10th SEPTEMBER | 2023

ESCRS Today

ESCRS Today is a daily newspaper packed with highlights of the day's main events and industry symposia.

Congress Unveils Knockout Experience

Conference introduces new interactive concepts and ways of presenting information.

NIDEK

TODAY

ESCRS Morning Symposium

Sunday, 10 September 2023 | 9:30-10:30
Room A4, Hall A

Diagnosis and Management of Myopia and Associated Comorbidities

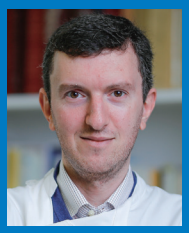
Moderator

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

www.nidek.com

More event information 〉

ESCRS Congress Opens in Vienna

A festival of science, technology, and education lies in store for attendees at the 2023 Congress of the ESCRS. That was the promise from ESCRS President Oliver Findl as he welcomed thousands of delegates to his hometown of Vienna for the opening ceremony of the ESCRS Congress.

"It is my pleasure to welcome you all here today to participate in our annual Congress, where you can catch up on the latest scientific and technological developments, renew links with colleagues, and build new alliances to further advance our profession," he said.

Dr Findl said it was gratifying to see the number of attendees at the meeting had returned to pre-COVID levels, with more than 14,000 people on site.

"It is great to see so many of you attending in person. We have over 1,900 accepted abstracts, 384 free papers in 32 sessions, a large number of posters and case reports, and many wet labs and courses to support our younger trainees," he said.

The organisers pulled out all the stops to assemble a rich and varied programme of the highest scientific quality, with symposia, instructional courses, wet labs, video sessions, poster and oral presentations, as well as a variety of other special interest days and sessions to cater to a broad range of interests and specialisations.

Dr Findl highlighted the progress made in putting sustainability at the heart of the Society and the annual meeting.

"We are increasing our momentum and investment in this area to achieve the 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," he said.

He thanked all the delegates and industry representatives present for their ongoing support for the initiative.

Dr Findl's address at the opening ceremony was followed by the Binkhorst Medal Lecture on Corneal Regeneration, delivered by Jorge Alió MD, PhD from Spain.

Issue Highlights

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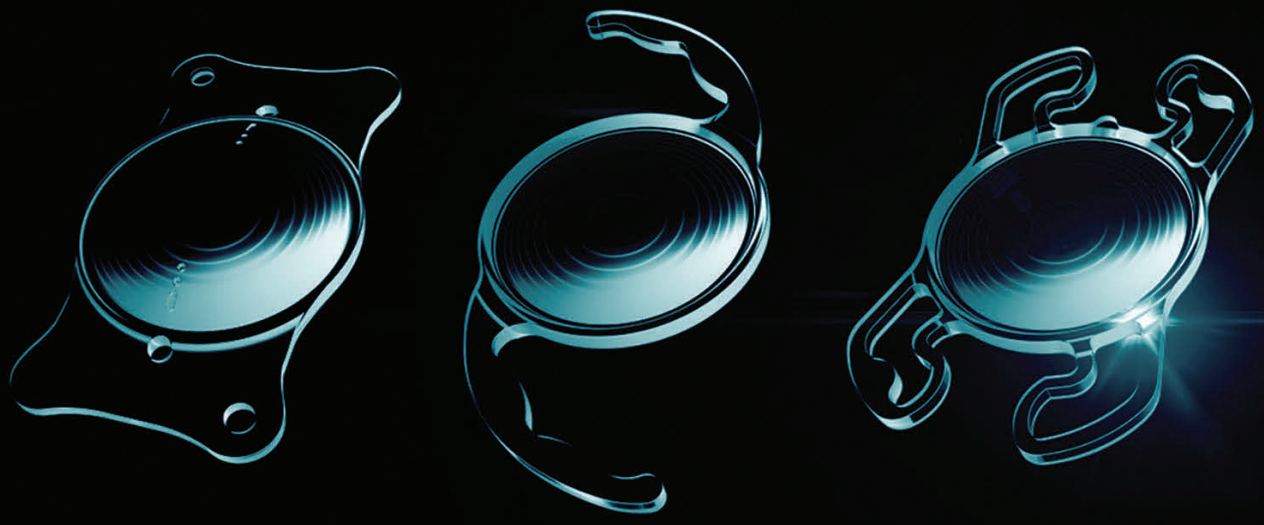
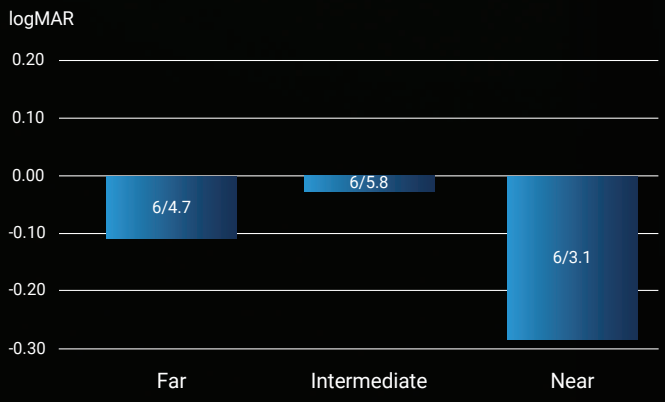


