

9th SEPTEMBER | 2023



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# Welcome to ESCRS 2023

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 **VIENNA 2023**  
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**ESCRS Morning  
Symposium**Sunday, 10 September 2023 | 9:30-10:30  
Room A4, Hall A

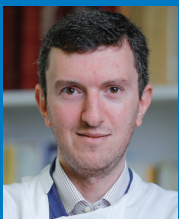
## Diagnosis and Management of Myopia and Associated Comorbidities



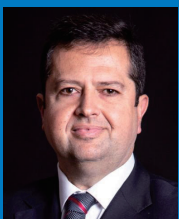
Moderator

**Anton Hommer**  
**MD**Hera Hospital  
Austria

Speaker

**Damien Gatinel**  
**MD, PhD**Rothschild Foundation Hospital  
France| Addressing the Myopia Epidemic  
- An In-Depth Analysis of Epidemiology,  
Optics, and Biometric Factors -

Speaker

**Luis Abegão Pinto**  
**MD, PhD**Faculty of Medicine of Lisbon University  
Portugal| Myopic Glaucoma - Sorting Out What Is  
Happening

Speaker

**Rodrigo Abreu Gonzalez**  
**MD, PhD, FEBO**University Hospital of La Candelaria  
Spain| Clinical Myopia for Non-Retina  
Specialists



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## Welcome to Vienna!

**W**elcome to the 41st Congress of the ESCRS! I want to extend a warm welcome to Vienna, my hometown. I think it will be an amazing Congress and a great experience for all of us. Last year in Milan, we had the best-attended ophthalmology conference in the world, and we believe Vienna will even top that.

The Congress will provide unprecedented opportunities for catching up on the latest developments in research, continuing your education, and, equally important, networking with friends and colleagues.

We got a running start on Friday with our second annual iNovation symposium; our specialty days in glaucoma, cornea, and paediatrics; and two sections of wet labs. We also had the first of our main symposia on the increasingly relevant topic of who owns ophthalmology, which addressed economic issues many of us face.

As in previous years, the core of the meeting will include a series of main symposia, clinical research symposia giving up-to-the-minute reports on topics including the digital OR and robotics, more than 100 wet labs, 110 instructional courses, video sessions, and posters.

*Continued on page 5*



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### **New formats**

However, this year, we wanted to shake things up and introduce some new concepts and ways of presenting information. After people attend a few conferences, they think they're pretty much all alike. So, we asked ourselves, what new things can we do? What would draw somebody in for the first time if they've never been, or get them to come back if they've attended before? And I think they're going to find a lot of things to like.

For example, a highlight of Saturday will be a "near-live" surgery session featuring challenging cases filmed by an ESCRS audio-visual team. The film crew visited surgeons in their home operating theatres using their own materials and equipment, and the filmed surgeons will be present to discuss the cases. I think this new concept is ethically more sound and will be more educational.

### **ESCRS Arena**

You also won't want to miss the arena, a venue for speakers to debate hot topics while allowing for audience interaction. A boxing ring in the middle of a large room will host a very vivid debate format with pro and con speakers, just a few minutes on each topic, followed by a discussion. People in the audience can "vote by feet"—moving within the room to show which opinion they support—and writing questions and comments, to be shown on big screens and fielded by a moderator.

Another new concept is a series of "100-second pearls," which also will take place in the boxing arena and feature short videos with special tips for surgical techniques. Like the pro-con debates, the pearls will be interactive, with audience members sharing real-time comments.

### **Smart & @ctive Monday**

Monday is being billed as "Smart & @ctive Monday" thanks to a "digital track" highlighted by symposia on the continents going digital, the digital operating room, automated robotic eye surgery, and the newest from artificial intelligence. Monday will also feature a mini-symposium on ophthalmic anaesthesiology, a full day of practice management workshops, a medical writing workshop, numerous instructional courses, and the ESCRS Heritage Lecture from Marie-Jose Tassignon. Three "brush-up" sessions focusing on glaucoma, retina, and oculoplastics are a novelty, given by the respective societies (EGS, EURETINA, and ESOPRS) to bring the anterior segment surgeon up to date in these fields within 45 minutes.

The Congress continues through Tuesday morning with symposia, free papers, and the popular best-of-the-best session.

I would also like to highlight that the 2023 ESCRS Congress will represent a crucial second step in the ESCRS sustainability journey, which we embarked on in earnest in 2022. My personal commitment to sustainability as president of ESCRS is equalled by the commitment of the Society as a whole, and we are increasing our momentum and investment in this area to achieve the very lofty goal of having a congress with zero waste to landfills, zero net carbon emissions, and placing ESCRS as a role model for social responsibility. I reiterate my call to you all, as this project requires that we all work collaboratively to support this aim. Please, join us on this journey!

Hoping that you will also find some time to experience the city with its cultural wealth and amazing food, I wish you a great congress!



**Oliver Findl**  
President of the ESCRS

# Behind the Scenes of the Vienna Congress

ESCRS president Oliver Findl gives *ESCRS Today* a look behind the scenes on planning the Vienna Congress.

## What does the programme committee do, and how do they do it?

The ESCRS programme committee is large, with 18 experienced surgeons. We usually start planning the main symposia about a year and a half before a congress or meeting. In fact, we have just now decided on the topics for the 2024 Congress. First, we look at all the main symposia we have done in the past five or ten years and brainstorm to develop the next main symposia, which are the skeleton of the Congress and our Winter Meeting. Then we start to lay out the other parts of the programme. The education committee, with 19 members, is also involved—they take care of the courses.

It is not only a painful process but a very long process. It takes many, many months with a lot of work from a lot of people. For the Vienna Congress, we got more than 270 applications for instructional courses, but we only have space for 110. There were a lot of good courses we couldn't fit. Then we looked at the papers and the posters, for which we received more than 1,900 abstract submissions. I can't tell you how much work that is to get all that sorted. Then we sort out the wet labs and start looking for instructors. We keep track of everything on a huge spreadsheet.

## That must be an amazing spreadsheet.

It is. It has a lot of information. For example, we can tell if a course has been given already, how many attended, and how attendees rated it. Then taking care of schedule clashes is even

more complex. You have all these accepted papers, posters, symposia, and videos on top of that.

## How has planning the conference programme changed over the years?

From our perspective, the pandemic and COVID told us we need in-person, face-to-face contact, no question. We are tired of just having virtual congresses. We did that once—out of necessity. Now we're trying to introduce more interactivity. People come to a congress to learn, but also to see people and talk with colleagues. The things that happen outside the conference rooms are often the most important.

We would like fewer of the "presenter on the podium" type of sessions. For example, we have the arena, a central boxing ring stage, with pro and con presentations, which is very different from the usual setup. It has a moderator and short presentations followed by discussion. Audience members will be able to write comments that will appear on a big screen and be discussed straightaway, allowing for an exchange of ideas.

You will see many changes in the format of our Congress. For example, we've changed the free paper sessions. We used to have one room per session. It was frustrating at times because maybe there were only two or three presentations that you were really interested in, and you would have to change to another room to see another session. Now we have four free paper sessions, all in one very large room. Attendees will have headphones with four channels to easily go from one session to another.



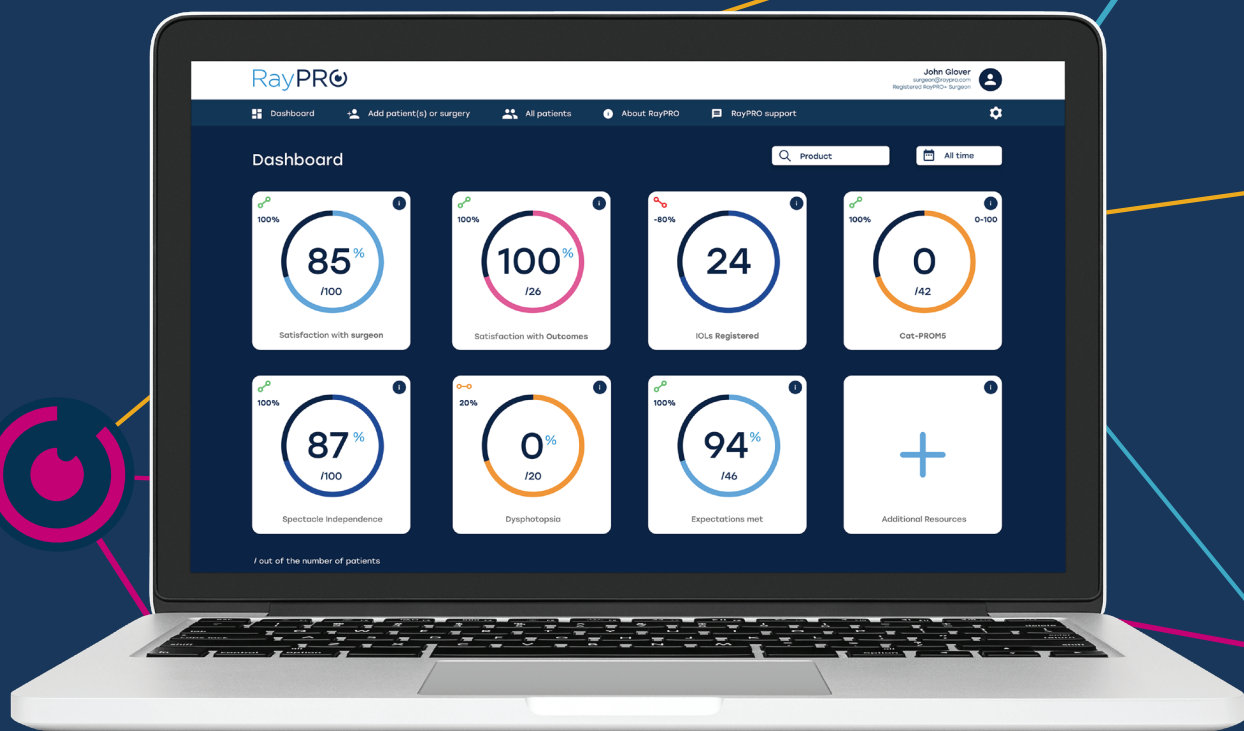


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# Less Is More in Angle Closure Surgery

DERMOT MCGRATH REPORTS

**S**urgeons should adhere to the basic principle of “less is more” in the surgical management of primary angle closure glaucoma (PACG), according to Dr Andrew J Tatham.

