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AAO 2018 News

CHICAGO

An Innovative Mind

Spotlight on the 2018 Laureate:
Steven T. Charles, MD

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FOR THE RECORD

ANNUAL BUSINESS MEETING. Notice is hereby given that the Annual Business Meeting of the American Academy of Ophthalmology will be held in conjunction with the Opening Session on Sunday, Oct. 28, from 8:30-10:00 a.m., in Lakeside E354 at the McCormick Place Convention Center in Chicago. Candidates for membership will be approved during this meeting.

For the full list of candidates, visit aao.org/member-services. To see the full order of business, refer to the "Opening Session" page of the *AAO 2018 Meeting Program.*

CALLING ALL VOTING MEMBERS AND FELLOWS. Election materials will be sent to all voting Academy fellows and members. Voting opens on Monday, Oct. 29, and closes Tuesday, Nov. 27, at noon EST. Results will be posted on the Academy's website at aao.org/about/governance/elections by Dec. 6, 2018.

The candidates' stated goals are as follows:

President-Elect: Anne L. Coleman, MD, PhD. "To help Academy members achieve our mutual goals to protect and restore sight and empower lives, and to enhance AAO programs for professional and personal improvement."

Trustee-at-Large: Judy E. Kim, MD. "To be the voice of our members with integrity and passion and to work with all stakeholders through communication and collaboration."

Senior Secretary for Clinical Education: Christopher J. Rapuano, MD. "I feel strongly that the backbone of the organization is education. My goal for the Academy is to continue to provide the best ophthalmic education in the United States and around the world."

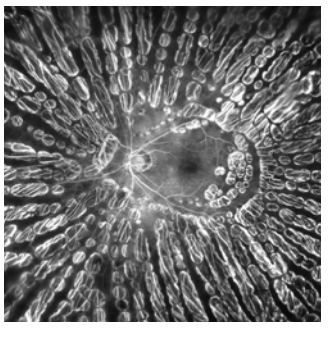
For candidates' full statements, visit aao.org/about/governance/elections, or visit the candidate display in the Main Concourse of McCormick Place during AAO 2018.

From the Editor
Welcome to Chicago!

The Academy is proud to present its 122nd annual meeting, AAO 2018. Today, the program kicks off with the Opening Session, featuring the Academy President's address by Keith D. Carter, MD; the Academy Chief Executive Officer's address by David W. Parke II, MD; and presentation of the Academy's highest honors, with the Laureate Recognition Award going to Steven T. Charles, MD. Additionally, Philip J. Rosenfeld, MD, will give the Jackson Memorial Lecture, "Lessons Learned From Avastin and OCT: The Great, the Good, the Bad, and the Ugly."

This year, the meeting offers over 50 symposia on a broad range of topics, from perspectives on corneal infections and keratoplasty to key aspects of open-angle glaucoma management as well as innovations in femtosecond lasers. Also note that 2 new Skills Transfer classes have been added, both of which definitely are worth checking out: "Ocular Trauma: Translating Lessons Learned From the Battlefield Into Everyday Practice" and "Pupilloplasty Techniques and Innovations in Iris Repair." Refer to the contents of this *AAO 2018 News* and aao.org/eyenet/daily for more on this year's meeting. We hope that your time in this wonderful city is enjoyable and informative.

Ruth D. Williams, MD
Chief Medical Editor, *EyeNet Magazine*



On the Cover
Diabetes

Sonya Cosby, CRA
University of Michigan
Kellogg Eye Center

The 2018 Presidential Guests
The Reasons Behind Dr. Carter's Choices

When selecting the 2018 Guests of Honor, Academy President Keith D. Carter, MD, FACS, wanted to recognize 3 individuals who have been influential at the major times in his professional life—residency, fellowship, and practice. In the following interview, Dr. Carter details the specific reasons for his selections, as well as those for the Special Recognition Award and the Distinguished Service Award. Today, Sunday, Dr. Carter will recognize these award recipients at the AAO 2018 Opening Session, which takes place from 8:30-10:30 a.m. in Room E354, Lakeside.

GUEST OF HONOR
Paul R. Lichter, MD

How did you meet? I met Paul when I interviewed for residency at the University of Michigan. I was fortunate enough to match, and the rest is history.


Dr. Lichter

What do you appreciate about him? It was the way he managed the Kellogg Eye Center. He was a no-nonsense kind of guy. Although I have a different management style, I respected his approach and learned a lot from him.

I have always believed that it is important to respect everyone in your department, from the person you may think is the lowest person in the organization, to those at the top. I look to people in power to do the same thing, and Paul did. I probably learned more from Paul about people management than I did about medicine.

He would always tell us that you have to make sure that 51% of people are publicly saying good things. In an example that I remember well, he was conducting a late clinic, which started around 11 a.m. or noon and ran until 8 or 9 p.m. We had a situation in which a patient had been waiting a long time, and the family was a little restless. I went to warn Paul that this family was getting edgy. He said, "Come with me, and I'll show you how to handle this."

He introduced himself to the family and welcomed everybody to the Kellogg Eye Center. Already, the lady was very impressed, and she thanked him for letting her come. (The son and family were still steaming.) He asked the lady whether she received the letter saying that her visit would be half a day. Since they had only been there for 6 or 7 hours he said, 'We're going to get you out of here early.' I couldn't believe he said that to them, but by the end of the visit, they all left in good spirits.

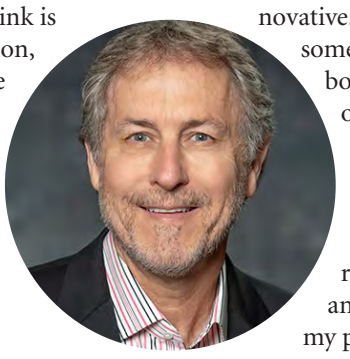
This showed me that you have to be up-front and honest with people. If you treat them with respect, they can better absorb news they may not like. In the end that lady is going to say positive things about this interaction.

Do you share activities outside of work? We play golf. We now have an annual golf event in Florida. Some of the alums at the eye department go down, and we join him for a weekend of golf. I love getting out there with him, but he's a much better golfer than I am, so there is friendly competition.

GUEST OF HONOR
Jeffrey A. Nerad, MD

How did you meet? Jeff gave me the opportunity to be his fellow at a very competitive fellowship—he took a chance on me. After I finished, he convinced me to join him here at the University of Iowa instead of going back to Indianapolis. We were together for more than 20 years until he went into private practice. He trained me in oculoplastic and orbital surgery and became a dear friend.

What do you appreciate about him? He is an excellent teacher because he is very patient, deliberate, and innovative. He has produced some excellent textbooks on teaching oculoplastic procedures. Also, Jeff was very inclusive: He involved me with different research projects and helped me with my publication record.


Dr. Nerad

Did you do any joint research projects that stood out for you? Probably the one with the greatest impact was using osseointegrated implants for facial rehabilitation.

In the 1980s, Jeff went to Sweden to learn this technique and brought it back and taught me. We started doing this procedure for patients who lost their eye and eye socket tissue so that they could have a facial prosthetic they had confidence wearing in public. These bony implants had magnets that allowed for easy insertion and stable placement.

The implants that we used were initially used as dental implants, and we adapted that technology. Osseointegration is when the implant is drilled into the bone, and the bone grows onto the implant surface. As in dentistry, we drilled the implant into the bone. However, when dentists put a tooth on top of the implant, we put a magnet on top of our orbital implants.

This was something new to oculoplastics because this was an adaptation of an oral surgery procedure. Jeff was responsible for bringing it to ophthalmology.

Fun fact? He used to dress up at Halloween as a doctor, but on stilts—like the drywall people wear.

GUEST OF HONOR
Wallace L.M. Alward, MD

How did you meet? Lee joined the department as a faculty member the same year that I was a fellow. He has been a great colleague and friend for the last 30 years.


Dr. Alward

What do you appreciate about him? Basically, he is my confidant. He is honest, gives great advice, listens well, and is very dependable. He has always been very supportive of me.

What makes him a good confidant? Lee is very practical and honest, and he applies those principles to any issue presented to him. He's good at thinking about the consequences, and he's very deliberate in his thoughts. He may not give you an opinion that day, but he'll be back soon afterward to discuss it. My history with him allows me to trust him to the point where I will listen and, if necessary, change course. I really have faith that he is looking out for my best interests and those of the department and whatever topics I may be asking him about. You've got to have somebody you can trust if you expect to be successful in managing people.

What do you find most impressive about him? He's a great educator. For example, he spent a lot of his career developing some of the very best teaching modules for glaucoma. His books on gonioscopy are world-renowned. His latest project is the current *Iowa Glaucoma Curriculum,* in which he walks you through the various topics in the book (http://curriculum.iowaglaucoma.org).

Dr. Carter and Dr. Alward golfing with friends.

He has an unbelievable number of videos and still pictures, which are on the University of Iowa website and in his *Iowa Glaucoma Curriculum* e-book.

He has won awards from the American Glaucoma Society for his educational contributions to the field, and he really pushes us in our educational efforts here at the University of Iowa. Everyone in the department wants to be like Lee. He's the gold standard for education in our department.

Fun fact? Lee made a YouTube video titled "Gonioscopy, Three-Mirror Technique," (https://www.youtube.com/watch?v=PKnQKKBwdgs), and his daughter, who was a teenager at the time, was the "patient." We used to tease her about that. The cool thing is that his daughter is now a glaucoma specialist, and she will join our faculty this year!

SPECIAL RECOGNITION AWARD

We are honoring the **Ophthalmology Section of the National Medical Association** as a leading force in the elimination of minority health disparities and the promotion of optimal health through its focus on the collective interests of ophthalmologists and patients of African descent.

DISTINGUISHED SERVICE AWARD

We are honoring the **Directors of Medical School Education in Ophthalmology** for its work in educating future nonophthalmologists in the core knowledge and skills necessary to evaluate the visual system and to manage and/or refer patients in need of care, as well as for its efforts in inspiring and attracting highly qualified medical students to the field of ophthalmology.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REFERENCES: 1. iStent *inject*® Trabecular Micro-Bypass System: Directions for Use, Part #45-0176. **2.** Hengerer FH. Personal experience with second-generation trabecular micro-bypass stents in combination with cataract surgery in patients with glaucoma: 3-year follow-up. ASCRS 2018 Presentation.

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Designing Retina's Past, Present, and Future
The 2018 Academy Laureate, Steven T. Charles, MD

Steven T. Charles, MD, is an icon in the world of retina. "As someone who has practiced in the retinal field for 30 years, I can unequivocally state that Dr. Charles' instruments, techniques, and thought processes assist me daily in immeasurable ways and have helped me to save many eyes," said John C. Hoskins, MD, president of the Tennessee Academy of Ophthalmology. "He is inherently blessed with a brilliant mind, and it's difficult to truly measure his contributions to our field because, unquestionably, they are profound."

The 3 T's

Dr. Charles is the first person to admit that he's not good at everything ophthalmologic. "I literally don't know how to do any coding or billing. I just tell our people in the office, 'Go to the meetings, play by the rules, and learn how to do it.'" What he does pride himself on are the 3 T's: technique, technology, and teaching. "The 3 T's are intertwined," he said. "Developing a new surgical technique is dependent on also developing a technology that enables performance of the technique. And so I believe in teaching technique and technology together—focusing on concept learning, which is robust and useful, as opposed to content learning, which is rote, fragile, and more difficult to apply."

