 12)

Figure 2. During the wet lab, Justine Cheng, MD, who recently joined the University of Illinois, Chicago after training at Casey Eye Institute at Oregon Health & Science University, provides vitrectomy tips to AVTT attendees.

there is interest in possible alleviation or prevention of neck and back pain, the pertinent issue was whether it leads to more efficient surgery and perhaps better surgical outcomes.

The final day began with updates on AMD. An important debate between Dr. Lim and Dr. Sarraf focused on the clinical utility of OCT angiography, which now has its own CPT code. The day concluded with the topics of uveitis, inflammation, infection, and toxicity. Dr. Srivastava discussed common mistakes to avoid as a retina specialist when caring for uveitis patients, Pooja Bhat, MD, gave pointers on pediatric uveitis, and Dr. Mieler touched on retinal toxicity due to recreational drug use, thus concluding a 3-day whirlwind tour of virtually all aspects of medical and surgical retina, uveitis, and pertinent aspects of ocular oncology as well.

We look forward to seeing many of you, along with the new group of vitreoretinal fellows, at the 26th Annual Chicago AVTT, August 22 – 24, 2025, at the Hyatt Centric Chicago Magnificent Mile! ■

FRANK MA, MD, PHD
- Vitreoretinal Fellow, University of Illinois, Chicago
- cma38@uic.edu
- Financial disclosure: None

NANCY FAUX, MD
- Vitreoretinal Fellow, University of Illinois, Chicago
- nfaux2@uic.edu
- Financial disclosure: None

NAVIGATING A GA PATIENT'S JOURNEY THROUGH CLINIC

Use of imaging and relevant educational supplements can help cut down on extended chair time.

By Esther Lee Kim, MD

While every practice has its own unique method of navigating and supporting patients through significant diagnoses, our mission as providers should be to support our patients, granting them the knowledge and autonomy to have as much control as possible. In the context of geographic atrophy (GA), that means supplying patients with the appropriate information and relevant supplementary data to make decisions about treatment.

My conversations about GA are tailored to every patient's individual circumstance, and as such, this does take more time than with other retinal diseases. GA is a complex disease. However, providers should not feel overwhelmed by the extra chair time needed to properly educate patients about their options.

Easing Patients' Minds

Patients often have many questions upon hearing about a diagnosis of age-related macular degeneration (AMD) or GA. We should be cognizant of the fact that a new diagnosis can be scary, and we should work to assuage those fears. For instance, I am often asked, "Will I go blind?" Thankfully, I can reassure patients that their peripheral vision will remain intact whereas they may lose central vision. Another common question I am asked is, "Are the injections working?" This involves a more complex answer. In patients with wet AMD, I can show evidence of the fluid reduction on OCT following treatment. To answer this question for patients with GA, however, I must rely on clinical trial data. The pivotal studies for the two available complement inhibitors involved thousands of patients followed over multiple years, and as practitioners, we trust the scientific data that these approved treatments have measurable, real benefits in reducing the growth of GA lesions over time.

Educating Patients

When educating about GA, I intentionally break up the discussion over a few visits. Not only are patients trying to comprehend the clinical information presented to them, but they are also emotionally processing a life-altering diagnosis. I provide patients with brochures for avacincaptad pegol intravitreal solution, (Izervay, Astellas) and/or pegcetacoplan, (Syfovre, Apellis), depending on which drug I would recommend to the patient. Furthermore, I rely on imaging to show patients their actual GA lesions. This makes their disease more real, especially in cases where patients are minimally symptomatic because their GA was detected early. It's powerful when patients observe the imaging for themselves, and usually the picture says it all for them. Additionally, I aim to perform fundus autofluorescence imaging around every 6 months, so I can visually follow the patient's disease progression.

Navigating a Patient's Journey Through Clinic

Initially, the logistics of scheduling GA patients in clinic were challenging as we were scheduling injections into an already busy clinic schedule or navigating the schedules of patients already coming in for their wet AMD injections. However, the process has become more streamlined, especially for existing patients receiving anti-VEGF treatment, as they are more familiar with injection protocols. One way we cut down on the treatment burden among patients being treated for both wet AMD and GA is to use newer generation anti-VEGF agents, such as Vabysmo (Faricimab, Genentech) or Eylea HD (aflibercept 8 mg, Regeneron), which offer extended treatment intervals.

Remaining Hopeful Yet Honest

It's no secret that GA is a potentially blinding condition and is often a very discouraging diagnosis. As retina specialists, I believe we must reiterate to our patients that a diagnosis of GA is a balance of hope and honesty. The currently available drugs provide some amount of hope, which is by far the most important thing. I am grateful I can offer treatments to patients that have proven to be efficacious with a decent safety profile.

It is also important to remain honest with patients and relay that, despite treatments, their GA will progress. This approach allows patients to anticipate a potential loss of vision, while not providing them with false expectations about their disease progression.

Although the currently available therapies for GA are not curative, they may provide a few additional years of increased quality of life with manageable side effects. This means perhaps experiencing a few more years of driving or seeing loved ones faces. And, at the very least, starting patients on complement inhibitor therapy now may serve as a bridge to even better future treatments, as GA is a very active area of research in the retina space. ■

ESTHER LEE KIM, MD

- Retina Specialist and Vitreoretinal Surgeon, Orange County Retina, Orange County, CA
- kim.esther.lee@gmail.com
- Financial disclosures: Speaker, Consultant (Apellis, Astellas)

Scan this QR code to read the extended article.

You Belong: The Value of Mentorship in Retina

These programs are dedicated to boosting diversity and inclusion in the field.

By Rebecca Hepp, MA, Editor-in-Chief

Numerous studies have documented a continued lack of diversity in ophthalmology and its subspecialties.[1-5] Luckily, many ophthalmology societies and organizations have initiated mentoring programs to expose talented and capable applicants who are underrepresented in medicine (URiM) to the field of ophthalmology and retina—and they are working.

This article highlights mentoring programs in retina and ophthalmology that have opened the door for many talented URiM trainees and shares the stories of those who have found their place in ophthalmology.

AAO MINORITY OPHTHALMOLOGY MENTORING PROGRAM

The Minority Ophthalmology Mentoring (MOM) program (a partnership between the AAO and the Association of University Professors of Ophthalmology) aims to increase diversity in ophthalmology by helping URiM students become competitive ophthalmology residency applicants.[1] As part of the program, URiM students in their first year of medical school gain one-on-one mentorship, help with career planning, and access to networking and educational opportunities. Participants who remain in the program for more than 1 year attend a MOM Student Engagement Weekend at the AAO's annual meeting and receive ongoing mentoring and matching and residency preparation.

For more information, visit bit.ly/3CX9XLh.

AAO LGBTQ+ COMMUNITY

The LGBTQ+ Community, hosted by the AAO, is designed to advance health equity for lesbian, gay, bisexual, transgender, queer, intersex, and asexual plus (LGBTQIA+) individuals and equality for LGBTQIA+ professionals. The Community focuses on increasing LGBTQIA+ visibility, mentoring trainees and practicing physicians, and educating the field on topics relevant to the LGBTQIA+ community.

David Ramirez, MD, an assistant professor of Pediatric Ophthalmology at Northwestern University, co-founded the LGBTQ+ Community in 2021 after realizing that trainees need a group of people who know firsthand what the LGBTQIA+ experience is like in ophthalmology.

AT A GLANCE

- The AAO boasts several programs that improve representation for those who are underrepresented in medicine (URiM): the Minority Ophthalmology Mentoring program and the LGBTQ+ Community mentorship program.
- The Vit-Buckle Society's FOCUS program shows URiM medical students and ophthalmology residents what the field of retina has to offer.
- The American Society of Retina Specialists supports the URiM Mentorship Program and the Women in Retina section.
- The Rabb-Venable Program supports research efforts of outstanding URiM medical students, residents, and fellows in ophthalmology.

"I have gone from feeling like I was alone on an island to building an over 100-member (and growing) community that cares about uplifting its members," he shared with *Retina Today*. "I look forward to the new initiatives we have planned for the future." (To read the full interview, see *Personal Perspectives: Building a Community of Inclusion*.)

In addition to a robust library of online resources, the LGBTQ+ Community has programming planned for the AAO's annual meeting in Orlando, including sessions and a dedicated lounge for members and LGBTQIA+ allies.

For Kevin C. Allan, MD, PhD, an ophthalmology resident at Cole Eye Institute, the Community gave him the push he needed to commit to the field. Dr. Allan loved ophthalmology as a medical student, but a lack of LGBTQIA+ representation in the field—and research showing it as one of the least diverse medical subspecialties—gave him pause.[1-5] A colleague suggested he join the AAO's LGBTQ+ Community, and he soon realized just how inclusive ophthalmology could be. "The LGBTQ+ Community provides opportunity and exposure to people who are safe, in your corner, and going to fight for you," he noted in an interview with *Retina Today*. "Every person I talked to was supportive and willing to guide me through residency applications."

Having gone through the process himself, Dr. Allan now participates in the group's mentorship program to help support other medical students struggling to overcome impostor syndrome and see themselves as part of the field of ophthalmology. (See *Personal Perspectives: Finding Your Place in Ophthalmology* to read the full interview.)

For more on the LGBTQ+ Community, visit bit.ly/411oaPe.

VBS FOCUS PROGRAM

The Vit-Buckle Society's (VBS) FOstering Careers for Underrepresented Stars (FOCUS) program provides an opportunity for outstanding medical students and ophthalmology residents to see what the field of retina has to offer, according to Basil K. Williams Jr, MD, VBS vice president of Diversity, Equity, and Inclusion.

"VBS creates a unique environment that is fun and engaging without a hierarchical structure and encourages

ABOUT THE ARTICLE PARTICIPANTS:

KEVIN C. ALLAN, MD, PHD (HE/HIM/HIS)
- Ophthalmology Resident, Cole Eye Institute, Cleveland Clinic, Cleveland
- allank2@ccf.org
- Financial disclosure: None

ELIZABETH "LIBBY" FAIRLESS, MD (SHE/HER/HERS)
- Medical Retina Fellow, Moran Eye Center, University of Utah Hospital and Clinics, Salt Lake City
- elizabeth.fairless.18@gmail.com
- Financial disclosure: none

VIVIENNE S. HAU, MD, PHD (SHE/HER/HERS)
- Clinical Assistant Professor, Kaiser Permanente Bernard J. Tyson School of Medicine, Pasadena, California
- Surgical Vitreoretinal Specialist, Vice Chair of Clinical Research, Southern California Permanente Medical Group, Riverside, California
- vivienne.s.hau@kp.org
- Financial disclosure: Research Funding (Genentech/Roche, Novartis, Regeneron)

DAVID RAMIREZ, MD (HE/HIM/HIS)
- Assistant Professor, Pediatric Ophthalmology, Ann & Robert H. Lurie Children's Hospital, Northwestern University, Chicago
- davidramirez@luriechildrens.org
- Financial disclosure: None

JESSICA D. RANDOLPH, MD (SHE/HER/HERS)
- Associate Professor of Ophthalmology, Virginia Commonwealth University, Richmond, Virginia
- Chair, ASRS Women in Retina
- jessrandolph@gmail.com
- Financial disclosure: None

ARNULFO GARZA REYES, MD (HE/HIM/HIS)
- PGY4, Department of Ophthalmology and Visual Sciences, Carver College of Medicine, University of Iowa, Iowa City, Iowa
- Incoming Vitreoretinal Fellow, Bascom Palmer Eye Institute, Miami
- arnulfo-garzareyes@uiowa.edu
- Financial disclosure: None

HECTOR SANDOVAL, MD (HE/HIM/HIS)
- PGY1, Department of Ophthalmology, St. John's Episcopal Hospital, Far Rockaway, New York
- hrsandjr@gmail.com
- Financial disclosure: None

BASIL K. WILLIAMS JR, MD (HE/HIM/HIS)
- Associate Professor of Clinical Ophthalmology, Bascom Palmer Eye Institute, Miami
- basilkwilliams@miami.edu
- Financial disclosure: Consultant (Abbvie, Castle Biosciences, EyePoint, Genentech/Roche, Regeneron)

Personal Perspectives: Building a Community of Inclusion

David Ramirez, MD, shares how the AAO's LGBTQ+ Community aims to strengthen the field of ophthalmology through mentorship and education.

***RETINA TODAY (RT):* WHAT ARE THE GOALS OF THE LGBTQ+ COMMUNITY?**

David Ramirez, MD: We aim to support LGBTQIA+ individuals in ophthalmology by creating an inclusive community, providing mentoring, increasing visibility, supporting research, facilitating access to resources, and advocating for LGBTQIA+ providers and patients.

***RT:* HOW HAS THE PROGRAM GROWN SINCE ITS FOUNDING IN 2021?**

Dr. Ramirez: When I was a resident, I felt like I was on an island. I had no knowledge of any LGBTQIA+ person in ophthalmology, and I yearned to hear perspectives from LGBTQIA+ physicians. Although I had wonderful non-LGBTQIA+ mentors, it was difficult for them to speak to what it's like to be a gay person in ophthalmology. Are people generally accepting? Is it frowned upon to discuss such a major part of my life with my colleagues? Am I allowed to bring my significant other to events, or is that considered controversial?

I needed to hear these stories from individuals who had experienced them firsthand. To meet this need, I, along with a few other LGBTQIA+ ophthalmologists, banded together to form the LGBTQ+ Community. We approached the AAO with the goal of creating visibility and mentorship opportunities.

With the AAO's support, our presence has grown significantly. In our first year, we created a web page, an LGBTQIA+ email hosted by the AAO, resource archives, mentorship handbooks, and formal programming during the annual meeting. Our first course morphed into an engaging discussion about allyship, dealing with staff who do not support LGBTQIA+ patients, and other topics. Much of our participation was from allies, although some students and practicing ophthalmologists shared their LGBTQIA+ perspectives.

The session left us feeling invigorated and hopeful that we had a positive effect—and we did. I received many emails from trainees asking about mentorship or expressing interest in being involved with the Community. After the success of that first program, we secured industry funding for our larger mentorship events, allowing us to host larger and larger groups. We built our online platform (hosted by the AAO) into a forum for discussion, resource sharing, and mentorship.

I am excited to see where the future takes us—I have gone from feeling like I was alone on an island to building an over 100-member (and growing) organization that cares about uplifting its members; the AAO has changed my life. I am grateful to all those involved and look forward to the new initiatives we have planned for the future.

***RT:* HOW CAN MENTORS/MENTEES GET INVOLVED?**

Dr. Ramirez: The first step would be to visit our landing page (www.aao.org/lgbtq-community) and join the Community (click on Invitation to Join the Community). There are several resources available, including an LGBTQ Survival Guide for Applying to Residency, and a pool of mentors waiting to help. Those interested in getting involved may also email lgbtq@aao.org with any questions.

We also plan to invite interested members to come to our programming at the annual meeting in Orlando this year. We will have a mentorship mixer and are hosting a Lavender Lounge to provide an inclusive space at the meeting. ■

DAVID RAMIREZ, MD (HE/HIM/HIS)
- Assistant Professor, Pediatric Ophthalmology, Ann & Robert H. Lurie Children's Hospital, Northwestern University, Chicago
- davidramirez@luriechildrens.org
- Financial disclosure: None

audience (especially young retina specialist) participation. As a result, the trainees get to see themselves as part of the field," he told *Retina Today* in an interview.

FOCUS includes a full day of educational sessions during the annual VBS meeting. URiM trainees also gain access to content to help them prepare for the rigors of training and create a network of mentors, Dr. Williams added.

For many attendees, including Arnulfo Garza Reyes, MD, the program is a tipping point in their training. During residency, Dr. Garza was interested in retina but struggled with imposter syndrome. "When I looked to the attendings at my institution, I realized that while they were amazing, their path to medicine and ophthalmology was really different than mine," he told *Retina Today* in an interview. A friend connected Dr. Garza with Dr. Williams to discuss his interest in the field of retina. Dr. Williams suggested applying for the FOCUS program, and that conversation was the push Dr. Garza needed to pursue his passion for retina.

"In participating in FOCUS, I realized not only that I wanted to be in the field of retina, but also that I belonged.

Personal Perspectives: Paying it Forward at FOCUS

Here, one VBS FOCUS participant shares his path to retina and how mentorship changed the course of his career for the better.

***RETINA TODAY (RT):* HOW DID YOU LEARN ABOUT THE VBS FOSTERING CAREERS FOR UNDERREPRESENTED STARS (FOCUS) PROGRAM?**

Arnulfo Garza Reyes, MD: Halfway through my residency, I shared with a friend that I really liked retina but was unsure if I would fit in. When I looked to the attendings at my institution, I realized that while they were amazing, their path to medicine and ophthalmology was really different than mine. That colleague connected me with Basil K. Williams Jr, MD, who took the time to hear my story, share his, and encourage me to pursue retina if that's what I wanted. Dr. Williams didn't know anything about me, yet he was very generous with his time. He noted that once you bring a lot of people together who struggle with imposter syndrome, you can develop a fellowship with them and help them overcome those insecurities. That's the goal of the VBS FOCUS program.

In participating in FOCUS, I realized not only that I wanted to be in the field of retina, but also that I belonged. Throughout my career, I've never been afraid of adversity, but I was a little intimidated by it. During the FOCUS program, I met other people at different levels of training, and many medical students were telling me *my* story, but from *their* perspective. They were struggling with the same things that I struggled with as a medical student. All I could think was, "Wow, this is incredible that I can talk about this with residents at my level but also fellows and attendings."

That opened my eyes to the support in the field and how the program leadership was so invested in getting us there. That fueled me, and I was empowered to go forward. It didn't stop the imposter syndrome or the feelings that I didn't belong–those may never go away–but I had more courage to try. Whenever I feel like I don't belong, I remember that everyone at FOCUS seemed like they belonged, so maybe I do too.

I attended FOCUS for 2 years, and in the first year, I didn't connect much with the medical students, perhaps because I felt that I hadn't accomplished enough yet. When I attended the VBS meeting the second year, I came back with a plan–specific things I was hoping to accomplish and certain people I wanted to connect with and seek support from during fellowship applications. I also focused on mentoring the medical students because I was confident enough to connect with them and start supporting them in whatever way I could.

***RT:* WHAT ADVICE CAN YOU OFFER TO OTHERS SEEKING MENTORSHIP?**

Dr. Garza: The first thing that really helped me is identifying what I really wanted and the foundational principles behind what I want to do in medicine–what really fills me up.

If you're struggling with imposter syndrome, talk to people and be open, however counterintuitive that seems. When you're struggling with imposter syndrome, you put up barriers, you're wearing armor, and that makes it hard to feel accepted. That often makes you work extra hard or say yes to more than you can handle, and you burn out.

Connect with someone who you identify with in medicine, whether that's another trainee at your level or one of your seniors. And then just be yourself; if you know exactly who you are and what you want to be, that's the most powerful thing. Convey that, and you will thrive.

It all starts with questioning who you are, what you want to do, and what fills you up. Then, just be vulnerable enough to open up whenever you're struggling with imposter syndrome. ■

ARNULFO GARZA REYES, MD (HE/HIM/HIS)
- PGY4, Department of Ophthalmology and Visual Sciences, Carver College of Medicine, University of Iowa, Iowa City, Iowa
- Incoming Vitreoretinal Fellow, Bascom Palmer Eye Institute, Miami
- arnulfo-garzareyes@uiowa.edu
- Financial disclosure: None

Throughout my career, I've never been afraid of adversity, but I was a little intimidated by it," he explained. "It didn't stop the imposter syndrome or feelings that I didn't belong—those may never go away—but I had more courage to try," Dr. Garza concluded. (To read the full interview, see *Personal Perspectives: Paying it Forward at FOCUS*).

Visit bit.ly/3ELImOJ to learn more about FOCUS.

RETINA SOCIETY RESOURCE PROGRAM

The Retina Society's URiM (RESOURCE) mentoring program pairs residents from underrepresented backgrounds with Retina Society mentors to provide research and career mentorship. Elizabeth Fairless, MD, heard about RESOURCE through her residency program director, who encouraged her to apply. Once accepted, the program matched her

with Yoshihiro Yonekawa, MD, and his former fellow, Rebecca Soares, MD, as mentors. Together, these mentors helped Dr. Fairless formulate a research question focused on health disparities facing Native Americans, and she presented the project at the annual Retina Society meeting.

"The experience helped me build research experience and strengthen my application for fellowship programs," Dr. Fairless told *Retina Today*. "Additionally, attending the Retina Society meeting allowed me to meet retina specialists and network prior to applying to fellowship."

"Because we all have unique paths through our careers, it's important to find mentors who are willing to understand your interests and motivations and support your goals, even if they're a little outside the norm," she added. Dr. Fairless is now a medical retina fellow at the University of Utah's Moran Eye Center in Salt Lake City.