In a Glaucoma Day session devoted to all aspects of angle closure, Dr Tatham reviewed the substantial evidence supporting phacoemulsification as a primary treatment modality for both acute angle closure glaucoma and chronic angle closure glaucoma.

“With primary angle closure glaucoma, we know that the crystalline lens is central to the mechanism because it causes pupil block and blocks the angle,” he said. “So, if we remove the lens, that can help reverse the pupil block and open the angle, which is very effective.”

Dr Tatham said he adheres to the principle of “less is more” by avoiding combined procedures in angle closure patients unless there are compelling reasons to do so.

“Phacoemulsification alone is preferred as the initial surgical treatment for the majority of patients,” he said. “The advice is to keep things simple, as phacoemulsification alone minimises the risk of surgical complications, reverses iridotrabeular contact, and often provides substantial reductions in intraocular pressure (IOP).”

There may also be certain instances where clear lens extraction is warranted.

“Even if a person does not yet have a cataract, clear lens extraction can be effective for those patients at high risk for primary angle closure,” he noted. “But of course, we need to balance the potential benefits of early lens extraction against the risks and can only be done on a case-by-case basis.”

Looking at scenarios where combined procedures may be justified, Dr Tatham said combined phacotrabeculectomy may be an option for advanced PACG, but exercise extreme

caution with small and “hot” eyes (patients with acute primary angle closure glaucoma).

To consider trabeculectomy before performing phacoemulsification in PACG, iridotrabeular contact (ITC) must be addressed first, advised Dr Tatham.

“There may be rare cases where laser iridotomy has reversed ITC, but further IOP lowering is warranted. However, it is best to avoid bleb-forming procedures in nanophthalmos eyes.”

The reality, he said, is cataract surgery in small eyes with angle closure is risky.

“The national ophthalmology database in the UK has shown that shorter axial length eyes have a significantly higher risk of complications,” he said. “And for patients with very small eyes, the risk is even higher.”

Due to the unique ocular anatomy of small eyes, the surgery itself is more complicated to perform, with a high incidence of complex complications such as angle closure glaucoma, fluid misdirection syndrome, and uveal effusion syndrome (UES), Dr Tatham pointed out.

If the surgeon has performed initial phacoemulsification—but the pressure-lowering impact is insufficient, and a filtering procedure is envisaged—it is advisable to leave as long a gap as possible between the procedures.

“This is because anterior chamber flare has been shown to persist for up to six months after phaco, potentially reducing the success of the filtering procedure,” he said.

There are also some arguments in favour of combining microinvasive glaucoma surgery (MIGS) with phacoemulsification in PACG, but Dr Tatham said the benefit-risk profile needs careful consideration.

“Iridotrabeular contact may cause direct trabecular meshwork dysfunction, which could be overcome by bypassing

the trabecular meshwork. And there is a potential for additional IOP lowering with these approaches,” he said. “I think endoscopic cyclophotocoagulation (ECP) is also something that is potentially interesting because of the anatomical changes it induces. However, we need to bear in mind there is a lack of high-quality evidence concerning MIGS in PACG—and their off-label use—and phacoemulsification alone is often very effective in angle closure. There is also a high risk of synechia formation where people use implants.”

## Is there a role for Phaco-MIGS in PACG?

### For

- Iridotrabeular contact may cause TM dysfunction which may be overcome by TM bypass
- Angle often open after phaco
- Potential for additional IOP lowering
- ECP promising mechanism

### Against

- Lack of high quality evidence
- Off label
- Phaco alone is more effective in PACG than in POAG
- Higher risk of implant-related synechia



# Mining the Rich Seam of Corneal Registries

DERMOT MCGRATH REPORTS

National and international corneal transplant registries such as the European Cornea and Cell Transplantation Registry (ECCTR) are extremely valuable resources in determining the real-world success rates of different keratoplasty techniques and enabling benchmarking to drive quality improvement and reduce healthcare costs, among other benefits, according to Professor Mor M Dickman.

“Measuring is the basis for improvement: If we don’t know where we are in terms of our results and we have no basis for comparison with others, how shall we ever improve?” he said. “Registries such as ECCTR provide us with an opportunity to benchmark outcomes against colleagues in our clinic, country, and even across Europe. They provide a safe environment to learn from peers and encourage and incentivize improvement to benefit doctors and patients.”

Established in 2016, the ECCTR has now collected data on more than 20,000 transplants from 15 European countries, including information on the recipient, donor, and eye bank processing; transplant procedure; and two-year follow-up, including graft survival and failure and patient-reported outcome measures (PROMs).

Registry data such as that contained in the ECCTR constitutes a mine of valuable information that benefits practitioners and patients, Prof Dickman said.

Some key findings from the ECCTR include a mean recipient age for a corneal graft of 70 years, with Fuchs’ endothelial dystrophy as the primary reason for corneal transplantation, followed by graft failure, pseudophakic bullous keratopathy, and keratoconus.

“We can see that patient age changes according to diagnosis, with keratoconus patients considerably younger than Fuchs’ patients,” he said. “Patients with pseudophakic corneal oedema tend to be the oldest patients in the registry.”

Although, historically, Descemet’s stripping automated endothelial keratoplasty (DSAEK) was the dominant transplant procedure—followed by penetrating keratoplasty and Descemet membrane endothelial keratoplasty (DMEK)—the landscape has changed in recent years with DMEK now the dominant procedure.

“The adoption of deep anterior lamellar keratoplasty (DALK) remains limited, primarily due to increased cross-linking for keratoconus and the lack of specialised expertise in many centres,” Prof Dickman said.

The registry also highlighted that the primary objective of

corneal transplantation is to improve vision, although other factors such as pain reduction, globe integrity, and infection debulking remain important objectives.

While the overall two-year transplant survival in the registry is 89%, Prof Dickman said survival is dominated by recipient diagnosis.

“Grafts performed for Fuchs’ dystrophy have better survival rates than grafts performed for bullous keratopathy,” he said. “Repeated grafts have a relatively poor prognosis, unfortunately.” Other poor prognostic factors are neovascularisation and a history of rejection.

## While the overall two-year transplant survival in the registry is 89%, Prof Dickman said survival is dominated by recipient diagnosis.

The past decades have seen a profound shift to endothelial keratoplasty (EK). Nevertheless, the real-world data emerging from the registry indicates survival rates may not be as impressive as initially thought.

“What we have learned is that endothelial keratoplasty outcomes vary a lot. Looking at data from the Netherlands, we found a one-year graft survival of only 85% after DMEK compared with 95% for DSAEK. Almost all failures occurred in the first few months after surgery,” he said. “Although graft survival improved over time, for novice surgeons, a quarter of cases failed in the first few months after surgery.”

Going forward, Prof Dickman outlined the potential of registry-based randomised trials to try to inform best clinical practice in terms of corneal transplantation. One such trial currently underway compares two steroid regimens—dexamethasone and fluorometholone—in IOP elevation and endothelial cell loss. The trial will also evaluate cost effectiveness, with indefinite follow-up ensured via the registry data and in line with evidence-based medicine guidelines.

# Learn to Juggle Management Roles

Leadership and Business Innovation Masterclass aims to expand the skill sets of all ophthalmologists.

**W**hether running a private or public clinic, conducting medical research, or developing new technologies, building a successful ophthalmology practice requires mastering skills beyond those taught in medical school. Juggling multiple management roles in a rapidly changing environment is the focus of this year's Leadership and Business Innovation Programme Masterclass at the 2023 ESCRS Congress in Vienna.

Designed for all ophthalmologists, the interactive event features clinicians from across Europe sharing what they've learned building and managing successful practices, departments, and companies. "The panel members are in ophthalmology practice today, living this in the trenches, not just pontificating from on high. It will be an open exchange of ideas, not just lectures," said session co-organiser and ESCRS consultant Kristine Morrill.

## Breakout sessions will include:

**Finding your hidden CEO.** Dr Omid Kermani and Dr Daniel Kook, who both launched successful clinics with partners in Germany, will share their insights into developing leadership skills needed to lead from opposite ends of the career journey.

**Money management—Balancing profitability with patient care.** Dr James Ball discusses his process of balancing the costs with the added patient benefits of building a cataract surgery suite in his office in the UK.

**Human resource mistakes and what we learned from them.** Dr Paul Rosen, who ran a large public ophthalmology

department in the UK, and Kris Morrill, who manages an ophthalmology business consulting firm in France, discuss their experiences with human resources.

**Ophthalmologists as inventors—Moving from idea to reality.** This panel includes three who moved their inventions from idea to product. Dr Florent Costantini developed Glasspop, an automated subjective refractor in France; Dr Nick de Pennington talks about Ufonia, an AI-based system for following up with patients by phone in the UK; and Dr Robert MacLaren, also from the UK, covers his work with Nightstar Therapeutics/Biogen developing gene therapies.

