GLAUCOMA
RESEARCH FOUNDATION

GLEAMS

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CAN I HAVE LASER VISION CORRECTION?

ALTHOUGH IT IS RARE TO DEVELOP GLAUCOMA AS A RESULT OF LASIK, THOSE WHO ARE AT RISK OF DEVELOPING GLAUCOMA OR ALREADY HAVE GLAUCOMA REQUIRE SPECIAL CONSIDERATIONS BEFORE, DURING, AND AFTER SURGERY.

The most common refractive surgery in the United States is LASIK (laser-assisted in-situ keratomileusis). It involves reshaping the cornea, the clear outer layer of the eye, with a laser in order to improve visual acuity and provide an alternative to eyeglasses or contact lenses for vision correction.

CONSIDERATIONS BEFORE SURGERY

LASIK is usually performed for correcting nearsightedness (myopia), which is a risk factor for developing glaucoma. In addition, individuals with myopia are more likely to have an increase in eye pressure (IOP) with steroids, which are routinely used after eye surgery. It is also important to report any family history of glaucoma to the eye surgeon to make sure that a thorough baseline glaucoma evaluation can be done and the best refractive procedure can be chosen.

CONSIDERATIONS DURING SURGERY

During LASIK, a partial-thickness corneal flap is created and laser energy is used to reshape the corneal tissue under this flap. In order to stabilize the eye, the IOP is increased significantly during the formation of the corneal flap. Although this increase in IOP is temporary, the potential impact on the optic nerve should be discussed with your doctor. In the presence of glaucoma, other options for laser vision correction, such as small-incision lenticule extraction (SMILE) or photorefractive keratectomy (PRK) which do not require flap formation may be considered.

CONSIDERATIONS AFTER SURGERY

Steroid eye drops are commonly used after laser vision correction to reduce inflammation, and the duration of steroid treatment is longer after PRK than LASIK. Steroids can increase IOP which may lead to glaucoma; therefore, it is critical to monitor IOP carefully after surgery. However, this is not as straightforward as one might think. Laser vision correction for myopia thins the cornea, which leads to underestimation of IOP with the commonly used measuring tools. This underestimation may mask steroid related IOP elevation and lead to delay in treatment.

Because of the difficulties in obtaining accurate IOP measurements, IOP should be measured using more than one instrument. In addition, monitoring the optic nerve and peripheral vision testing become even more critical in this setting. When establishing eye care with a new ophthalmologist, it is important to provide your history of laser vision correction and all the baseline tests and results you have to make follow-up care easier.

In summary, refractive surgery is not prohibited for glaucoma suspects and those with well controlled, early glaucoma. However, a thorough baseline evaluation is needed before surgery and careful monitoring for changes in eye pressure is critical after surgery.

Sarwat Salim, MD, FACS, *is Professor of Ophthalmology, Vice-Chair of Academic Advancement, and the Director of Glaucoma Service at Wake Forest University School of Medicine.*

The 2025 Shaffer Research Grants

Since 1978, Glaucoma Research Foundation has invested over $62 million to advance knowledge through innovative research. To date, we have awarded more than 300 Shaffer Research Grants. Shaffer Grants present a unique opportunity for investigators to pursue innovative ideas in the spirit of high risk/high reward scientific discovery. 93% of surveyed Shaffer Grant recipients said that the GRF grant helped them pursue a new idea that would otherwise not have been investigated. We are grateful to the generous donors who funded the 2025 Shaffer Research Grants.

The Arlene Anthony Grant for Innovative Glaucoma Research

JOEL PALKO, MD
West Virginia University School of Medicine
Project: Impact of Low Blood Pressure on ONH Biomechanics in Glaucoma
Summary: By uncovering the mechanisms linking low blood pressure to glaucoma, we aim to pave the way for new neuroprotective glaucoma treatments.

The Larry Haimovitch Grant for Innovation in Ophthalmology

SHRUTHI KARNAM, PHD
University of California, Berkeley
Project: Targeting Lipoxin B4 for Reversing Astrocyte-Mediated Neuroinflammation in Glaucoma
Summary: This research project proposes a new approach to treating glaucoma by focusing on protecting retinal cells with anti-inflammatory strategies, rather than relying solely on reducing eye pressure.