Visit bit.ly/3D1wuGE to learn more about the RESOURCE program.

ASRS URIM MENTORSHIP PROGRAM

The URiM Mentorship Program for the American Society of Retina Specialists (ASRS) fosters professional relationships that encourage URiM mentees to join the field of retina.

"In the wake of George Floyd, the ASRS realized it could do a better job of cultivating interest and involvement among races and ethnicities not well represented in our field," Vivienne S. Hau, MD, PhD, co-chair of the ASRS Diversity, Equity, and Inclusion Ad Hoc Committee, told *Retina Today*. "This program employs a holistic application process where we now support one of the most diverse representations of mentees within the field."

The program includes two distinct tracks: traditional and family. The traditional track follows a standard one-on-one format, while the family track pairs groups of mentors with mentees. "This unique program connects mentees with a family of four mentors who are meant to be life-long mentors, unlike typical 1-year one-on-one mentorship," explained Dr. Hau. "Each year, mentors and mentees commit to at least five sessions (three virtual and two in-person) with a variety of invited speakers on engaging topics to elicit deep discussion and introspection, empowering them with the tools to be successful as retina specialists."

Hector Sandoval, MD, was part of the program's inaugural year, and the mentorship has been invaluable, particularly when his residency program announced its closure. His ASRS URiM family acted quickly to help him network and find a new residency program to avoid a break in his training.

"As a first-generation physician, my journey has been long, with many ups and downs; however, with the guidance of my mentors, I've always stayed on track," he told *Retina Today*. "Their advocacy and guidance have been invaluable, and it inspires me to pay it forward to the next generation of ophthalmologists."

He has enjoyed one-on-one mentoring, in addition to in-person networking at the annual ASRS meeting. "Sharing life updates and supporting each other on our journeys toward becoming ophthalmologists is always a pleasure," Dr. Sandoval noted. "I also found it reassuring to meet a network of mentors dedicated to providing guidance and increasing diversity within the retina subspecialty."

Visit bit.ly/3QuYTIm to learn more.

ASRS WOMEN IN RETINA

The ASRS Women in Retina (WinR) section, which has promoted and supported women in the field of retina for more than 10 years, focuses on four pillars, according to current WinR Chair Jessica D. Randolph, MD: professional development, wellness, networking, and inclusivity. The programming includes case conferences, research competitions, and leadership discussions, Dr. Randolph added.

"Retina is a very white, male-dominated field, and even though the number of women is rising, the positions of power are still very male-dominated," she said. "Our goal is to remedy that." For example, WinR launched the Clinical Trials Incubator program, which nominates two women to initiate a clinical trial at their site and provides them intensive mentoring by physician and industry mentors.

WinR's mentoring program, designed for fellows and early-career women in retina, is equally beneficial to mentors, who have found the program incredibly rewarding, Dr. Randolph explained. "We are always looking to bring in more mentors, as the pool of mentees is constantly growing," she added.

To get involved as a mentor or apply as a mentee, visit bit.ly/3XcLMPE.

RABB-VENABLE PROGRAM

The Rabb-Venable Excellence in Ophthalmology Research Program supports the research efforts of outstanding URiM medical students, residents, and fellows in ophthalmology or those who desire to work in underserved communities. The program, founded in 2000, invites award winners to present their research during the Ophthalmology Section at the National Medical Association's annual assembly. In addition, Rabb-Venable participants have access to mentorship, guidance for applying to ophthalmology residency programs, and information about research opportunities.

To learn more, visit bit.ly/4hL5Kcx.

IMPROVING DIVERSITY IN RETINA

The goal for all retina specialists is to provide exceptional care to patients and preserve their vision whenever possible—and that principle is universal, regardless of the clinician's race, ethnicity, gender, or sexual orientation. With the help of the mentoring programs discussed here (and others), the field of retina is slowly diversifying with exceptionally talented URiM clinicians to better represent the diverse population it treats. And that means everyone can feel seen, find the support they need, and thrive. ■

Personal Perspectives: Finding Your Place in Ophthalmology

Kevin C. Allan, MD, PhD, shares why visibility is crucial, particularly in a medical specialty that is traditionally lacking in diversity.

RETINA TODAY (RT): HOW DID YOU FIND THE LGBTQ+ COMMUNITY?

Kevin C. Allan, MD, PhD: In medical school, I first became interested in ophthalmology because people told me that ophthalmologists are nerdy, love their lives, and enjoy a unique blend of clinical practice and surgery. But I also heard the field was one of the least diverse specialties, and I saw studies that supported that notion.[1-5] As a gay man, it was intimidating to consider a traditionally conservative field. While I was drawn to the specialty and saw myself thriving in it, I was bothered by the lack of LGBTQIA+ representation within the field.

One day, I found myself talking with a retina fellow and voiced my concern about whether LGBTQIA+ physicians were truly welcome in ophthalmology. She shared that she was gay and involved in the AAO's LGBTQ+ Community, a new group eager to grow its membership and visibility. I joined, and seeing that the group already had more than 50 members was enough for me—I went from feeling isolated to having 50 points of contact across the country, all of whom were more than willing to support me during residency applications and beyond. Today, the LGBTQ+ Community has grown to more than 150 members, highlighting the need for this network and the importance of fostering a sense of belonging.

RT: HOW HAS THIS COMMUNITY AFFECTED YOUR CAREER?

Dr. Allan: I cannot emphasize enough how important this mentorship has been. When I ask my mentors what defines their success, every one of them credits mentorship and standing on the shoulders of giants. When I was applying to residency, I connected with members of the LGBTQ+ Community to learn about different programs and gauge how welcoming they were to LGBTQIA+ physicians. I didn't want to be put back in the closet, if you will, during my 4 years of residency. These conversations provided invaluable insights into the culture of each program, and my mentors supported me by recommending places that were truly inclusive and would set me up for success.

The LGBTQ+ Community also offers a mentorship program that pairs more senior members with medical students navigating the application process. Now, as a mentor myself, it's wonderful and rewarding to provide that same support, to encourage others that they can achieve their goals, and to reassure them that they are not alone. The LGBTQ+ Community provides opportunity and exposure to people who are safe, in your corner, and going to fight for you.

.

RT: WHAT ADVICE CAN YOU OFFER TO OTHERS SEEKING MENTORSHIP?

Dr. Allan: My biggest piece of advice is to reach out to people or approach potential mentors at conferences. You won't know until you hear *no* or *yes*. Get involved in the group, come to the LGBTQIA+ event at AAO, or apply for the incredible programs listed in this article. The opportunities offered by these programs are endless, and you can breathe easy knowing that there are successful people in this field who look like you or share your identity, thriving in every area from academics to private practice to industry.

I'll end by saying I don't think there's any greater infraction on someone's rights than denying their existence, and no group of people should ever feel invisible. That's why the visibility provided by this article and the LGBTQ+ Community is so crucial and will inspire future generations. Beyond that, this Community provides lifelong friends and colleagues you'll see again and again at meetings, making the world of ophthalmology that much more exciting, welcoming, and full of opportunity. ■

1. Nguemeni Tiako MJ, Johnson S, Muhammad M, Osman NY, Solomon SR. Association between racial and ethnic diversity in medical specialties and residency application rates. *JAMA Netw Open*. 2022;5(11):e2240817.
2. Ali M, Menard M, Zafar S, Williams BK Jr, Knight OJ, Woreta FA. Sex and racial and ethnic diversity among ophthalmology subspecialty fellowship applicants. *JAMA Ophthalmol*. 2023;141(10):948-954.
3. Tam EK, Harrell M, Siegel NH. Understanding the lack of under-represented racial and ethnic minorities in ophthalmology. *J Acad Ophthalmol* (2017). 2021;13(2):e192-e194.
4. American Association of Medical Colleges. Diversity in medicine: facts and figures 2019. Accessed January 17, 2025. www.aamc.org/data-reports/workforce/report/diversity-medicine-facts-and-figures-2019
5. Nguemeni Tiako MJ, Johnson S, Muhammad M, Osman NY, Solomon SR. Association between racial and ethnic diversity in medical specialties and residency application rates. *JAMA Netw Open*. 2022;5(11):e2240817.

KEVIN C. ALLAN, MD, PHD (HE/HIM/HIS)
■ Ophthalmology Resident, Cole Eye Institute, Cleveland Clinic, Cleveland
■ allank2@ccf.org
■ Financial disclosure: None

1. Atkuru A, Lieng MK, Emami-Naeini P. Trends in racial diversity among United States ophthalmology residents. *Ophthalmology*. 2022;129(8):957-959.
2. Ali M, Menard M, Zafar S, Williams BK Jr, Knight OJ, Woreta FA. Sex and racial and ethnic diversity among ophthalmology subspecialty fellowship applicants. *JAMA Ophthalmol*. 2023;141(10):948-954.
3. Tam EK, Harrell M, Siegel NH. Understanding the lack of under-represented racial and ethnic minorities in ophthalmology. *J Acad Ophthalmol (2017)*. 2021;13(2):e192-e194.
4. American Association of Medical Colleges. Diversity in medicine: facts and figures 2019. Accessed January 17, 2025. www.aamc.org/data-reports/workforce/report/diversity-medicine-facts-and-figures-2019
5. Nguemeni Tiako MJ, Johnson S, Muhammad M, Osman NY, Solomon SR. Association between racial and ethnic diversity in medical specialties and residency application rates. *JAMA Netw Open*. 2022;5(11):e2240817.

DEI Literature Review

Retina specialists continue to focus on identifying and reducing disparities in eye care.

By Alex Brodin, MA, Senior Editor

Because patients who are underrepresented in medicine (URiM) are more likely to experience worse health and vision outcomes,[1] clinician-scientists continue to focus on diversity, equity, and inclusion (DEI) research.

DEI within the ophthalmic profession is equally of interest. Studies published in the last year have looked at gender, race, and other demographics in various ophthalmology education settings, including mentorship, leadership, and residency matching, among others, to assess where the field stands and where there remains room for improvement.

This article distills recent studies that have tracked DEI issues—as well as progress made—within ophthalmology, from the perspective of both patient care and the profession.

THE RELATIONSHIP BETWEEN PATIENT DEMOGRAPHICS AND...

Detection of IRDs

A study by Abuzaitoun et al sought to determine whether Black race was associated with the detection of pathological variants for inherited retinal diseases (IRDs) via genetic testing.[2] The results indicated a reduced likelihood of obtaining a conclusive genetic diagnosis among Black individuals compared with White individuals.

A total of 572 patients were divided into two groups based on racial identity: Black (n = 54) and non-Hispanic White (n = 518). Black race and older age were found to be independently associated with decreased odds of reaching a conclusive genetic test result. In one of the two databases used in the study, 44.4% of Black patients had a positive/likely positive test result, which was a significantly lower proportion compared with White patients (57.7%).[2]

These findings, the study authors concluded, highlight a growing concern over patient access to investigational therapies for IRDs. In addition, Black patients with an IRD may be disadvantaged in terms of proper prognostication, inheritance counseling, reproductive decision making, and eligibility for clinical trials due to the lower likelihood of obtaining a positive genetic test result.[2]

AT A GLANCE

- One study found that Black patients with an inherited retinal disease are less likely to obtain a conclusive genetic test result and may be disadvantaged in receiving appropriate care.
- Patients who live in disadvantaged neighborhoods or where a higher percentage of individuals drive to work are more likely to present with worse rhegmatogenous retinal detachment.
- A study on mentorship in ophthalmology showed that providing quality mentorship for women in ophthalmology at all stages of education and professional development is crucial.

Retinal Detachment Severity at Presentation

Ong et al found that patients with adverse neighborhood-level social determinants of health present with more severe cases of rhegmatogenous retinal detachment (RRD).[3] This retrospective cohort study included 700 adults who underwent primary repair of an uncomplicated RRD. Every decile increase in Area Deprivation Index (ADI), which indicates greater socioeconomic disadvantage, was associated with increased odds of presenting with a VA worse than 20/40 and fovea-involving RRD. Moreover, each $1,000 increase in per capita income was associated with lower odds of presenting with worse visual acuity, and every 1% increase in the percentage of workers who drove to work was associated with an increase in odds of presenting with worse vision and fovea-involving RRD. The study authors concluded that these findings suggest there are potential health benefits of implementing public policy changes to address the barriers faced by patients residing in disadvantaged neighborhoods to improve access to care and outcomes of RRD.

Quality of Diabetic Eye Care

Chaudhury et al looked at how social determinants of health (eg, health insurance, residence urbanicity, diabetes type, and diabetic retinopathy [DR]) affected how patients received eye care in accordance with established clinical practice guidelines.[4] The complex results showed that certain factors affect patients differently according to race, while other factors were not associated with a difference in care.

Compared with those of the same race who lived in urban communities, Black and White patients with diabetes from rural communities had an 88% and 25% lower chance of having eye care visits, respectively. Black and White patients with worse disease had 4% and 5% higher odds of having an eye care appointment, respectively. Furthermore, Black patients with preexisting DR had 15% lower odds of having an eye care visit compared with those without preexisting DR, while White patients with preexisting DR had a 16% higher likelihood. Hispanic patients had 15% lower odds of eye care visits compared with non-Hispanic patients.

Not all factors affect all patients the same way, the study authors concluded. Several groups are at a particular risk of not receiving diabetic eye care in accordance with clinical practice guidelines (patients living in rural communities, Black patients with preexisting DR, and Hispanic patients), potentially leading to worse health and vision outcomes.

Likelihood of Proliferative Diabetic Retinopathy

A study by Yangyiran et al found that patients who live in neighborhoods with greater socioeconomic disadvantage and those who live farther from ophthalmology clinics have greater odds of developing proliferative DR (PDR).[5]

A total of 73,618 patients were included, and a significant relationship was observed between ADI quartile and distance from ophthalmology clinics. Among patients residing within 8 miles of an eye care clinic, those living in higher ADI quartiles had increased odds of PDR compared with those who lived in more advantaged areas. However, for patients living more than 8 miles away from a clinic, the odds of PDR were similar across all ADI quartiles; that is, patients in all ADI quartiles living more than 8 miles away from a clinic had greater odds of developing PDR compared with those of the same ADI quartile who lived within 8 miles of a clinic.

"Our study looked at the association between characteristics of patients' residential neighborhoods (ie, how far they reside from ophthalmology clinics) and receiving a diagnosis of PDR at two major academic medical centers," Cindy X. Cai, MD, one of the study authors, shared with *Retina Today*. "We found that patients who resided in neighborhoods with greater socioeconomic disadvantage and farther from ophthalmology clinics had greater odds of PDR. This suggests we should potentially focus DR screening on socioeconomically deprived and more distant neighborhoods to reduce vision loss from PDR."

DEI WITHIN THE OPHTHALMOLOGY PROFESSION

Messaging Across Canadian Postgraduate Websites

To evaluate DEI in Canadian postgraduate medical education, Bondok et al analyzed 17 postgraduate medical education (PGME) websites' messaging regarding DEI using 20 criteria across five domains: leadership and governance, recruitment, accommodations, community engagement, and pathways to entry. Applicants for residency programs encounter this information while researching PGME programs, which may influence recruitment and retention.[6]

The findings revealed a mean score of 8.65/20 in DEI performance (range, 4/20 - 13/20). Leadership and governance had the highest mean proportion of completed criteria (51%), and community engagement had the lowest (24%). Nine of the programs met at least half of the criteria, although regional trends emerged: Ontario and the Western Provinces scored significantly higher compared with Quebec, the Prairies, and the Atlantic region.

Overall, the commitment to DEI across PGME websites was variable. The regional differences suggest there are potential benefits of enhancing communication regarding best practices to support DEI initiatives throughout Canada, the authors concluded.

Trends Within US Academic Institutions

Tao et al analyzed race, ethnicity, and gender trends among US full-time academic ophthalmology faculty and department chairs from 1966 to 2021 in a study involving registrants of the Association of American Medical Colleges.[7]

The annual proportional change for women; minoritized race; and Hispanic, Latino, or Spanish ethnicity was +0.63%, +0.54%, and -0.01%, respectively. For department chairs from

1966 to 2021, the annual rate of change in the proportion of women; minoritized race; and Hispanic, Latino, or Spanish ethnicity was +0.32%, +0.34%, and +0.05%, respectively. In both faculty and department chairs, the proportion of URiM groups (ie, American Indian or Alaska Native, Black or African American, Hispanic, and Native Hawaiian or Other Pacific Islander) grew the least.[7]

Importance of Mentorship

Cote et al conducted a prospective study with ophthalmologist and trainees who were asked to fill out 10-item surveys focused on mentorship and career satisfaction. Female ophthalmologists reported experiencing significantly worse mentorship satisfaction and poorer quality of mentorship, as well as significantly lower income, worse job satisfaction, and lower rates of goal achievement and support toward achieving future goals. Notably, however, these career outcomes (except for income level) were partially mediated by mentorship score (mediation effect ranged from 29% to 68%).[8] These data illustrate an intuitive relationship between mentorship and career success; therefore, providing quality mentorship for women in ophthalmology at all stages of education and professional development is crucial, the study authors concluded.

Inclusivity in Author Submission Guidelines

Tao et al evaluated the inclusivity of opthalmology journals' author submission guidelines based on six criteria: 1) included gender-inclusive language; 2) recommended use of gender-inclusive language; 3) distinguished sex from gender; 4) provided educational resources on gender-inclusive language; 5) provided a policy allowing name changes; and 6) gave a statement of commitment to inclusivity. The study authors considered a journal to be "inclusive" if it met at least one of these six criteria.[9] Of 94 journals evaluated, 29.8% were rated as inclusive; interestingly, these journals also had a higher relative impact factor, citations, and article influence scores compared with noninclusive journals. The three most common criteria met were having an inclusivity statement (71.4%), defining sex versus gender (67.9%), and providing additional resources on gender reporting for authors (60.7%).[9]

The study authors concluded by suggesting the potential value in journals updating their author submission guidelines to use more gender-inclusive language.[9]

Geographic Trends Among Ophthalmic Subspecialty Surgeons

A study by Ahmed et al identified a gap in ophthalmic care in rural areas of the United States, where there resides a lower proportion of specialty surgeons versus patients requiring services.[10] The study included Medicare patients and surgeons performing specialized procedures between 2012 and 2022. The researchers evaluated 13,526 ophthalmic surgery specialists: 2,540 cornea (18.5%), 3,676 glaucoma (26.8%), 1,951 oculoplastic (14.2%), 4,123 retina (30%), and 1,236 strabismus (9%). Across these specialities, 5.6% lived in rural areas compared with 17.4% of patients. Several groups were identified as less likely to practice in rural areas, including female surgeons, surgeons in the Northeast and the West, and recent graduates.

Diversity Among Resident Applicants Versus Medical Students

Paracha et al compared the diversity of ophthalmology residency applications and matriculants with that of graduating medical students and found that certain groups were significantly underrepresented in residency.[11]

The study used representation quotients (RQ) from reports by the Association of University Professors of Ophthalmology and San Francisco Match, along with demographic data from the Association of American Medical Colleges. An RQ is a metric of DEI that divides a racial, ethnic, or gender group's proportion in a specific population by its proportion in a larger population. Black individuals had the lowest mean RQ among residency applicants and matriculants, and regression analysis showed that female ophthalmology residency applicants and matriculants experienced decreased representation compared with medical student populations, while men experienced increased representation. Moreover, Black and Hispanic individuals experienced a decrease from residency application to matriculation. This study demonstrates that underrepresentation of female, Black, and Hispanic individuals remains persistent in ophthalmology residency programs and that more URiM applicants does not always translate to increased matriculation rates of these groups.