These 3 T's are in his blood and have been the driving force of his career. Dr. Charles' father was a college professor, his maternal grandfather was an engineer, and his paternal grandfather and uncle were both surgeons. Accordingly, it's quite natural that his career transpired the way it did. After graduating high school, he attended 4 years of engineering school—an experience that would greatly inform his career as an ophthalmologist. "Being a cabinetmaker, a machinist, a welder, and an electronics technician as a young man, I knew I wanted to work with my hands," said Dr. Charles. "But it wasn't until about halfway through engineering school that I started to think about being a doctor." Dr. Charles cut his program short and, in 1965, enrolled in medical school at the University of Miami, where he conducted research at the fledgling Bascom Palmer Eye Institute under the guidance of Edward W.D. Norton, MD. After a medical internship and residency in ophthalmology at Jackson Memorial Hospital, he served as a clinical associate at the National Eye Institute in 1973. Today he is a clinical professor at the University of Tennessee and runs the Charles Retina Institute.

On Innovation

The list of surgical techniques that he has developed traces the entire history of vitrectomy: endophotocoagulation, fluid-air exchange, forceps membrane peeling, scissors segmentation and delamination, linear suction, and punch-through retinotomy for subretinal bands, to name just a few.

Despite it all, he has never been interested in the "fame game." Eschewing what he calls "aspirational innovation," his singular focus is on how collaboration with others can push forward innovation that will truly help patients. "Innovation doesn't come about because it's something you plan, want, or hope for," said Dr. Charles. "You've got to roll up your sleeves and work. I haven't taken a vacation in 22 years." Even though Dr. Charles does not have a life of luxury, he does have friends around the world, and it's the collaboration with these colleagues that fuels his accomplishments. "We can't be obsessed with money or the fame game or naming an instrument after ourselves—nothing good comes from that because few innovations are actually the result of a single individual. But if multiple surgeons and multiple engineers collaborate, this working together will keep our focus on our patients and their outcomes."

What's truly important about innovation, said Dr. Charles, is getting a product into widespread clinical use. "I'm always learning technology at the highest level so that I can really engage in high-volume, unmet clinical needs. Of course, it's rewarding to focus on curing the rare diseases that affect small amounts of people with a specific genetic disorder. But our biggest technological breakthroughs in the past have come from—and into the future, will come from—improvements in managing the common diseases that we typically manage poorly: glaucoma, macular degeneration, proliferative vitreoretinopathy."

THE 2018 ACADEMY LAUREATE. *Dr. Charles receives the Laureate Recognition Award during the Opening Session, which takes place Sunday, 8:30-10:00 a.m., in Room E354, Lakeside.*

A Defining Moment

Dr. Charles has been instrumentally involved in engineering the earliest vitrectomy surgical systems, and he remains involved by refining present-day systems. He has more than 100 issued or pending patents. He was the founder of MicroDexterity Systems, which developed robots to aid in spine surgery and minimally invasive knee and hip replacement. He is also the cofounder of CamPlex, a company pioneering advanced visualization technology for neurosurgery and the treatment of head and neck cancers.

But of all his achievements, Dr. Charles is most satisfied with his work at Alcon Laboratories, where he has served as the principal architect for the Accurus Surgical System and the Constellation Vision System—both of which have revolutionized vitreoretinal surgery. The Accurus and the Constellation aren't his inventions, though; they came to fruition through many years of working with over 100 engineers. This collaboration culminated in a moment that he has never forgotten—a moment when the 3 T's came together to push the limits of patient care. For Dr. Charles, it's a moment that encapsulates his career.

"Years ago, I went on a trip to Beijing to assist a team of ophthalmologists with the Accurus system. They had a giant waiting list for surgeries and were more than 2 years behind. I asked them, 'How many cases do you do a day?' They said 2. 'How many employees do you have in the OR?' They said 25. I replied, 'I have 1 scrub tech and 1 circulating nurse, and I do 12 cases a day. I'm done by 5:30. Let me show you how.' So rather than travel around to the Great Wall and all of the tourist spots during my stay, we operated all day every day. I don't believe in rest—it's bad for you—so I did 42 cases in a week in their OR."

But that wasn't the most rewarding part, said Dr. Charles. "What was truly fulfilling was when I returned a few years later, they had huge smiles on their faces as they posed in front of the Accurus machine that I helped develop and showed me 'the list.' They were now doing 10 cases a day, and their backlog was almost gone. Now that's cool—being able to apply what I've learned in engineering to retinal surgery and to design good things for real people with real problems."

For Dr. Charles, this story is also a reminder of the power of efficiency in ophthalmology. "When I departed, I told my Beijing colleagues that if you set out to perform 'show-off' procedures that take an hour, there's no lasting value. Instead, focus on the middle-of-the-road cases—not the easiest and not the hardest—and do them quickly and efficiently. That's how we can truly save time, money, and, most importantly, vision."

Two Traits for Success

Reflecting on 5 decades in medicine, Dr. Charles has identified 2 traits common to the most successful physicians. The first is emotional intelligence. This concept gained popularity in 1995 from the best-seller *Emotional Intelligence* by science journalist Daniel Goleman. "It's especially important for a physician," said Dr. Charles. "This type of intelligence comes down to being aware of your own emotions as well as those of others and managing these emotions to achieve your goals. To be good in business, for example, you need to sense buyer anxiety and sales resistance. In the case of medical outcomes, it's especially important to read patients and empathize with and sense what they are feeling."

Emotional intelligence is common parlance in the medical world, but there's another important character trait that not enough physicians focus on, said Dr. Charles. It's the idea of robustness. This concept has its roots in engineering and involves feedback loops that ensure

BY MIKE MOTT, CONTRIBUTING WRITER

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"Think of a large, empty building," said Dr. Charles. "Five hundred people enter for a meeting, yet the building temperature remains the same—feedback sensors in the heating, ventilation, and air conditioning system are continuously making adjustments to keep things stable. Now apply this in human terms. It's shocking how many people are effective until they happen upon a stressful event. They just aren't able to make the necessary adjustments to remain competent in what they are performing. But to be successful, you have to. I can't be rattled or upset in the OR; if I am, I'm going to hurt somebody or blind them. We can't let things knock us down, be it illness, divorce, business failures, or whatever stands in our way."

Dr. Charles' favorite metaphor for this idea of robustness is one he learned from a college friend who played wide receiver at the University of Oklahoma. "No matter how well he was covered by how many opponents, he'd yell at his quarterback, 'Give me the ball. I'm wide open!' I've told my colleagues the same thing my entire career. It doesn't matter if it's patient care or working to get the latest technology to market. 'Don't worry.' 'Give it to me.' 'I can handle this.'"

Looking Ahead

Dr. Charles doesn't have plans to retire anytime soon. He's currently engaged in 3 large projects: as an engineer for Alcon's fifth-generation vitreoretinal machine; as the main surgeon for the National Eye Institute's iPSC project, coaxing induced-pluripotent stem cells into retinal pigment epithelium for surgical implantation; and as a developer of new visualization technology for retinal physicians in the operating room.

Looking ahead, he sees a bright future for ophthalmology. But to fulfill that future, said Dr. Charles, ophthalmologists young and old should reflect on 1 thing: simply being a good doctor. This means attending as many meetings as possible, reading journals, and getting to know other surgeons. This also means worrying less about money and reimbursement.

"As a whole, we should concern ourselves less with the business side of ophthalmology and focus more on practicing state-of-the-art medicine. And you can't achieve that by constantly worrying about coding or billing or hanging out in your clinic. You've got to attend the big ophthalmic gatherings, listen to the top surgeons talk, ask questions, and watch people operate so that, collectively, we all improve each other's skill sets." For Dr. Charles, the expression "a rising tide lifts all boats" rings especially true. "A tremendous number of physicians isolate themselves in their offices, clinics, and operating rooms. Instead, let's get out and learn together. Let's pay attention to the pace of technological development. Let's take more active risks—no more paralysis by analysis. Let's work with device manufacturers and the people who are going to make the next-generation biologics. Let's improve one another's craft. After all, ophthalmology is a lifetime education. It's not about the golf games, the wine collections, and the Ferraris. We are here to devote our energy to making patients see better and to producing better outcomes. And you know what? It's fun!"

PROTECTING VISION. *Dr. Charles performing vitreoretinal surgery.*

RETINA EXPERT. *Dr. Charles delivering the Retina Society's 2016 Schepens Lecture.*

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Those whose attendance has been verified at AAO 2018 can claim their CME credit onsite at the CME Reporting kiosk in Grand Concourse Level 2.5 and in the Academy Resource Center (Booth 508), or online after the meeting. Registrants will receive an email on Monday, Oct. 29, with the link and instructions on how to claim credit.

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References: 1. Silverstein SM, Rana V, Stephens R, Segars L, Pankratz J, Shivani R, et al. Effect of phenylephrine 1.0%-ketorolac 0.3% injection on tamsulosin-associated intraoperative floppy-iris syndrome. *J Cataract Refract Surg.* 2018;44(9):1103-1108. **2.** Rosenberg ED, Nattis AS, Alevi D, et al. Visual outcomes, efficacy, and surgical complications associated with intracameral phenylephrine 1.0%/ketorolac 0.3% administered during cataract surgery. *Clin Ophthalmol.* 2018;12:21-28. **3.** Bucci FA Jr, Michalek B, Fluet AT. Comparison of the frequency of use of a pupil expansion device with and without an intracameral phenylephrine and ketorolac injection 1%/0.3% at the time of routine cataract surgery. *Clin Ophthalmol*. 2017;11:1039-1043. **4.** Visco D. Effect of phenylephrine/ketorolac on iris fixation ring use and surgical times in patients at risk of intraoperative miosis. *Clin Ophthalmol.* 2018;12:301-305. **5.** Walter K, Delwadia N. Miosis prevention in femtosecond cataract surgery using a continuous infusion of phenylephrine and ketorolac. Presented at: 2018 American Society of Cataract and Refractive Surgery (ASCRS) and American Society of Ophthalmic Administrators (ASOA) Annual Meeting; April 13-17, 2018; Washington, DC. **6.** Matossian C. Clinical outcomes of phenylephrine/ketorolac vs. epinephrine in cataract surgery in a real-world setting. Presented at: American Society of Cataract and Refractive Surgery (ASCRS) and American Society of Ophthalmic Administrators (ASOA) Annual Meeting; April 13-17, 2018; Washington, DC. **7.** Al-Hashimi S, Donaldson K, Davidson R, et al. Medical and surgical management of the small pupil during cataract surgery. *J Cataract Refract Surg.* 2018;44:1032-1041. **8.** Gayton JL. E-poster presented at: 15th International Congress on Vision Science and Eye; 2017 Aug 10-11; London, UK. **9.** Katsev DA, Katsev CC, Pinnow J, Lockhart CM. Intracameral ketorolac concentration at the beginning and end of cataract surgery following preoperative topical ketorolac administration. *Clin Ophthalmol*. 2017;11:1897-1901. **10.** Waterbury LD. Alternative drug delivery for patients undergoing cataract surgery as demonstrated in a canine model. *J Ocul Pharmacol Ther*. 2018;34:154-160.

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MAHMOUD KHAIMI, MD

ELLEX EXHIBIT #1044

*These sessions are not affiliated with the official program of AAO 2018

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The Maladies and Remedies of Yesteryear

This year's Museum of Vision exhibit (Booth 704) delves into the strange world of Renaissance and early modern ophthalmic medicine through the periods' published diagnoses and treatments.

The Museum of Vision's 2018 exhibit, "Remedy," is devoted to the signs, symptoms, and treatments for several eye disorders reported in 8 volumes from the museum's rare book library. Display cases explore descriptions of diseases between the 16th and 19th centuries, plus the medicines prescribed from botanical, mineral, and animal origins. The exhibit, featuring 4 eye conditions, displays 2 different books for each disorder that collectively show the changes in diagnosis and treatment over time. Today, we read these accounts and find the methods to be outdated at best and potentially lethal at worst. These texts were written by physicians for physicians and, as such, offer intriguing details about the practice of medicine during times when the cure could be worse than the disease.

One featured book, *A Clinical Memoir on Certain Diseases of the Eye and Ear Consequent on Inherited Syphilis* (by Jonathan Hutchinson, 1863, published with the Abraham Schlossman, MD Collection), documents a case of what was known as venereal ophthalmia in the 19th century. As an example of what the museum exhibit has to offer, below is a summary of Dr. Hutchinson's attempt to diagnose and treat this condition from 1859-1860.