**Understanding the EU regulatory environment.** Dr Michael Mrochen of Switzerland will walk colleagues through current regulations for clinical studies, such as GDPR, MDR, and compliance with Good Clinical Practice and local ethics committee review. He will also discuss quality management, including ISO:9001 compliance and certification.

**Embracing creativity.** A hobby that makes the ophthalmologist happy and provides a different perspective on life is critical to be an effective surgeon, businessperson, and family member. Dr Damien Gatinel of France presents his music and photography, Dr Detlef Holland of Germany talks sailing, and Dr Florian Auerbach of Germany chats about visual arts.

The Masterclass will take place from 08:30 through 17:30 Sunday, 10 September 2023, at the Messe Wien venue in Vienna, Austria.

**Juggling multiple management roles in a rapidly changing environment is the focus of this year's Leadership and Business Innovation Programme Masterclass.**





## Get into the Jazz Groove in Vienna

Jazz fans won't want to miss the ESCRS-endorsed charity jazz concert on 10 September during the ESCRS Congress at Vienna's Jazz and Music Club Porgy & Bess.

**T**he band includes two ophthalmologists, Dan Reinstein on tenor and soprano sax and Thomas Pflieger on guitar. Other members include Stefan Pelzl on alto sax and flute, Wolfgang Schuller on bass, Robert Schönherr on piano, Werner Mras on drums, Stefanie Pitsch on vocals, and Toni Burger on violin.

The concert was arranged by JAZZMED 4 Life, a group of dedicated physicians who have put their performances at the service of charitable organisations or projects since 2006. Proceeds from the benefit concert will be donated to Light for the World, an international organisation that saves sight and empowers people with disabilities in Africa.

### Get your ticket now!

Date: Sunday, September 10, 2023 from 20:30 hrs.  
 Porgy & Bess, Riemergasse 11, 1010 Vienna  
 Tickets: € 28,00  
[tickets@porgy.at](mailto:tickets@porgy.at)  
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# New EGS Guide Updates Information on Surgical Options

**G**laucoma Day offered a full range of topics, from innovations in glaucoma surgery to how to handle post-phaco complications. The European Glaucoma Society used the occasion to debut a new book, *A Guide on Surgical Innovation for Glaucoma*, giving all attendees a free copy.

Two years in the making, the book is the result of systematic work by a panel of European glaucoma specialists led by three editors—Dr Luís Abegão Pinto (Lisbon), Dr Ingeborg Stalmans (Leuven), and Dr Gordana Sunaric Mégevand (Geneva).

The book is a response to the many innovations in glaucoma surgery in recent years. It allows readers to familiarize themselves with current procedures—both the minimally

invasive glaucoma surgeries (MIGS) and bleb-forming devices—providing detailed descriptions of each, a summary of existing literature, and information on complications and caveats. In addition to telling readers what is out there, it addresses a need to create benchmarks for clinical trials to provide better data for comparing the risks and benefits of traditional and novel surgical interventions.

“The *Guide* offers an overview of the existing minimally invasive glaucoma surgery techniques but also aims to provide the reader with the tools for interpreting surgical studies,” said Dr Pinto, EGS Secretary. “Finally, or should I say, critically, it also aims to provide the standard for research on the field, hopefully raising the bar for future clinical trials.”

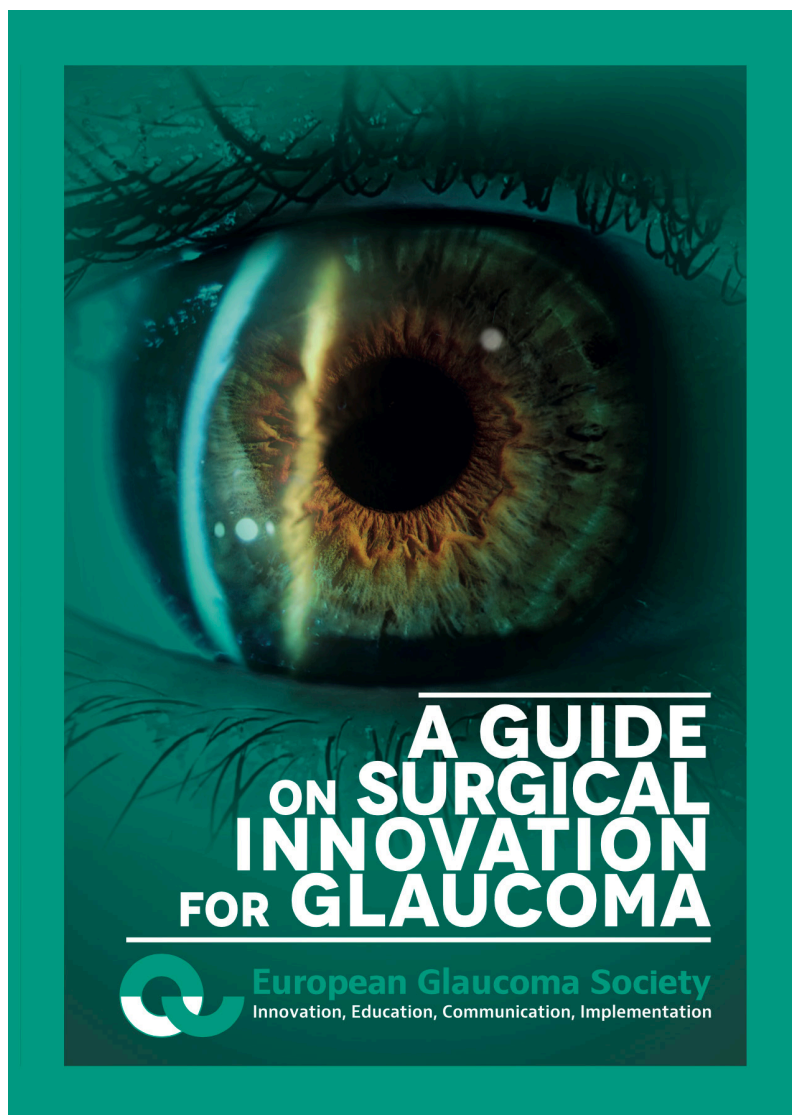
The editors gathered more than 250 questions from 50 European glaucoma specialists in 18 countries to name the top 10 clinical questions facing glaucoma surgery, which then went under systematic review. Where sufficient high-quality data was available, the editors included it but provided consensus statements based on clinical experience when sufficient data could not be found.

**We are not telling people what to do. We want to provide doctors with the data and the tools to make their own decisions.**

“We are not telling people what to do. We want to provide doctors with the data and the tools to make their own decisions,” Dr Pinto explained. “This book is intended to offer guidance for interventions popular enough to be widely used while avoiding bias towards techniques that are currently niche techniques.”

An important goal of the book is to create a framework of common standards for surgical trial design and reporting, making it easier to compare and judge future clinical studies using established benchmarks, he added.

The book will soon be available on the EGS website, [www.egs.org](http://www.egs.org).





# UNCOVER MORE >

# SATELLITE SYMPOSIUM

**Tomorrow: Sunday, September 10<sup>th</sup>:**

**9:30 am – 10:30 am, Room A5**

## **Mastering Vision Precision: Enhancing IOL Power Prediction with High-Resolution Anterior Segment Imaging**

*Moderator: **Steven Thomson (Heidelberg Engineering)***

**Steven Thomson** (Heidelberg Engineering): Mastering Vision Precision: Enhancing IOL Power Prediction with High-Resolution Anterior Segment Imaging

**Alain Saad** (Paris): PEARL-DGS; A Machine learning-based, thick lens IOL Calculation Method

**Damien Gatinel** (Paris): An Objective Cataract Grading System Based on SS-OCT and Deep Learning

**Kjell Gunnar Gundersen** (Haugesund): Refractive Predictability and Biometry Agreement of a Combined Swept Source Optical Coherence and Reflectometry Biometer Compared to an Optical Low Coherence Reflectometry Biometer and an SS-OCT Biometer



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**HEIDELBERG  
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# ESCRS Launches Cat Pack Tool

Wondering how your cataract pack affects the environment? ESCRS has launched an online tool to help you find out.

The modern cataract pack (“cat pack”) is a case study in the benefits of customisation and efficiency. But what the cat pack saves in staff time, it more than wastes in terms of environmental impact. Items that go unused or used just once, heavy packaging materials, plastics that are difficult to recycle—the cat pack has them all.

To address this problem, ESCRS has developed a tool for evaluating the sustainability of customized cataract packs used by hospitals and surgical centers. The tool is the result of the SIDICS Project, an ESCRS-led initiative to create metrics to evaluate the overall sustainability of cat packs. Use this four-step process to see how your packs compare with the ESCRS benchmark recommendation and where there is a potential for CO<sub>2</sub>.

1. Enter the number of cataract packs you order annually.
2. Choose items for your pack from the list to see its CO<sub>2</sub> footprint and how it compares with the ESCRS benchmark.
3. Adjust the components and learn how much CO<sub>2</sub> you save.
4. Use the final list for ordering cat packs in the future.

Using SIDICS can have a profound impact on the amount of medical waste generated by cataract and refractive surgeries. The annual carbon footprint of cataract surgeries in Europe is equivalent to that of 410,000 cars per year. Reducing the size and weight of cat packs and reusing more of their components—as is done in India, for example—can significantly reduce their carbon footprint.