WHEN WE KNOW BETTER, WE DO BETTER

Although progress has been made in DEI within the profession, these recent studies highlight room for growth and the need to support a better environment for URiM patients and ophthalmologists. ■

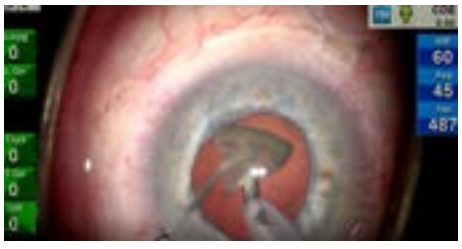
1. Elam AR, Tseng VL, Rodriguez TM, Mike EV, Warren AK, Coleman AL; American Academy of Ophthalmology Taskforce on Disparities in Eye Care. Disparities in vision health and eye care. *Ophthalmology*. 2022;129(10):e89-e113.
2. Abuzaitoun RO, Branham KH, Lacy GD, et al. Racial disparities in genetic detection rates for inherited retinal diseases. *JAMA Ophthalmol*. 2024;142(12):1150-1156.
3. Ong SS, Tran D, Westlund E, et al. Neighborhood-level social determinants of health and presenting characteristics for rhegmatogenous retinal detachments. *JAMA Ophthalmol*. 2024;142(9):845-854.
4. Chaudhury AS, Ige M, Marwah S, et al; Sight Outcomes Research Collaborative (SOURCE) Consortium. Race, social determinants of health, and the quality of diabetic eye care. *JAMA Ophthalmol*. 2024;142(10):961-970.
5. Xie WY, Rustam Z, Tran D, et al. Association of neighborhood socioeconomic disadvantage with proliferative diabetic retinopathy. *Ophthalmol Retina*. 2024:S2468-6530(24)00483-4.
6. Bondok M, Bondok M, Martel L, Law C. Evaluating equity, diversity, and inclusion in Canadian Postgraduate Medical Education: A cross-sectional analysis of online content. *PLoS One*. 2024;19(8):e0307584.
7. Tao BK, Ding J, Ing EB, et al. Gender, race, and ethnicity of US academic ophthalmology faculty and department chairs from 1966 to 2021. *JAMA Ophthalmol*. 2024;142(8):742-748.
8. Cote SL, Nguyen A, Berry JL, et al. Gender disparities in mentorship and career outcomes in Ophthalmology. *J Womens Health (Larchmt)*. 2024;33(8):1120-1127.
9. Tao BK, Xie JS, Leong R, et al. Gender inclusivity of ophthalmology journal submission guidelines and associated research metrics. *Eur J Ophthalmol*. 2025;35(1):126-132.
10. Ahmed A, Ali M, Dun C, Cai CX, Makary MA, Woreta FA. Geographic distribution of US ophthalmic surgical subspecialists. [Published online ahead of print January 2, 2025]. *JAMA Ophthalmol*.
11. Paracha SS, Williams SA, Shamshad A, Persad-Paisley EM, Migliori ME. Representation quotients to examine diversity in ophthalmology residency applicants and matriculants [published online ahead of print January 16, 2025]. *JAMA Ophthalmol*.

NEW ON EYETUBE
FEATURED CONTRIBUTORS

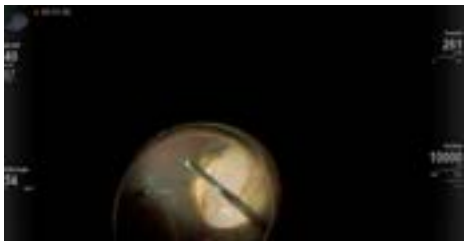
Rishi P. Singh, MD

33 videos

An Update on AVD-104 for the Treatment of GA



Zero CDE Removal of Dense Post-Vitrectomy Cataract



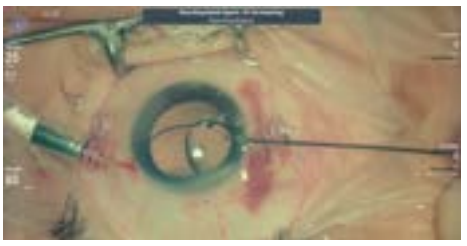
Coloboma Retinal Detachment Repair

María H. Berrocal, MD

83 videos

Simultaneous UWF Imaging With OCT and FFA/ICGA

AI in ROP



Modified Yamane Technique for a Dislocated Three-Piece IOL

Visit Eyetube.net/contributors
or scan the QR code to view robust video libraries from your peers in retin!

eyetube | bmc

The Reality of Women in Retina

Five female ophthalmologists share their struggles and successes in the field.

By Catherine Manthorp, BA, Senior Editor

Featuring Laxmi Devisetty, MD; Avni P. Finn, MD, MBA; Kristen Nwanyanwu, MD, MBA, MHS; and Ashvini K. Reddy, MD

Historically a male-dominated field, retina has seen a narrowing in the gender gap among physicians.[1] *Retina Today* (*RT*) spoke with several prominent women in retina, who discussed the challenges they've faced and the changes that are necessary to promote a more inclusive and equitable field.

Retina Today: What are some of the challenges of being a woman in a historically male-dominated field?

Laxmi Devisetty, MD: Many people do not understand or appreciate the dual roles women often have to (or are expected to) play, specifically when it comes to running both the office and the home, an often-impossible task without help. Even then, help can be unreliable and complicate matters even further. These challenges don't even account for the ones we face every day at work itself. Women usually must work twice as hard and prove twice as much to earn the respect of colleagues, who are typically more likely to question a female physician than a male physician.

Avni P. Finn, MD, MBA: Based on the American Society of Retina Specialists' (ASRS) directory, only 17% of practicing retina specialists in the United States were women in 2020.[1] Having female mentors enables female mentees to see themselves in certain roles. One of the biggest challenges to women in a male-dominated field is the limited opportunity to imagine what your life as a retina specialist would look like. If you see other women balancing their clinical/research demands and personal and professional lives, it can bolster your confidence to achieve your goals and surpass them.

Kristen Nwanyanwu, MD, MBA, MHS: The challenges are also opportunities, but they are numerous. I have lost count of the number of times I've been mischaracterized as anything but a surgeon. I no longer wonder if my male colleagues receive as many comments on their hair or clothes as I do. Nothing was designed with women

AT A GLANCE

- In 2020, only 17% of retina specialists in the United States were women.
- Improving sponsorship opportunities can improve the diversity in retina as we intentionally work on promoting equity and inclusion.
- Organizations are more productive if they value diversity, experience, and leadership and are willing to overlook the traditional compensation model.

in mind—think operating while pregnant and going on maternity leave. There are tremendous opportunities to add to the diversity of thought in our field to build innovation.

Ashvini K. Reddy, MD: Research shows that female physicians perform better relative to males in some major outcome measures.[2] Despite this, women generally earn less than men and are more likely to experience harassment and prejudice in the workplace.[3,4] Women are generally also underrepresented in leadership positions.

RT: What advice would you offer to young female retina specialists looking to advance their career?

Dr. Devisetty: Never settle. Find the career that's worth working for. Everyone can do a job, but a career is something you build. Let go of the pressure to always be the best of the best and acknowledge how far you have already come. Never wait to have kids on some magical timeline; if family is important to you, make it a priority.

Dr. Finn: Don't be afraid to seek out mentors. Our field is supportive, and there are so many leaders invested in the next generation of retina specialists. Seek out those who you admire or who inspire you—both women and men—and engage with them. You never know who might be able to offer sage advice or open a door for you.

Dr. Nwanyanwu: Picture what you want being a retina specialist to look like. Find your flexibilities and non-negotiables based on what you want your life to look like. Learn how to effectively communicate, negotiate, and advocate. Identify how best to use your skills and find places that allow you to do that on your own terms.

Dr. Reddy: Choose a job that makes you happy and allows you to care for patients who bring you joy in a field you love and a practice environment that allows you to shine.

RT: What changes are necessary to improve diversity in retina?

Dr. Finn: As an educator and an established retina surgeon, I view mentorship as one of the most important roles I have. However, I am learning that sponsorship is equally, if not more, important. While a mentor provides guidance, a sponsor advocates. Improving sponsorship opportunities can improve the diversity in our field as we intentionally work on promoting equity and inclusion.

Dr. Nwanyanwu: Allowing ourselves to conceptualize a diverse field is the first step. We need bright humans who understand that diversity of thought is the key to usher our field to the next level of innovation. To do that, we must build inclusive environments that welcome historically excluded individuals. This is the focus of the ASRS mentorship program, the Vit-Buckle Society mentorship program, and Women in Retina. We must design better systems and interrogate these systems if we want different outcomes.

Dr. Reddy: Transparency about workloads, representation, and compensation drive diversity in our field. Many institutions are making changes that enable women to benefit from progressive family leave policies, flexible work hours, and leadership opportunities.

RT: What are the most important things that you look for in a job?

Dr. Devisetty: I look for the opportunity to create something that is sustainable. In my previous jobs, I was successful in building a practice that enabled me to make a difference. There needs to be reliable support staff and willingness of administration to implement changes that optimize efficiency. If something is not the right fit, do not wait to get out. Sometimes, you must cut your losses early.

Dr. Finn: I look for the opportunity to cultivate personal and professional growth, a collegial community, and leaders who are inspirational and supportive.

Dr. Nwanyanwu: When I was looking for a job, I solved for what I wanted. My coworkers are collegial and kind. I work in a community that is interested in advancing equity and understands the history of racism and injustice. I have the intellectual freedom to approach challenging problems from many different angles.

Dr. Reddy: The culture of the workplace makes a huge difference. I look for work environments that are patient-centered and equitable.

RT: What makes a practice female friendly?

Dr. Devisetty: Flexible start times. Sometimes, women specifically may need to come in late or leave early because of our kids. It is also important to have career advancement opportunities and equitable compensation. Studies show that women often get paid less for equal or more work.[5] Jobs that value diversity, experience, and leadership skills and are willing to overlook the traditional compensation model will make for a more productive organization.

Dr. Reddy: Most women today are looking for work environments that allow them ample clinical and surgical opportunity, good pay, and some flexibility with work hours, maternity leave, and childcare. As an example, my office has a room set aside where employees' children can play during work hours. This has drastically improved absenteeism.

Dr. Nwanyanwu: What makes a practice female friendly usually makes the practice better for everyone. Transparency and good communication are important. Prioritize job structure, organization culture, and colleague compatibility. Listen to that voice of truth inside you that keeps you safe when a situation isn't right for you. ■

1. Nahar A, Mahmoudzadeh R, Rama M, et al. Authorship trends of women in retina: a 25-year analysis. *Ophthalmol Retina*. 2023;7(2):164-170.
2. Harris E. Patients treated by female physicians had better mortality rates. *JAMA*. 2024;331(22):1884.
3. Emami-Naeini P, Lieng MK, Chen J. Sex differences in salaries of academic ophthalmologists in the United States. *JAMA Ophthalmol*. 2022;140(5):519-522.
4. Frank E, Brogan D, Schiffman M. Prevalence and correlates of harassment among US women physicians. *Arch Intern Med*. 1998;158(4):352-358.
5. Emami-Naeini P, Lieng MK, Chen J. Sex differences in salaries of academic ophthalmologists in the United States. *JAMA Ophthalmol*. 2022;140(5):519-522.

An International Perspective

Featuring Anat Loewenstein, MD, MHA

***Retina Today (RT)*: What are some of the challenges of being a woman in a historically male-dominated field?**

Anat Loewenstein, MD, MHA: Although more than 50% of ophthalmologists in Israel where I practice are women, the percentage of women in leadership positions within the profession is only about 10%.[1] In the field of surgical retina, female representation is even lower in Israel. I think this is due to challenges stemming from work-life hardships women are more likely to face and the gentlemen's club approach that is often taken when considering candidates for leadership positions.

***RT*: How do you connect with other women in retina?**

Dr. Loewenstein: During my fellowship, I was fortunate enough to be mentored by both men and women alike who not only taught me medical and surgical retina but also gave me a lot of insight on family-career balance. I learned that keeping the balance is possible and necessary for a female leader in the field of retina.

***RT*: What advice would you offer to young female retina specialists?**

Dr. Loewenstein: First and foremost, maintain a healthy balance between family and career. Then, find a mentor or join a mentorship program for guidance, foster relationships with peers, try out the academic side of things, and establish international relationships.

***RT*: What changes are necessary to improve diversity in retina?**

Dr. Loewenstein: Men, especially those in positions of authority in academia and industry, must play a more active role in gender equality advocacy. Also, as the president of Euretina, I do not accept any symposium, course, or session that doesn't have speaker diversity. I believe other organizations must do the same. It may even be worth considering offering fellowships or research grants dedicated specifically to women.

***RT*: What are the most important things that you look for in a job?**

Dr. Loewenstein: Enthusiasm and excitement about a job are two of the most important factors to me. The acceptance and promotion of diversity is what separates a female-friendly practice from one that is less so.

***RT*: What are some of the key differences for women in retina between where you practice and the United States?**

Dr. Loewenstein: In Israel, women seem to have fewer difficulties receiving the benefits and promotions they deserve. This is not to say that problems do not exist, but, generally speaking, if a woman is willing to work as hard as any man, she will reap the rewards. ■

1. Haller JA. Cherchez la femme. *JAMA Ophthalmol.* 2015;133(3):260-261.

ANAT LOEWENSTEIN, MD, MHA
- Head of Retina, Division of Ophthalmology, Tel Aviv Medical Center, Tel Aviv, Israel
- Deputy President of Care, Tel Aviv Medical Center, Tel Aviv, Israel
- Professor and Sidney Fox Chair of Ophthalmology, Tel Aviv University, Tel Aviv, Israel
- President, Euretina
- anatl@tlvmc.gov.il
- Financial disclosure: Consultant (4DMT, Abbvie, Annexon, Apellis, Astellas, Aviceda, Bayer, Beyeonics, Boehringer Ingelheim, Eyepoint, NotalVision, Ocular Therapeutix, Oculis, Ocuphire, Opthea, Oxurion, Roche, Voiant)

LAXMI DEVISETTY, MD
- Vitreoretinal Surgeon, St. Luke's University Hospital, Bethlehem, Pennsylvania
- Mentor, YoungMD Connect
- laxmiatkuru@gmail.com
- Financial disclosure: None

AVNI P. FINN, MD, MBA
- Associate Professor, Department of Ophthalmology and Visual Sciences, Vanderbilt University Medical Center, Nashville, Tennessee
- avni.finn@vumc.org
- Financial disclosure: Advisory Board/Consultant (Genentech/Roche); Advisory Board (Abbvie, Apellis, Astellas)

KRISTEN NWANYANWU, MD, MBA, MHS
- Vitreoretinal Surgeon, Associate Professor of Ophthalmology and Visual Science, Yale School of Medicine, New Haven, Connecticut
- Principal Investigator, Sight-Saving Engagement and Evaluation in New Haven Program, New Haven, Connecticut
- Founder, Eyeful
- khn@eyefullenscase.com
- Financial disclosure: None

ASHVINI K. REDDY, MD
- Ophthalmologist and Medical Director, Athena Eye Institute, San Antonio, Texas
- drreddy@athenaeyeinstitute.com
- Financial disclosure: None

YoungMD Connect | RETINA

Brought to you by: bmc vision RT

Join Our Ask-Me-Anything Mentoring Sessions

Calling all trainees and new-to-practice ophthalmologists:

Participate in monthly mentoring sessions with retina thought leaders and peer mentors.

2025 MONTHLY MENTOR LINEUP

Maria Berrocal, MD
Tuesday, March 11
Berrocal and Associates and University of Puerto Rico

Sharon Fekrat, MD, FACS, FASRS
Tuesday, July 8
Duke University Medical Center

Prethy Rao, MD
Wednesday, September 17
Retina & Vitreous of Texas

Talia Kaden, MD
Thursday, December 4
Northwell Health

R.V. Paul Chan, MD
Wednesday, June 11
University of Illinois

Chang Sup Lee, MD
Wednesday, August 13
Pacific Eye Institute

Parth Shah, DO
Thursday, October 23
Toronto Retina Institute

Additional mentors to be announced soon!

Enjoy 50% off 1-year membership ($18.50)

Discount automatically applied using the QR code.

Gain Exclusive Access To:

- ✔ **MENTORING SESSIONS** to build connections with thought leaders.
- ✔ **EDUCATIONAL WORKSHOPS** to complement your clinical training.
- ✔ ***BOOKMARKED* EDITORIAL FORUM** to read the latest articles in eye care.
- ✔ **RESOURCES** to build new skills.
- ✔ **JOB BOARD** to land your first job or make a change.
- ✔ **IN-PERSON EVENTS** to fasttrack your networking opportunities and engage with industry.

YMDC members engaging with retina thought leaders, Audina Berrocal, MD, and Dean Eliott, MD, during in-person events and virtual mentoring sessions.

YMDC is made possible with industry support from:

VISIONARY: abbvie Johnson&Johnson

FOUNDATIONAL: Apellis BAUSCH+LOMB Dompé REGENERON

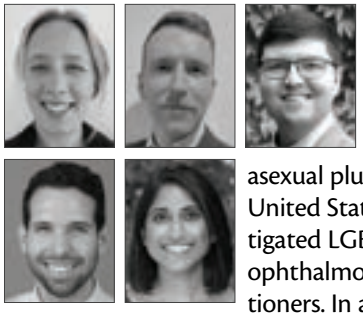
PARTNER: Genentech A Member of the Roche Group GLAUKOS TRANSFORMING VISION Ocular Therapeutix STAARSURGICAL™

GUIDING: Alcon AMGEN Rare Disease astellas EYEGATE PHARMA LUMIBIRD MEDICAL tarsus Vision Innovation PARTNERS

LGBTQIA+ Inclusion and Care in Ophthalmology

Identifying diversity among patients and providers is only the first step toward a more inclusive ophthalmology community.

By Meghan Smith, MPH, BA; Duncan Fuller, BS; Ogul E. Uner, MD; Carlos Torres Quinones, MD; and Merina Thomas, MD



Despite the growing number of people who identify as lesbian, gay, bisexual, transgender, queer, intersex, and asexual plus (LGBTQIA+) in the United States,[1] no studies have investigated LGBTQIA+ inequities among ophthalmology patients and practitioners. In a 2022 review of 75 studies exploring disparities in ophthalmic care, none evaluated inequities within the LGBTQIA+ community.[2] Some studies have explored the potential for increased burden of ophthalmic conditions for members of the LGBTQIA+ community, such as human immunodeficiency virus retinopathy, cytomegalovirus retinitis, and ocular syphilis.[3,4] However, there is a paucity of data describing eye care use and barriers to care for the LGBTQIA+ population.

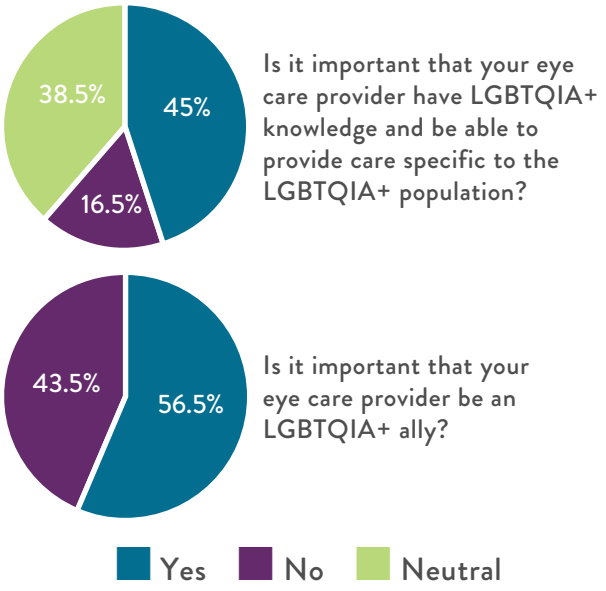
Likewise, there is little literature discussing physicians who identify as LGBTQIA+ in the ophthalmic workforce. A recent international survey of 403 ophthalmologists showed 13.2% identified as LGBTQIA+, which was associated with personal and work-related burnout.[5] Association of American Medical Colleges data from 2016 to 2019 demonstrated that only 3.3% of LGB-identified medical students intended to pursue a career in ophthalmology, the second lowest chosen specialty for this group.[6]

In response, we conducted a single-center survey assessing the prevalence and experiences of LGBTQIA+ patients

AT A GLANCE

- There is a paucity of data describing current eye care use and barriers to care for the LGBTQIA+ population.
- A survey of 116 patients and 36 providers found that 14 patients (12.1%) and three providers (8.3%) identified as LGBTQIA+.
- The authors plan to develop a course for ophthalmology trainees and providers on LGBTQIA+ informed care.