SYPHILITIC EYES. *An illustration of syphilitic eyes from Dr. Hutchinson's own memoir, published 1869.*

Diagnosis

Dr. Jonathan Hutchinson first encountered his patient in March of 1859. "Mr. H" consulted Dr. Hutchinson on behalf of his ailing 15-year-old son, whom Dr. Hutchinson noted as having "numerous small masses of white deposit" in both corneas. Additionally, the doctor observed "crescentic fringes of vessels … on both [eyes] creeping up from below over the lower segment of the corneal surface" and teeth that were "dwarfed and notched as any [he had] ever seen."

These "characteristic" symptoms, according to the doctor's professional experience, and in conjunction with the father's own attested syphilitic history, confirmed for Dr. Hutchinson that the boy was suffering from "an attack of interstitial keratitis which affected both eyes," or bilateral chronic keratitis. Dr. Hutchinson was the first to describe the combination of interstitial keratitis plus dental and hearing abnormalities—now known as Hutchinson's triad—as a classic presentation of congenital syphilis.

Treatment

After 3 months of treatment, Dr. Hutchinson recorded that the boy could see clearly once again, reversing earlier "severe attacks" that "for some weeks had rendered him quite blind." During those months, the doctor applied 3 principal remedies: "mercurial inunction," "iodides of potassium and iron internally," and "occasional blisters behind the ears."

Mercurial inunction. Dr. Hutchinson wrote that he used "the mild mercurial ointment rubbed behind the ears, on the neck, or under the axilla, every night at bedtime"—likely calomel or mercuric chloride ointment, which was 15% to 28% mercury mixed with either lard or suet. A stronger version, with up to 50% mercury content, was also available.

A familiar treatment, mercuric sulfide had been used since ancient times to treat eye infections. Calomel and corrosive sublimate, both forms of mercuric chloride, were introduced in the ninth century.

Iodides of potassium and iron. Dr. Hutchinson wrote that he provided patients with "a mixture containing iodide of potassium, iodide of iron, and tincture of *nux vomica*" at the same time as the mercury treatments. These ingredients were meant to fortify the patients' constitution by providing needed nutrients (i.e., iron and potassium). *Strychnos nux-vomica* is a tree native to Asia that produces strychnine, an odorless, colorless crystalline powder. Poisonous in high doses, it can cause convulsions. In low doses, it is a stimulant and was thought to help in absorption of the iron.

In general, Dr. Hutchinson suggested that his syphilitic patients undergoing mercury treatment also take a "draught containing opium." Ophthalmologists often prescribed wine of opium and thebaic tincture to ease pain, induce sleep, and purge the bowels. It might have also helped alleviate mercury's side effects, including excessive salivation, tooth loss, and ulcers.

Blistering. Medical blistering, or "vesiculation," was a treatment in which a physician applied a caustic powder or plaster to the skin to create a blister, which was then opened and drained to release bad humors from the body. An alternative to chemical blistering was cupping, which utilized a heated cup made of glass, metal, or ceramic. When applied to the skin, the cup would create a vacuum that raised a blister. A common remedy through the 18th century, blistering was believed to help drain bad humors, correct inflammation, and reduce fevers.

TRADE CARD ADVERTISEMENT. *Dr. J. Pettit's American Eye Salve contained ammoniated mercury, boric acid, camphor, and zinc oxide. It sold from 1807 to 1981.*

MERCURIC OXIDE OINTMENT. *The ointment still filling this jar is labeled as 5.45% red mercuric oxide, a long-used antiseptic for eyelid infections that has largely been replaced by modern antibiotics.*

Outcome

Although Dr. Hutchinson's young patient regained his sight after 3 months, he was not considered cured until a year later, in March 1860. The doctor defined recovery as the boy's being in "good health," being able to "see well," and having corneas that were "nearly clear."

As a concluding thought on his case, Dr. Hutchinson advised his medical contemporaries: "I have no doubt as to the superior efficacy of specifics, yet I would carefully guard my readers against expecting too much from their [treatments'] use." Firmly believing in his methods, Dr. Hutchinson blamed not the remedies for any complications or delays in healing, but rather the vexing nature of the disease itself. "This form of keratitis runs but too often a very protracted course, in spite of the best contrived plan of treatment. Neither mercurial nor iodides will, as a rule, cut it short … [but] they will, I believe, prevent the effusion from being copious, and very much limit both the extent and duration of the disease."

Dr. Hutchinson's methods might seem preposterous now, but he was considered an advanced and learned doctor in his day. Treatments for syphilis throughout the Renaissance and early modern periods often included mercury as their principal agent, though other strategies for healing patients were also implemented. To learn about more treatments for venereal ophthalmia over time, or about treatments for other conditions from the 16th through 20th centuries, visit the Museum of Vision at Booth 704.

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Save Your Spine, Part 2
Avoid Physical Pain, Financial Loss

The first installment of this article warned of risk factors for injury and suggested ergo-related questions to ask in the exhibit hall. Part 2 provides further tips for avoiding injury, along with insights from the research.

Martin Wand, MD, recalls when he was first stricken by a musculoskeletal disorder (MSD). "For the first time in more than 30 years, I had to stop working. Over the course of 3 months, I took almost 2 weeks off because I was in such agony from a prolapsed spinal disk. But for 2 or 3 months before that, I was not working a full schedule, and I could not do any surgery. Then I was out of the office for another 10 days after having spinal surgery."

Fortunately, thanks to successful surgery, Dr. Wand was able to return to the job that he loved for several more years of practice before retiring. But "if I had not been able to have my back surgery, I would have had to stop practicing ophthalmology," he said. "As a surgeon, if your back is injured in this way, you cannot even switch to medical ophthalmology because using a slit lamp is too painful."

How much income will you lose? You may face a steep drop in income if you are permanently disabled. Some disability insurance policies require the injured specialist to first try practicing as a general physician before they will grant benefits. If the disability claim is granted later, any payments are based on that lower income level, rather than on the income previously earned as a specialist or surgeon.

Invest in your work environment. "I wish I had known some of this information when I started practicing, at 35, and had taken the proper preventive measures," said Dr. Wand. For instance, he recommends modifying operating microscopes with oculars that can be tilted to the most comfortable angle. This allows the surgeon to keep the neck soft and neutral, rather than flexed or extended. "If I knew then what I know now, and if that modification had been available, it would have been one of the best investments I ever made."

8 Tips for Avoiding Injuries

"With increasing demands on ophthalmologists, these [MSD] problems will manifest themselves at earlier ages," said Jeffrey L. Marx, MD, a Burlington, Mass., vitreoretinal surgeon who will be co-chairing a Monday session on ergonomics and MSDs (see "Wellness Events"). "Young ophthalmologists need to know that bad habits will catch up with you," he warned. "But careful attention early on will make a huge difference in your life."

Improve your day-to-day ergonomics by keeping in mind these rules of thumb.

1. Never fit your body to the equipment. Adjust the equipment to fit your body. When using a computer, adjust the workstation, chair, and monitor to prevent them from forcing you into an awkward posture. If you wear bifocals, you should position monitors so that you need not tilt your head, straining your neck, to see them. Or buy computer-distance glasses.

2. Give muscles and tendons frequent, short rests. Take "microbreaks"—ideally, at least every 20 minutes. Stand up; walk around a bit; do some stretches. Best for the lower back: the pelvic tilt. (See "Stretching: Your Ally Against Muscle Fatigue.")

3. Maintain a neutral position while working. For your long-term health, focus on the following:

- a normal spinal curvature
- shoulders relaxed
- head and neck upright and in line with the torso (perpendicular to the floor)
- upper arms and elbows close to the trunk and, ideally, supported by armrests
- forearms, wrists, and hands in a straight line, without side-to-side angling of hands or wrists
- if seated, thighs parallel to the floor and feet flat on the ground or a footrest.

4. Make sure the foot pedal is easily accessible. If necessary to keep legs from angling forward, place the surgical foot pedal on a small rise to use it. Both feet should be at the same height, to keep the spine and whole body aligned.

5. Beware of prolonged static postures. If they cannot be avoided, periodically vary your position slightly with small adjustments to your chair seat or backrest. While standing, ease the weight on your back by putting 1 foot forward or propping it up on a small stool for a short time.

WELLNESS RESOURCES AT AAO 2018. *Visit the* ***EyePlay Experience*** *(Booth 2581)—which is open during exhibit hall hours—to enjoy a seated massage, recharge your mobile device in the new Charging Lounge, get help at the Tech Bar, play Ping-Pong, and more. On Sunday, you also can watch football and enjoy an afternoon beer. For the activities schedule, see the Mobile Meeting Guide (aao.org/mobile).*

Further wellness resources include the ***Wellness Corner at the Young Ophthalmologist (YO) Lounge*** *(Grand Concourse, Level 3, Lobby), which is open to Academy members who are in training or in their first 5 years of practice, and the Sunday and Monday* ***Friends of Bill W.*** *sessions from 12:45-1:45 p.m. in Room S501d.*

6. Do not extend your neck forward while working. Oculars are now available for the slit lamp and operating microscope that obviate the need to flex your neck.

7. Vary how you hold tools like forceps. For instance, alternate between holding a tool with the thumb and index finger and holding it with the index and middle fingers.

8. Protect your back. Include exercises for strengthening your "core" muscles (abdominals) in your regular workouts.

Stretching: Your Ally Against Muscle Fatigue

Wayne E. Fung, MD, a retired retinal specialist, became interested in the topic of back pain after suffering a painful back spasm from performing a series of lengthy vitreoretinal surgeries. "Consider that a microsurgeon's eyes must be fixed on the eyepieces of the microscope, the hands are controlling the instruments, and the feet are operating the pedals, which control the microscope and the surgical console," he said. "What stabilizes all 3 points? The back, shoulder, and neck muscles." He urges physicians to perform stretching exercises during "microbreaks" between patients and to strengthen the body's abdominal muscles, which support the spine.

How to get started with stretching. Ideally, you should attend 1 of this year's stretching demonstrations, both tailored for surgeons. Early Sunday in the YO Lounge, Camille Palma, MD, will be demonstrating 5-minute yoga flows that can be done in a suit; and on Monday lunchtime, Dr. Marx's session will include stretching tips (see "Wellness Events"). If you aren't able to attend either session, you can follow these instructions.

Neck. 1) Put chin to chest, and let gravity stretch the back of your neck. 2) Hold for a count of 4. 3) Return head slowly to center. 4) Repeat movement to right, then back. 5) Then left. (Return head slowly to center each time. Do not roll your neck.)

Shoulder. 1) Place right hand over your left shoulder, as far down your back as possible. 2) Place your left hand on your right elbow and push backward. 3) Switch arms and repeat.

Upper arm. 1) Without bending the elbow, hold your right arm across your chest toward your left side. 2) With the inside of your left elbow or your left hand, push your right arm back toward your body. You'll feel the stretch in your right upper arm and shoulder. 3) Switch arms and repeat.

Wrist. 1) Hold arm straight out in front of you. 2) Pull the right hand backward with the left hand, then pull downward. 3) Hold for 20 seconds, then relax. Repeat 3 times on each side.

