

Ophthalmology Update

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Individualizing Patient Care Through Research, Expertise

Relentless research enables Mayo Clinic to turn innovations into patient care. As physicians treat patients and see opportunities for advancing patient care, they work together to develop new and improved diagnostic tools, treatment protocols and more.

Exemplifying the integration of research into the practice is Ruti Sella Svetlit, M.D., who recently joined Ophthalmology at Mayo Clinic in Rochester, Minnesota.

“We are pleased to welcome Dr. Sella Svetlit to our department,” says Sophie J. Bakri, M.D., chair of Ophthalmology and professor of ophthalmology at Mayo Clinic in Rochester, Minnesota. “She brings a broad educational background and has quickly established herself as a superb researcher, clinician and surgeon in the field of anterior segment ocular surgery and refractive surgery.”

Dr. Sella Svetlit’s primary focus is treating patients with cataract and refractive error. In terms of research, her areas of special interest include increasing the precision of intraocular lens calculation formulas, analysis of refractive outcomes of cataract and refractive surgeries, and new technologies for corneal imaging.

Dr. Sella Svetlit was among the first to investigate the accuracy of modern

intraocular lens calculation formulas in different age groups, with an emphasis on the older adult and pediatric populations. Her work in the field of specialty intraocular lenses is paving the way to a better understanding of the indications, calculations and cost-effectiveness of those lenses.

Her expertise in the field of corneal and external diseases of the eye also brings a unique perspective to the refractive aspect of cataract surgery. “Having a comprehensive understanding of corneal pathologies helps tailor the most optimal surgical and refractive outcome for each individual patient,” says Dr. Sella Svetlit.

ABOUT DR. SELLA SVETLIT

Dr. Sella Svetlit completed medical school at Rappaport Faculty of Medicine, the Technion, Israel Institute of Technology, in Haifa, Israel. Dr. Sella Svetlit completed a residency in ophthalmology at Rabin Medical Center in Petah Tikva, Israel, and a clinical and research cornea and refractive surgery fellowship at the Shiley Eye Institute, University of California San Diego, in La Jolla, California. Prior to joining Mayo Clinic, she served as a corneal surgeon, senior ophthalmologist and head of the Cataract Service at Rabin Medical Center.



Ruti Sella Svetlit, M.D.



Sophie J. Bakri, M.D.

PROCEDURES PERFORMED

- Cataract surgery.
- LASIK eye surgery.
- Lens replacement surgery.
- Photorefractive keratectomy.
- Refractive surgery.

RECENT PUBLICATIONS

- Evaluation of IOL power calculation with the Kane formula for pediatric cataract surgery, published in *Graefe's Archive for Clinical and Experimental Ophthalmology*.
- Comparison of the Barrett Universal II formula to previous generation formulae for paediatric cataract surgery, published in *Acta Ophthalmologica*.
- Intraocular lens power calculation in the elderly population using the Kane formula in comparison with existing methods, published in *Journal of Cataract & Refractive Surgery*.
- Accuracy of IOL power calculations in the very elderly, published in *Eye*.
- Axial length and pharmacologic pupillary dilation in highly myopic patients, published in *Graefe's Archive for Clinical and Experimental Ophthalmology*.
- Pathogen surveillance for acute infectious conjunctivitis, published in *JAMA Ophthalmology*.
- Evaluating the accuracy of a cataract surgery simulation video

in depicting patient experiences under conscious anesthesia, published in *International Ophthalmology*.

- Long-term evaluation of pseudoexfoliation syndrome after cataract extraction, published in *Journal of Personalized Medicine*.
- Evaluating changes in apparent chord mu after pharmacological pupil dilatation, published in *Ophthalmic Research*.

FOR MORE INFORMATION

Reitblat O, et al. Evaluation of IOL power calculation with the Kane formula for pediatric cataract surgery. *Graefe's Archive for Clinical and Experimental Ophthalmology*. 2022;260:2877.