PATIENT PERSPECTIVES



and providers within ophthalmology. We distributed a cross-sectional questionnaire (in English and Spanish) regarding demographics and lived experiences around LGBTQIA+ inclusion in the ophthalmic community and care setting. We also gathered clinician perspectives of providing inclusive care to LGBTQIA+ patients. Confidential responses were collected from March to June 2023. In total, 116 patients and 36 providers participated in the study.[7]

A LOOK AT THE NUMBERS

The survey found that 14 patients identified as LGBTQIA+ (12.1%). Of these, one patient identified as a transgender woman (7% of non-cisgendered respondents), six indicated nonbinary (42.8%), and seven indicated other (50%). The most common sexual orientation was bisexual (42.9%), followed by queer (35.7%) and gay (28.6%). Patients who identified as LGBTQIA+ were more likely to be between the ages of 26 and 40 ($P = .0004$). Although there was no statistically significant difference in reported gross income between groups ($P = .3$), there was an observed trend that LGBTQIA+ patients reported lower income than non-LGBTQIA+ patients. Two LGBTQIA+ patients (15.4%) and seven non-LGBTQIA+ patients (7.1%) said they had no primary care provider, a difference that was not statistically significant. Of LGBTQIA+ patients, 69.2% indicated that they had disclosed their sexual and/or gender identity to their primary care provider, while 15.4% had done so with their eye care provider ($P = .4$). Among all patients surveyed, 87.6% stated that their eye care provider had not asked about or discussed their sexual orientation and/or gender identity.[7]

In total, 45% of surveyed patients felt it was important for their eye care provider to have LGBTQIA+ knowledge and be able to provide care specific to the LGBTQIA+ population. Comparatively, 38.5% were neutral on this topic, and 16.5% disagreed. Answers did not differ between LGBTQIA+ and non-LGTBQIA+ identified patients ($P = .5$). Most patients (56.5%) agreed that it was important that their eye care provider be an LGBTQIA+ ally ($P = .06$).[7]

Among the 36 providers surveyed, five (13.9%) identified as LGBTQIA+ in terms of sexual orientation, with two identifying as bisexual, one as gay, one as pansexual, and one as other; 28 (77.8%) identified as straight, and three did not provide a response. Most (88.9%) providers identified as cisgender, one identified as a gender minority, and three did not provide a response. Of the providers, 60% stated that they have asked patients about their sexual orientation or gender identity, while 40% have never asked. Most (77.8%) providers identified as LGBTQIA+ allies, 84.8% agreed that there is a need for continuing education and training on LGBTQIA+ care, and 72.7% felt that allyship was important.[7]

IMPLICATIONS FOR CLINICAL PRACTICE

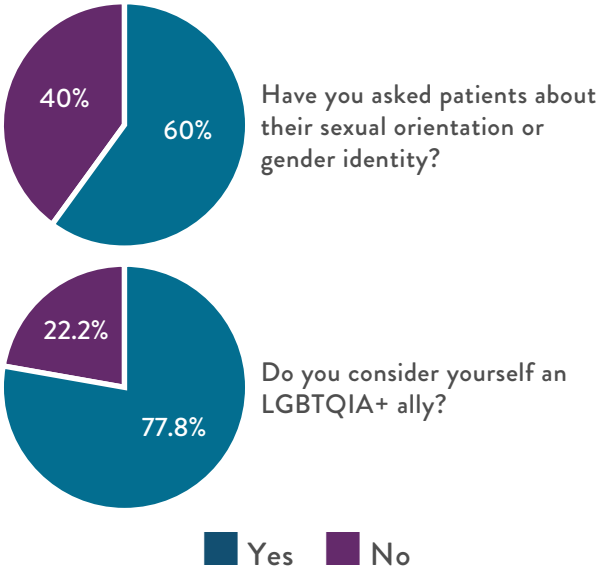
Our results indicate a desire from both patients and providers to better understand, consider, and address intersectionality as it pertains to sexual orientation and gender identity within ophthalmology. We currently have a poor understanding of how LGBTQIA+ identity intersects with health disparities in the eye care setting. A key impediment is the low rates of sexual orientation and gender identity (SOGI) disclosure in the electronic health record, making equity analysis and emerging eye care trends within the LGBTQIA+ community difficult to study. SOGI data would be useful in evaluating the ocular effects of systemic therapies used in LGBTQIA+ care, as well as further examining inequalities in access to eye care for LGBTQIA+ patients.

In addition to a lack of research regarding LGBTQIA+ patients in ophthalmology, there is a need for increased diversity among the physician workforce in eye care. Ophthalmologists have been calling for increased outreach efforts and better SOGI data collection to understand provider self-identification.[8] Improving physician workforce diversity has been demonstrated to improve patient outcomes,[9,10] meaning that provider representation can affect health care disparities for LGBTQIA+ ophthalmology patients. The inclusion of LGBTQIA+ among underrepresented groups in previously established programs, as well as the creation of gender minority-focused programs, are accessible solutions that will help increase representation, provide support, and ultimately improve patient care.

CONTINUING EDUCATION ON LGBTQIA+ CARE

Our study demonstrated a desire from patients and providers to have an eye care team that consists of

PROVIDER PERSPECTIVES



LGBTQIA+ allies capable of providing culturally directed care to this population as appropriate. To increase education of our trainees and providers regarding the effect of LGBTQIA+ care on ophthalmic issues, our team plans to develop a course for ophthalmology trainees and providers on LGBTQIA+ informed care. Interventional studies in other medical training settings have provided promising outcomes.[11,12] Looking forward, studies in our training and care settings to evaluate ophthalmologist comfort and competence when providing inclusive care are needed to further develop our understanding of the intersectionality of LGBTQIA+ issues and ophthalmic health.

THE INTERSECTION WITH RETINA

No studies have explored the prevalence of LGBTQIA+ individuals specifically in retina, but the LGBTQIA+ community has anecdotally not been well-represented within ophthalmology. Still, established retina specialists in the LGBTQIA+ community have highlighted the unique challenges they faced, particularly early in their careers.[13,14] The lack of LGBTQIA+ mentors and leaders in the field, as well as uncertainties surrounding the assessment of job fit, are two important points raised by these experts. They also report the abundance of LGBTQIA+ patients in retina. For example, Scott Walter, MD, MSc, discusses how "many older patients have come out to [him], and for them it's liberating to finally have a provider with whom they can identify. It's important to have providers out there who represent the diversity in our communities, and that goes for gender, race, sexual orientation, and every other category of diversity."[13]

Our study aligns with the message shared by these retina specialists: We need more research and training in LGBTQIA+ directed ophthalmic care to provide the best care for our patients. Mentorship is another important area of improvement, and the American Society of Retina Specialists' Underrepresented in Retina Mentorship Program is the first program of its kind in the retina community that includes LGBTQIA+ trainees as underrepresented. We hope other established mentorship programs within retina and ophthalmology will follow this example to increase LGBTQIA+ representation, which will ultimately benefit not only our professional community, but also our patients. ■

1. Jones J. U.S. LGBT identification steady at 7.2%. Gallup. February 22, 2023. Accessed January 14, 2025. bit.ly/40BXbcR
2. Hemmerich C, Jones G, Staggs J, Anderson RM, Bacani R, Vassar M. Inequities and research gaps in ophthalmology: a scoping review. *JAMA Ophthalmol*. 2023;141(1):63-70.
3. Hollar MW, Zhang MM, Mawn LA. Ophthalmic disparities in transgender patients. *Semin Ophthalmol*. 2016;31(4):426-431.
4. Lobo AM, Gao Y, Rusie L, Houlberg M, Mehta SD. Association between eye diagnosis and positive syphilis test results in a large, urban sexually transmitted infection/primary care clinic population. *Int J STD AIDS*. 2018;29(4):357-361.
5. Chang TC, A R, Candelario C, et al. LGBTQ+ identity and ophthalmologist burnout. *Am J Ophthalmol*. 2023;246:66-85.
6. Mori WS, Gao Y, Linos E, et al. Sexual orientation diversity and specialty choice among graduating allopathic medical students in the United States. *JAMA Netw Open*. 2021;4(9):e2126983.
7. Quinones CT, Smith M, Fuller D, et al. Assessment of LGBTQIA+ inclusion and care in ophthalmology. *Invest Ophthalmol Vis Sci*. 2024;65(7):6383.
8. Sokkary N, Awad H, Paulo D. Frequency of sexual orientation and gender identity documentation after electronic medical record modification. *J Pediatr Adolesc Gynecol*. 2021;34(3):324-327.
9. Poma PA. Race/ethnicity concordance between patients and physicians. *J Natl Med Assoc*. 2017;109(1):6-8.
10. Iyengar NS, Law JC, Chang TC. Increasing LGBTQ+ visibility and representation in ophthalmology: a professional imperative. *Am J Ophthalmol*. 2022;242:A4-A6.
11. Barrett DL, Supapannachart KJ, Caleon RL, Ragmanauskaite L, McCleskey P, Yeung H. Interactive session for residents and medical students on dermatologic care for lesbian, gay, bisexual, transgender, and queer patients. *MedEdPORTAL*. 2021;17:11148.
12. Cohen JJ, Gabriel BA, Terrell C. The case for diversity in the health care workforce. *Health Aff (Millwood)*. 2002;21(5):90-102.
13. Churgin D, Sanislo S, Velez W, Walter SD. A word from members of the LGBTQ community. *Retina Today*. 2021;16(2):40-43.
14. Hau VS, Diaz-Rohena R, Churgin DS, Thomas M, Kondapalli SSA. Providing equitable healthcare for all: understanding the LGBTQIA+ community. *Retina Times*. Accessed January 14, 2024. bit.ly/3QjYuZn

MEGHAN SMITH, BA, MPH
- MD Student, Oregon Health & Science University, Portland, Oregon
- Financial disclosure: None

DUNCAN FULLER, BS
- MD Student, Oregon Health & Science University, Portland, Oregon
- Financial disclosure: None

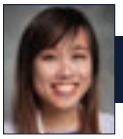
OGUL E. UNER, MD
- Ophthalmology Chief Resident and Incoming Uveitis & Clinical Ocular Immunology Fellow, Casey Eye Institute, Oregon Health & Science University, Portland, Oregon
- uner@ohsu.edu
- Financial disclosure: None

CARLOS TORRES QUINONES, MD
- Ophthalmologist, Kaiser Permanente Portland, Oregon
- Former Resident, Casey Eye Institute, Oregon Health & Science University, Portland, Oregon
- Financial disclosure: None

MERINA THOMAS, MD
- Assistant Professor of Ophthalmology, School of Medicine, Oregon Health & Science University, Portland, Oregon
- Financial disclosure: None

RISING STARS IN RETINA

Get to know outstanding retina fellows from the class of 2025.



S. Tammy Hsu, MD

***Retina Today (RT):* When did you first know that you wanted to become a retina specialist?**

My path to retina was shaped by a combination of research, clinical exposure, and mentorship over time. As a medical student, I had the opportunity to work with inspirational mentors such as Lejla Vajzovic, MD; Cynthia A. Toth, MD; and Xi Chen, MD, PhD. Participating in retina conferences further exposed me to the innovative world of retina. During residency, my experience in clinic and the OR confirmed my interest, as I enjoyed the complexity, variety, and problem-solving aspects of surgical retina. As I met more retina specialists, I realized that I had found a tribe of people I aspired to be part of: smart, hardworking, creative, and down-to-earth people who go out of their way to do what's best for their patients.

***RT*: Who do you look to as mentors in the field?**

Many outstanding mentors have shaped my journey. Dr. Vajzovic has been one of the most influential. She leads by example—an outstanding clinician, efficient and compassionate surgeon, and irreplaceable advocate for colleagues and trainees. Dr. Toth was my first ophthalmology mentor and introduced me to ophthalmology research during medical school. She inspires me to think critically and creatively to perform rigorous, high-quality research that will advance the field. Dr. Chen inspires me to be the most compassionate physician and human I can be. Glenn J. Jaffe, MD; Sharon Fekrat, MD; Durga S. Borkar, MD, MMCi; and Dilraj S. Grewal, MD, have also been fantastic mentors, teaching efficiency, independence, and reasoning in the clinic and OR.

***RT*: What has been one of the most memorable experiences of your fellowship thus far?**

I remember teaching a resident how to perform their first membrane peel, under the encouragement of my attending. Stepping into the role of a teacher was exciting and nerve-wracking—while refining my own skills, I was also responsible for guiding another surgeon.

The procedure went smoothly, and in the process, I gained a deeper appreciation for how much I had learned. It was a pivotal moment that reinforced my own growth as a surgeon and the importance of mentorship in surgical training.

***RT*: What are you hoping to accomplish once you are in practice?**

My goal is to provide exceptional care while fostering strong, meaningful doctor-patient relationships. Beyond clinical practice, I hope to be involved in clinical and translational research. I am particularly interested in innovations that improve patient outcomes and expand our understanding of retinal diseases.

***RT*: What advice can you offer to residents who are considering retina?**

Take advantage of every opportunity to gain exposure to both the medical and surgical aspects of retina during residency. The field is vast and dynamic, so early hands-on experience can help you determine where your interests lie.

Research is also a significant component of retina, and getting involved early can be invaluable. Seek out mentors who can guide you through projects and help you navigate the field. Attend retina conferences to stay informed about the latest advances, connect with leaders in the field, and build a strong professional network.

Most importantly, stay curious, work hard, and be a good doctor. Retina is a challenging yet rewarding specialty! ■

S. TAMMY HSU, MD
- Vitreoretinal Surgery Fellow, Duke Eye Center, Durham, North Carolina
- s.tammyhsu@duke.edu
- Financial disclosure: None

Clinical Trial Enrollment: Future Diversity Opportunities

New data suggest targeting specific geographies in the United States could improve diversity efforts in retina trials.

By M. Ali Khan, MD, FACS, FASRS

The 1993 National Institutes of Health Revitalization Act sought to improve recruitment and inclusion of minority populations in clinical research.[1] Despite this, ongoing disparities exist between retinal disease burden in the US population and the demographic makeup of clinical trial participants.[2] As clinical trials are designed to assess efficacy and safety, with the ultimate goal of FDA approval, it is critically important that clinical trial data are generalizable to diverse populations in the real world.

Recent analyses have confirmed that specific demographic subgroups remain consistently underrepresented in US clinical trials. For example, in a recent cohort study, Berkowitz et al analyzed recruitment data from 31 ophthalmology clinical trials from 2000 to 2020.[3] The authors found that Black and Hispanic/Latino patients were underrepresented in clinical trials compared with the expected disease burden. Conversely, there was an overrepresentation of White patients compared with the expected disease burden, which is expected to increase by 2050 if trends are not corrected.[3] For diabetic macular edema (DME) specifically, additional studies have confirmed a discordance between trial enrollment of under-represented populations and the expected enrollment based on US Census data in 2010 and 2021, as well as demographic data of patients treated for DME in the IRIS Registry.[2,4,5]

Efforts to improve clinical trial enrollment require a better understanding of current processes, including geographic considerations and more granular information regarding current DME disease prevalence in the United States. With this aim, a recent study evaluated regional trends in the enrollment of underrepresented subgroups in DME using data from five phase 3 clinical trials.[6]

AT A GLANCE

- Studies show that Black and Hispanic/Latino patients are underrepresented in clinical trials compared with the expected disease burden.
- New research found an under-enrollment of Black, Asian, and Hispanic/Latino patients across the United States, with regional variance in the degree of under-enrollment.
- The author suggests focusing on individual geographies may help tailor strategies to overcome barriers to recruitment.

STUDY DESIGN

The objective was to evaluate the geographic variance in the enrollment of underrepresented patients in DME clinical trials. Specifically, enrollment was analyzed in DRCR.net Protocols I (NCT00444600), S (NCT01489189), and T (NCT01627249) and RIDE/RISE (NCT00473382/NCT00473330). The subgroups of interest for this study included Black, Asian, Hispanic/Latino, and female patients.[6]

The primary outcome measure was a metric termed *the enrollment ratio*, which was defined as the proportion of underrepresented patients enrolled in the trials divided by the expected recruitment rate. The expected recruitment rate was based on two factors:

1. the prevalence of DME in each subgroup in the United States, as determined by the TriNetX consolidated electronic health record database, and
2. the proportion of people from each subgroup residing within 25 miles of each clinical trial recruitment site, as determined by US Census data.

An enrollment ratio less than 1.0 indicates under-enrollment compared with the expected DME patient population residing within 25 miles of each clinical trial recruitment site.

THE RESULTS

Clinical trial recruitment sites from each of the included trials were grouped into four US regions: West (43 sites), Midwest (35 sites), South (68 sites), and Northeast (40 sites). The enrollment ratio was calculated for each underrepresented subgroup in each region.

For each region—West, Midwest, South, and Northeast, respectively—the ratios were the following for each underrepresented group (Table):

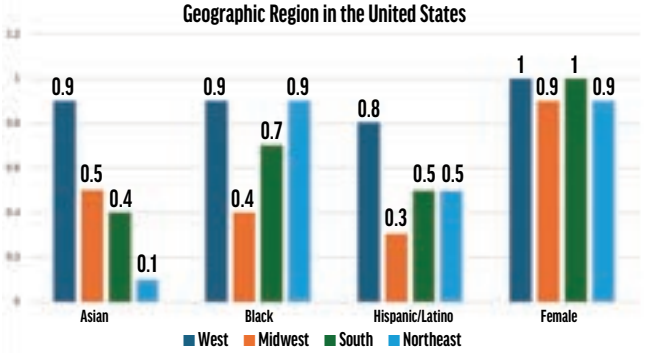
- Asian patients: 0.9, 0.5, 0.4, and 0.1
- Black patients: 0.9, 0.4, 0.7, and 0.9
- Hispanic/Latino patients: 0.8, 0.3, 0.5, and 0.5
- Female patients: 1.0, 0.9, 1.0, and 0.9

These enrollment ratios reveal an under-enrollment of Black, Asian, and Hispanic/Latino patients across the United States, with regional variances. This relative under-enrollment was most notable in the Midwest region for Black (0.4) and Hispanic/Latino (0.3) populations and in the Northeast region for Asian patients (0.1). Enrollment of female patients was at or near expected levels of recruitment, with ratios hovering near 1.0 in all regions.

IMPLICATIONS FOR FUTURE CLINICAL TRIALS

The study findings may offer insights and strategies to improve enrollment of underrepresented subgroups in future trials. For instance, developing trial recruitment sites in geographies with low enrollment ratios may offer the best opportunities to make meaningful increases in enrollment. Moreover, focusing on individual geographies may help tailor strategies to overcome barriers to recruitment, as efforts can be more specific to the subgroup populations of interest. For instance, Asian and Hispanic/Latino populations in one US geography may be entirely different than those in other geographies based on nationality, language, and cultural beliefs, among other reasons. Working to address barriers to recruitment will require a multifaceted approach, and the study results suggest geography-specific strategies may be helpful.

Table. Enrollment Ratio of Underrepresented Patients Based on Geographic Region in the United States



The study analysis comes with several limitations. The racial and ethnic subgroups assessed were limited to those included in the five clinical trials and to those available for analysis in US Census data. In addition, the sample size of certain subgroups, particularly Asian patients, was small in the available clinical trials.

COLLABORATE TO IMPROVE

Analysis of recruitment data from five phase 3 clinical trials revealed an under-enrollment of Black, Asian, and Hispanic/Latino patients across the United States, with regional variance in the degree of under-enrollment. Efforts to understand why such variances exist may help improve future clinical trial enrollment, offering insights into specific US geographies where improved efforts may be most successful. Collaboration to share strategies and best practices is welcome. ■

1. Oh SS, Galanter J, Thakur N, et al. Diversity in clinical and biomedical research: a promise yet to be fulfilled. *PLoS Med*. 2015;12(12):e1001918.
2. Bowe T, Salabati M, Soares RR, et al. Racial, ethnic, and gender disparities in diabetic macular edema clinical trials. *Ophthalmol Retina*. 2022;6(6):531-533.
3. Berkowitz ST, Groth SL, Gangaputra S, Patel S. Racial/ethnic disparities in ophthalmology clinical trials resulting in US Food and Drug Administration drug approvals from 2000 to 2020. *JAMA Ophthalmol*. 2021;139(6):629-637.
4. Kaakour A-H, Hua H-U, Rachitskaya A. Representation of race and ethnicity in randomized clinical trials of diabetic macular edema and retinal vein occlusion compared to 2010 US Census data. *JAMA Ophthalmol*. 2022;140(11):1096-1102.
5. Yu AJ, Masalkhi M, Brown R, Chen B, Chhablani J. Racial and ethnic distribution in diabetic macular edema clinical trials in the United States (2002–2021). *Ophthalmol Retina*. 2023;7(12):1035-1041.
6. Khan MA. Regional variance in the enrollment of underrepresented patients in US clinical trials of diabetic macular edema. Presented at: AAO Annual Meeting; November 4, 2023; San Francisco, CA.

M. ALI KHAN, MD, FACS, FASRS
■ Vitreoretinal Surgeon, Granite Bay, California
■ khanretinamd@gmail.com
■ Financial disclosure: Consultant (Apellis, Genentech/Roche); Research Support (Regeneron)

Discrimination Within Ophthalmology: Implications for Practice

Combatting the high rates of discrimination experienced by US ophthalmologists who are underrepresented in medicine.

By Samantha Madala, MD*; Victoria Y. Wang, MD*; Melinda Y. Chang, MD; Jesse L. Berry, MD; and Angeline M. Nguyen, MD

*co-first authors

Significant disparities persist for women and physicians who are underrepresented in medicine (URiM) within the ophthalmology workforce, highlighting ongoing inequities in our field.[1-3] Such disparities are likely compounded by the discrimination faced by these groups, which not only undermines the diversity of our workforce, but also threatens the career achievement and well-being of our colleagues and trainees within the field. Here, we explore new research that uncovers the prevalence of discrimination in the US ophthalmology workforce and ways to combat it.