“It is important that ESCRS continues this conversation once the index is developed, making sure hospitals use it and the exchange with industry keeps happening,” says Ereik Stoisser, co-founder of SDI\*Rating, which worked with ESCRS to develop the tool. “Generating greater awareness of sustainability issues among all stakeholders and highlighting further ways the eye care industry can be improved is the key to ensure long-term systemic change. This way, doctors will become more aware of the impact their purchasing decisions have, and the industry will be encouraged to design more sustainable products.”

Note for industry: You can add your own product alternatives and their CO<sub>2</sub> information to see how it changes the carbon footprint of cataract packs.





# ESCRS SYMPOSIUM

## NEW TRENDS IN THE TREATMENT OF PCO, GLAUCOMA AND DRY EYE

**SUNDAY SEPTEMBER 10<sup>TH</sup> 2023**  
**09:30 am to 10:30 am**

### PROGRAM

**ROOM STRAUSS 2**



**Moderator:** Prof. Mario DE LA TORRE (France, Peru)

### CATARACT



**Premium Capsulotomy After Premium Cataract Surgery**  
Prof. Béatrice COCHENER (France)

### GLAUCOMA



**Overcoming barriers to SLT as first-line therapy for POAG & OH**  
Prof. Gus GAZZARD (UK)

### DRY EYE

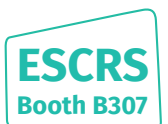


**Dry eye: New Diagnostic and Therapeutic Tools in 2023**  
Prof. Pablo DIGHIERO (France)



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# What is the Potential Role of AI in Ophthalmology?

BY ARUN JAMES THIRUNAVUKARASU MD

Ophthalmology is at the forefront of medical artificial intelligence (AI) innovation. Through deep learning—where artificial neural networks are trained to process unstructured data such as images and text—many models have been validated for use with fundus photography, optical coherence tomography (OCT), and electronic patient records to augment diagnosis, management planning, and risk stratification. Opportunities abound, but risks and limitations must be considered and ameliorated to ensure that AI benefits patients and practitioners.

## Opportunities for development

Some AI tools have already undergone validation and acceptance by regulatory authorities such as the US FDA or EU MDR. Progress has been greatest in models for diabetic retinopathy (DR) screening, such as IRIS and IDx-DR. For these tools, the aim for development is cost-effective and clinically successful implementation. Economic modelling and systems analysis suggest these models are best used alongside clinicians rather than as a replacement—negative marginal revenue was recorded following autonomous deployment of IDx-DR in the US, but semi-automation (AI triage followed by human assessment) was shown to be cheaper than autonomous deployment or humans working without AI in Singapore. Benefits of implementation are likely to be greater where human resources are more strained, such as in lower-income countries where access to ophthalmologists is more limited: Cybersight and ARDA have been used to good effect for DR screening of hundreds of thousands of patients

in India, Rwanda, and Thailand. Further work is necessary to identify how other models should be incorporated into ophthalmology services.

However, even where there is better access to care, resources are strained, with waiting lists ballooning around the world in the wake of the COVID pandemic. Deployment of AI systems may help address these issues. Large language models (LLMs) exhibit limited ophthalmological knowledge and are unlikely to be deployed as autonomous agents, but they can serve to improve the efficiency of cognitive work by rapidly assimilating information from disparate sources such as clinic notes, correspondence, and investigations. As multimodal LLMs such as GPT-4 (OpenAI, San Francisco, California, US) and PaLM 2 (Google LLC, Mountain View, California, US) emerge, functionality is set to increase—models can now cope with the rich variety of image-based ophthalmological investigations in addition to large volumes of text. Multilingual models may reduce the requirement for translators and improve communication, improving the equity of service provision with patients of different backgrounds. If doctors can delegate time-consuming administrative work to AI assistants, more time can be used to treat patients, improving quality of care and alleviating service pressures.

## Risks and limitations

There are a wide range of barriers to AI development in ophthalmology. AI introduces new risks and concerns requiring discussion: cybersecurity (Are AI models using patient data safely, away from adversarial attack?), medicolegal

issues (Who takes responsibility for decisions made or contributed to by AI?), and the evolving patient-ophthalmologist relationship as computer systems begin to play a larger role in decision making. Other barriers to implementation are more general. Quality of care is of paramount importance, and robust validation is essential to ensure that models are implemented based on true benefit rather than mere hype. There is room for improvement here, as a 2020 systematic review found just one randomised control trial testing deep learning systems against ophthalmologists, despite an exponentially growing literature base. Financial, infrastructural, and human resource demands are significant for AI systems, particularly for initial implementation, and it is necessary to consider whether other interventions may represent a more cost-effective means of improving patient outcomes.

These multifaceted considerations are complicated. To ensure that a fair and optimal outcome is reached for all stakeholders, it is critical that patients and practitioners are consulted. Policy-makers must retain neutrality when working with innovators who often have conflicts of interest. Technological limitations must be acknowledged—AI is not a panacea—and evidence-based decisions made regarding precisely where models should (and should not) be deployed. These decisions also depend on ethical considerations, as society must reach a consensus on how AI systems should be incorporated into healthcare systems.

### Conclusion

AI systems offer exciting opportunities to automate repetitive cognitive tasks in ophthalmology, such as assimilation, interpretation, and production of data relating to clinical documentation, investigation results, and management planning. Automatic DR screening has demonstrated this potential as validated models with regulatory approval are changing clinical practice internationally. Models corresponding to a wide range of other diseases and input modalities are well-established, and implementation is expected to result in significant changes to how eye care is delivered. Policymakers must engage closely with stakeholders to ensure that risks and limitations are mitigated so AI systems work for the greatest possible benefit.

*Dr Thirunavukarasu submitted this essay to the John Henahan Writing Prize essay contest, answering the prompt "What is the potential role for AI in ophthalmology and what are the negative implications and caveats?". It was rated in the top 5 of 41 essays submitted by the medical editorial board of EuroTimes. Dr Thirunavukarasu is an Academic Foundation Doctor at the University of Oxford, UK.*



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# IOL Match is a Surgeon's Helping Hand

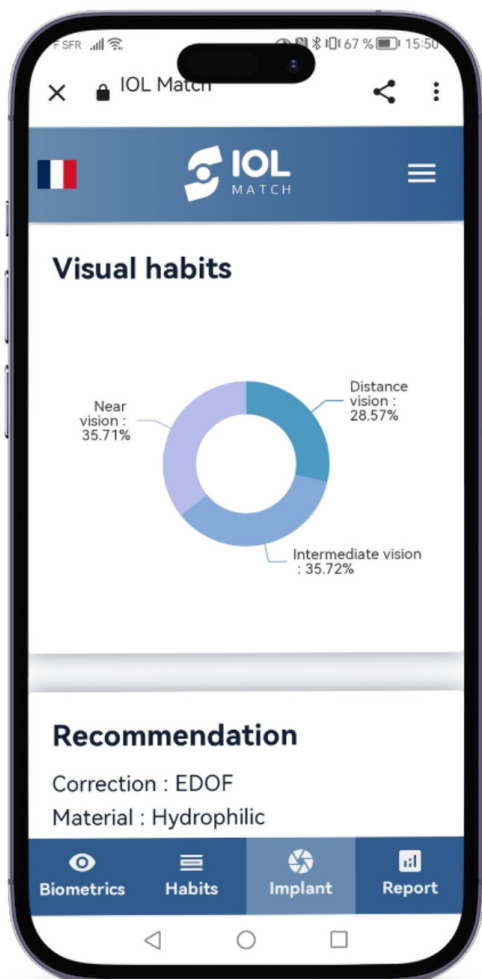
A free app for iOS and Android to enhance patient care journey.

A free-to-use, simple and constantly updated application for iOS and Android could soon be available as a helping hand in selecting the best IOL based on the patients' needs.

Created by Drs Gilles Lesieur and Paul Dupeyre, IOL Match is a straightforward application that selects and compares the best options amongst several types of intraocular lenses based on patient parameters.

"It started with a defocus curve on an Excel sheet," Dr Lesieur said. "We wanted to develop something to give our patients the best choice for the best results, so at the beginning of 2022, we decided to take a step forward from the spreadsheet phase and create an application out of it."

"There is a jungle of different optics on the market, and this could make it difficult to choose the best lens for a patient," Dr Dupeyre explained. "Our goal is straightforward: we want to identify the best-fit IOL for each patient's ocular parameters and visual behaviours."



According to Lesieur and Dupeyre, automating the decision-making procedure through algorithms makes it possible to enhance the patient care journey.

"One of the main features of IOL Match is a decision-making protocol functioning as a comprehensive checklist, with a very precise lifestyle questionnaire and some crucial parameters that are generally overlooked," Dupeyre explained. "The application will then provide some intelligent recommendations of the most suitable implants based on the data collected, comparing different defocus curves for different IOLs," Lesieur added.

Finished with beta development, IOL Match will undergo beta testing to gain enough feedback for an optimised definitive version.

**The data will then be anonymised and implemented, while the application will constantly improve to keep up with the most recent advancements.**

"This application will benefit from collaborative development, with surgeons from France and around the world helping to improve the application," Lesieur said. "We are also developing a protocol for collecting user experience data."

The official release does not mark the end of the updates. Dupeyre explained each surgeon will have a dedicated user account, allowing them to personalise specific parameters based on their practices. "The data will then be anonymised and implemented, while the application will constantly improve to keep up with the most recent advancements."