The pelvic tilt. Striated muscle relaxes when gently stretched, and the pelvic tilt is the best at accomplishing this in the lower back, noted Dr. Fung. He suggested lying on a bench in the surgeon's dressing room. 1) Lie on back, arms at

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Sunday,
October 28, 2018

9:30 AM
Multifactorial Approaches to DME and RVO
David Lally, MD

10:00 AM
A Minimally Invasive Approach to IOP Control: Introduction to the Technology and Outcomes
Nathan Radcliffe, MD

10:30 AM
IOL Exchange From Mundane to Insane
Brandon Ayres, MD

11:00 AM
Multifactorial Approaches to DME and RVO
John Huang, MD, MBA, CPE

11:30 AM
A Minimally Invasive Approach to IOP Control: Introduction to the Technology and Outcomes
Steven Sarkisian, MD

12:00 PM
Techniques for Your Surgical Presbyopic Patient
George Waring IV, MD

12:30 PM
The Key Elements of Effective Intravitreal Injection Reimbursement
Dave Baczewski, MD

1:00 PM
The Key Elements of Effective Gel Stent Reimbursement
Sharon DeCanio, MD

1:30 PM
Mastering DALK: Top 10 Surgical Pearls
Neda Shamie, MD

2:00 PM
Multifactorial Approaches to DME and RVO
Robert Kwun, MD

2:30 PM
A Minimally Invasive Approach to IOP Control: Introduction to the Technology and Outcomes
Inder Paul Singh, MD

3:00 PM
The Science Behind Neurostimulation and Ophthalmology
John Sheppard, MD, MMSc

3:30 PM
The Key Elements of Effective Intravitreal Injection Reimbursement
Dave Baczewski, MD

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side, knees bent and heels on the bench. 2) Squeeze anal sphincter and contract glutei. 3) Slowly "suck in" the anterior abdominals while flattening the back's arch. 4) Exhale to flatten it further. 5) Hold for 10 to 20 seconds, and then slowly relax. Repeat 3-6 times. (This also can be done in a standing position, preferably with your back against the wall.)

Knee(s) to chest. 1) Lie on back, arms at side, knees bent and heels on the bench. 2) Slowly raise knee(s) to chest, using arms to help if needed. 3) Count to 5. 4) Lower legs slowly, one at a time, and rest briefly. Repeat 5 times.

Single or double leg raise. This exercise strengthens your core without stressing your lower back. 1) Lie on back with both legs out straight, hands at side with palms down. 2) Slowly raise one or both legs off the floor 6 to 8 inches, then lower. Do this 3 times. As your muscles strengthen, increase difficulty by placing hands behind head, raising legs only 2 to 3 inches, holding leg(s) up for a count of 5 or 10, and raising head 2 to 3 inches simultaneously with leg(s).

More Research Needed

Scientific studies to measure the strain that repeated motions and awkward postures place on the body have been conducted largely for manual occupations such as manufacturing and assembly lines, not for ophthalmology. Nor are there objective metrics for determining whether purportedly ergonomic design features of new equipment actually reduce muscular tension and/or risks for users, said Scott E. Olitsky, MD, professor of ophthalmology at the Missouri–Kansas City School of Medicine.

Analyzing the problem. "One of the things we really need to do is find ways to measure all of the angles we hold with our necks and backs throughout a procedure and quantify whether a new technique or tool is better or not," Dr. Olitsky said.

AAO 2018 ART + SCIENCE

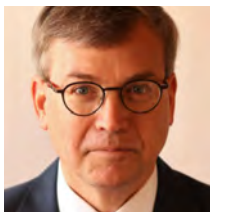
WELLNESS EVENTS

Sunday


Dr. Palma

Physician Wellness: Movement, Yoga, and Mindfulness at Work. *Presenter: Camille Palma, MD.* Try several 5-minute yoga sequences that can be done in your suit. Dr. Palma, a retina specialist and certified yoga instructor, will also lead discussions on posture, breathing, ergonomics, and meditation. **When:** 8:00-9:00 a.m. **Where:** YO Lounge (Grand Concourse, Level 3, Lobby). **Access:** Ophthalmologists who are in training or in their first 5 years of access.

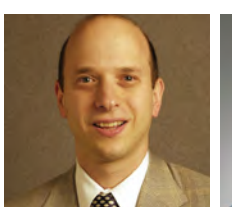
Monday

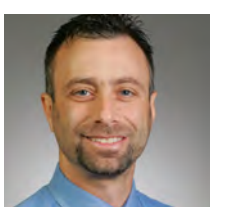

Dr. Paul

A Proficiency-Based Virtual Reality Cataract Surgery Course for Residents (event code 413). *Senior instructor: Alfred A. Paul Jr., MD.* This course showcases a publicly-available simulation training program for resident eye surgeons. The program's goal is to bridge the gaps between the classroom, the wet lab, and the operating room. Along the way, it includes instruction on ergonomics, phacodynamics, and mental-skills training. **When:** 9:00-10:00 a.m. **Where:** Room S501a. **Access:** Academy Plus course pass.

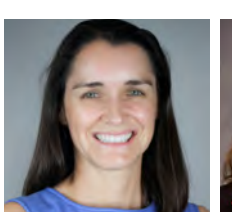

Dr. Connolly

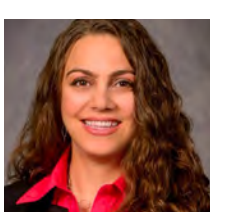
Extinguishing Burnout and Reigniting Joy in Medicine (459). *Senior instructor: Susan E. Connolly, MD.* The presenters of this course have studied the prevalence of physician burnout at a large multispecialty group of more than 1,500 physicians in Northern California. They have determined factors associated with greater or lesser degrees of burnout and have implemented interventions to minimize burnout and maximize physician well-being. **When:** 11:30 a.m.-12:30 p.m. **Where:** Room N427d. **Access:** Academy Plus course pass.


Dr. Marx


Dr. Olitsky

Ergonomics/Musculoskeletal Disorders in Ophthalmologists (Spe29). *Presenters: Jeffrey L. Marx, MD, Scott E. Olitsky, MD, and Max Whiting, PT, DPT.* An ergonomics specialist will focus on practical recommendations to minimize injury and optimize patient care in clinical settings. In addition, a physical therapist will demonstrate exercises and stretching routines that can be performed during the day at work and home. **When:** 12:45-1:45 p.m. **Where:** Room S403a. **Access:** Free.


Dr. Shriver


Dr. Nijm

Physician Wellness for the Busy Ophthalmologist: Practical Tips You Can Implement Today (Sym39). *Chairs: Erin M. Shriver, MD, and Lisa Nijm, MD, JD.* Cosponsored by Women in Ophthalmology (WIO), this symposium will discuss the steps that can be taken to boost physician wellness, improve practice efficiency, and enhance personal resilience. **When:** 12:15-1:45 p.m. **Where:** Room E350. **Access:** Free.

"What makes it ergonomic? Are there really data to determine that this desk or that chair or any other piece of equipment is ergonomically appropriate?"

Such questions are not just academic for Dr. Olitsky, who had to stop clinical and surgical practice 4 years ago after developing cervical radiculopathy.

Dr. Marx agreed that a more objective approach to ophthalmic ergonomics is needed. "We've never really advanced the science of ergonomics in ophthalmology," he said. "We've qualitatively described the issue, and quantitatively described that there's a problem, in terms of the percentages of ophthalmologists who, on surveys, say they have symptoms. But we haven't really understood the science truly behind it."

Insights from motion capture. The handful of nonsurvey studies that have been published were based on using electrogoniometry (which measures angles of joints) or inclinometers to track deviations of posture from neutral, and electromyography to measure muscle loading.

Most recently, however, Dr. Olitsky and colleagues at the University of Missouri have begun studying ophthalmologists in action, using a motion-capture suit, similar to that used in Hollywood to bring lifelike movement to digital characters in movies. The motion-capture suit is dotted with reflective markers, and 14 infrared video cameras that track the markers' locations 3-dimensionally in space as the wearer moves.

The researchers reported the results of a pilot study last November at AAO 2017. In the study, 10 pediatric ophthalmologists, outfitted in the motion-capture suit, were monitored to objectively determine how much their necks deviated from neutral during simulated retinoscopy and refraction, performed on an upright and then reclining mannequin.

Study findings and implications. The study found that during loose-lens retinoscopy, the percentage of procedural time with nonneutral neck flexion (mean ± standard error of the mean) was 81.39% ± 2.57% when the mannequin was upright. This decreased to 69.45% ± 3.91% ($p = .038$) with the mannequin reclined. The only other statistically significant difference in the mean percentage of nonneutral neck flexion was between loose prism and prism bar refraction: 66.54% ± 3.80% vs. 74.57% ± 1.38% ($p = .028$), respectively.

Although it was a small pilot study and limited to pediatric ophthalmologists, the findings objectively confirmed a long-standing belief among those concerned with ophthalmic ergonomics: Small alterations in work routines can make a big difference. "Simple postural alterations (such as reclining the patient during retinoscopy and refraction exams) may reduce the time spent by ophthalmologists in nonneutral postures, reducing the likelihood of musculoskeletal injuries," the researchers wrote.[1]

This cutting-edge type of motion analysis might eventually help the broader ophthalmology community better understand how to limit their MSD risks by modifying their work habits, Dr. Marx said.

1 Siddicky SF et al. Evaluating ergonomics in ophthalmology using kinematic motion analysis: a pilot study [PO386.] Poster presented at: AAO 2017; Nov. 17, 2017; New Orleans. (ePoster available at: aao.scientificposters.com.)

Dr. Fung is a retired retina specialist and former president of the Retina Society. **Dr. Marx** is a vitreoretinal specialist at Lahey Medical Center in Burlington, Mass. **Dr. Olitsky** is professor of ophthalmology at the University of Missouri–Kansas City (UMKC) School of Medicine. **Dr. Wand** is a retired glaucoma and cataract specialist.

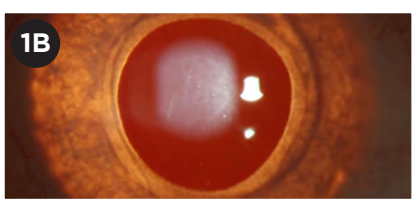
Financial disclosures: *Drs. Fung, Marx, Olitsky, and Wand: None.*

This article includes excerpts from *EyeNet*'s Practice Perfect (April, 2018).

EyeNet's Most Challenging "Blinks"

What's at the end of every *EyeNet* issue? And is the magazine's shortest section? And contains more imagery than words? That would be "Blink"—one of *EyeNet*'s most popular sections. Every month, we present a mystery image and challenge readers to chime in at aao.org/eyenet with their diagnoses. The "answer," or case description, appears in the following issue.

Submit an image. Got an image that is perplexing or intriguing? Send it to eyenet@aao.org along with its case description and diagnosis. The image must be large and high resolution (6" x 6" and 300 dpi) and the case description should be 150-250 words.

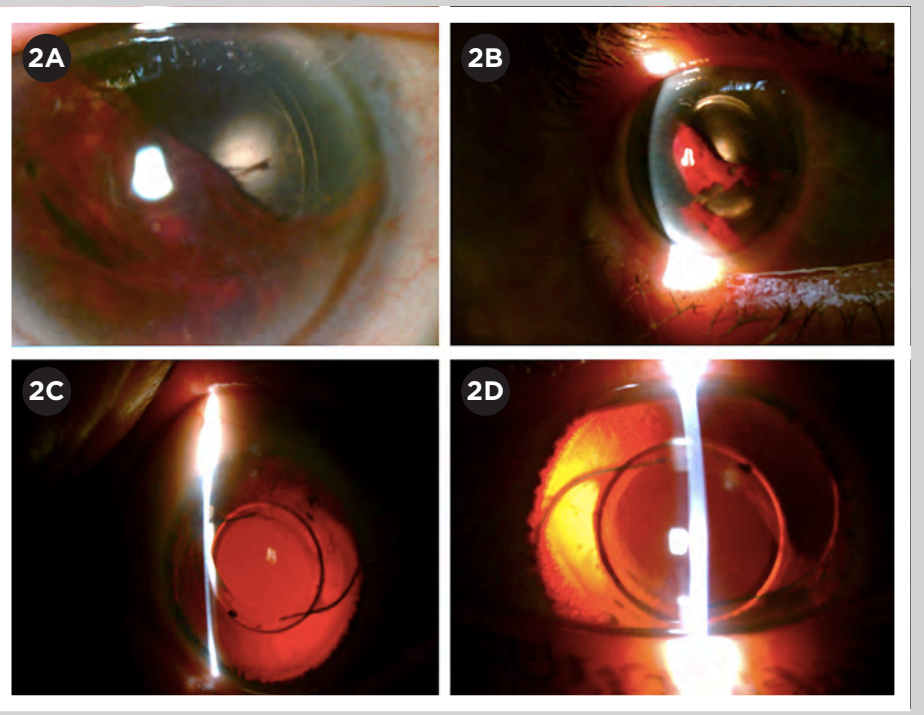


Albinism

A 47-year-old woman underwent a routine ophthalmic evaluation for diabetic eye disease. She reported suffering from poor visual acuity and light sensitivity her entire life, but she had no recent changes in vision. The general physical examination revealed white hair and pale skin. Her best-corrected visual acuity measured 20/400 OU, and she had horizontal nystagmus. Color photographs of the fundus revealed an absence of pigmentation, and the choroidal vessels were easily visualized (Fig. 1A). The slit-lamp examination showed hypopigmentation of the iris with transillumination throughout (Fig. 1B). The fovea could not be found on optical coherence tomography scanning (Fig 1C).