DISCRIMINATION BY THE NUMBERS

Our team recently surveyed 463 clinicians from 10 US-based ophthalmology organizations to evaluate discrimination within the US ophthalmology workforce. We found that 41.9% of ophthalmologists and ophthalmologists-in-training reported experiencing discrimination on the

AT A GLANCE

- A recent survey of ophthalmologists found that 67.7% of female respondents, 92.9% of Black respondents, 50% of Asian respondents, and 50% of LGBTQIA+ respondents reported experiencing some form of discrimination in practice or in training.
- Combatting workplace discrimination in ophthalmology requires intentional efforts and collective action.
- Institutions in ophthalmology should develop and enforce clear antidiscrimination policies and a transparent, anonymous reporting system.

Those who reported at least one encounter of discrimination experienced significantly lower job satisfaction and lower achievement of career goals.

basis of gender; race or ethnicity; or lesbian, gay, bisexual, transgender, queer, intersex, and asexual plus (LGBTQIA+) status.[4] Discrimination was more often experienced by respondents identifying as female, from non-White racial and ethnic backgrounds, and who identified as LGBTQIA+. For example, 67.7% of female respondents, 92.9% of Black respondents, 50% of Asian respondents, and 50% of LGBTQIA+ respondents reported some form of discrimination. Commonly cited consequences of discrimination included disrespect or passive aggression (34.1%) and loss of income (23.1%). The most common sources of discrimination were senior faculty (48%) and hospital administration (29.5%). Those who reported at least one encounter of discrimination experienced significantly lower job satisfaction and lower achievement of career goals.

IMPROVING PRACTICE

Tackling the issue of discrimination in ophthalmology begins with understanding the extent of the issue, and this study serves as a starting point for characterizing the discrimination faced by many members of our field. Measuring progress and the success of future interventions will require continued study over time. While tools for measuring discrimination have not yet been validated for the ophthalmology workforce in particular, scales already validated to measure discrimination in the health care setting should be employed in future efforts to measure discrimination within our workforce.

To measure outcomes on diversity, it is important that organizations also collect and analyze demographic data to track progress. Gender and ethnicity data, as well as information on sexual orientation and gender identity, are now collected through the San Francisco Match, and continued efforts to collect such data at organizations at different levels will be crucial to monitor trends in diversity over time.

Combatting workplace discrimination in ophthalmology requires intentional efforts and collective action at the individual and institutional level. On the individual level, studies of bystander intervention programs in medical training have found that such interventions strengthen individuals' abilities to intervene and advocate for others.[5] Further study is needed to demonstrate whether such empowerment ultimately improves workplace culture, with individuals feeling more supported and respected. Colleagues and faculty can stand in solidarity by listening to and validating the experiences of URiM individuals, affirming belonging, advocating for change, and speaking out against discrimination. Individuals in leadership positions can model allyship and incorporate values of diversity, equity, and inclusion into their organization's core values. They can also advocate and offer resources for ally development through programs such as the free online Accreditation Council for Graduate Medical Education Equity Matters program.[6]

At the institutional level, efforts that increase diversity through recruitment and ongoing mentorship should be promoted, as the presence of diversity itself can reduce discrimination by improving cultural competency and challenging biases and stereotypes. Many mentoring programs provide women and URiM students and residents opportunities for research and professional development (For more, see the featured article *You Belong: The Value of Mentorship in Retina* in this issue). By improving exposure and mentorship, these programs play a key role in improving the workforce "pipeline" starting with first-year medical students.

EXAMPLE: PARENTAL LEAVE

A common experience among women is the inconsistent or restrictive parental leave policies that disproportionately affect female physicians. Pregnancy, maternity leave, and breastfeeding have been linked to gender discrimination against women, often manifesting as disrespectful treatment from colleagues and disparities in pay and benefits.[4] A 2023 study of female ophthalmologists found that nearly half of women received inadequate information about family leave and felt the length of leave was inadequate, with many feeling pressured to return to work early.[7] A solution to maternal bias is the establishment of clearly communicated family leave policies that do not disadvantage female physicians for taking the necessary time off for pregnancy complications, childbirth, adoption, or postnatal leave.[8] Organizations may additionally choose to implement a gender-neutral parental leave policy to all caregivers within the first year of a child's birth or adoption, which can be offered in addition to medical leave related to pregnancy

and childbirth. Having a parental leave that is equal for male and female employees can reduce the stigma associated with taking family leave and can ensure inclusivity for all parents, regardless of gender.

The Accreditation Council for Graduate Medical Education has set minimum requirements for parental leave in residency programs, but minimum requirements are not standardized across practices or institutions. By providing paid parental leave that aligns with guidelines from the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, organizations can address the systemic discrimination that disenfranchises mothers, restricts their career progression, and creates a work culture that penalizes pregnancy.[9,10]

Women who choose to breastfeed should also be provided accommodations in time and space for lactation and milk storage upon their return. Such accommodations not only promote both maternal and infant health, but also are a legal requirement.[11] To this end, adequate facilities and equipment should be made available, and physicians should be given protected time away from patient care and other responsibilities for lactation without fear of repercussions.[8]

PUT IT IN WRITING

Finally, a critical step in reducing workplace discrimination may be the development and enforcement of clear antidiscrimination policies along with a transparent, anonymous reporting system. In 2020, the AAO published rule 18 of its Code of Ethics, condemning harassment and discrimination in ophthalmology.[12] Institutions should also seek to create their own policies that allow reporting and oversight of discriminatory behaviors. The effectiveness of such reporting and review mechanisms will be contingent on factors such as trust in the system, follow-through on inquiries, and clear accountability structures.

WE ALL BENEFIT

As we work toward creating a more diverse, equitable, and inclusive environment within ophthalmology, we should be cognizant of the discrimination faced by many groups in ophthalmology and in medicine at large. Addressing these challenges requires a multifaceted approach, including allyship, institutional commitment, and policy reforms. While much of the focus has been on race, gender, and sexual orientation, other forms of discrimination—such as those based on disability and socioeconomic status—also affect inclusion and career advancement in ophthalmology.

By fostering an inclusive and equitable environment, ophthalmology can attract and retain a talented and diverse workforce, ultimately improving patient care and strengthening the field as a whole. Continued efforts in research, advocacy, and systemic change are necessary to ensure lasting progress. ■

1. Woreta FA, Gordon LK, Knight OJ, Randolph JD, Zebardast N, Pérez-González CE. Enhancing diversity in the ophthalmology workforce. *Ophthalmology*. 2022;129(10):e127-e136.
2. Aguwa U, Williams B, Woreta F. Diversity, equity and inclusion in ophthalmology. *Curr Opin Ophthalmol*. 2023;34(5):378-381.
3. Rousta N, Hussein IM, Kohly RP. Sex disparities in ophthalmology from training through practice: a systematic review. *JAMA Ophthalmol*. 2024;142(2):146-154.
4. Sirivolu S, Pike S, Reid MW, Berry JL, Chang MY, Nguyen AM. Discrimination within the US ophthalmology workforce. *JAMA Ophthalmol*. 2025;143(1):73-77.
5. McMahon S, Connor RA, Frye V, Cusano J, Johnson L. The presence, action, and influence of bystanders who witness sexual harassment against medical students. *Med Teach*. 2023;45(10):1134-1139.
6. ACGME Equity Matters. Accreditation Council for Graduate Medical Education. Accessed February 18, 2025. dl.acgme.org/pages/equity-matters-catalog
7. Zimmermann CM, Kraus CL, Campbell AA, Kaleem MA, Shukla AG, McGlumphy EJ. Maternity and family leave experiences among female ophthalmologists in the United States. *PLoS One*. 2023;18(4):e0277376.
8. Heshmati A, Honkaniemi H, Juárez SP. The effect of parental leave on parents' mental health: a systematic review. *Lancet Pub Health*. 2023;8(1):e57-e75.
9. Dammann CEL, Montez K, Mathur M, Alderman SL, Bunik M; Council on Community Pediatrics, Council on Early Childhood, Section on Breastfeeding, Section on Neonatal Perinatal Medicine; Paid family and medical leave: policy statement. *Pediatrics*. 2024;154(5):e2024068958.
10. ACOG statement of policy: paid parental leave. ACOG. www.acog.org/clinical-information/policy-and-position-statements/statements-of-policy/2020/paid-parental-leave
11. Frequently asked questions–pumping breast milk at work. Department of Labor. Accessed February 18, 2025. www.dol.gov/agencies/whd/nursing-mothers
12. Code of ethics. American Academy of Ophthalmology. Accessed February 18, 2025. www.aao.org/education/ethics-detail/code-of-ethics

SAMANTHA MADALA, MD (CO-FIRST AUTHOR)
- Ophthalmology Resident, Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles
- Financial disclosure: None

VICTORIA Y. WANG, MD (CO-FIRST AUTHOR)
- Ophthalmology Resident, Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles
- Financial disclosure: None

MELINDA Y. CHANG, MD
- Assistant Professor of Clinical Ophthalmology, Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles
- Attending Physician, The Vision Center at the Children's Hospital Los Angeles, Los Angeles
- Financial disclosure: Research Funding (Blind Children's Center, Children's Eye Foundation of AAPOS, Knights Templar Eye Foundation, NIH NEI K23EY033790, Saban Research Institute)

JESSE L. BERRY, MD
- Professor of Ophthalmology, Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles
- Director, Ocular Oncology and Retinoblastoma Program; Vice Chair, Academic Affairs, Department of Surgery; A. Linn Murphree, MD, Chair in Ocular Oncology, all at The Vision Center at the Children's Hospital Los Angeles, Los Angeles
- Financial disclosure: Research Funding (Childhood Eye Cancer Trust, Children's Cancer Research Fund, Children's Oncology Group/St. Baldrick's Foundation, Hyundai Hope on Wheels, Knights Templar Eye Foundation, Larry and Celia Moh Foundation, NIH NCI K08CA232344, Wright Foundation)

ANGELINE M. NGUYEN, MD
- Attending Physician, Pediatric Ophthalmology and Adult Strabismus, Roski Eye Institute, Keck School of Medicine, University of Southern California, Los Angeles
- Clinical Assistant Professor of Ophthalmology, The Vision Center at the Children's Hospital Los Angeles, Los Angeles
- angnguyen@chla.usc.edu
- Financial disclosure: Research Funding (Research to Prevent Blindness)

MANAGING UVEITIS IN THE OR


When cataract surgery or vitrectomy is indicated, keep these tips in mind.

BY NATASHA KESAV, MD, AND DANNY A. MAMMO, MD

Ocular surgery in patients with uveitis presents unique complexities due to the interplay of chronic inflammation, postinflammatory anterior segment anatomical changes, and prolonged corticosteroid therapy. Optimal surgical outcomes require tailored preoperative planning, perioperative inflammatory control, flexible intraoperative techniques, and close postoperative monitoring. This article discusses surgical considerations for cataract and vitreoretinal surgeons managing uveitis.

CATARACT SURGERY IN UVEITIS

Preoperative Planning

Patients with intraocular inflammation, especially those treated with corticosteroids, have an increased rate of cataract development. Still, surgical and visual outcomes remain largely favorable, with a median gain of 4.8 lines and a median BCVA of 20/25 1 year after surgery.[1] Preoperative preparation consists of the following:

- Achieve inflammatory quiescence for at least 3 months before surgery to minimize postoperative complications.[2-4] If topical, periocular, and systemic corticosteroids are insufficient, consider systemic immunomodulatory therapies. Intravitreal steroids, such as the 0.7 mg dexamethasone intravitreal implant (Ozurdex, Abbvie), have shown efficacy in mitigating uveitic macular edema and controlling inflammation preoperatively.[5]
- A thorough clinical examination with multimodal imaging, including OCT and ultra-widefield fluorescein angiography, can help assess how much immunosuppression is needed and guide discussions regarding visual prognosis. The preoperative examination should focus on the presence of anterior or posterior synechiae (Figure 1), pupil size, fibrotic anterior capsule, band keratopathy, and phacodenesis suggestive of zonulopathy.
- Set realistic expectations and educate patients on the importance of medication adherence. While most patients experience visual improvement, recovery can be prolonged, and the risk of complications (eg, posterior capsular opacification or fibrin membrane formation) should be discussed. Younger patients face unique long-term challenges; in one study, 39% of pediatric uveitic eyes achieved 20/40 vision or better 1 year after cataract surgery compared with much higher rates in adults.[6]

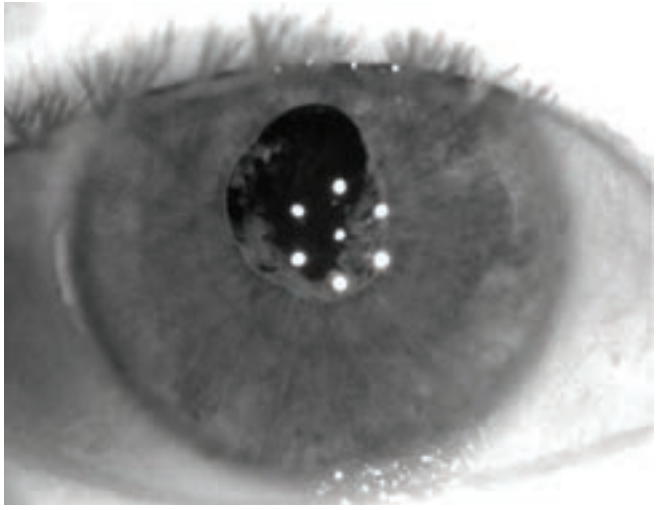


Figure 1. The infrared image of the right eye shows a distorted, irregularly shaped pupil with posterior synechiae, consistent with chronic uveitis.

Intraoperative Planning

Typically, patients are instructed to begin preoperative topical and/or oral corticosteroids, depending on the risk of postoperative flare and chronic inflammation.[7] Additionally, some surgeons may opt for a periocular or intraocular steroid injection or dexamethasone implant to enhance surgical outcomes and visual recovery.[8,9] If the patient has a history of severe intraocular inflammation (Figure 2), an intravenous dose of corticosteroids can be given at the time of surgery to assist with perioperative control.

Anatomic changes in eyes with uveitis, such as the presence of small pupils, capsular fibrosis, and zonular instability, necessitate preoperative planning and adaptation of surgical techniques. Consider the following:

- Strong mydriatic agents, such as phenylephrine 10%, can assist with dilation. Intracameral phenylephrine can provide additional intraoperative dilation when topical agents are insufficient.
- Band keratopathy can be removed by chemical chelation with 1% to 2% ethylenediaminetetraacetic acid if it is in the visual axis or causes recurrent corneal erosion.
- Uveitic eyes with synechiae and dense fibrin membranes can have miotic pupils. Synechiolysis techniques include using a cyclodialysis spatula or gentle viscoelastic to

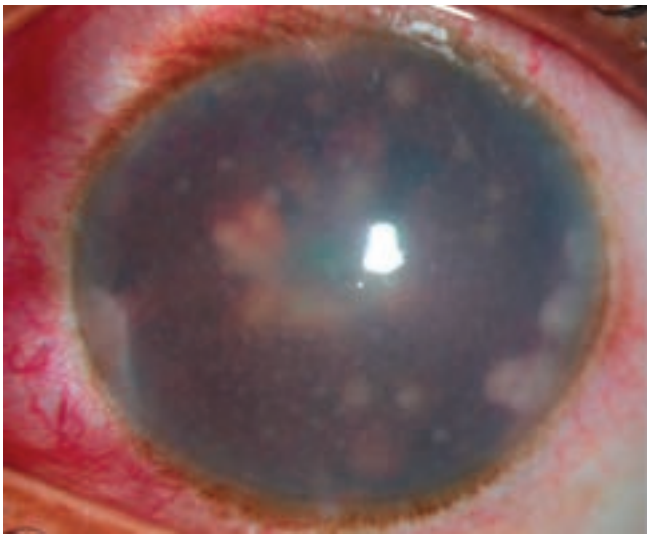


Figure 2. This slit lamp photograph shows severe inflammation of a panuveitis sarcoid eye, showcasing prominent inflammation in the anterior chamber. Multiple granulomatous nodules are visible. Koeppe nodules are seen at the pupillary margin, appearing as small, white inflammatory lesions. Busacca nodules are scattered across the iris stroma, indicative of more widespread granulomatous involvement. Berlin nodules are present on the anterior chamber angle, contributing to anterior chamber inflammation.

break adhesions without putting undue stress on the lens capsule. For more resistant synechiae, bimanual techniques using Sinskey or Kuglen hooks are effective. For flat adhesions, a 27- or 30-gauge bent needle on a syringe can create space between the iris and capsule, and then a cyclodialysis spatula or viscoelastic cannula can be used. Iris hook retractors, Malyugin rings, or viscoelastic-assisted dilation can keep the pupil enlarged.

- With a poor red reflex, trypan blue staining enhances visualization of the anterior capsule. In eyes with fragile or fibrotic capsules, cohesive viscoelastic provides endothelial protection and helps maintain a stable anterior chamber. In instances of capsular fibrosis, the use of intraocular scissors may be necessary to facilitate capsulorhexis. The can-opener technique should be used when the edge of the rhexis is lost or radialized and involves the creation of peripheral punctures that are subsequently pulled centrally to connect the torn edges.
- Capsular tension rings can stabilize the capsular bag in eyes with zonular weakness. For severe zonulopathy, sutured capsular tension rings or scleral fixation of the IOL may be necessary to achieve stable lens positioning.

Postoperative Management

Close monitoring is essential for 5 to 7 days following surgery, as inflammation can escalate.[9] Postoperative drop regimens often need to be increased and tapered over a prolonged period compared with routine cataract surgery. OCT can detect early signs of cystoid macula edema.[10]

Although posterior capsular opacification frequently occurs, IOL placement in uveitic eyes of adult patients is no longer discouraged.[11,12] However, even with optimal management, complications such as capsular contraction, synechiae recurrence, zonular dehiscence, and cystoid macula edema may still arise. Suboptimal postoperative inflammatory control can lead to optic capture, pupillary membranes, and complications from persistent fibrin, including postoperative hypotony.[10] Early intervention with antiinflammatory agents can mitigate these complications and improve outcomes.

VITRECTOMY IN UVEITIS

Pars plana vitrectomy (PPV) in eyes with uveitis may be indicated for therapeutic or diagnostic purposes.[10,12] Indications include media opacities, tractional or combined retinal detachments (RDs), and epiretinal membrane formation. PPV can be effective in controlling intraocular inflammation and improving visual outcomes in patients with accompanying structural or inflammatory complications.[13,14]

Preoperative considerations include a thorough anterior segment examination. Posteriorly, a scleral-depressed examination should assess for any snowbanking at the pars plana, which can affect trocar placement. B-scan ultrasonography can also assess for choroidal thickening or effusions, which may necessitate the use of a 6 mm infusion cannula and/or choroidal drainage prior to trocar entry.[10,15] Uveitic eyes may also have subretinal fluid, and whether the fluid is rhegmatogenous or exudative may guide surgical decision making. To distinguish between an exudative and rhegmatogenous RD (RRD), a thorough history and scleral-depressed examination looking for retinal breaks is required to evaluate underlying inflammatory or systemic causes (Figure 3). The presence of shifting fluid and the absence of vitreous pigment can be helpful in pointing to an exudative cause, but the presence of vitreous pigment can occur with RRD or uveitis with exudative RD. Multimodal imaging including OCT can be helpful, as outer retinal corrugations are more common in RRD than in exudative RD.

Sustained Drug Delivery

With the development of sustained drug delivery devices, the treatment of chronic and recurrent uveitis has shifted. These devices allow for controlled, long-term release to keep treatment levels steady. Three implants are FDA-approved to treat uveitis: the 0.59 mg fluocinolone acetonide implant (Retisert, Bausch + Lomb), the 0.7 mg dexamethasone intravitreal implant, and the 0.18 mg fluocinolone acetonide implant (Yutiq, ANI Pharmaceuticals).