The Mary Dell Hibbert Glaucoma Research Fund

RICHARD EVA, PHD
King's College London
Project: Pro-Tect and Restore: Developing Pro-trudinPlus Gene Therapy
Summary: This project aims to develop a new gene therapy for glaucoma. It will also have relevance for other optic neuropathies and diseases of the central nervous system.

The Rajen Savjani Fund for Innovative Glaucoma Research

VIDHYA RAO, PHD
Loyola University Chicago
Project: Role of Nicotinamide Adenine Dinucleotide Phosphate (NADPH) Oxidase-4 (NOX4) induced mitochondrial dysfunction in Primary Open Angle Glaucoma
Summary: We propose to determine if inhibiting NOX4 can prevent the increase in pressure within the eye. If successful, this study may lead to a new treatment strategy for the management of primary open-angle glaucoma.

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Q&A What is Charles Bonnet Syndrome?

Stephanie Wey, MD
is a Fellow Physician at the Scheie Eye Institute, University of Pennsylvania.

Ahmara Ross, MD, PhD
is an Assistant Professor of Ophthalmology and Neurology at the Scheie Eye Institute, University of Pennsylvania.

Charles Bonnet Syndrome (CBS) is a condition where patients with significant vision loss experience visual hallucinations in the absence of cognitive or psychological illness. Hallucinations in CBS only affect your sight and you don't hear or smell things that are not there. Individuals diagnosed with CBS are usually aware, or can learn to recognize, that their hallucinations are not real.

Q. What are the hallucinations characteristic of Charles Bonnet Syndrome?

A. These hallucinations can vary widely. They can be as simple as geometric shapes and patterns to as complex as people, animals, and plants. They usually disappear after a few seconds, reappearing as frequently as multiple times a week, and most commonly occur in the daytime.

Q. Who is at risk of Charles Bonnet Syndrome?

A. CBS, also called "release phenomenon," was classically described in patients with macular degeneration, as well as those diagnosed with glaucoma. The prevalence in individuals with glaucoma is about 7%. While CBS is typically described in individuals with severe vision loss, it can also be seen in those who have clear central vision but have loss of the range of vision (visual field loss).

Q. What causes Charles Bonnet Syndrome?

A. We do not know for sure. One leading hypothesis is that loss of vision leads to decreased connections from the eye to the brain. This can lead to abnormal or rogue neuronal signaling resulting in visual disruptions and hallucinations. The irregular neuronal activation may compensate for decreased visual input from the world.

Q. How is Charles Bonnet Syndrome treated?

A. There is no cure for CBS but symptoms often get better with time. The presence and nature of the hallucinations can be distressing, and they may also interfere with some tasks. But simply having more information about CBS can help reduce anxiety from this condition. Talk to your eye doctor if you are experiencing visual hallucinations.

By Stephanie Wey, MD and Ahmara Ross, MD, PhD

IN APPRECIATION

We are incredibly grateful for the generous and loyal support from all of our donors. Following is a listing of recent contributions and pledges at the $1,000 level and above. Please note these are new contributions and pledge payments between November 1, 2024 and February 28, 2025 and will not reflect a donor's cumulative giving for the year.

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Daria Barry: Translating Discovery into Care with a Transformational Gift

Daria Barry, a visionary financial strategist and leader at Prospect Capital Corporate (NASDAQ: PSEC) ("Prospect), co-built a successful business helping clients mobilize their assets. Now, leveraging that expertise, she is channeling her passion into glaucoma research – accelerating future treatments through transformation generosity.

Daria and her husband, John Barry, founded alternative investment manager Prospect Capital Corporation, where Daria serves as Head of Administration and John is Chairman and CEO. Together with their five children, they also oversee the John and Daria Barry Foundation. Although the Foundation traditionally focuses on veterans, education, and the environment, its recent healthcare initiatives reflect Daria's personal commitment to fighting glaucoma.