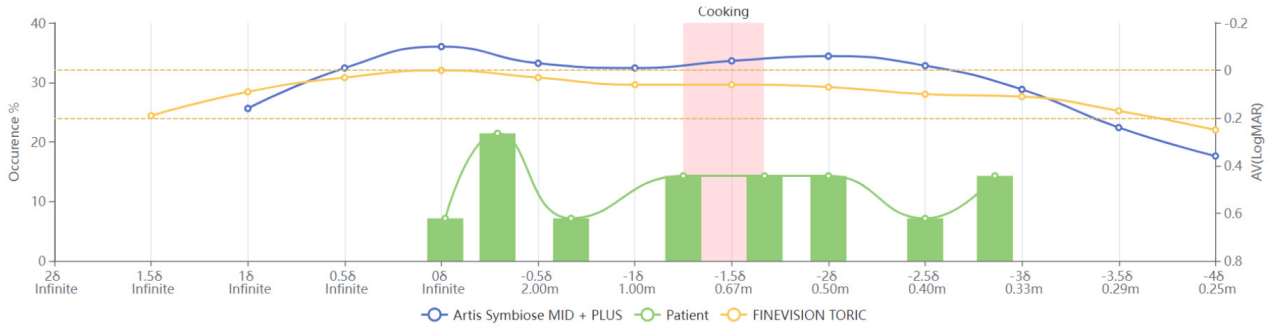
Set to release in Q1 2024, IOL Match will be completely free on Android and iOS platforms. Once released, Lesieur observed it will only refine its abilities—as more data comes in, the more data will improve the program. This data "is crucial to keep the application updated."

"We want to improve the quality of life of patients, so we want this app to be as widespread as possible," Dupeyre added.

"It is the twenty-first century: if you want to have an impact and contribute to the evolution of ophthalmology, you will need to go collaborative. Freely. This is my way of thinking and why I decided to provide the app for free," Lesieur concluded.



Source (BVI)  
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## Transformational Cell Therapy for Corneal Endothelial Disease

Greg Kunst, CEO

September 2023

# Transformational Cell Therapy

Meeting the need for corneal endothelial disease treatment.

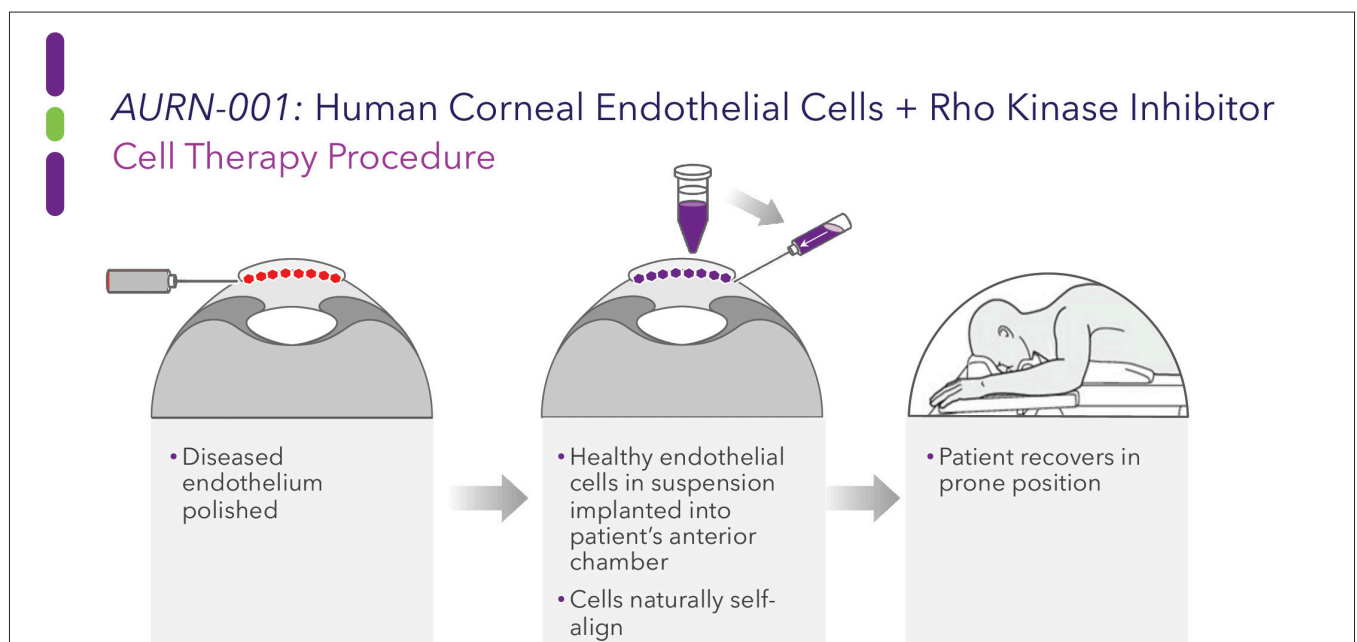
SEAN HENAHAN REPORTS

The iNovation session highlighted some of the most exciting treatments for eye disease now entering the clinic. In the cornea session, Aurion Biotech CEO Greg Kunst briefed attendees on AURN001, a cell therapy for treating corneal endothelial disease.

Based on the pioneering clinical research of Professor Shigeru Kinoshita, the procedure involves taking a donor cornea, stripping out corneal endothelial cells, and growing

them in the lab. The healthy endothelial cells in suspension are implanted into the patient's anterior chamber, along with a Rho kinase (ROCK) inhibitor compound. The cells naturally align, and the patient recovers in a prone position over several hours.

ROCK inhibitors impede apoptosis and promote endothelial cell proliferation, adhesion, and migration. They play a role in many of the new treatments for endothelial



## These treatments were a big step forward but are challenging and complex invasive surgeries.

disease and are thought to enhance the results of endothelial keratoplasty, Descemet stripping only (DSO), and Descemet membrane transplantation (DMT).

Corneal endothelial disease treatment has evolved steadily over the years from penetrating keratoplasty to Descemet's stripping automated endothelial keratoplasty (DSAEK) to Descemet Membrane Endothelial Keratoplasty (DMEK), with less intervention with each new approach. These treatments were a big step forward but are challenging and complex invasive surgeries. Recovery is onerous, requiring patients to lie flat for up to three days. Because of bubbling failures and other issues, some patients may eventually need a full graft.

Other problems remain. First and foremost, the world-wide supply of donor corneas will never meet the increasing demand, with one donor cornea available for every 70 eyes in need. Aurion's approach offers the promise of treating 100 patients with cells derived from a single donor cornea.

In the first published trial of endothelial cell therapy in humans, Prof Kinoshita and colleagues report 11 bullous keratopathy patients received intracameral injections of in vitro expanded corneal endothelial cells treated with a ROCK inhibitor, followed by prone positioning for three hours to achieve attachment to recipient corneas.<sup>1</sup> After 24 weeks, corneal oedema regressed, and corneal endothelial cell density exceeded 500 cells per square millimetre (range 947 to 2,833) in all eyes. Vision improved by two lines or more in 9 of the 11 patients, and the results were stable for up to 24 months.

Japan's PMDA has approved the Aurion cell therapy for treating bullous keratopathy of the cornea, making it the first-ever approval of a cell therapy to treat corneal endothelial disease.

1. *N Engl J Med.* 2018; 378: 995–1003.

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## Evaluate OSD at Every Stage of Surgery

CHERYL GUTTMAN KRADER REPORTS

**C**ataract surgery ranks as one of the safest and most effective types of surgical procedures, but eyes with ocular comorbidities present specific challenges.

In the opening session of Cornea Day, speakers discussed considerations regarding evaluation, preoperative management, and surgical planning in cases of eyes presenting with cataract and various ocular comorbidities.

Professor Allan R Slomovic (Canada) began the programme with a presentation on cataract surgery in patients with ocular surface disease (OSD), noting it is a very common situation encountered in daily practice given its prevalence in the typically elderly cataract population.

“It is very important to diagnose and manage OSD prior to cataract surgery, as not doing so can result in postoperative refractive surprises due to inaccurate keratometry and biometry and worsening of the dry eye disease, leading to patient dissatisfaction with their surgery,” Prof Slomovic cautioned.

“The ophthalmologist’s role is to optimise the ocular surface prior to and after surgery and set realistic expectations. Explain to the patient that they have two separate problems—their cataract and their OSD. Explain that the OSD must be treated first to get optimum results from the cataract surgery.”

He reviewed best practices for managing patients with common ocular surface problems: pterygium, epithelial

basement membrane dystrophy (EBMD, or Salzmann’s nodular corneal degeneration), and dry eye. As take-home messages, he recommended surgical intervention before cataract surgery in eyes with a pterygium (i.e., removal) and in those with EBMD/Salzmann’s nodular corneal degeneration (i.e., superficial keratectomy). Then, surgeons should wait six to eight weeks for the ocular surface to heal before performing preoperative biometry and cataract surgery.

For patients with dry eye disease, Prof Slomovic explained how preoperative management is necessary to maximise refractive outcomes. In addition, he cautioned about the use of NSAIDs postoperatively in select patients with dry eye.

“I will use a steroid and not an NSAID if a patient has significant dry eye disease because, in that setting, I have personally seen they can result in corneal ulcers, melting, and even perforation,” Prof Slomovic said.

### Facing the patient with Fuchs’

Fuchs’ endothelial corneal dystrophy (FECD) is another ocular condition that is commonly comorbid with cataract, said Dr Bjorn Bachmann (Germany).

“These are diseases of the elderly population, and we know the share of people aged 65 years and older will increase by more than 50% in the next 30 years,” he said. “So, there is a significant and growing population of patients with cataract and corneal endothelial disease.”