These implants deliver a controlled intravitreal steroid release for between 3 and 36 months, depending on the implant.[16] Compared with periocular steroid injections and systemic corticosteroids, these procedures have been shown to better control inflammation, improve visual outcomes, and lower recurrence rates.[17,18]

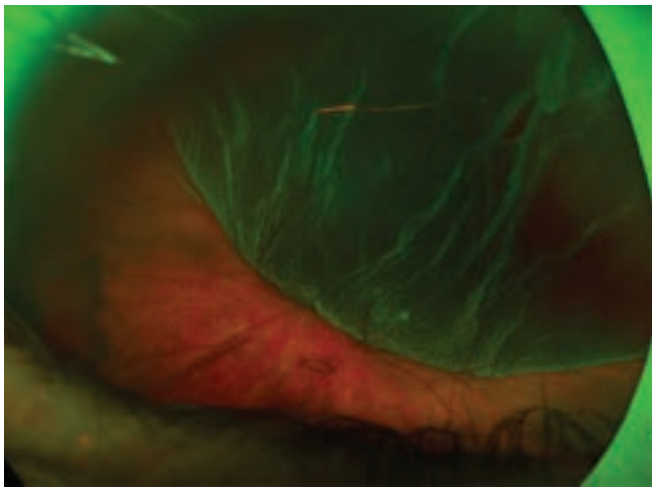


Figure 3. Fundus imaging demonstrates RRD with a visible break at the 1 and 2 clock hours.

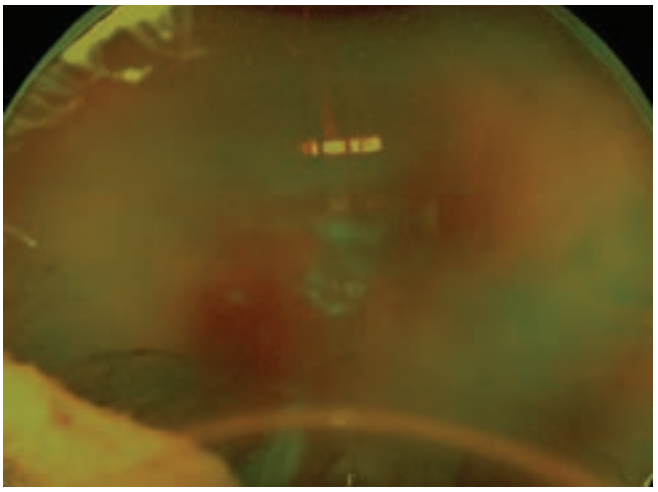


Figure 4. An 86-year-old woman presented with dense 4+ vitreous cell. PPV and vitreous biopsy showed results consistent with primary vitreoretinal lymphoma.

Biopsy Techniques

When performing PPV with vitreous biopsy and/or chorioretinal biopsy, avoid corticosteroids for 2 weeks prior, as steroid use can lead to lysis of lymphoma cells and limit the biopsy's diagnostic utility.

Undiluted and diluted vitreous samples are ideal for diagnostic analysis and should be refrigerated/frozen to preserve cell morphology for cytology, polymerase chain reaction, viral, bacterial, and fungal cultures, and antibody analysis.[19] Flow cytometry is useful for finding clonal B-cell populations that are indicative of vitreoretinal lymphoma. In suspected cases of lymphoma, analysis of *MYD88* mutations can be helpful in corroborating the diagnosis. Researchers have found elevated IL-10 concentrations (IL-10:IL-6) in intraocular lymphoma. Polymerase chain reaction-based assays can detect pathogens and atypical bacteria and fungi.

If vitreous biopsy does not yield a diagnosis, a chorioretinal biopsy may help.[9] In a study of 29 patients with suspected lymphoma, chorioretinal biopsy provided a definitive diagnosis of lymphoma in 59% of patients and excluded a lymphoma diagnosis in 31% of patients (Figure 4).[20] Surgical tools such as intraoperative OCT can assist in guiding the depth of the biopsy to ensure accurate sampling without damaging the surrounding tissue. Lesion margins are more likely to yield pathological results.[21]

WEIGHING THE RISK-REWARD

Cataract and vitreoretinal surgery in eyes with uveitis poses unique challenges and necessitates a careful risk-benefit discussion and planning. Achieving quiescence preoperatively and tailoring intraoperative strategies can improve outcomes. Advances in the field, such as sustained-release drug implants and enhanced biopsy techniques, have improved the management of complex cases. Meaningful rehabilitation can be achieved with close postoperative monitoring and patient-centered approaches. ■

1. Jabs DA, Sugar EA, Burke AE, et al. Cataract surgery in patients with uveitis treated with systemic therapy in the Multicenter Uveitis Steroid Treatment (MUST) trial and follow-up study: risk factors and outcomes. *Am J Ophthalmol*. 2023;254:210-220.
2. Kalogeropoulos D, Asproudis I, Stefaniotou M, et al. The large Hellenic study of uveitis: diagnostic and therapeutic algorithms, complications, and final outcome. *Asia Pac J Ophthalmol (Phila)*. 2023;12(1):44-57.
3. Llop SM, Papaliodis GN. Cataract surgery complications in uveitis patients: a review article. *Semin Ophthalmol*. 2018;33(1):64-69.
4. Al-Essa RS, Alfawaz AM. New insights into cataract surgery in patients with uveitis: a detailed review of the current literature. *Saudi J Ophthalmol*. 2022;36(2):133-141.
5. Thorne JE, Sugar EA, Holbrook JT, et al. Periocular triamcinolone vs. intravitreal triamcinolone vs. intravitreal dexamethasone implant for the treatment of uveitic macular edema: the PeriOcular vs. INTravitreal corticosteroids for uveitic macular edema (POINT) trial. *Ophthalmology*. 2019;126(2):283-295.
6. Gangaputra S, Newcomb C, Armour R, et al. Long-term visual acuity outcomes following cataract surgery in eyes with ocular inflammatory disease. *Br J Ophthalmol*. 2024;108(3):380-385.
7. Deng J, Sun WT, Ai H, Wang LP. Combination of cataract surgery with intravitreal injection of dexamethasone intravitreal implant (Ozurdex) for uveitis-induced cataract. *Int J Ophthalmol*. 2023;16(3):361-366.
8. Mora P, Gonzales S, Ghirardini S, et al. Perioperative prophylaxis to prevent recurrence following cataract surgery in uveitic patients: a two-centre, prospective, randomized trial. *Acta Ophthalmol*. 2016;94(6):e390-e394.
9. Nussenblatt RB, Whitcup SM. Uveitis: Fundamentals and Clinical Practice. Elsevier Health Sciences, 2010.
10. Jevnikar K, Počkar S, Umek L, Rothova A, Valentincic NV. Prognostic factors of cataract surgery in patients with uveitis. *Int Ophthalmol*. 2023;43(12):4605-4612.
11. Bélair ML, Kim SJ, Thorne JE, et al. Incidence of cystoid macular edema after cataract surgery in patients with and without uveitis using optical coherence tomography. *Am J Ophthalmol*. 2009;148(1):128-135.
12. Arepalli S. Surgical management options in uveitis. *Advances in Ophthalmology and Optometry*. 2024;9(6).
13. Shin YU, Shin JY, Ma DJ, Cho H, Yu HG. Preoperative inflammatory control and surgical outcome of vitrectomy in intermediate uveitis. *J Ophthalmol*. 2017;2017:5946240.
14. Emami P, Srivastava SK. Surgical considerations in the uveitic patient. *Complications in Uveitis*. 2020: 247-259.
15. Bovey EH, Herbort CP. Vitrectomy in the management of uveitis. *Ocul Immunol Inflamm*. 2000;8(4):285-291.
16. Mishra K, Leng T. Steroid therapy for the long haul. *Retina Today*. 17(1):24-27.
17. Jaffe GJ, Martin D, Callanan D, et al. Fluocinolone acetonide implant (Retisert) for noninfectious posterior uveitis: thirty-four-week results of a multicenter randomized clinical study. *Ophthalmology*. 2006;113(6):1020-1027.
18. Pavesio C, Zierhut M, Bairi K, Comstock TL, Usner DW. Evaluation of an intravitreal fluocinolone acetonide implant versus standard systemic therapy in noninfectious posterior uveitis. *Ophthalmology*. 2010;117(3):567-575.
19. Lin P, ed. Current Practices in Ophthalmology: Uveitis. Springer Nature; 2019.
20. Mastropasqua R, Di Carlo E, Sorrentino C, Mariotti C, da Cruz L. Intraocular biopsy and immunomolecular pathology for "unmasking" intraocular inflammatory diseases. *J Clin Med*. 2019;8(10):1733.
21. Mastropasqua R, Thaung C, Pavesio C, et al. The role of chorioretinal biopsy in the diagnosis of intraocular lymphoma. *Am J Ophthalmol*. 2015;160(6):1127-1132.

NATASHA KESAV, MD
- Uveitis Fellow, Cole Eye Institute, Cleveland Clinic, Cleveland
- Financial disclosure: None

DANNY A. MAMMO, MD
- Retina Specialist, Cole Eye Institute, Cleveland Clinic, Cleveland
- danny.mammo24@gmail.com
- Financial disclosure: Consultant (ANI Pharmaceuticals, Bausch + Lomb); Speaker (Apellis)

CODING ADVISOR
A Collaboration Between *Retina Today* and AMERICAN ACADEMY OF OPHTHALMOLOGY

OCT: WHAT TO KNOW FOR 2025

Here are the changes and updates you should be prepared for as we head further into the year.

BY JOY WOODKE, COE, OCS, OCSR

As of the beginning of 2025, the family of codes for OCT imaging saw some changes. In this article, I provide an overview of these modifications so that you and your office staff can keep up with coding best practices.

DESCRIPTOR CHANGES

Prior to the new year, OCT was defined by CPT as *scanning computerized ophthalmic diagnostic imaging*. The new descriptor removed the word *scanning*, affecting CPT codes 92132, 92133, and 92134 (Table 1).

A NEW CODE

Effective January 1, a new CPT code, 92137, is available for OCT angiography that does not require an injection of dye like fluorescein angiography (CPT code 92235) and is noninvasive and infusion-free.

NATIONAL CORRECT CODING INITIATIVE CHANGES

CPT code 92133 has been bundled with 92134 since 2011 with a mutually exclusive edit, indicator of 0, which means these tests cannot be billed on the same day or unbundled with modifier -59. It is expected that this bundling will be expanded in 2025 to include a mutually exclusive edit with 92137. This is due to the AMA CPT parenthetical that states codes 92133, 92134, and 92137 cannot be reported at the same patient encounter.

However, when medically necessary fluorescein angiography (CPT code 92235), ICG angiography (92240), or combined fluorescein angiography/ICG angiography (92242) are performed on the same day as OCT angiography (92137), they can be reported separately.

(Continued on page 53)

TABLE 1. NEW OCT DESCRIPTORS AND CODE IN 2025

CPT Code	Descriptor
92132	Computerized ophthalmic diagnostic imaging (eg, optical coherence tomography [OCT]), anterior segment, with interpretation and report, unilateral and bilateral
92133	Computerized ophthalmic diagnostic imaging (eg, optical coherence tomography [OCT]), posterior segment, with interpretation and report, unilateral and bilateral; optic nerve
92134	Computerized ophthalmic diagnostic imaging (eg, optical coherence tomography [OCT]), posterior segment, with interpretation and report, unilateral and bilateral; retina
92137	Computerized ophthalmic diagnostic imaging (eg, optical coherence tomography [OCT]), posterior segment, with interpretation and report, unilateral and bilateral; retina, including OCT angiography

TABLE 2. OCT RELATIVE VALUE UNIT CHANGES FOR 2025

CPT Code	2024 Total Relative Value Unit	2025 Total Relative Value Unit
92132	0.94	0.89
92133	1.09	0.92
92134	1.21	0.97
92137	N/A	1.76

ACUTE RETINOPATHY FOLLOWING WEIGHTLIFTING SUPPLEMENT

An unusual case demonstrates the value of inquiring about a patient's lifestyle and nutrition in relation to their visual symptoms.

BY SAYENA JABBEHDARI, MD, MPH; ABDELRAHMAN M. ELHUSSEINY, MD, MSC; WILLIAM A. HENRY, MD; AND VELIMIR PETROVIC, MD

Acute macular neuroretinopathy (AMN)/acute macular outer retinopathy (AMOR) was first reported in 1975. Although the pathophysiology of this condition is unclear, it has been associated with microvascular abnormality in the deep retinal layers, mainly ischemia of the deep capillary plexus.[1]

AMN/AMOR is most common in healthy women in their teens to 30s and usually presents with sudden onset of a single or multiple paracentral scotomas, shadows/spots, mild decreased visual acuity, floaters, metamorphopsia, and photopsia.[1] AMN/AMOR can be unilateral or bilateral and can persist indefinitely, although most cases resolve partially over months. Although a preceding viral illness is the most common reported association, AMN/AMOR has been reported in association with oral contraceptive use, significant caffeine consumption, use of epinephrine, hypotensive episodes, and COVID-19 infection or vaccination.[1]

Here, we discuss a case of bilateral AMN/AMOR in a middle-aged man who presented with acute blurry vision and distortion after taking weightlifting supplements.

CASE REPORT

A 52-year-old White man presented to our urgent care clinic with a chief complaint of having a teardrop-shaped distortion and blurriness in his left eye, which started 3 days earlier. The patient denied any problem with his right eye. He had a medical history of hypertension, for which he was taking oral losartan. He also had a history of chronic posttraumatic stress disorder, panic disorder, seborrheic keratosis, and depression, but he was not taking medication for these conditions. He reported no medical history of trauma, sleep apnea, obesity, cigarette smoking, cancer, or infectious, inflammatory, or autoimmune conditions. He stated that he has had one cup of coffee daily for the past 30 years. He denied any history of COVID-19 infection and had not received the COVID-19 vaccine.

His ocular history included hypertensive retinopathy in each eye and hemorrhagic posterior vitreous detachment in his left eye. The patient had been lifting heavy weights for years. However, he started taking weightlifting supplements that included selective androgen receptor modulators (SARMs) 2 weeks prior to the onset of visual symptoms. He did not report any change in his weightlifting routine around the time of his visual symptoms, which could have also potentially explained the symptoms.

EXAMINATION FINDINGS

On examination, his BCVA was 20/20-3 OU. His IOP was 15 mm Hg OD and 17 mm Hg OS. His extraocular movements were intact, and his pupils were round and reactive with no relative afferent pupillary defect. Examination of the anterior chamber was unremarkable, except for mild nuclear sclerosis cataract in each eye.

Dilated fundus examination showed no vitreous cell, a cup-to-disc ratio of 0.1 OU, a flat retina in each eye, and normal retinal vessels in his right eye. In the left eye, examination revealed temporal arteriovenous anastomosis with regressed peripheral neovascularization elsewhere and prior sectoral laser. No clinically significant macular edema, neovascularization, or hemorrhage was noted in either eye. There was an area with a red-brown appearance adjacent to the fovea in a wedge-shaped pattern in the left eye, as well as a faint red-brown spot in his right eye.

OCT showed a slightly altered ellipsoid zone inferior to the foveal avascular zone in his right eye and altered outer retinal layers in the pattern of a teardrop in his left eye

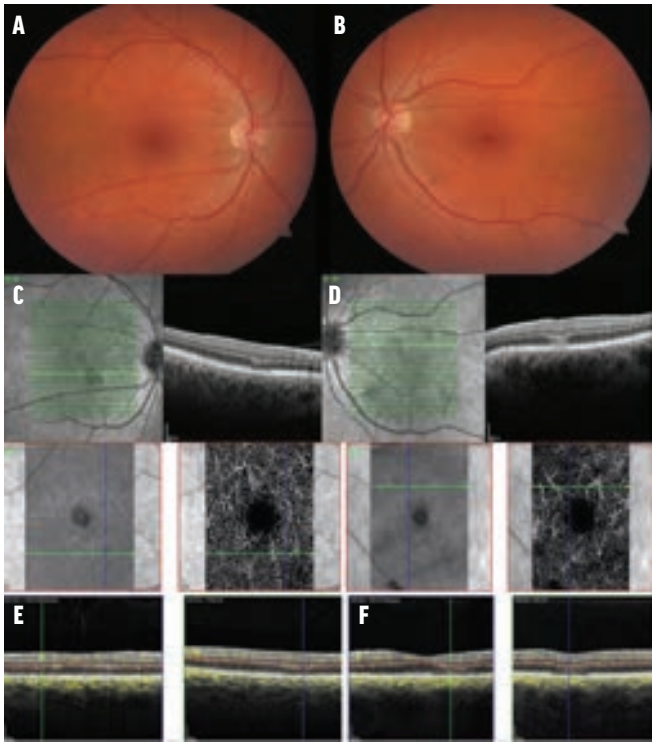


Figure 1. Fundus imaging of the right (A) and left (B) eye showed teardrop wedge-shaped areas that are more evident on the infrared reflectance images (C and D, respectively) as hypoautofluorescent wedge-shaped lesions and hyperreflective outer retinal lesions on OCT. OCT angiography of the right (E) and left (F) eye showed a bilateral intact deep capillary plexus.

(Figure 1). OCT angiography was unremarkable in each eye with bilateral intact deep capillary plexus. Amsler grid was unremarkable in his right eye and showed a teardrop-shaped scotoma in his left eye. Because the patient had no cystoid macular edema, subretinal fluid, and/or retinal detachment, our management consisted of close observation with serial dilated fundus examinations. In addition, we recommended the patient discontinue the weightlifting supplements.

Follow-up Visits

After 2 weeks, the patient reported stable vision with an improvement in the scotoma. OCT showed an improvement in the altered ellipsoid zone and outer retinal layer in each eye (Figure 2). At the 6 week visit, he reported stable vision and complete resolution of the scotoma in the left eye. His BCVA was 20/20 OU, and fundus examination showed fading of the teardrop-shaped lesion. OCT showed improvement in the ellipsoid zone and outer retinal layers in each eye.

DISCUSSION

AMN/AMOR affects the outer retina and can be diagnosed with multimodal imaging. The underlying pathophysiology of AMN/AMOR is still unclear; however, imaging has demonstrated the condition locus to be the outer retina, deep capillary plexus, and/or choroid.[2] Microvascular ischemia of the choriocapillaris may lead to middle and outer retinal layer hypoxia.[3] AMN/AMOR is identified by the characteristic appearance of wedge-shaped parafoveal lesions. On OCT, it can present with outer layer hyperreflectivity starting in the outer plexiform layer, which, over time, may lead to outer retinal layer thinning and disruption of the outer segments and retinal pigment epithelium.[3] Outcomes generally vary from persistent scotomas to complete visual recovery, and side effects may last from weeks to months.[1]

Although AMN/AMOR is often associated with preceding flu-like illness, it can occur after oral contraceptive consumption, high caffeine consumption, antecedent trauma, hypotensive episodes, pregnancy-induced hypertension, epinephrine and pseudoephedrine use, and COVID-19 infection and/or vaccination.[4,5]

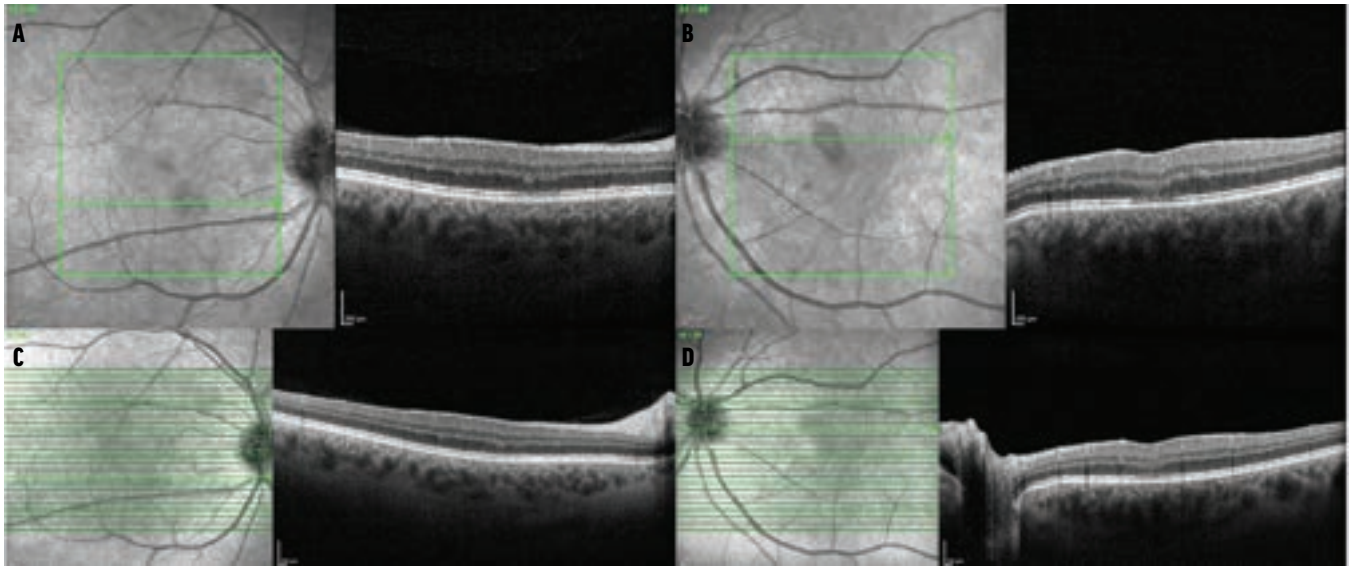


Figure 2. OCT of the right (A and C) and left (B and D) eye at the 2-week and 6-week follow-up visits, respectively, after discontinuing the weightlifting supplement.