Daria understands the surprise many experience when they learn they have this neurodegenerative disease. "I always thought it was something much older people get," she recalls. Sitting in her specialist's waiting room for checkups, Daria noticed the broad spectrum of patients affected by glaucoma. And over time, she performed a balancing act familiar to many: multiple medications, administered at different times of day, just to get pressure down. "I don't know how other people keep up without meticulous notes and a spreadsheet!" Daria says.

As the disease stole her peripheral vision, Daria's questions became more urgent. Attending a Glaucoma Research Foundation Patient Summit, Daria was impressed and reached out to learn more. The more she learned, the more she wanted to do something transformative. And what Daria did has truly changed the game for glaucoma research and for patients.

Through their foundation, Daria and John made a $5 million gift — the largest in our history — to fund a "treatment accelerator" that will help ramp-up new glaucoma therapies. Over the next five years, the Barry Family Treatment Acceleration Fund will distribute grants to speed laboratory breakthroughs from bench to bedside. The first three grants will enable scientists in Glaucoma Research Foundation's third Catalyst for a Cure initiative to move discoveries in neuroprotection and vision restoration through the testing pipeline toward clinical trials.

Daria Barry Rings the NASDAQ Closing Bell to Celebrate PSEC's 20th Listing Anniversary on July 24, 2024

Daria's passion for accelerating treatments is fueled by her compassion for others who share the challenges of life with glaucoma. "We want to apply our resources toward something that could benefit our family and other families," she says. "We want to put glaucoma on the map as a serious, neurodegenerative illness and speed up the quest for new treatments and a cure."

CONTINUED FROM PAGE 3:

The 2025 Shaffer Research Grants

The Rajen Savjani Fund for Innovative Glaucoma Research

SUPRAJA VARADARAJAN, PHD
University of Texas Southwestern Medical Center
Project: The Role of Postsynaptic Targets in Preserving Vision
Summary: This proposal investigates the effect of modulating neural activity in target neurons on preventing glaucomatous retinal ganglion cell axon degeneration and conferring neuroprotection to target neurons.

The Linda and Gary Sirak Glaucoma Research Fund

KARL KADOR, PHD
University of Missouri–Kansas City
Project: Reintroducing Developmentally Regulated Guidance Factors to the Optic Nerve
Summary: This study aims to develop a method for overcoming the lack of guidance of transplanted retinal ganglion cells, the first step in restoring vision to patients with late-stage glaucoma.

The Frank Stein and Paul S. May Grants for Innovative Glaucoma Research

STEVEN BARNES, PHD
Doheny Eye Institute, UCLA
Project: Intrinsic Ion Channels Reduce Excitability During Energy Stress
Summary: This project aims to improve diagnostics and detection to allow early intervention to prevent or restore vision loss due to ganglion cell loss in optic neuropathies including glaucoma.

The Frank Stein and Paul S. May Grants for Innovative Glaucoma Research

FIONA MCDONNELL, PHD
Moran Eye Center, University of Utah
Project: Extracellular Vesicle Regulation of ECM in the Lamina Cribrosa
Summary: Determining the role that extracellular vesicles play in extracellular matrix turnover in the lamina cribrosa will contribute to our knowledge of the mechanism leading to glaucoma progression and assess their potential as a treatment for this blinding disease.

The Zander Family Research Fund for Glaucoma Genetics

BALASANKARA REDDY KAIPA, PHD
University of California, Irvine
Project: The Genetics of Glaucoma: Lipid nanoparticle-mediated delivery of base editor ribonucleoprotein complex targeting the trabecular meshwork for the treatment of glaucoma
Summary: This project aims to develop a highly targeted, one-time gene therapy that directly addresses the disease's root cause, providing hope for a lasting solution for patients suffering from MYOC-related glaucoma.

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Pictured on the front cover: Three members of the Catalyst for a Cure Vision Restoration team, Derek Welsbie, MD, PhD, Anna La Torre, PhD, and Yang Hu, MD, PhD (left to right)