A more detailed medical history confirmed that the patient had oculocutaneous albinism. This autosomal recessive condition, characterized by decreased synthesis of melanin, affects 1 in 20,000 people. Ocular abnormalities are often noted at birth but remain stable throughout life.

Written by Michael W. Stewart, MD, and Jason Calhoun, Mayo Clinic, Jacksonville, Fla. Photo by Jason Calhoun. *Published November 2017.*



Traumatic Aniridia

A 77-year-old woman, 2 weeks after undergoing uncomplicated laser-assisted phacoemulsification of her right eye, presented 2 hours after falling onto the right side of her face. Her vision was hand motion with 2+ corneal folds, total hyphema, and IOP of 40 mm Hg. There was no evidence of corneal or scleral laceration. Upon emergent anterior chamber washout (2A; note residual blood), absence of the iris was observed (2B). No vitreous hemorrhage or retinal detachment was evident. The recently implanted IOL was centered and intact within the capsular bag. The patient was placed on topical glaucoma medications, bed rest, and a short course of oral prednisone. Over 1 month, her corneal edema and hyphema cleared (2C). A year later, with total aniridia and a centered, intact IOL (2D), she denies complaints of glare and has maintained 20/30 uncorrected VA.

There are few reports of isolated aniridia in pseudophakic eyes after nonperforating blunt trauma, without dehiscence/extension of the cataract incision.[1-6] Small self-sealing modern cataract incisions appear to be protective against expulsion of intraocular contents, which has led to several theories regarding the mechanism of traumatic aniridia.[2-6] Acute rise in IOP from blunt trauma may allow the corneal incision to act as a "release valve," promoting rapid progression of an iridodialysis to complete avulsion and subsequent expulsion due to the high-velocity injury.[3,4] In our case, there was total iris loss, but the remainder of the intraocular contents stayed stable and intact. Thus, it is possible that the IOL may have acted to absorb the impact and block disruption of surrounding tissue.[5] An additional theory is that the traumatized iris may have remained within the eye, only to undergo rapid phagocytosis by macrophages and trabecular meshwork cells.[3]

1 Gencer B et al. *Turk J Ophthalmol.* 2014;44:80-82.
2 Kim KH, Kim WS. *Arq Bras Oftalmol.* 2016;79(1):44-45.
3 Parmeggiani F et al. *J Ultrasound Med.* 2007;26:1795-1797.
4 Muzaffar W, O'Duffy D. *J Cataract Refract Surg.* 2006;32(2):361-362.
5 Khemka S et al. *The Internet Journal of Ophthalmology and Visual Science.* 2005;4(1):1-4.
6 Mikhail M et al. *Clin Ophthalmol.* 2012;6:237-241.

Written by Alanna S. Nattis, DO, Lindenhurst Eye Physicians and Surgeons, Babylon, N.Y.; Henry D. Perry, MD, Nassau University Medical Center, East Meadow, N.Y.; Eric D. Donnenfeld, MD, New York University, New York, N.Y.; Eric D. Rosenberg, DO, New York Medical College, Valhalla, N.Y. Photo by Henry D. Perry, MD. *Published December 2017.*

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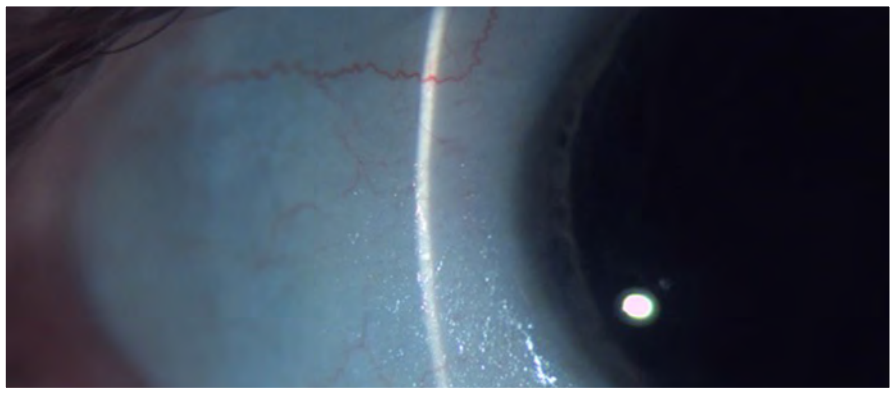


Xerosis in Vitamin A Deficiency

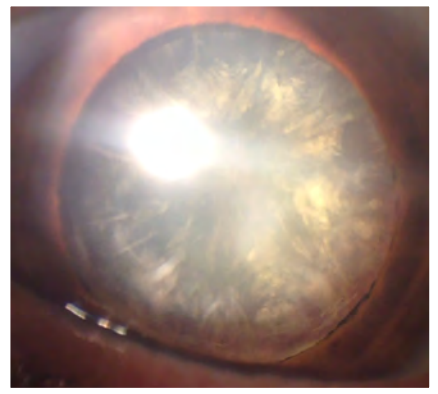
A 48-year-old woman who reported gradually worsening night vision for 1 year was referred to our clinic for possible retinal dystrophy. She also reported persistent burning and foreign body sensation associated with ocular surface dryness.

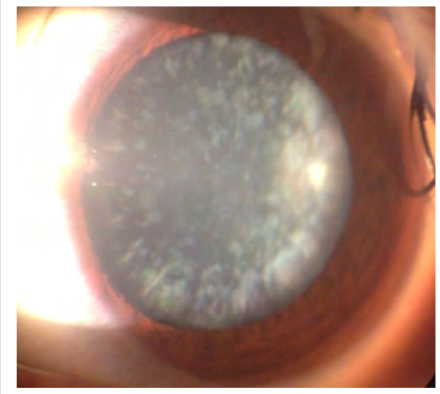
There was no family history of vision problems. Notable in her past medical history was gastric bypass surgery 13 years previously and a subsequent 100-pound weight loss. Her best-corrected visual acuity was 20/30 in her right eye and 20/40 in her left. Intraocular pressure was within normal limits. Slit-lamp examination of the anterior segment showed conjunctival xerosis in both eyes. Full-field electroretinogram demonstrated significant attenuation of waveform amplitudes under dark-adapted conditions. Serum vitamin A levels were severely diminished at < 0.21 µmol/L (normal range is 1.05 to 2.80 µmol/L).

She was started on high-dose vitamin A supplementation; this produced a dramatic improvement in her nyctalopia and ocular surface dryness within 6 months.

Nutritional malabsorption following bariatric surgery is an important and underreported cause of vitamin A deficiency in the developed world.

Written by Shriji Patel, MD, Vanderbilt Eye Institute, Nashville, Tenn. *Published March 2018.*





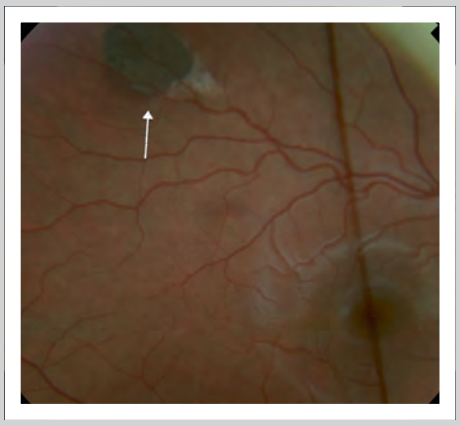
Metabolic Cataract:
A Presenting Sign of Uncontrolled Diabetes Mellitus

A 55-year-old taxi driver with hypertension and dyslipidemia presented to our clinic with blurred vision in his left eye that had been deteriorating for the past 2 months and was interfering with his work. On examination, visual acuity in his left eye was counting fingers at 5 ft and 20/100 in the right. He had advanced bilateral cortical and posterior subcapsular cataracts in both eyes. During routine blood tests prior to surgery, fasting-serum glucose measured 212 mg/dL with hemoglobin A_{1c} of 9.7%. The patient was subsequently diagnosed with diabetes mellitus (DM) and started on sitagliptin/metformin 50/1,000 mg and glimepiride 2 mg. Cataract surgeries were unremarkable, and the patient's vision improved to 20/20 bilaterally.

Early diagnosis of DM can be challenging. Blurred vision and visual loss commonly present as initial symptoms.[1,2] Although acute diabetic cataracts are rarely encountered in clinical practice today, a young adult with rapidly maturing bilateral cortical cataracts should have a diabetic workup.

1 Gong J et al. *Br J Gen Pract.* 2014;64(629):614-615.
2 Koffler M et al. *Isr J Med Sci.* 1990;26(7):393-394.

Written by Asaf Achiron, MD, The Edith Wolfson Medical Center, Holon, Israel, and Uri Aviv, MD, Sackler School of Medicine, Tel Aviv University, Israel. Photo by Dr. Achiron. *Published September 2017.*



Congenital Hypertrophy of RPE in Familial Adenomous Polyposis

A 17-year-old girl presented with bilateral lesions found on funduscopic examination. She had a history of familial adenomatous polyposis (FAP) and denied having any ocular symptoms. Her BCVA was 20/20 in both eyes. The 5 lesions in her left eye and 1 in her right eye were determined to be congenital hypertrophy of retinal pigment epithelium (CHRPE), a hereditary thickening of the retinal pigment epithelium (RPE) layer of the retina.

CHRPE lesions are asymptomatic, flat, hyperpigmented, vary in color (they may be gray, brown, or black), and have smooth or scalloped margins that are well-demarcated from the rest of the RPE, which appears normal. CHRPE lesions that are multifocal and bilateral are associated with FAP.[1] This is an autosomal dominant disease that presents with ≥ 100 polyps in the colon in the patient's late 20s or early 30s; it is linked to mutation of the tumor suppressor gene adenomatous polyposis coli. These polyps ultimately develop into colon cancer through the adenoma-carcinoma sequence. The patient underwent prophylactic total colectomy.

1 Meyer CH, Gerding H. In: Ryan SJ et al., eds. *Retina.* 5th ed. London: Saunders; 2013:2209-2213.

Written by Steve G. Lee, MD, LT MC USN, and Joseph W. Schmitz, MD, LCDR MC USN. Photo by Calvin Rogers, CRA. All are at the Naval Medical Center, San Diego. *Published August 2017.*

References

1. Alcon Data on File (Jul 2016). 2. AcrySof® IQ ReSTOR® +2.5 D Multifocal Toric IOL Directions for Use. 3. Vega F, Alba-Bueno F, Millán MS, Varon C, Gil MA, Buil JA. Halo and through-focus performance of four diffractive multifocal intraocular lenses. *Invest Ophthalmol Vis Sci.* 2015;56(6):3967-3975 (study conducted with corneal model eye with 0.28µ spherical aberration). 4. Wirtitsch MG, Findl O, Menapace R, et al. Effect of haptic design on change in axial lens position after cataract surgery. *J Cataract Refract Surg.* 2004;30(1):45-51 5. Visser N, Bauer NJ, Nuijts RM. Toric intraocular lenses: historical overview, patient selection, IOL calculation, surgical techniques, clinical outcomes, and complications. *J Cataract Refract Surg.* 2013;39(4):624-637. 6. Potvin R, Kramer BA, Hardten DR, Berdahl JP. Toric intraocular lens orientation and residual refractive astigmatism: an analysis. *Clin Ophthalmol.* 2016;10;1829-1836.