SARMs, an ingredient in the supplement the patient was taking, have been reported to increase the risk of cardiovascular disease.[6] It has been proposed that high levels of androgen system signaling can lead to endothelial dysfunction. We propose that this SARM-induced endothelial dysfunction may have led to reduced ocular blood supply with subsequent development of AMN/AMOR. In addition, there is a case report on the occurrence of AMN following weightlifting itself,[7] and, although it is unclear whether the weightlifting supplement was the causative agent or merely a coincidence, the occurrence of AMN/AMOR shortly after starting the supplement and the resolution after stopping the agent raises concerns for a potential causal association.

IMPORTANT TO RULE OUT

Although there is no treatment for AMN/AMOR, the diagnosis is necessary to differentiate from the more serious paracentral acute middle maculopathy, as well as for patient reassurance and to limit unnecessary further workup. ■

1. Bhavsar KV, Lin S, Rahimy E, et al. Acute macular neuroretinopathy: A comprehensive review of the literature. *Surv Ophthalmol*. 2016;61(5):538-565.
2. Lee SY, Cheng JL, Gehrs KM, et al. Choroidal features of acute macular neuroretinopathy via optical coherence tomography angiography and correlation with serial multimodal imaging. JAMA Ophthalmol. 2017;135(11):1177-1183. Erratum in: *JAMA Ophthalmol*. 2017;135(11):1282.
3. Thanos A, Faia LJ, Yonekawa Y, Randhawa S. Optical coherence tomographic angiography in acute macular neuroretinopathy. *JAMA Ophthalmol*. 2016;134(11):1310-1314.
4. Turbeville SD, Cowan LD, Gass JD. Acute macular neuroretinopathy: a review of the literature. *Surv Ophthalmol*. 2003;48(1):1-11.
5. Dinh RH, Tsui E, Wieder MS, et al. Acute macular neuroretinopathy and coronavirus disease 2019. *Ophthalmol Retina*. 2023;7(2):198-200.
6. Hall E, Vrolijk MF. Androgen receptor and cardiovascular disease: a potential risk for the abuse of supplements containing selective androgen receptor modulators. *Nutrients*. 2023;15(15):3330.
7. Agarwal S, Nayak MA, Luthra S, Parakh S. Acute macular neuroretinopathy following Valsalva manoeuvre: an insight into the pathophysiology. *BMJ Case Rep*. 2024;17(5):e256685.

SAYENA JABBEHDARI, MD, MPH
- Ophthalmology Resident, Jones Eye Institute, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- jabbehdarisayena@gmail.com
- Financial disclosure: None

ABDELRAHMAN M. ELHUSSEINY, MD, MSC
- Ophthalmology Resident, Jones Eye Institute, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- Financial disclosure: None

WILLIAM A. HENRY, MD
- Ophthalmology Resident, Jones Eye Institute, University of Arkansas for Medical Sciences, Little Rock, Arkansas
- Financial disclosure: None

VELIMIR PETROVIC, MD
- Retina Specialist, Department of Ophthalmology, John L. McClellan Memorial Veterans Hospital, Little Rock, Arkansas
- velimir.petrovic@va.gov
- Financial disclosure: None

(Continued from page 50)

Looking for more information on OCT imaging? Check out these recent *Retina Today* articles:

A Reference Guide for OCT Angiography
By Ivy Zhu, MD; Nicole L. Decker, BS; and Amani A. Fawzi, MD

The Utility of En Face OCT for Detecting Neovascularization in DR
By Mizuki Hamada, MD, and Kotaro Tsuboi, MD

RELATIVE VALUE UNIT CHANGES

We've also seen reductions in the relative value unit (RVU) for each of the existing codes and an assigned RVU for the new CPT code for OCT angiography (Table 2).

DESIGNATED HEALTH SERVICE CHANGES

Certain services are considered a designated health service (DHS) per the physician self-referral law, also known as Stark Law. Under certain circumstances, productivity-based group compensation is prohibited for these services. There are exceptions to this rule, for example, if the services were not delegated and the physician performed them.

Historically, CPT codes 92132, 92133, and 92134 have been considered DHS. In 2025, CPT code 92137 joined the list.

Stark Law and productivity-based compensation in group practices is complex, and physicians and practices should consult with an attorney to ensure ongoing compliance.[1]

NEW YEAR, NEW CODING TO MASTER

Stay up to date on the CPT code changes and additions regarding OCT with resources such as the AMA's CPT 2025 and the American Academy of Ophthalmology's retina coding guide. For a comprehensive review of the 2025 coding changes, attend a Codequest course near you. ■

1. Woodke J, Shuren AW. The Stark Law and productivity-based compensation in group practices. American Academy of Ophthalmology. August 1, 2022. Accessed January 15, 2022. www.aao.org/eyenet/article/the-stark-law-and-productivity-based-compensation?august-2022

JOY WOODKE, COE, OCS, OCSR
- Director of Coding & Reimbursement, American Academy of Ophthalmology, San Francisco
- jwoodke@aao.org
- Financial disclosure: None

NEOPLASTIC MASQUERADERS OF UVEITIS

Remember these various ocular malignancies as you prepare your differential diagnosis.

BY IOANNA PLOUMI, MSC; KONSTANTINA RIRI, MD, MSC; AND SOFIA ANDROUDI, MD, PHD

Uveitis masquerade syndromes encompass a range of conditions that mimic the clinical presentation of uveitis but are caused by underlying pathologies such as malignancies, infections, or degenerative diseases.[1,2] Neoplastic masqueraders, such as intraocular lymphoma, uveal melanoma, leukemia, and metastatic tumors, are among the most serious and challenging to diagnose due to the potential for systemic involvement and life-threatening progression. Such conditions account for about 2.5% of presumed uveitis patients in tertiary care settings.[3] The incidence varies in terms of geographic location, access to health care, and presence of systemic malignancies. Early detection hinges on identifying atypical features, using advanced imaging modalities, and performing targeted diagnostic procedures such as vitreous biopsy.

INTRAOCULAR LYMPHOMA

Primary vitreoretinal lymphoma (PVRL) is most common in older adults, with a peak incidence between 50 and 70 years of age. It is a subset of primary central nervous system (CNS) lymphoma, which itself accounts for 1% to 2% of all non-Hodgkin lymphomas.[4,5] Secondary intraocular lymphoma is more frequent in patients with systemic lymphoma and has no clear age predilection.

A high frequency of *MYD88* and *CD79B* mutations with VRL has been observed.[4] In addition, it is important to remember the following pearls:[5]

- At the time of presentation with VRL, CNS involvement is present in 16% to 34% of patients.
- Of patients with primary CNS lymphoma, 25% have VRL at presentation.
- Of patients with VRL, 50% to 90% develop a CNS and/or spinal cord disease within 16 to 24 months.

Recent recommendations suggest the following elements should be used to obtain a PVRL diagnosis:[6]

- **Clinical History:** Most patients with PVRL are older than 50 years of age and present with floaters and painless vision loss without redness or photophobia. The disease may manifest unilaterally, but PVRL is predominantly bilateral.
- **Anterior Segment Findings:** Keratic precipitates of various types may or may not be present in VRL. Scleritis, pseudohypopyon, and hyphema are uncommon, while anterior synechiae and iris depigmentation are almost never seen.
- **Vitreous and Posterior Segment Findings:** Massive cellular infiltration (vitreous sheets or clumps) with the absence of macular edema, snowbanking, or vitreous hemorrhage may be present. There are usually multifocal creamy/white lesions in the outer retina (Figure 1) with or without a leopard-spot appearance, and retinal pigment epithelial (RPE) atrophy or fibrosis.
- **Ocular Imaging:** Multimodal imaging, including fundus autofluorescence (Figure 2), OCT (Figure 3),

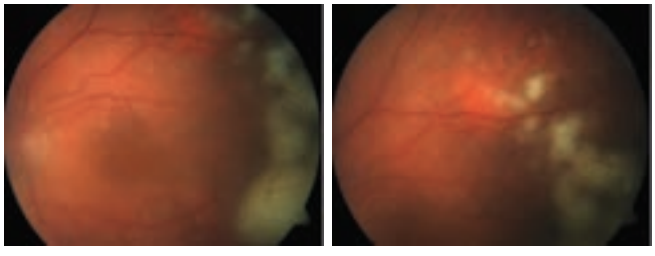


Figure 1. Fundus images of the right eye of a 55-year-old man on presentation showed multifocal creamy/white lesions in the outer retina with leopard-spot and RPE atrophy typical of intraocular lymphoma. This patient underwent vitrectomy, which confirmed the diagnosis, and he developed brain lymphoma 14 months later.

fluorescein angiography, and contrast-enhanced MRI of the brain, is also important to investigate.

- **Behavior With Systemic Steroids:** Systemic steroids should not be used as a sole treatment for VRL due to their limited effectiveness and should be stopped at least 2 weeks prior to a scheduled vitrectomy for ocular fluid study.
- **Ocular Fluid Diagnosis:** In cases of suspected VRL, diagnostic vitrectomy may be performed after oral steroids have been discontinued for at least 2 weeks. Early undiluted vitreous samples should be obtained with a low cut rate, and diluted and undiluted vitreous should be evaluated as soon as possible. Cell morphology and cytokine and gene analysis of the ocular fluid can aid in the diagnosis; the IL-10:IL-6 ratio and *MYD88* gene mutation are strongly recommended. Immunophenotype (ie, flow cytometry, immunocytology, and histochemistry) and polymerous chain reaction testing should also be performed, if possible.

The Interleukin Score for Intraocular Lymphoma Diagnosis is a useful probability score for the diagnosis of PVRL that is based on a mathematical formula integrating both IL-10 and IL-6 levels in vitreous or aqueous samples with high sensitivity and specificity (93% and 95%, respectively).[7]

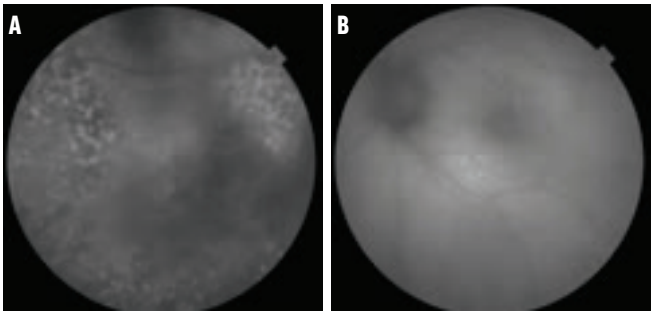


Figure 2. Fundus autofluorescence of the right (A) and left (B) eye of a 66-year-old woman showed a granular hyper- and hypoautofluorescence pattern indicative of VRL. This patient had a vitrectomy specimen labeled as "highly suspicious" for lymphoma and, indeed, developed brain lymphoma 2 months after presenting with ocular symptoms.

Finally, VRL should be suspected when there is nonspecific posterior uveitis with better visual acuity than expected, minimal anterior chamber flare, dense vitritis, and absence of posterior synechiae or cystoid macular edema.

UVEAL MELANOMA

Uveal melanoma is the most common primary intraocular malignancy, with an annual incidence of five to

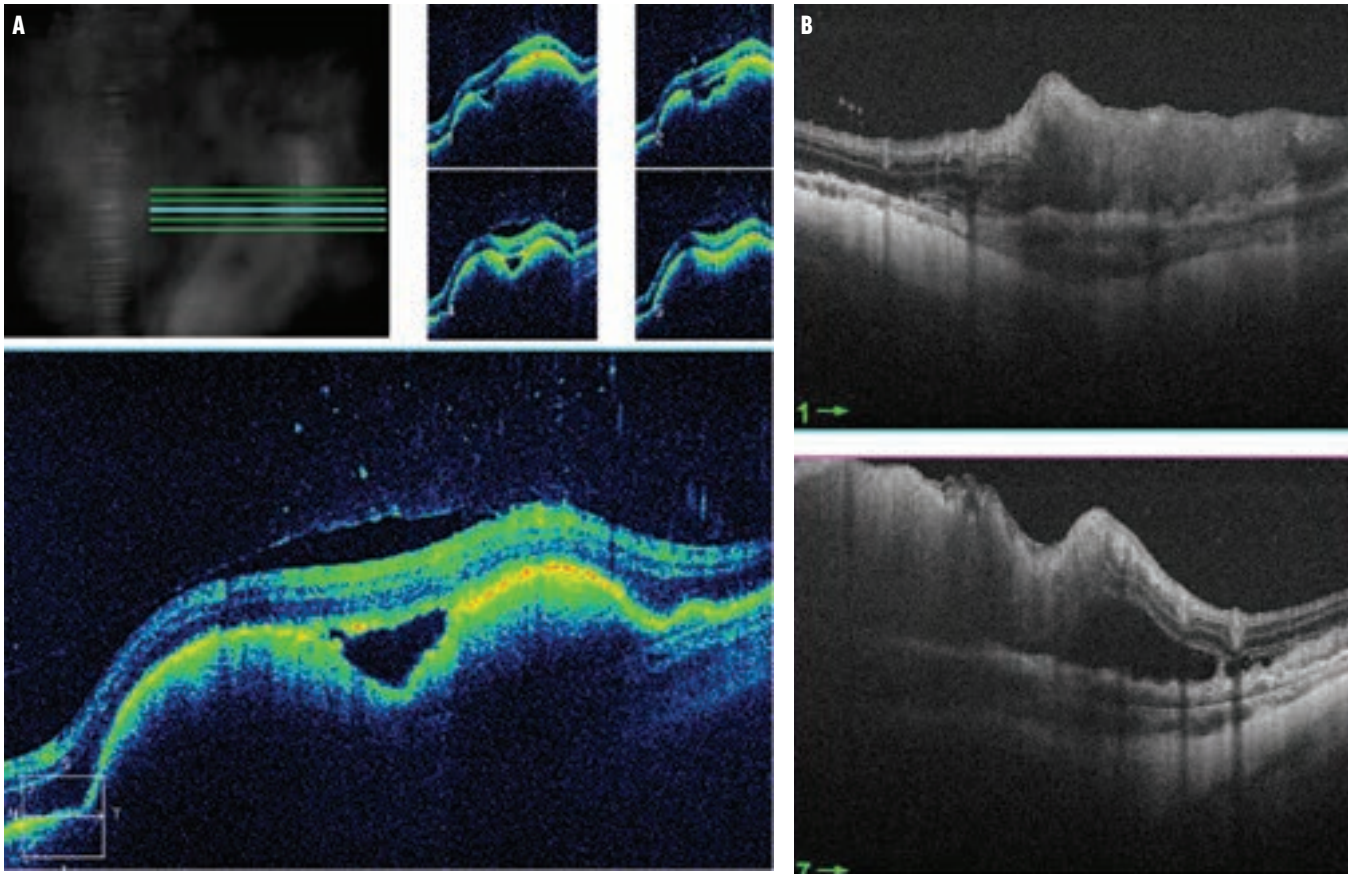


Figure 3. OCT of the patient in Figure 1 showed focal round lesions causing pigment epithelial detachment with RPE irregularities and subretinal fluid (A). In another case of PVRL in a 39-year-old man, whose ocular symptoms had been misdiagnosed as uvetitis, RPE thickening, subretinal fluid, and diffuse highly reflective subretinal infiltration were observed (B).

seven cases per one million individuals in the United States. It predominantly affects White individuals and has a slightly higher prevalence in men. Risk factors include light iris color, ultraviolet light exposure, and a genetic predisposition, such as mutations in the *GNAQ*, *GNA11*, or *BAP1* genes.[8]

Melanomas appear as hypovascular, dome-shaped masses on B-scan ultrasonography and are characterized by a centrally located vessel with a "central pattern" of blood flow. Uveal melanoma may present as a masquerade syndrome, mimicking conditions such as endogenous endophthalmitis, subretinal fluid in the macula with pigment epithelial detachments, and a thickened choroid resembling central serous chorioretinopathy, choroidal vortex vein varix, or chronic unilateral uveitis.[8-11]

LEUKEMIA

About 90% of patients with leukemia, especially those with the chronic form, experience ocular involvement.[12] In cases of acute leukemia, ocular signs often correlate with disease relapse or progression. Malignant cells have been documented to infiltrate the uvea, optic nerve, cranial nerves, and periorbital tissues.[12,13] Ocular manifestations are more commonly associated with anterior uveitis presenting with hypopyon, while secondary extramedullary location of acute myeloid leukemia can present as anterior uveitis with dust-like pigmented keratic precipitates, iris bombe, ischemic bilateral retinal vasculitis, and anterior synechiae with retinal detachment and a lesion in the subretinal space.[2] Posterior segment involvement may result from direct ocular infiltration or indirect effects of systemic disease.[2,12] Retinal hemorrhage, vitreous hemorrhage, vascular occlusion, and secondary infections may present as indirect sequelae of systemic malignant disease.[2,12,13]

METASTATIC TUMOR

Metastatic tumors are the most common intraocular malignancy with the majority originating from breast (40%) and lung (30%) cancers. Choroidal metastases predominate due to the rich vascular supply of the posterior uvea. Many cases of lung cancer with masquerading ocular metastases have been documented, presenting as anterior uveitis with pseudokeratic precipitates, secondary glaucoma with goniosynechiae and iris nodules, bullous retinal detachment, and diffuse retinal vasculitis with vitritis and optic disc edema.[14,15] Furthermore, ocular metastasis of mammary carcinoma may mimic bilateral anterior uveitis with hypopyon, partial third nerve palsy, and eyelid margin thickening.[16,17]

Fewer cases of ocular metastasis from kidney carcinoma have been reported, masquerading as endogenous endophthalmitis, while eyelid and ocular metastases from gastrointestinal carcinoma may present as chalazion.[18,19] Ocular metastases are most commonly found in the choroid (88%), iris (9%), and ciliary body (2%). Metastases typically appear yellow in color and can be solitary, multiple, unilateral, or bilateral. They can cause blurred vision (70%), flashes and floaters (12%), or may be asymptomatic.[18,19]

TIME IS OF THE ESSENCE

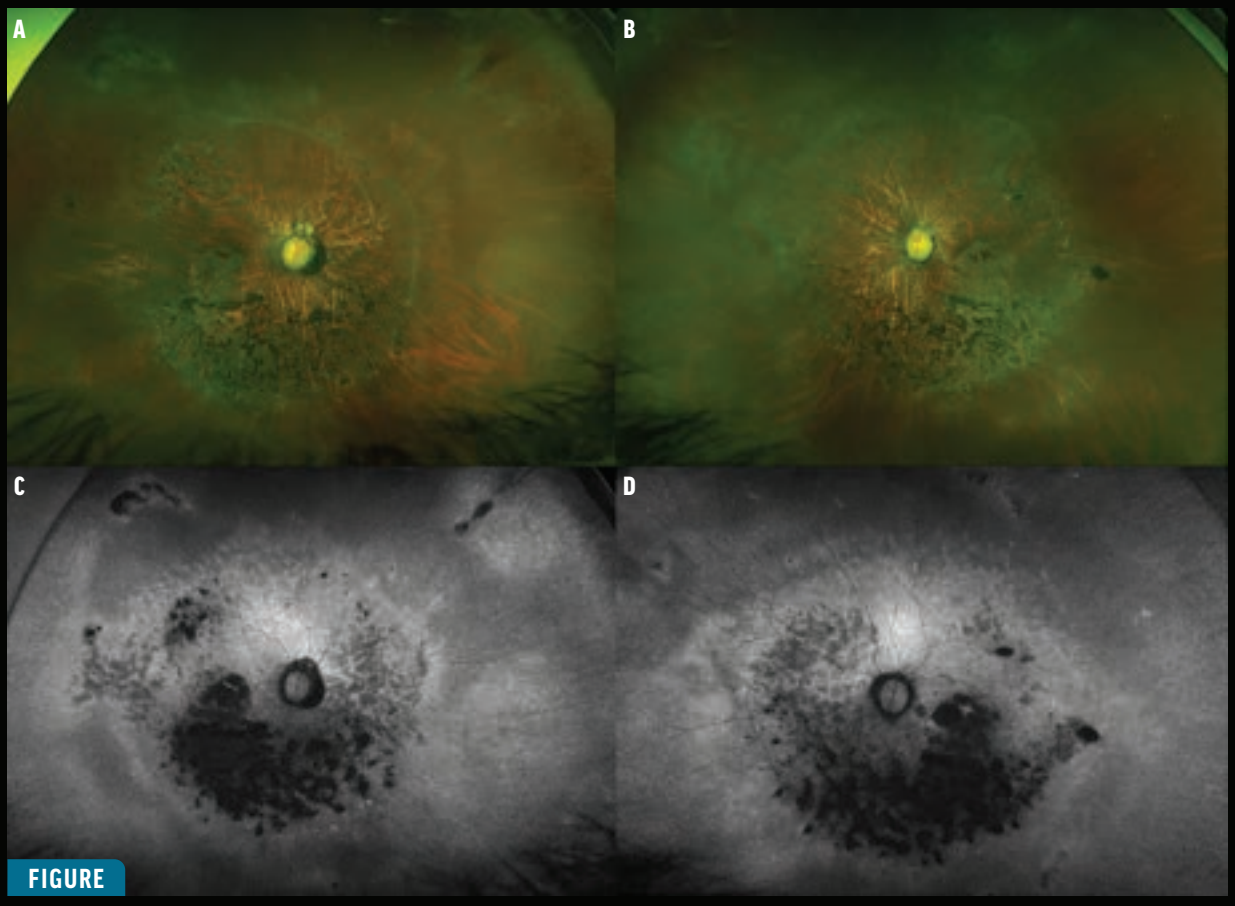
The primary diagnostic method for masquerade syndromes remains the cytological and histological analysis of a vitreous biopsy via pars plana vitrectomy.[5,15,20] Further research into molecular diagnostics and targeted treatments is essential to enhance prognosis and quality of life for affected patients. ■