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In deciding how to approach patients with comorbid cataract and FECD, surgeons need to consider if both diseases truly require surgery. The answer can be difficult, however, considering existing classification systems do not always correlate well with the visual impairment patients are experiencing, Dr Bachman said.

Furthermore, there is no way to predict whether the corneal endothelial disease or cataract will progress over time following an approach in which solely cataract surgery or endothelial keratoplasty is performed, respectively, he added.

Dr Bachmann discussed three options for approaching patients with comorbid cataract and FECD: combined surgery, sequential surgery beginning with the cataract procedure, and sequential surgery beginning with Descemet membrane endothelial keratoplasty (DMEK). He reviewed the advantages and disadvantages of each, along with ideas about candidate selection and approaches for IOL calculations.

Summarising his key points, Dr Bachmann said, "Patients with pronounced corneal oedema and cataract benefit from rapid success with combined surgery. For presbyopic patients with mild corneal oedema and mild cataract, consider DMEK first, especially in patients who have extreme demands regarding refraction. Do cataract surgery first in patients without visible corneal oedema. And every time you do the IOL calculations, consider the post-DMEK change in the posterior corneal curvature."

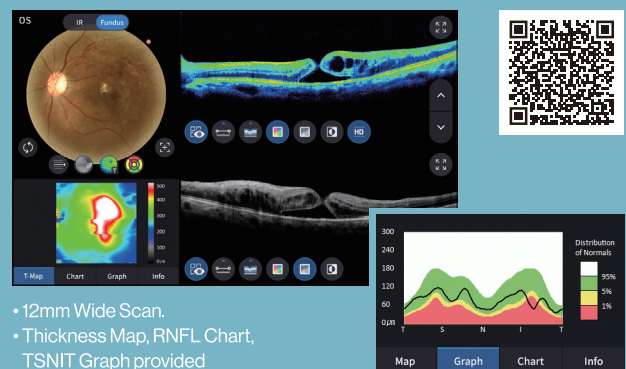
## More on IOL decisions

Several presentations in the session focused specifically on IOL planning in complex eyes. Dr Adi Abulafia (Israel) addressed eyes with keratoconus, noting IOL power calculation is challenging in eyes with keratoconus and that toric IOLs can be suitable for selected patients. He recommended using several devices for obtaining the preoperative measurements and several keratoconus-specific formulas for IOL power calculations.

"The most important message is that patient counselling is critical. Underpromise and overdeliver," he said.

In other presentations on IOL decisions, Dr Ruth Lapid-Gortzak (Netherlands) spoke about the use of multifocal or extended depth of focus IOLs in eyes with a history of corneal refractive surgery. Speaking on behalf of Dr Massimo Busin, Dr Angeli Christy Yu (Italy) discussed toric and multifocal IOL implantation in eyes with FECD.

The session also included talks by Dr Damien Gatinel (France) on optics in the diseased cornea, and by Dr Luigi Fontana (Italy), who spoke about deep anterior lamellar keratoplasty after infectious keratitis.



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# OmniVu Accommodating IOL Moving Toward Market

HOWARD LARKIN REPORTS

**A**fter promising results in a first-in-human trial of its accommodating IOL (AIOL), Atia Vision aims to submit an application in the second half of 2024 to begin clinical trials for registration with the US Food and Drug Administration, Dr Dee G Stephenson said at the second ESCRS iInnovation Day.

The OmniVu is a modular AIOL intended to simulate the natural accommodative action of the eye. It consists of a fluid-filled base optic that changes shape and refractive power in response to the contraction of the ciliary muscles and a fixed, exchangeable anterior optic targeting the patient's refraction. The goals are to achieve refractive predictability and stability, restore full functional vision range, and preserve natural vision quality while reducing visual disturbances, Dr Stephenson added.

In a study involving 25 eyes of 18 patients, refractions were stable six months after surgery, with 95% of implanted eyes within 0.50 D of plano, Dr Stephenson reported. "That's a really stable refraction."

Visual acuity was also excellent at all distances, yielding vision of 20/32 or better over about 4.00 D of defocus binocularly and 2.75 D monocularly. Mean uncorrected distance visual acuity was 20/16, with distance-corrected intermediate vision of 20/20 and near vision of 20/32, or J2. Contrast sensitivity results are promising, and endothelial cell densities are comparable to existing lenses.

Importantly, imaging confirmed the posterior optic does change shape under accommodative effort, suggesting a true accommodative mechanism of action. "We have that data, and we have videos," Dr Stephenson said in response to a question from session panellist Dr Ramin Khoramnia.

The lens is implanted in normal cataract surgery, with the base injected into the capsular bag through a manual capsulorhexis of 5.5 mm. Even though the base optic requires enlargement of the incision to 3.5 mm, no clinically significant surgically induced astigmatism was detected in the study, Dr Stephenson said.

Composed of biocompatible silicone, the base optic completely fills the capsular bag and is designed to keep the platform stable. It has a groove into which the edge of the capsulotomy snaps and blue tabs along the periphery to help position it in surgery. No sutures are required to keep the lens stable afterwards or to close the wound.


The bag-filling design also reduces the risk of posterior capsule opacification (PCO). Only 1 of 25 eyes required a posterior capsulotomy for PCO during the study period. Dr Stephenson said the base optic stayed in position and continued to function after the capsulotomy.

The anterior optic is hydrophobic acrylic and can be replaced if the patient is not happy with their vision. "Exchangeability is just an awesome part of this lens," Dr Stephenson said.

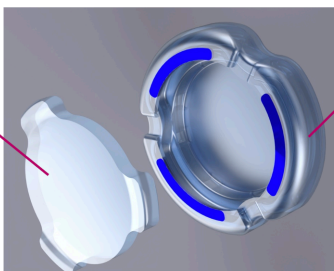
A toric anterior option is also in the works to correct astigmatism.

**In a study involving 25 eyes of 18 patients, refractions were stable six months after surgery, with 95% of implanted eyes within 0.50 D of plano.**

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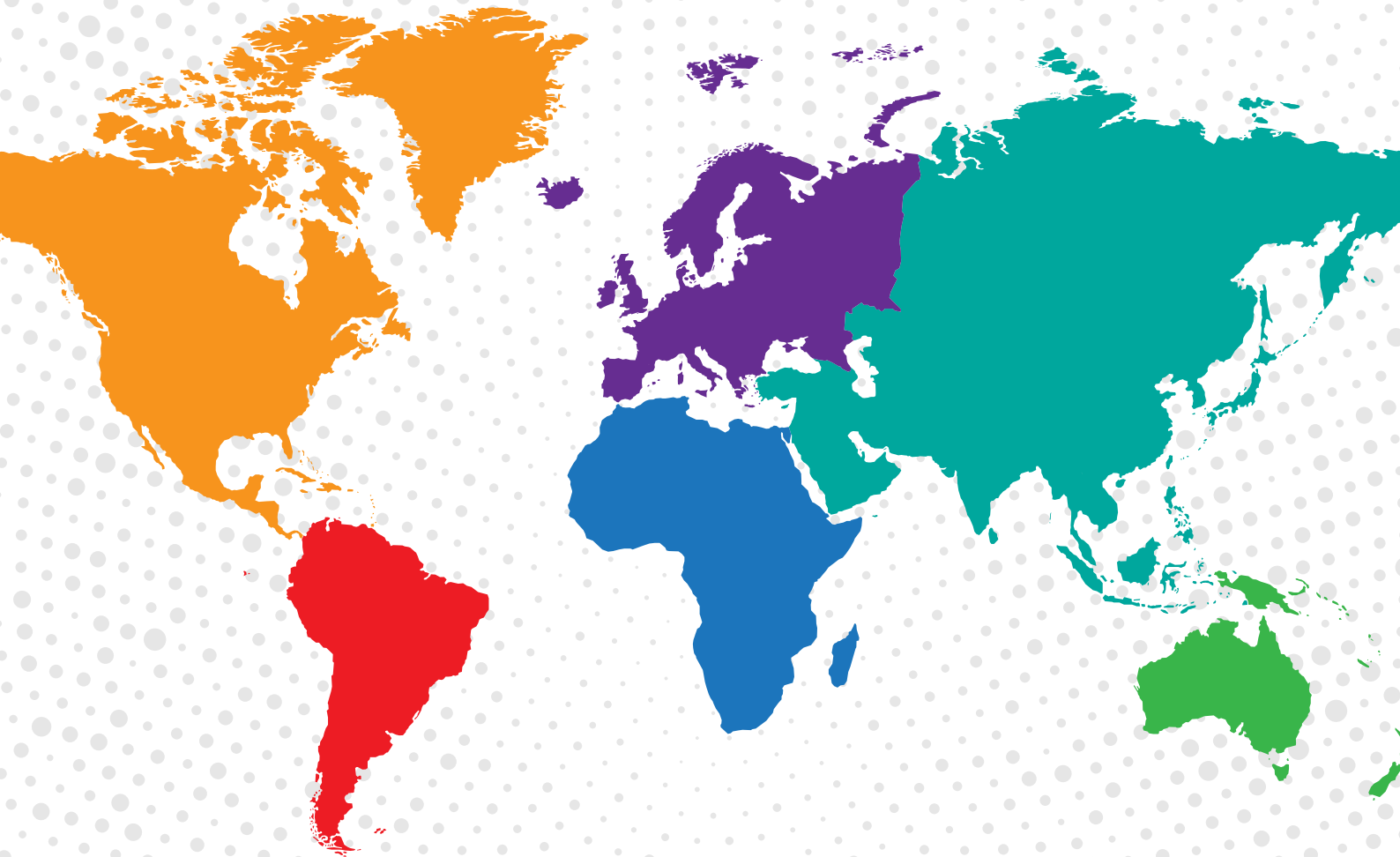
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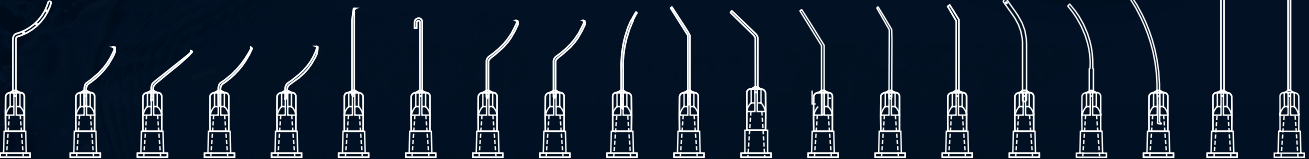