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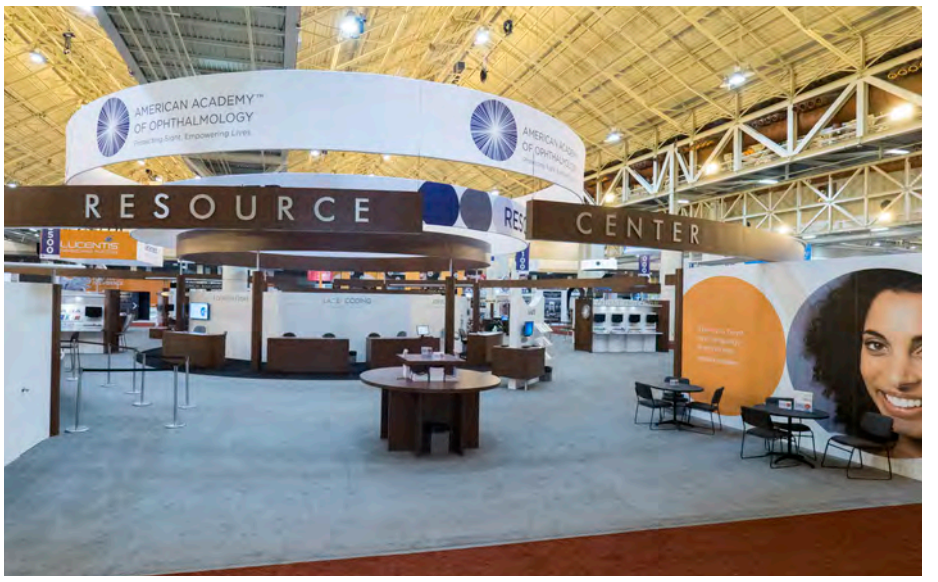

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- **Academy Foundation Donor Reception.** As a special thank you, the Academy Foundation invites its donors to meet Academy leaders, learn about the future home of the Museum of Vision, and enjoy refreshments. **When:** Saturday, 3:00-5:00 p.m. **Where:** Museum of Vision, Booth 704.
- ***Ophthalmology Glaucoma*** **and** ***Ophthalmology Retina:*** **Launch Celebration.** Subscribers, reviewers, and published authors of the new *Ophthalmology Glaucoma* and *Ophthalmology Retina* journals are invited to meet editors-in-chief Henry D. Jampel, MD, and Andrew P. Schachat, MD, and the editorial boards. **When:** Sunday, 10:00-11:00 a.m. **Where:** Resource Center, Booth 508.
- **EyeCare America Volunteer Reception.** EyeCare America volunteers, join your colleagues as we honor you and your dedication to this vital public service. Residents who have pledged to volunteer on entering practice are also invited to learn firsthand how satisfying the experience can be. **When:** Sunday, 3:00-4:30 p.m. **Where:** Museum of Vision, Booth 704.
- **2019** ***Focal Points*** **Spotlight Social.** Subscribers, editors, authors, and contributors to *Focal Points* are invited to preview and celebrate the new format, which launches January 2019. Each new *Focal Points* issue will examine current research and discuss practical ways to implement it. **When:** Monday, 4:00-5:00 p.m. **Where:** Resource Center, Booth 508.

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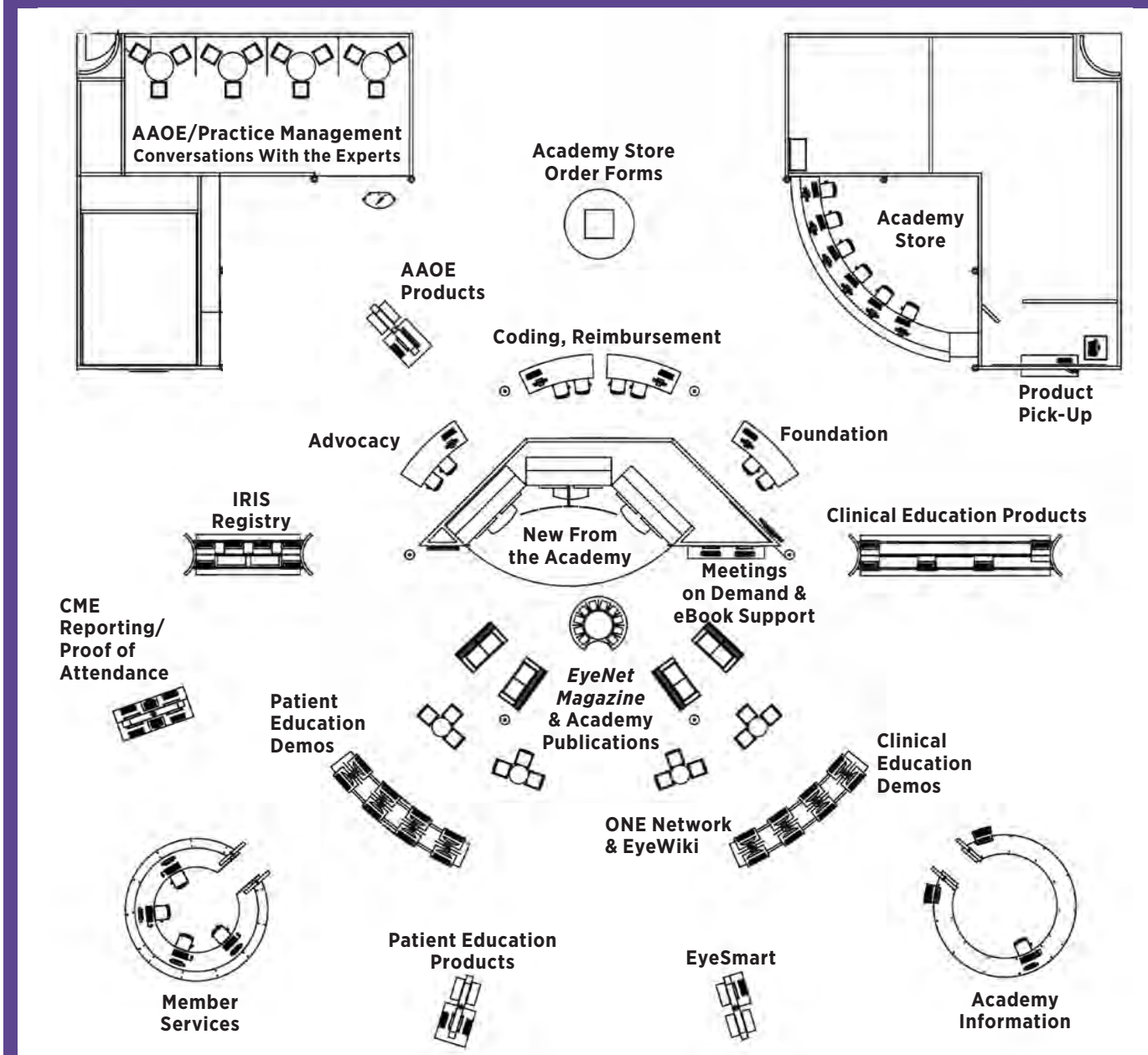

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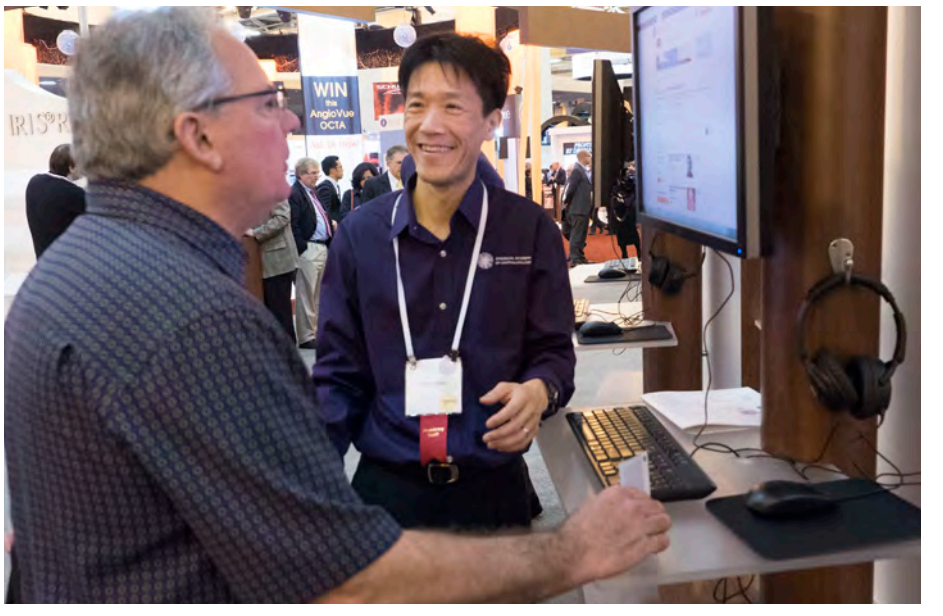

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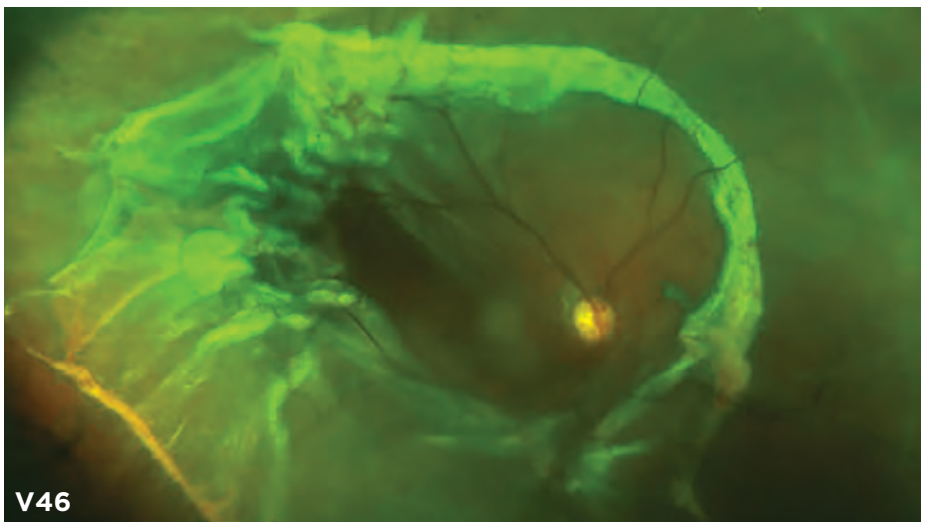
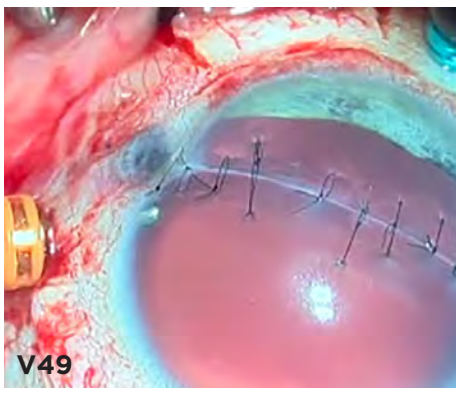
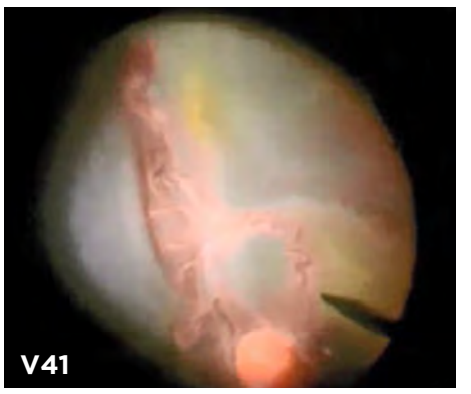
AAO 2018 Best of Show: 10 Must-See Videos

The Best of Show winners are listed below and will be featured at an awards ceremony on Tuesday, Oct. 30, from 10:45 a.m.-12:00 p.m., in Learning Lounge 1.