1. Carbonell D, Mahajan S, Chee SP, et al. Consensus recommendations for the diagnosis of vitreoretinal lymphoma. *Ocul Immunol Inflamm*. 2021;29(3):507-520.
2. Paez-Escamilla M, Caplash S, Kalra G, et al. Challenges in posterior uveitis–tips and tricks for the retina specialist. *J Ophthalmic Inflamm Infect*. 2023;13(1):35.
3. Rothova A, Groen F, ten Berge JCEM, Lubbers SM, Vingerling JR, Thiadens AAHJ. Causes and clinical manifestations of masquerade syndromes in intraocular inflammatory diseases. *Retina*. 2021;41(11):2318-2324.
4. Kraan W, Horlings HM, Van Keimpema M, et al. High prevalence of oncogenic MYD88 and CD79B mutations in diffuse large B-cell lymphomas presenting at immune-privileged sites. *Blood Cancer J*. 2013;3(9):e139.
5. Pe'er J, Hochberg FH, Foster CS. Clinical review: treatment of vitreoretinal lymphoma. *Ocul Immunol Inflamm*. 2009;17(5):299-306.
6. Carbonell D, Mahajan S, Chee SP, et al. Study group for vitreoretinal lymphoma diagnostics. consensus recommendations for the diagnosis of vitreoretinal lymphoma. *Ocul Immunol Inflamm*. 2021;29(3):507-520.
7. Soussain C, Malaise D, Cassoux N. Primary vitreoretinal lymphoma: a diagnostic and management challenge. *Blood*. 2021;138(17):1519-1534.
8. Sara Simões Macedo, Mónica Teixeira, Andreia Correia, António Novais, Cátia Cabral. Ocular melanoma presenting as masquerade syndrome. *Eur J Case Rep Intern Med*. 2019;6(7):001118.
9. Feng L, Zhu J, Gao T, Li B, Yang Y. Uveal melanoma in the peripheral choroid masquerading as chronic uveitis. *Optometry and Vision Science*. 2014;91(9):e222-225.
10. Gillan SN, Roxburgh STD. Vortex varix manifesting as choroidal melanoma. *BMJ*. 2013;346(jun25 3):f3947-f3947.
11. Negretti GS, Kalafatis NE, Shields JA, Shields CL. Choroidal melanoma masquerading as central serous chorioretinopathy. *Ophthalmol Retina*. 2023;7(2):171-177.
12. Eze B, Ibegbulam G, Ocheni S. Ophthalmic manifestations of leukemia in a tertiary hospital population of adult Nigerian Africans. *Middle East Afr J Ophthalmol*. 2010;17(4):325.
13. Reddy SC, Jackson N, Menon BS. Ocular involvement in leukemia – a study of 288 cases. *Ophthalmologica*. 2003;217(6):441-445.
14. Kim KW, Kusuhara S, Tachihara M, Mimura C, Matsumiya W, Nakamura M. A case of panuveitis and retinal vasculitis associated with pembrolizumab therapy for metastatic lung cancer. *Am J Ophthalmol Case Rep*. 2021;22:101072.
15. Konno S, Yuzawa S, Kinouchi R. A case of masquerade syndrome caused by metastatic iris tumor diagnosed by a high CEA level in the aqueous humor and iris biopsy. *Diagn Pathol*. 2024;19(1):128.
16. Amer NM, Bashir G, Ogedegbe A, Saeed I. Metastatic breast cancer: an unusual cause of diplopia. *J Cancer Metastasis Treat*. 2016;2(3):123.
17. Annamalai R, Delampady P, Biswas J. Bilateral hypopyon uveitis in carcinoma of breast: Masquerade syndrome and review of literature. *Indian J Ophthalmol Case Rep*. 2023;3(4):1147-1150.
18. Rebollo NP, Yeaney GA, Hwang CJ, Perry JD. Metastatic gastric carcinoma to the eyelids masquerading as a chalazion: a case report. *Am J Ophthalmol Case Rep*. 2023;29:101814.
19. Ge JY, Loo YH, Chan ASY. Metastatic renal cell carcinoma masquerading as an endogenous endophthalmitis: role of vitreous cytology. *Asia Pac J Ophthalmol (Phila)*. 2024;13(2):100055.
20. Coupland SE, Bechrakis NE, Anastassiou G, et al. Evaluation of vitrectomy specimens and chorioretinal biopsies in the diagnosis of primary intraocular lymphoma in patients with Masquerade syndrome. *Graefes Arch Clin Exp Ophthalmol*. 2003;241(10):860-870.

IOANNA PLOUMI, MSC
■ Research Fellow, Harvard Retinal Imaging Lab, Boston
■ iploumi@meei.harvard.edu
■ Financial disclosure: None

KONSTANTINA RIRI, MD, MSC
■ PhD Candidate, University Eye Clinic, University of Thessaly, Larissa, Greece
■ riri91k@gmail.com
■ Financial disclosure: None

SOFIA ANDROUDI, MD, PHD
■ Professor and Chair, University Eye Clinic, University of Thessaly, Larissa, Greece
■ androudi@otenet.gr
■ Financial disclosure: None



FIGURE

IDENTIFYING *KIF11*-ASSOCIATED RETINOPATHY

Genetic testing helped elucidate the cause of lifelong low vision.

BY FRANCISCA BRAGANÇA, MD; CÉLIA AZEVEDO SOARES, MD, PHD; AND ANA MARTA, MD

A 39-year-old woman presented with low vision since infancy. Her medical history included epilepsy, microcephaly, short stature, brachydactyly, and intellectual impairment. Her BCVA was 20/200 OU.

Fundus examination revealed bilateral pale optic discs, attenuated vessels, diffuse retinal pigment epithelial degeneration, and symmetric pigment clumping in the posterior pole and inferior midperiphery, which was visible on ultra-widefield fundus photography (Figure A, B). Fundus autofluorescence revealed a corresponding symmetric, irregular comet-shaped area of decreased autofluorescence located inferiorly (Figure C, D).

NEXT STEP: GENETIC TESTING

Whole-exome sequencing revealed a likely pathogenic frameshift variant in the gene *KIF11*

IN OUR CASE, THE PATIENT'S IMPAIRED VISION WAS PRIMARILY ATTRIBUTABLE TO PATHOLOGICAL MANIFESTATIONS OF CHORIORETINOPATHY.

(NM_004523.4:c.1912del p.(Met638*)), which is responsible for encoding a motor protein belonging to the kinesin-like protein family. Mutations in the *KIF11* gene are recognized as a cause of an autosomal dominant disorder characterized by microcephaly with or without chorioretinopathy, lymphedema, and intellectual disability.[1,2] In our case, the patient's impaired vision was primarily attributable to pathological manifestations of chorioretinopathy. ■

1. Li JK, Fei P, Li Y, et al. Identification of novel *KIF11* mutations in patients with familial exudative vitreoretinopathy and a phenotypic analysis. *Sci Rep*. 2016;6:26564.
2. Malvezzi JV, H Magalhaes I, S Costa S, et al. *KIF11* microdeletion is associated with microcephaly, chorioretinopathy and intellectual disability. *Hum Genome Var*. 2018;5:18010.

FRANCISCA BRAGANÇA, MD
- Resident, Department of Ophthalmology, Centro Hospitalar Universitário de Santo António, EPE, Porto, Portugal
- franciscabraganca@hotmail.com
- Financial disclosure: None

CÉLIA AZEVEDO SOARES, MD, PHD
- Clinical Geneticist, Medical Genetics Department, Centro de Genética Médica Jacinto Magalhães, Centro Hospitalar Universitário de Santo António, EPE, Porto, Portugal
- Unit for Multidisciplinary Research in Biomedicine, Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto, Porto, Portugal
- i3S Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal
- Financial disclosure: None

ANA MARTA, MD
- Ophthalmologist, Department of Ophthalmology, Centro Hospitalar Universitário de Santo António, EPE, Porto, Portugal
- Instituto Ciências Biomédicas Abel Salazar, Porto, Portugal
- Financial disclosure: None

If you have images you would like to share, email Manish Nagpal, MS, FRCS, FASRS, at drmanishnagpal@yahoo.com.

Note: Photos should be 400 dpi or higher and at least 10 inches wide.

INDEX OF ADVERTISERS

This advertiser index is published as a convenience and not as part of the advertising contract. Although great care will be taken to index correctly, no allowances will be made for errors due to spelling, incorrect page number, or failure to insert.

VABYSMO™
faricimab-svoa injection 6 mg

VABYSMO® (faricimab-svoa) injection, for intravitreal use

This is a brief summary. Before prescribing, please refer to the full Prescribing Information

1 INDICATIONS AND USAGE

VABYSMO is a vascular endothelial growth factor (VEGF) and angiopoietin 2 (Ang-2) inhibitor indicated for the treatment of patients with:

1.1 Neovascular (wet) Age-Related Macular Degeneration (nAMD)

1.2 Diabetic Macular Edema (DME)

1.3 Macular Edema Following Retinal Vein Occlusion (RVO)

4 CONTRAINDICATIONS

4.1 Ocular or Periocular Infections

VABYSMO is contraindicated in patients with ocular or periocular infections.

4.2 Active Intraocular Inflammation

VABYSMO is contraindicated in patients with active intraocular inflammation.

4.3 Hypersensitivity

VABYSMO is contraindicated in patients with known hypersensitivity to faricimab or any of the excipients in VABYSMO. Hypersensitivity reactions may manifest as rash, pruritus, urticaria, erythema, or severe intraocular inflammation.

5 WARNINGS AND PRECAUTIONS

5.1 Endophthalmitis and Retinal Detachments

Intravitreal injections have been associated with endophthalmitis and retinal detachments *[see Adverse Reactions (6.1)]*. Proper aseptic injection techniques must always be used when administering VABYSMO. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay, to permit prompt and appropriate management *[see Dosage and Administration (2.6) and Patient Counseling Information (17)]*.

5.2 Increase in Intraocular Pressure

Transient increases in intraocular pressure (IOP) have been seen within 60 minutes of intravitreal injection, including with VABYSMO *[see Adverse Reactions (6.1)]*. IOP and the perfusion of the optic nerve head should be monitored and managed appropriately *[see Dosage and Administration (2.6)]*.

5.3 Thromboembolic Events

Although there was a low rate of arterial thromboembolic events (ATEs) observed in the VABYSMO clinical trials, there is a potential risk of ATEs following intravitreal use of VEGF inhibitors. ATEs are defined as nonfatal stroke, nonfatal myocardial infarction, or vascular death (including deaths of unknown cause).

The incidence of reported ATEs in the nAMD studies during the first year was 1% (7 out of 664) in patients treated with VABYSMO compared with 1% (6 out of 662) in patients treated with aflibercept *[see Clinical Studies (14.1)]*.

The incidence of reported ATEs in the DME studies from baseline to week 100 was 5% (64 out of 1,262) in patients treated with VABYSMO compared with 5% (32 out of 625) in patients treated with aflibercept *[see Clinical Studies (14.2)]*.

The incidence of reported ATEs in the RVO studies during the first 6 months was 1.1% (7 out of 641) in patients treated with VABYSMO compared with 1.4% (9 out of 635) in patients treated with aflibercept *[see Clinical Studies (14.3)]*.

5.4 Retinal Vasculitis and/or Retinal Vascular Occlusion

Retinal vasculitis and/or retinal vascular occlusion, typically in the presence of intraocular inflammation, have been reported with the use of VABYSMO *[see Adverse Reactions (6.2)]*. Discontinue treatment with VABYSMO in patients who develop these events. Patients should be instructed to report any change in vision without delay.

6 ADVERSE REACTIONS

The following potentially serious adverse reactions are described elsewhere in the labeling:

- Hypersensitivity *[see Contraindications (4)]*
- Endophthalmitis and retinal detachments *[see Warnings and Precautions (5.1)]*
- Increase in intraocular pressure *[see Warnings and Precautions (5.2)]*
- Thromboembolic events *[see Warnings and Precautions (5.3)]*
- Retinal Vasculitis and/or Retinal Vascular Occlusion *[see Warnings and Precautions (5.4)]*

6.1 Clinical Trial Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in other clinical trials of the same or another drug and may not reflect the rates observed in practice.

The data described below reflect exposure to VABYSMO in 2,567 patients, which constituted the safety population in six Phase 3 studies *[see Clinical Studies (14.1, 14.2, 14.3)]*.

Table 1: Common Adverse Reactions (≥ 1%)

Adverse Reactions	VABYSMO			Active Control (aflibercept)		
	AMD N=664	DME N=1,262	RVO N=641	AMD N=662	DME N=625	RVO N=635
Cataract	3%	15%	< 1%	2%	12%	1%
Conjunctival hemorrhage	7%	8%	3%	8%	7%	4%
Vitreous detachment	3%	5%	2%	3%	4%	2%
Vitreous floaters	3%	4%	2%	2%	3%	2%
Retinal pigment epithelial tear[a]	3%			1%		
Intraocular pressure increased	3%	4%	1%	2%	3%	3%
Eye pain	3%	3%	< 1%	3%	3%	< 1%
Intraocular inflammation[b]	2%	1%	1%	1%	1%	< 1%
Eye irritation	1%	< 1%	< 1%	< 1%	1%	< 1%
Lacrimation increased	1%	1%	0%	1%	< 1%	< 1%
Ocular discomfort	1%	1%	< 1%	< 1%	< 1%	< 1%

[a]AMD only
[b]Including iridocyclitis, iritis, uveitis, vitritis

Less common adverse reactions reported in < 1% of the patients treated with VABYSMO were corneal abrasion, eye pruritus, ocular hyperemia, blurred vision, sensation of foreign body, endophthalmitis, conjunctival hyperaemia, visual acuity reduced, visual acuity reduced transiently, vitreous hemorrhage, retinal tear and rhegmatogenous retinal detachment.

6.2 Postmarketing Experience

The following adverse reactions have been identified during postapproval use of VABYSMO. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Eye disorders: retinal vasculitis with or without retinal vascular occlusion.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Risk Summary

There are no adequate and well-controlled studies of VABYSMO administration in pregnant women.

Administration of VABYSMO to pregnant monkeys throughout the period of organogenesis resulted in an increased incidence of abortions at intravenous (IV) doses 158 times the human exposure (based on C_{max}) of the maximum recommended human dose *[see Animal Data]*. Based on the mechanism of action of VEGF and Ang-2 inhibitors, there is a potential risk to female reproductive capacity, and to embryo-fetal development. VABYSMO should not be used during pregnancy unless the potential benefit to the patient outweighs the potential risk to the fetus.

All pregnancies have a background risk of birth defect, loss, and other adverse outcomes. The background risk of major birth defects and miscarriage for the indicated population is unknown. In the U.S. general population, the estimated background risk of major birth defects is 2%-4% and of miscarriage is 15%-20% of clinically recognized pregnancies.

Data

Animal Data

An embryo fetal developmental toxicity study was performed on pregnant cynomolgus monkeys. Pregnant animals received 5 weekly IV injections of VABYSMO starting on day 20 of gestation at 1 or 3 mg/kg. A non-dose dependent increase in pregnancy loss (abortions) was observed at both doses evaluated. Serum exposure (C_{max}) in pregnant monkeys at the low dose of 1 mg/kg was 158 times the human exposure at the maximum recommended intravitreal dose of 6 mg once every 4 weeks. A no observed adverse effect level (NOAEL) was not identified in this study.

8.2 Lactation

Risk Summary

There is no information regarding the presence of faricimab in human milk, the effects of the drug on the breastfed infant, or the effects of the drug on milk production. Many drugs are transferred in human milk with the potential for absorption and adverse reactions in the breastfed child.

The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for VABYSMO and any potential adverse effects on the breastfed child from VABYSMO.

8.3 Females and Males of Reproductive Potential

Contraception

Females of reproductive potential are advised to use effective contraception prior to the initial dose, during treatment and for at least 3 months following the last dose of VABYSMO.

Infertility

No studies on the effects of faricimab on human fertility have been conducted and it is not known whether faricimab can affect reproduction capacity. Based on the mechanism of action, treatment with VABYSMO may pose a risk to reproductive capacity.

8.4 Pediatric Use

The safety and efficacy of VABYSMO in pediatric patients have not been established.

8.5 Geriatric Use

In the six clinical studies, approximately 58% (1,496/2,571) of patients randomized to treatment with VABYSMO were ≥ 65 years of age. No significant differences in efficacy or safety of faricimab were seen with increasing age in these studies. No dose adjustment is required in patients 65 years and above.

17 PATIENT COUNSELING INFORMATION

Advise patients that in the days following VABYSMO administration, patients are at risk of developing endophthalmitis. If the eye becomes red, sensitive to light, painful, or develops a change in vision, advise the patient to seek immediate care from an ophthalmologist *[see Warnings and Precautions (5)]*.

Patients may experience temporary visual disturbances after an intravitreal injection with VABYSMO and the associated eye examinations *[see Adverse Reactions (6)]*. Advise patients not to drive or use machinery until visual function has recovered sufficiently.

VABYSMO® [faricimab-svoa]
Manufactured by:
Genentech, Inc.
A Member of the Roche Group
1 DNA Way
South San Francisco, CA 94080-4990
U.S. License No.: 1048

M-US-00022310(v1.0) 11/23

NOW AVAILABLE TO ORDER*

Prefilled Syringe

VABYSMO™

faricimab-svoa injection 6 mg

DELIVER THE DIFFERENCE WITHIN

DUAL-PATHWAY • DRYING • DURABILITY

START FIRST | WITH VABYSMO® (faricimab-svoa)

*The VABYSMO Prefilled Syringe will be available to order from distributors as early as the week of September 3, 2024.

INDICATIONS

VABYSMO (faricimab-svoa) is a vascular endothelial growth factor (VEGF) inhibitor and angiopoietin-2 (Ang-2) inhibitor indicated for the treatment of patients with Neovascular (Wet) Age-Related Macular Degeneration (nAMD), Diabetic Macular Edema (DME), and Macular Edema following Retinal Vein Occlusion (RVO).

IMPORTANT SAFETY INFORMATION

Contraindications

VABYSMO is contraindicated in patients with ocular or periocular infection, in patients with active intraocular inflammation, and in patients with known hypersensitivity to faricimab or any of the excipients in VABYSMO.

Warnings and Precautions

- Endophthalmitis and retinal detachments may occur following intravitreal injections. Patients should be instructed to report any symptoms suggestive of endophthalmitis or retinal detachment without delay, to permit prompt and appropriate management.
- Increases in intraocular pressure have been seen within 60 minutes of an intravitreal injection.
- There is a potential risk of arterial thromboembolic events (ATEs) associated with VEGF inhibition.
- Retinal vasculitis and/or retinal vascular occlusion have been reported. Patients should be instructed to report any change in vision without delay.

Adverse Reactions

The most common adverse reactions (≥5%) reported in patients receiving VABYSMO were cataract (15%) and conjunctival hemorrhage (8%).

You may report side effects to the FDA at (800) FDA-1088 or www.fda.gov/medwatch. You may also report side effects to Genentech at (888) 835-2555.

Please see additional Important Safety Information throughout and in the VABYSMO Brief Summary of full Prescribing Information on the following page.

M-US-00023761(v2.0) 09/24

Scan the QR code to discover more or visit www.vabysmo-hcp.com/namd

Genentech
A Member of the Roche Group