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## Cost Versus Benefit May Determine Future of Digital OR

HOWARD LARKIN REPORTS

**E**merging digital technology holds the potential to improve surgical outcomes, increase workflow efficiency, train more surgeons to meet exploding global demand, and eventually even lower costs. But the substantial upfront cost of developing and deploying digital technology—and who will pay it—remains a significant barrier, according to panellists at a session on the future of the digital operating room at the second ESCRS iNovation Day.

“Digital visualisation will be a really important factor. It’s not only about ergonomics for the surgeon: it’s about teaching, it’s about good documentation, and it’s especially about getting a lot of information into the visual field of the surgeon,” said Professor Oliver Findl in an introductory video. The session examined several aspects of what will be needed to fulfil the potential of the digital OR.

### Impact of the digital OR

Streaming digital technologies that identify patients using biometric data gained in preoperative tests, project guides for toric lens alignment and other purposes, and live OCT and other imaging data are already available intraoperatively, noted session co-chair Professor Burkhard Dick. But uptake is limited, with only about 15% of surgeons using digital intra-

operative marking systems. Infrastructure that supports data access and integration—and trust in technology to improve patient care—will be key for reaping the potential benefits in the short term, panellists said.

“Data is becoming more and more important in the OR, interconnectivity of systems is becoming more important,” said Zeiss’s Frank Seizinger. “The systems are talking to each other; a biometry system is talking to a microscope, is talking to a phaco machine, and giving the surgeon all the information on demand as they need it.” Over the next 10 years, integrating this type of clinical data will drive better outcomes and efficiency in the clinic. Adding digital patient questionnaires can shed light on patient needs and medical histories help improve decision-making. In addition to improving patient outcomes and satisfaction, such information could help increase workflow efficiency and throughput, he noted.

Alcon’s Seba Leoni added that reducing variability is paramount in cataract surgery, particularly with premium lenses. “The ability to have highly reliable diagnostic devices that ultimately enable seamless computation of the data and transmission into the operating room in a visual manner that allows for image guidance can really help improve surgeon precision, reduce variability, and deliver that [desirable]



surgical outcome.” He cited research showing improved outcomes for surgeons who use digital markers rather than ink markers for aligning toric lenses, with a difference of about three degrees of alignment. Digital markers also eliminate the extra step of manually marking the astigmatism axis, increasing efficiency, Leoni added.

“Digital marking is a no-brainer that improves efficiency and outcomes,” said session co-chair Dr David Chang. So why isn’t it used more?

Among the challenges have been connectivity issues, Leoni said. A few years ago, when digital markers first appeared, data were mostly transferred by thumb drive. Then local area networks took over, and now the digital cloud. “We are moving in the right direction,” Leoni said. Uptake of existing technology roughly correlates with market penetration of premium lenses, suggesting that those with the biggest stake in increased precision are most likely to use it.

Dr Roger Zaldivar sees integrating digital data as essential to keep up with growing demand for services. He sees simplifying processes for not only doctors but also their staff as the key to improving efficiency and outcomes.

Dr Chang noted that most digital technology is predictive, leading to better outcomes through better preparation and execution. He cited the Light Adjustable Lens that can digitally change refraction after surgery as an extension of the digital OR that improves outcomes. “It’s a little daunting for those of us doing this for so long to think that someone a month out of training can get a fantastic result. ... It’s a nice complement to all the digital technology we have in the OR.”

### Digital visualisation

Improved and augmented visualisation is among the most important potential benefits of the digital OR, said Dr Damien Gatinel. Delicate procedures in the anterior chamber, such as placing endothelial grafts, as well as glaucoma and vitreoretinal procedures, would all benefit from enhanced stereoscopic view. Beyond this, augmented reality features, such as alarms when an instrument gets too close to fragile tissues, could enhance surgical precision and outcomes.

Prof Dick, who has used several advanced visualisation systems, agreed they are extremely valuable for delicate procedures. But cost is still an issue, especially for broader use.

“The systems are beautiful, but they are really expensive. If you are doing cataract surgery, how do you add enough value? What will it take to bring the cost down?” Dr Chang asked.

Improved ergonomics and better visualisation are advantages that once surgeons experience, they do not want to go back, industry panellists said. In addition, the cost of electronics tends to drop over time, which should make visualisation and other digital technologies more affordable as the technology develops, said Heidelberg’s Benedikt Wurm.

### AI and robotics

The prospect of designing and programming a robot that can do everything surgeons can do is daunting, Dr Chang said. He likened the challenge to teaching a helicopter to fly on its

own. No one could program it to anticipate every challenge, but teaching the helicopter how to correct problems as they occurred could make the project successful. “[With] machine learning, perhaps combined with a robotic system, you actually could succeed—that’s what intrigues me about it.”

Dr Zaldivar suggested taking smaller steps toward a robotic future may be the way forward. “For example, why do some surgeons have to retire after a certain [number] of years when they can still control and monitor a robot and still do surgery? There are things we can do heading in that direction.”

## Improved ergonomics and better visualisation are advantages that once surgeons experience, they do not want to go back, industry panellists said.

Dr Gatinel distinguished between autonomous and controlled robotic surgery, noting that while robots can be trained to do very precise procedures such as a capsulorhexis, paradoxically, placing a speculum is more difficult for a machine but easier for a human because the patient is anxious and may move their head in the process. “Removing the human completely? I don’t think is what we want or what patients want.”

Additionally, more and better data from digitally enabled diagnostic and surgical instruments will be needed to support machine learning, Wurm noted. “Digitalisation of the OR gives us an enabling technology to then develop semi-autonomous or even autonomous technologies.” Standardising such data is equally important, Dr Zaldivar said.

### Training and education

AI and robotics also have a role in coaching and training surgeons, Leoni said. Using remote learning, Alcon’s phaco development programme has helped train 4,000 surgeons who have delivered more than 8 million procedures worldwide, he said. More recently, the company is developing a virtual training simulator in which students around the world can join a virtual operating room and look through the microscope as an instructor explains what they are doing in the procedure.

Cost, though, is an issue. However, much technology exists that can facilitate distance learning, including Zoom and inexpensive cameras.

Even so, 60% of participants polled for the session identified cost as the major barrier to implementing digital technology. A combination of reduced costs and proven benefit will be needed to overcome resistance, panellists said.

# Views from *Vienna*

A glimpse into the exciting events unfolding at ESCRS 2023 in Vienna.







# CAN'T-MISS SYMPOSIA

The ESCRS Educational Forum offers a series of comprehensive and interactive symposia that promise an update on ophthalmic practice and technology. The symposia span the four days of the Congress and cover phacoemulsification, refractive IOLs, refractive surgery, glaucoma and MIGS, and the digital operating room. The symposia are as follows:

## **Demystifying Common Misunderstandings with Refractive IOL Procedures**

Saturday, 9 September, 16:30–17:30 CET  
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*Co-chaired by Thomas Kohnen and Rudy Nuijts*

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## **The Future of Refractive Surgery—Lenticle Extraction, Phakic IOLs, and Beyond**

Sunday, 10 September, 09:30–10:30 CET  
Room A3, Messe Wien Exhibition & Congress Centre  
*Co-chaired by Burkhard Dick and Beatrice Cochener-Lamard*

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## **Implementing MIGS during Cataract Surgery for Earlier Intervention in the Glaucoma Patient**

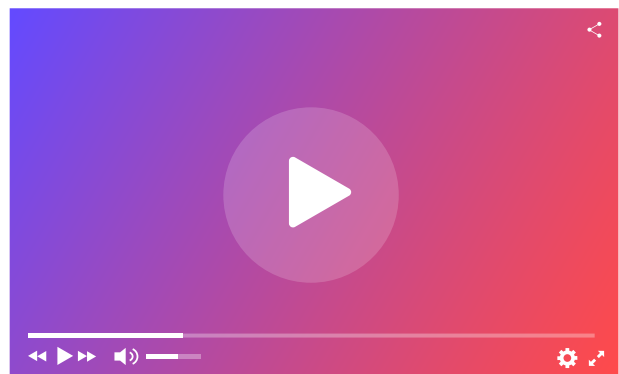
Monday, 11 September, 09:00–10:00 CET  
Strauss 1, Messe Wien Exhibition & Congress Centre  
*Co-chaired by Ike Ahmed and Karsten Klabe*

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## **Integrating the Digital Operating Room into Future Practice**

Monday, 11 September, 13:00–14:00 CET  
Strauss 1, Messe Wien Exhibition & Congress Centre  
*Co-chaired by Oliver Findl and David Chang*

*Space is limited, so please arrive early to secure a seat and receive your audience response device.*



## **ESCRS Video Awards**

The highly anticipated annual ESCRS Video Awards take place tomorrow at 14:00 in Hall A1. In addition to an overall winner, other awards given include categories such as Difficult and Special Cases, Educational, Innovative, Scientific, Historical, and Young Ophthalmologist. An international team of experts will judge the entries. Three prizes will be available in each category. This year, the top three videos are awarded a bursary of €1,000 and complimentary registration for the Congress.