The 2018 Best of Show winners have described their videos. This year's scientific program consists of 54 videos, viewable at the Videos on Demand computer terminal in Hall A, and in the Lakeside Center. Watch these videos via the Mobile Meeting Guide or by visiting aao.org/programsearch.

CATARACT

Principles of Refractive Index Shaping of Intraocular Lenses With Femtosecond Laser (V05)

The use of a femtosecond laser to alter the hydrophilicity of targeted areas allows one to build a refractive index shaping lens within an existing intraocular lens (IOL). This video focuses on the chemical changes and the lens creation within the targeted area leading to IOL power change, as well as on the differences between the laser system used in this application and systems used in cataract surgery. Commercially available single-piece acrylic lenses had power and modulation transfer function measured before and after laser adjustment. Treatments demonstrated include spherical, toric, and spherocylindrical changes, as well as induced multifocality and canceled multifocality. Lenses were also analyzed under laser-induced fluorescence microscopy. ***Senior Producer:*** *Liliana Werner, MD, PhD.*

OCULAR ONCOLOGY/ PATHOLOGY

OSSN Management Options: Not "One Size Fits All" (V24)

Ocular surface squamous neoplasia (OSSN) is an encompassing term for precancerous and cancerous epithelial lesions of the conjunctiva and cornea, including the spectrum of dysplasia, carcinoma in situ (CIN), and invasive tumor. There are no consistent clinical criteria for distinguishing CIN from invasive OSSN. Diagnostic imaging is an important tool in the diagnosis and management of OSSN. The management ranges from topical immunomodulation therapy to a radical surgery like exenteration, depending on the presentation of OSSN. Careful management planning and optimal use of treatment options, including multimodal treatment, can result in minimal recurrence and complications. Compliance to therapy and follow-up are the key to remission of disease. ***Senior Producer:*** *Ankit Singh Tomar, FICO, MBBS, MD.*

REFRACTIVE SURGERY

Management of Complications in SMILE (V33)

We illustrate complications during small-incision lenticule extraction (SMILE), including cap-lenticular adhesion, lenticular rupture, and retained partial lenticular fragment; and those seen postoperatively, including epithelial ingrowth, haze, and interface inflammation. We describe stepwise management and approaches to minimize complications, including identifying the correct lenticular plane and various methods of lenticular dissection. Approaches to dissecting the epithelial ingrowth postoperatively and management of the interface are illustrated. ***Senior Producer:*** *Sartaj Singh Grewal, MD.*

Management of Difficult Lenticule Extraction in the Learning Curve of SMILE (V34)

We describe intraoperative complications encountered during lenticule dissection and extraction in the initial learning curve of small-incision lenticule extraction (SMILE) and their management. In Case 1, inadvertent posterior plane dissection before separating the anterior plane resulted in cap-lenticular adhesion. The procedure was abandoned and we planned for flap-based retreatment at a later date.

In Case 2, anterior segment optical coherence tomography (OCT) was used to diagnose the retained lenticule with wrong dissection plane, and Sinskey hook–assisted extraction of the lenticule was performed in the same sitting.

Case 3 demonstrates incomplete lenticule removal with retained fragments in a case with difficult lenticule dissection and forceful extraction of the lenticule.

Cases 4 and 5 show side cut tears and cap tears resulting from vigorous manipulations in cases with difficult dissection. Delayed visual recovery was observed; however, eventual visual and anatomical outcomes were satisfactory. ***Senior Producer:*** *Jeewan S. Titiyal, MD.*

The Many Moods of Ectasia (V35)

Ectasia following refractive surgery is often undetected. It can be caused by a multitude of factors, including inadequate preoperative screening, persistent eye rubbing, poor healing, hormonal fluctuations, subclinical inflammation of the ocular surface, and inherent genetic susceptibility. Collagen degradation is the hallmark of corneal ectasia, a cellular phenomenon. Therefore, it is prudent to study the molecular markers of ectasia. To be able to give a wider group of patients the option of safer refractive surgery, we need to improve our diagnostics and make our screening more robust. This video elucidates the complex interplay between clinical factors, imaging, and molecular and genetic markers to better understand why ectasia occurs and the different moods and modes of its presentation. ***Senior Producer:*** *Prerna Ahuja.*

RETINA/VITREOUS

En Bloc Resection of Retinal Capillary Hemangioma in Combined Tractional-Rhegmatogenous RD Repair (V41)

A 24-year-old female patient was diagnosed with a combined tractional-rhegmatogenous retinal detachment (RD) associated with a retinal capillary hemangioma. A 23-gauge pars plana vitrectomy with chandelier endoillumination was performed, involving intravitreal injection of Kenalog, a membrane peel, en bloc resection of tumor, air-fluid exchange, endolaser, and injection of 1,000 cS silicone oil. This video highlights techniques used including

bimanual feeder vessel ligation, excision of tumor that spanned retinal layers, and en bloc transscleral removal of the lesion. Vision improved postoperatively from light perception to counting fingers. Retina remains attached under silicone oil. The patient's workup was negative for Von Hippel-Lindau syndrome. ***Senior Producer:*** *Christina Y. Weng, MD, MBA.*

How to Manage Choroidal Detachment in Patients With RD (V42)

This video shows a practical surgical procedure for getting rid of suprachoroidal fluid in a patient who has both choroidal and retinal detachment (RD) at the time of surgery. A 23-year-old woman diagnosed with giant retinal tear and RD was referred to our clinic for surgery. At the time of surgery, we noticed that the eye was too soft, and we were not able to pass from the pars plana due to choroidal detachment. We decided to drain the suprachoroidal fluid via the small cut of sclera, which was 7 mm away from the limbus. After we put an infusion line into the anterior chamber, we opened infusion and drained the fluid from this small cut of sclera. The thickness of the choroid in both the pars plana and the posterior segment decreased after drainage, and we were able to finish all steps of surgery without any problem. ***Senior Producer:*** *Sibel Demirel, MD.*

Intraoperative OCT Findings During the Surgery for Optic Disc Pit-Associated Maculopathy (V45)

Optic disc pit (ODP) is an extremely rare congenital anomaly, secondary to colobomatous malformation of the optic nerve head. The pathogenesis, nature, and source of the fluid in ODP-associated maculopathy remain unclear, and it is unknown whether the fluid is liquefied vitreous through a sieve-like connection or cerebrospinal fluid (CSF) through a channel in the peripapillary subarachnoid space. In this report, we describe the real-time anatomical evaluation of the optic pit using a continuous intraoperative optical coherence tomography (iOCT) microscope system during the surgical treatment of a rare case of ODP-associated maculopathy in an 8-year-old girl. Contrary to a previous report, extensive aspiration just over the optic pit did not result in subretinal fluid drainage as revealed by iOCT, suggesting no definite connection between the vitreous cavity and the subretinal space. Both preoperative and intraoperative imaging strongly suggest CSF as the primary fluid source. ***Senior Producer:*** *Min Kim, MD.*

Management of Subretinal Bands During RD Repair (V46)

Management of subretinal bands can be challenging during proliferative vitreoretinopathy-associated retinal detachment (RD) repair. We describe a stepwise management approach to address subretinal bands, including identification of appropriate locations and planes for obtaining access to subretinal bands, instrumentation and visualization strategies to grasp and remove subretinal bands, assessment of traction during and after removal, and determination of the extent of subretinal band removal required for retinal reattachment. Different visualization and instrumentation approaches are discussed. ***Senior Producer:*** *Dilraj Singh Grewal, MD.*

Post-traumatic Aphakia, Aniridia, Corneal Opacification, and RD Case: Total Ocular Reconstruction (V49)

This film shows the first surgical association of capsular bag transplantation, capsular ring implant, intraocular lens implant, artificial iris prosthesis implant without scleral fixation, scleral buckle, pars plana vitrectomy, and corneal transplant in a case of severe post-traumatic open eye. ***Senior Producer:*** *Fernando Gonzalez Del Valle, MD.*

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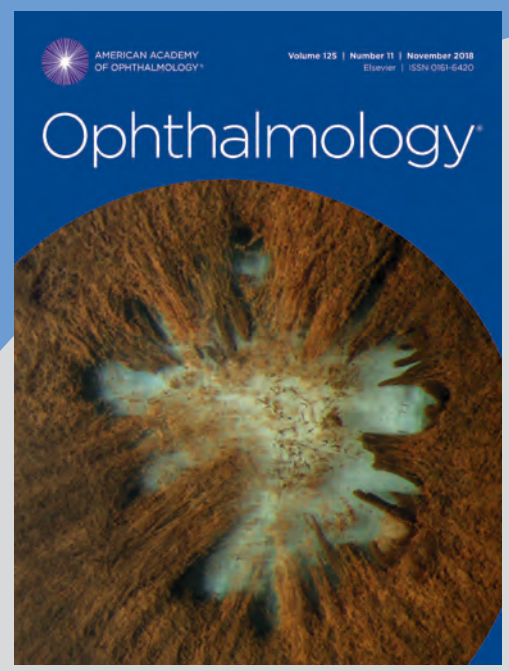

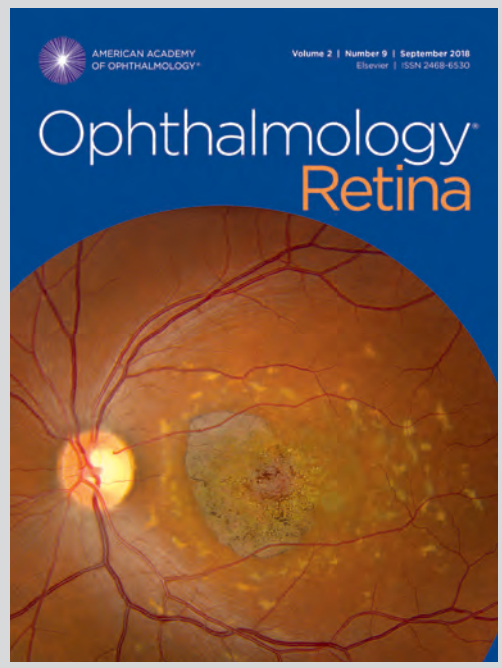

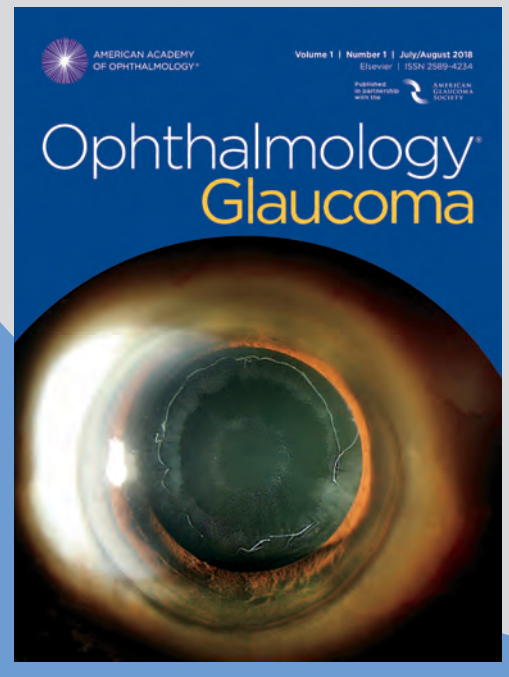

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From Academia to the Clinic
10 Eminent Speakers Talk About Current Issues

Whether you want a window into your colleagues' subspecialties or quick updates on your own field, consider attending an honorary lecture. These informative presentations by leaders in their fields are easy to fit into your schedule, as they are free and usually between 15 and 35 minutes long. Preview the highlights of these lectures below, and in the Friday *AAO 2018 News*.