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Sella R, et al. Evaluating the accuracy of a cataract surgery simulation video in depicting patient experiences under conscious anesthesia. *International Ophthalmology*. 2023;43:4897.

Shouchane-Blum K, et al. Long-term evaluation of pseudoexfoliation syndrome after cataract extraction. *Journal of Personalized Medicine*. 2023;13:818.

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Collaborative Surgical Innovation Reduces Complications and Hospital Stay



Lilly H. Wagner, M.D.



Jamie J. Van Gompel, M.D.

“The glory of medicine is that it is constantly moving forward.”
— Dr. William J. Mayo

Collaborating across clinical practice allows for discovery and quicker application of knowledge to develop new, patient-centered solutions. This approach has allowed Mayo Clinic ophthalmologists to work together with their colleagues across multiple specialties to offer the most promising surgical approaches

for meningiomas of the skull base and improve patient outcomes.

Meningiomas account for 15% to 20% of primary brain tumors. A meningioma of the skull base is typically a noncancerous and slow-growing tumor that develops in the covering of the base of the brain. While most often benign, these neoplasms can become aggressive and grow from the dura to extracranial spaces such as the orbit and nasal cavity.

Many meningiomas are asymptomatic; however, when symptoms do present, they include headaches, anosmia and visual deficits that can significantly impact quality of life.

“The current standard treatment for patients with symptomatic anterior skull base meningiomas consists of unilateral frontal or bifrontal craniotomies,” says Lilly H. Wagner, M.D., an oculoplastic and orbital surgeon at Mayo Clinic in Rochester, Minnesota. “While this approach has high rates of complete resection, it also carries a variety of risks including postoperative cerebral edema and visual morbidity due to manipulation of the optic nerve.”

One alternative, the endoscopic endonasal approach (EEA), has been increasingly used, as it can provide better visualization of important vascular and nerve structures. It can also reduce operative time and eliminate the need for brain retraction, where appropriate. However, there are anatomical limitations, which make it challenging to reach lesions extending to lateral parts of the anterior skull base with EEA.

Minimally invasive supraorbital craniotomy has emerged as another option for anterior skull base meningioma resection in select patients. “Advantages of a supraorbital approach include the use of dynamic brain retraction, reduced risk of postoperative encephalomalacia, shorter length of time in the hospital and improved cosmetic results,” says Dr. Wagner.

Existing literature predominantly focuses on the use of the supraorbital approach for small meningiomas, and it also carries its own risks. “The classic supraorbital keyhole approach creates a small craniotomy in the frontal bone,” says Dr. Wagner. “Risks associated with this approach include unintentionally opening the frontal sinus, weakness of the frontal branch of the facial nerve and cosmetic deformity due to burr holes.

“Unfortunately, the supraorbital approach does not provide access to intraorbital tumor components,” continues Dr. Wagner. “And there remains a gap in knowledge surrounding the role of oculoplastic surgeons in the management of such cases.”

With recent advances — and the close collaboration among experts in ophthalmology, neurology and otolaryngology — transorbital neuroendoscopic surgery provides access to the skull base through the orbit and can provide sufficient exposure for total resection while avoiding the complications of traditional supraorbital keyhole craniotomy.

“Traditional craniotomy approaches carry higher morbidity and require longer hospital stays,” says Dr. Wagner. “The transorbital route and collaboration between orbital surgeons and neurosurgeons allow access to otherwise difficult-to-reach lesions in the orbital apex and skull base with decreased risk for surgical morbidity, better visualization and faster recovery (Figure 1).”

“Working together to manage these cases is ultimately in the best interest of the patient,” says Jamie J. Van Gompel, M.D., a neurosurgeon at Mayo Clinic in Rochester, Minnesota. “The transorbital route allows us to successfully excise the tumor with minimal complications while preserving eye function. Additionally, this approach has tremendous cosmetic advantages that positively impact a patient’s overall well-being and recovery (Figure 2).”