LET'S GET READY TO RUMBLE

# SUSTAINABILITY ARENA

Featuring:

Oliver  
Findl

Ike  
Ahmed

David  
Chang

Burkhard  
Dick

Referee:

Ben  
LaHood

"Is anyone actually doing anything to improve sustainability in ophthalmology, or is it all just talk?! Join us ringside in the ESCRS Arena on Sunday to witness some of the most renowned international surgeons being asked the tough questions from the next generation of ophthalmologists and find out whether they are saving the planet... or saving themselves."







**ESCRS LEADERSHIP & BUSINESS INNOVATION MASTERCLASS,  
SUNDAY, 10 SEPTEMBER. STRAUSS 3, 08.30–18.00**

**The Fine Art of Juggling**

Ophthalmologists must be master jugglers. Most of these skills are learned on the job with no formal training. The expectation is they will manage them all and do them well. In this interactive and didactic workshop, ESCRS Consultant Kristine Morrill and an expert panel will cover topics including **Finding the Hidden CEO, Managing Money, and Encouraging Creativity.**

**08.30–08.40 Welcome**



Paul Rosen, Chair ESCRS Leadership and Business Innovation Committee, Consultant Ophthalmic Surgeon, Oxford Eye Hospital, Oxford University Hospital Foundation Trust, UK; and



Kristine Morrill, ESCRS Consultant and Founder and President, Medevis.

**08.40–10.00 The Hidden CEO**



Omid Kermani, Co-Founder Augenklinik am Neumarkt, Germany; and



Daniel Kook, Co-founder, Prof Kook & Partner, Germany.

**10.00–10.30 Discussion/coffee break**

**10.30–11.30 Money Management—Balancing Profitability with Patient Care**



John Bolger, London.

**11.30–11.45 Discussion**

**11.45–12.45 HR: Mistakes We've Made and How We Learned from Them**

Paul Rosen and Kris Morrill

**12.45–13.30 Lunch Break**

**13.30–14.30 Panel: Ophthalmologist as Inventor—Taking Something from Idea to Reality**



Florent Constantini, Founder, GlassPop, France.



Nick Pennington, Associate Medical Director, Ufonia, UK.



Robert McClaren, UK, Ophthalmologist and Founder, Nightstar/Biogen.

**14.30–14.45 Discussion**

**14.45–15.30 Understanding the EU Regulatory Environment**



Michael Mrochen, Founder and CEO, IROC Science, Switzerland.

**15.30–16.00 Discussion/coffee break**

**16.00–17.00 Panel: Embracing Your Creative Side**



Damien Gatinel, Chief, Anterior Segment, France.



Detlef Holland, Co-Founder, Augenzentrum One, Germany.



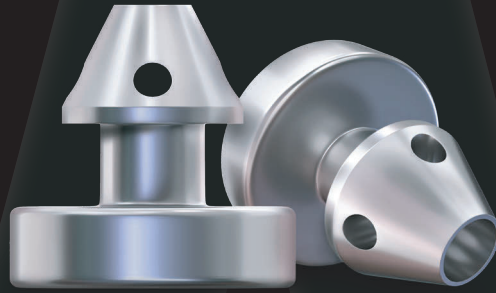
Florian Auerbach, Founder, Private Practice, Germany.

**17.00–17.30: Discussion/Wrap Up**

Faculty, Paul Rosen, and Kris Morrill



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inject® w



# POWERFUL PREDICTABLE PROVEN

## INTERVENE EARLIER WITH ISTENT INJECT® W DELAYING GLAUCOMA DISEASE PROGRESSION<sup>1-8</sup>

81%

OF PATIENTS BELOW  
15MMHG AFTER 5  
YEARS FOLLOW-UP<sup>2</sup>

97%

OF 778 PATIENTS IN A META-  
ANALYSIS OF STANDALONE  
ISTENT INJECT EYES DID  
NOT REQUIRE SECONDARY  
INCISIONAL SURGERY  
DURING FOLLOW-UP<sup>6</sup>

40+

PUBLICATIONS  
DEMONSTRATE ISTENT  
TECHNOLOGIES  
PROTECT AGAINST  
VISUAL FIELD LOSS<sup>†</sup>



**VISIT OUR BOOTH B204  
TO KNOW MORE ABOUT GLAUKOS**

† Data on file.

1. Berdahl, J., Voskanyan, L., Myers, J.S., Katz, L.J., & Samuelson, T.W. (2020). iStent inject trabecular micro-bypass stents with topical prostaglandin as standalone treatment for open-angle glaucoma: 4-year outcomes. *Clinical & Experimental Ophthalmology*, 48(6), 767-774. 2. Hengerer, Fritz H., Gerd U. Auffarth, and Ina Conrad-Hengerer. "iStent inject Trabecular Micro-Bypass with or Without Cataract Surgery Yields Sustained 5-Year Glaucoma Control." *Advances in Therapy* (2022): 1-15. 3. Ferguson, Tanner J., et al. "iStent trabecular micro-bypass stent implantation with phacoemulsification in patients with open-angle glaucoma: 6-year outcomes." *Clinical Ophthalmology* (Auckland, NZ) 14 (2020): 1859. 4. Ziaei, Hadi, and Leon Au. "Manchester iStent study: long-term 7-year outcomes." *Eye* 35 8 (2021): 2277-2282. 5. Salimi, Ali, Harrison Watt, and Paul Harasymowycz. "Long-term outcomes of two first-generation trabecular micro-bypass stents (iStent) with phacoemulsification in primary open-angle glaucoma: eight-year results." *Eye and Vision* 8 1 (2021): 1-12. 6. Healey, Paul R., et al. "Standalone iStent trabecular micro-bypass glaucoma surgery: A systematic review and meta-analysis." *Journal of Glaucoma* 30.7 (2021): 606-620. 7. Samuelson TW, on behalf of the iStent inject Pivotal Trial Study Team. Three-Year Effectiveness and Safety of 2nd-Generation Trabecular Micro-Bypass (iStent inject). Paper at the Annual Meeting of the American Academy of Ophthalmology (AAO), Virtual Meeting; November 13-15 2020. 8. Samuelson, Thomas W., et al. "Prospective, randomized, controlled pivotal trial of an ab interno implanted trabecular micro-bypass in primary open-angle glaucoma and cataract: two-year results." *Ophthalmology* 126.6 (2019): 811-821.

### iStent inject® W IMPORTANT SAFETY INFORMATION

**INDICATION FOR USE:** The iStent inject® W, is intended to reduce intraocular pressure safely and effectively in patients diagnosed with primary open-angle glaucoma, pseudo-exfoliative glaucoma or pigmentary glaucoma. The iStent inject® W, can deliver two (2) stents on a single pass, through a single incision. The implant is designed to stent open a passage through the trabecular meshwork to allow for an increase in the facility of outflow and a subsequent reduction in intraocular pressure. The device is safe and effective when implanted in combination with cataract surgery in those subjects who require intraocular pressure reduction and/or would benefit from glaucoma medication reduction. The device may also be implanted in patients who continue to have elevated intraocular pressure despite prior treatment with glaucoma medications and conventional glaucoma surgery. **CONTRAINDICATIONS:** The iStent inject® W System is contraindicated under the following circumstances or conditions: • In eyes with primary angle closure glaucoma, or secondary angle-closure glaucoma, including neovascular glaucoma, because the device would not be expected to work in such situations. • In patients with retrolbulbar tumor, thyroid eye disease, Sturge-Weber Syndrome or any other type of condition that may cause elevated episcleral venous pressure. **WARNINGS/PRECAUTIONS:** • For prescription use only. • This device has not been studied in patients with uveitic glaucoma. • Do not use the device if the Tyvek® lid has been opened or the packaging appears damaged. In such cases, the sterility of the device may be compromised. • Due to the sharpness of certain injector components (i.e. the insertion sleeve and trocar), care should be exercised to grasp the injector body. Dispose of device in a sharps container. • iStent inject® W is MR-Conditional; see MRI Information below. • Physician training is required prior to use of the iStent inject® W System. • Do not re-use the stent(s) or injector, as this may result in infection and/or intraocular inflammation, as well as occurrence of potential postoperative adverse events as shown below under "Potential Complications." • There are no known compatibility issues with the iStent inject® W and other intraoperative devices. (e.g., viscoelastics) or glaucoma medications. • Unused product & packaging may be disposed of in accordance with facility procedures. Implanted medical devices and contaminated products must be disposed of as medical waste. • The surgeon should monitor the patient postoperatively for proper maintenance of intraocular pressure. If intraocular pressure is not adequately maintained after surgery, the surgeon should consider an appropriate treatment regimen to reduce intraocular pressure. • Patients should be informed that placement of the stents, without concomitant cataract surgery in phakic patients, can enhance the formation or progression of cataract. **ADVERSE EVENTS:** Please refer to Directions For Use for additional adverse event information. **CAUTION:** Please reference the Directions For Use labelling for a complete list of contraindications, warnings and adverse events.

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