MONDAY, Oct. 29

MICROBIOLOGY

Jones/Smolin Lecture: *The Persistent Enigma of Adenovirus Keratitis: Viral Pathogenesis in the Cornea,* presented by James Chodosh, MD, MPH.

When: *Monday, 9:32-9:57 a.m., during Sym31, Nonbacterial Keratitis: Diagnostic and Treatment Challenges.*

Where: *Room E450.*

"Epidemic keratoconjunctivitis (EKC) is a severe, hyperacute ocular surface infection caused by adenoviruses. The sine qua non of EKC is the delayed onset of subepithelial corneal infiltrates (adenovirus keratitis), which may be chronic or recurrent in up to one-third of cases. This lecture will discuss recent revelations in the etiology of EKC, including both the emergence of novel etiologic agents and new concepts in the pathogenesis of recurrent adenovirus keratitis."

Nonbacterial Keratitis: Diagnostic and Treatment Challenges *(8:30-10:00 a.m.) is cosponsored by the Ocular Microbiology and Immunology Group.*

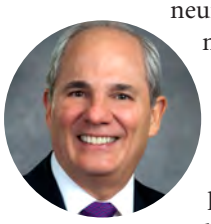
NEURO-OPHTHALMOLOGY

William F. Hoyt Lecture: *Unraveling the Enigma of Non-Arteritic Anterior Ischemic Optic Neuropathy,* presented by Joseph F. Rizzo III, MD.

When: *Monday, 9:35-9:59 a.m., during Sym30, Is This Optic Nerve Normal?*

Where: *Room S406a.*

"Nonarteritic anterior ischemic optic neuropathy (NAION) is the most common nonglaucomatous optic neuropathy of mid- to later life. NAION produces permanent visual loss, and there is a relatively high risk of subsequent involvement of the fellow eye. Despite its prevalence and visual significance, NAION was not recognized as a distinct entity until the later 20th century. The cause of NAION remains elusive, despite a substantial history of investigations. The Hoyt Lecture will provide a brief overview of the clinical features of this disorder and a detailed examination of the relevant vascular studies. The lecture will emphasize what is known and unknown, and how our future studies might provide new information to better inform our understanding of the cause of NAION."



Is This Optic Nerve Normal? *(8:30-10:00 a.m.) is cosponsored by the North American Neuro-Ophthalmology Society.*

ORGANIZED MEDICINE

Parker Heath Lecture: *Telemedicine and Digital Health: Our Profession Must Lead,* presented by Jack Resneck Jr., MD.

When: *Monday, 11:04-11:29 a.m., during Sym34, The Evolution and Effect of Artificial Intelligence, Telemedicine, and 3-D Printing on the Practice of Ophthalmology.*

Where: *Grand Ballroom S100c.*

At the time of press, the 2018 lecture had not been finalized. The Parker Heath lecture honors Parker Heath, MD, who was the 54th president of the American Ophthalmic Society and was known as a pioneer in ophthalmic pathology. The Parker Heath lecturer is always a prominent ophthalmologist or other physician who can speak to topics that broadly apply to all of medicine. This year's lecturer, Dr. Resneck, is president-elect and chairman of the board of the American Medical Association as well as vice chair of the Department of Dermatology at the University of California, San Francisco.

The Evolution and Effect of Artificial Intelligence, Telemedicine, and 3-D Printing on the Practice of Ophthalmology *(10:15-11:45 a.m.) is cosponsored by the American Medical Association.*

CATARACT

Charles D. Kelman Lecture: *Dealing With Damaged Zonules,* presented by Robert J. Cionni, MD.

When: *Monday, 11:40 a.m.-12:15 p.m., during Spo2, Spotlight on Cataract Complications: Pressure Cooker—Managing Nerve-racking Complications.*

Where: *Room E354.*

"Dr. Charles Kelman brought us small-incision ultrasonic phacoemulsification, which helped make cataract surgery one of the most successful procedures known to modern medicine. Still, certain challenges remained, such as how to manage a compromised zonular apparatus. Missing, damaged, or weakened zonular fibers decrease the likelihood that a cataract surgery will proceed without complications and increase the likelihood that the surgeon will be unable to place an intraocular lens within the capsular bag for long-term stability.

"Over the last 2 decades, numerous devices and techniques have provided us the ability to better manage the compromised zonule. We will explore the history of managing the zonular fibers and highlight the most current surgical techniques and technologies that improve the chance of a good outcome. A review of the literature and selected videos will illustrate how these innovations came to be."

Spotlight on Cataract Complications: Pressure Cooker—Managing Nerve-racking Complications *(8:15 a.m.-12:15 p.m.).*

OPHTHALMOLOGY AND THE ARTS

Michael F. Marmor, MD, Lecture, presented by Howard Schatz, MD.

When: *Monday, 12:50-1:15 p.m., during Sym40, Michael F. Marmor Lecture in Ophthalmology and the Arts.*

Where: *Room S406a.*

At the time of press, the 2018 lecture had not been finalized. Every year an eminent practitioner in architecture, music, history, or art with strong links to medicine gives the Marmor Lecture in Ophthalmology and the Arts to illuminate how his or her field of expertise relates to and can provide unique insights into ophthalmology.

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Michael F. Marmor Lecture in Ophthalmology and the Arts *(12:45-1:45 p.m.).*

PATHOLOGY/ONCOLOGY

Zimmerman Lecture: *Retinoblastoma: Seeing the Big Picture,* presented by Matthew W. Wilson, MD.

When: *Monday, 2:59-3:24 p.m., during Sym44, Needle Aspiration Biopsy of the Eye and Orbit: Implications for the Ophthalmic Oncologist and Pathologist.*

Where: *Room E350.*

"Retinoblastoma is the most common primary intraocular malignancy of children, with approximately 8,000 cases occurring worldwide each year. Retinoblastoma is a highly curable cancer when contained within the eye. In high-income countries, survival rates exceed 90%, and care is focused on saving eyes and vision. However, in middle- and low-income countries, delayed diagnosis, extraocular spread, and metastatic disease lead to decreased survival. Eighty percent of the world's children live in middle- and low-income countries; in turn, this is where the global retinoblastoma burden resides. Building capacity to diagnose and treat retinoblastoma within these regions is imperative; advancements in saving lives and saving vision can be made."

Needle Aspiration Biopsy of the Eye and Orbit: Implications for the Ophthalmic Oncologist and Pathologist *(2:00-3:30 p.m.) is cosponsored by the American Association of Ophthalmic Oncologists and Pathologists.*

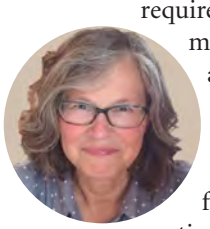
PROFESSIONALISM AND ETHICS

Dr. Allan Jensen and Claire Jensen Lecture in Professionalism and Ethics: *The Intersection of Liability and Ethical Professionalism,* presented by Anne M. Menke, RN, PhD.

When: *Monday, 3:50-4:40 p.m., during Sym46, Dr. Allan Jensen and Claire Jensen Lecture in Professionalism and Ethics.*

Where: *Room S406a.*

"The Hippocratic Oath highlights the risk inherent in the practice of medicine: harming a patient. Mitigating that risk requires an ongoing commitment to competency and professionalism. Both may be called into question when an ophthalmologist is sued for medical malpractice and expert witnesses challenge the defendant's knowledge, skills, and ethics. This lecture will explore the relationship between professional liability and the professional responsibilities built into the Academy Code of Ethics. Malpractice lawsuits will be used to explore the Academy Rules of Ethics pertaining to informed consent, advertising, pretreatment assessment, research, and delegation of services."



Dr. Allan Jensen and Claire Jensen Lecture in Professionalism and Ethics *(3:45-4:45 p.m.).*

TUESDAY, Oct. 30

RETINA

Arnall Patz Lecture: *Is All Cystoid Macular Edema the Same?* presented by Alexander J. Brucker, MD.

When: *Tuesday, 8:33-8:53 a.m., during Sym52, Retina Imaging: New Insights Into Disease and Treatment.*

Where: *Room S406a.*

"Retinal vascular disease threatens vision in a variety of ways. Prior to the advent of laser photocoagulation, we had nothing to offer our patients when macular edema was the cause for vision loss. We now have treatment that has triggered a paradigm shift in our management of macular edema. This presentation will look at cystoid macular edema (CME) and its

treatment in a variety of disease entities. Multimodal imaging, including optical coherence tomography (OCT) and OCT angiography, has now changed our understanding of CME, regardless of its etiology. This presentation will help one understand the many forms of macular edema that challenge the vision of so many."

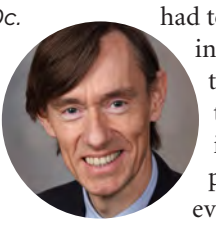
Retina Imaging: New Insights Into Disease and Treatment *(8:30-10:00 a.m.) is cosponsored by the Macula Society.*

PREDIATRIC OPHTHALMOLOGY

Marshall M. Parks Lecture: *Evidence-Based Amblyopia Treatment,* presented by Jonathan M. Holmes, MD.

When: *Tuesday, 9:38-9:58 a.m., during Sym50, Get Up to Date on Amblyopia.*

Where: *Grand Ballroom S100c.*



"Over the last 20 years, multicenter randomized clinical trials and large observational studies have advanced the treatment of amblyopia. Along this journey, we have been both surprised and disappointed. We have been forced to question previous dogma, and we have had to swallow our pride. Reevaluating less popular approaches to treating amblyopia has also led to some valuable rediscoveries. As we contemplate new potential treatments, critically evaluating past studies will better equip us to assess future studies. This talk will address the pathway to evidence-based treatment of amblyopia."

Get Up to Date on Amblyopia *(8:30-10:00 a.m.) is cosponsored by the American Association of Pediatric Ophthalmology and Strabismus.*

CORNEA

Castroviejo Lecture: *The Ethical Basis of Clinical Research,* presented by Alan Sugar, MD.

When: *Tuesday, 11:55 a.m.-12:14 p.m., during Sym54, The Future of Cornea in 3-D: Drugs, Devices, and Diagnostics.*

Where: *Grand Ballroom S100ab.*

"Clinical research is essential for developing, testing, and validating knowledge of diseases and their treatments. While the history of research on humans is long, concern for its ethical basis has intensified in the years following the uncovering of past research misconduct, which has led to the creation of various ethics codes and regulations. The underlying ethical principles are autonomy, beneficence, and justice for the participants in research. The validity and value of scientific methods, data analysis, and outcome reporting are critical. Unfortunately, too many surgical innovations still are developed in an unsystematic manner and employed without adequate study or concern for the rights and safety of patients. Understanding the ethical principles involved will improve the quality of our science and the care of our patients."

The Future of Cornea in 3-D: Drugs, Devices, and Diagnostics *(10:15 a.m.-12:15 p.m.) is cosponsored by the Cornea Society and Sektion Kornea of the German Ophthalmological Society.*

EYECARE AMERICA RECEPTION

Every year, the ECA staff honors the dedication of the volunteer-ophthalmologists who perform medical eye exams at no out-of-pocket cost. Come mingle with seasoned volunteers and enjoy snacks and beverages. Volunteers are encouraged to bring a friend interested in volunteering. All volunteers leave with a recognition gift.

When: *Sunday, Oct. 28, 3:00-4:30 p.m.* ***Where:*** *Museum of Vision, Booth 704.* ***Access:*** *Free.*

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