“Our multidisciplinary collaboration provides integrated evaluation, testing, imaging and consultation within a few days in order to determine if a patient is a candidate for this minimally invasive approach,” says Dr. Wagner. “Working closely together across specialties allows patients to receive individualized care plans — taking their personal treatment goals and disease characteristics into consideration.”

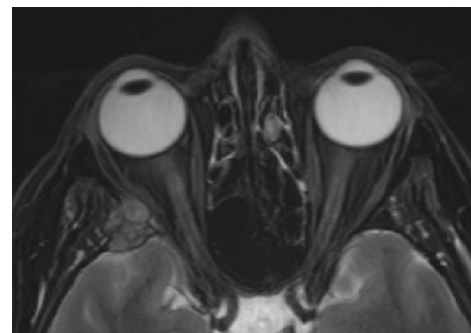


Figure 1. An MRI scan showing a tumor in the anterior middle cranial fossa, extending into the lateral orbit and displacing the lateral rectus muscle. This tumor was removed in a combined surgery with oculoplastic surgeons and neurosurgeons. The surgeons used a transorbital approach with eyelid crease incision.



Figure 2. Three months after surgery, patient shows no visible scar on the right upper lid.

Expanding Pediatric Cornea, Cataract and Glaucoma Care

Solving serious and complex medical challenges requires a level of expertise that can't be achieved alone. Mayo Clinic's collaborative, team-based approach invites highly specialized experts from around the world.

Eric J. Kim, M.D., has joined Ophthalmology at Mayo Clinic in Rochester, Minnesota. "I'm looking forward to working with my colleagues to expand our department's ability to care for children with complex anterior segment disorders, specifically in the areas of pediatric cornea, cataract and glaucoma," says Dr. Kim.

"We are pleased to welcome Dr. Kim to our department," says Sophie J. Bakri, M.D., chair of Ophthalmology and professor of ophthalmology at Mayo Clinic in Rochester, Minnesota. "His passion for research and education, in addition to his areas of expertise, aligns with our values and mission."

"I'm excited to invest in teaching medical students, residents and fellows to help raise up the next generation of leaders who will push forward the frontiers of medicine and deliver compassionate care to others," says Dr. Kim. "I am also excited to build up a clinical research program to expand the knowledge and treatment of pediatric anterior segment disorders.

"In joining Mayo Clinic, I'm looking forward to multidisciplinary collaboration and working together to ensure the needs of the patient come first," says Dr. Kim.

ABOUT DR. KIM

Dr. Kim completed medical school at Baylor College of Medicine in Houston. There, he also completed an internship in internal medicine and an ophthalmology residency. Dr. Kim completed a fellowship in pediatric ophthalmology and strabismus at Mayo Clinic in Rochester, Minnesota, and has additional subspecialty expertise in pediatric cornea and pediatric glaucoma. Prior to joining Mayo Clinic, he served as faculty member at Texas Children's Hospital, Baylor College of Medicine.

TREATMENTS AND PROCEDURES

Dr. Kim's area of expertise includes:

- Amniotic membrane transplantation.
- Angle surgery.
- Anterior segment reconstruction.
- Complex cataract surgery.
- Comprehensive pediatric ophthalmology.
- Corneal cross-linking.
- Cyclophotocoagulation.
- EDTA chelation.
- Keratoplasty.
- Limbal stem cell transplantation.
- Optical iridectomy.
- Pediatric and adult strabismus surgery.
- Superficial keratectomy.
- Tube shunts.



Eric J. Kim, M.D.



Sophie J. Bakri, M.D.



CONTACT US

Mayo Clinic welcomes inquiries and referrals, and a request to a specific physician is not required to refer a patient.

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or email cme@mayo.edu

Ophthalmology Update

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Medical Editors

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Lilly H. Wagner, M.D.

Cover Image

Human multicolored iris of the eye animation concept
Credit: CG Alex

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