Revolutionizing Ophthalmic Optics

Distance Corrected Defocus Curve:
40 eyes/20 patients 3 months postop



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Moving Simulator Moves to Vienna

ESCRS sends surgical simulators to countries where doctors have limited access to hands-on training.

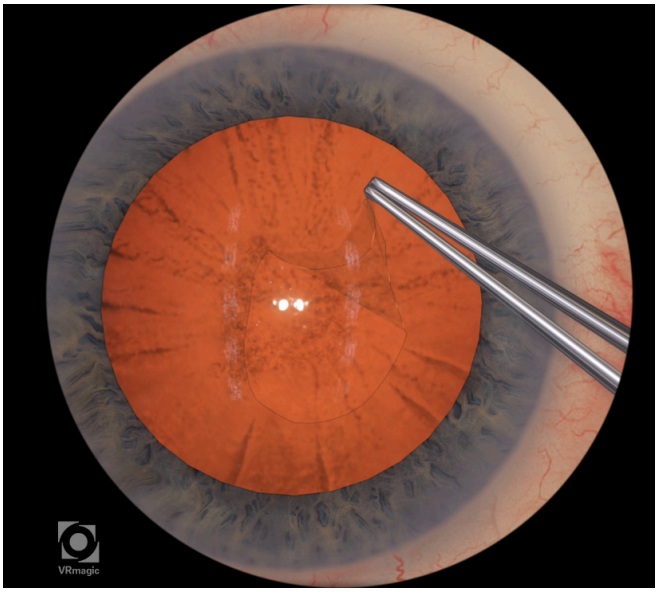
Earlier this year, the ESCRS Education Committee purchased Eyesi simulator from Haag-Streit, deciding to move them from country to country in Europe. The simulator has been on a journey through Eastern Europe, stopping first in Romania, then Ukraine. The simulator has now arrived at the ESCRS Congress.

The national ophthalmological societies of some of the larger European countries, such as the UK and France, operate simulators in different locations, allowing aspiring ophthalmologists to use them at little or no cost during their training. In some countries, simulator training is mandatory for gaining access to surgical training in clinical settings.

But using simulators to train young ophthalmologists is expensive—the cost of a single simulator can run €200,000 or more. Consequently, teaching hospitals in smaller countries and some countries in eastern Europe do not have simulators or have outdated models no longer in use.

The ESCRS is helping to fill the void with the Haag-Streit Eyesi simulator, moving it from country to country. The simulator will be hosted by the national society, either in their office rooms or in a centrally located hospital.

Under the Committee's plan, the simulator will stay in one location for at least four weeks.



"Through this project, ESCRS will intensify its role in providing hands-on skills training, which is of utmost importance to young surgeons," says Dr Oliver Findl, president of the Society. "This will allow them to undergo a larger part of the curriculum on the simulator, which is not possible at our Annual Congress due to the restricted time frame."

Under the Committee's plan, the simulator will stay in one location for at least four weeks and as many as eight, depending on country size and the number of interested trainees. Ideally, the simulators will travel to six or more countries per year, visiting each country every other year, based on need. The local society will set up the simulator and oversee access.

"We will start with countries that have dual membership with ESCRS, then invite other countries to offer this type of membership, and then move to countries with the most need," Dr Findl says. "The trainees need to be or become ESCRS members, which is free for the first five years, and watch an instructional video before using the simulator."

Training curriculum

A customised "ESCRS curriculum" comprising eight hours of instruction is being developed by Dr Artemis Matsou and Dr Alja Crnej. The training will be delivered in two four-hour sessions; during the first session, an instructor will be available for the first 15–20 minutes to help the trainee get oriented and answer possible questions.

"For practical reasons, and in order to provide this fantastic opportunity to as many trainees around Europe as possible, two four-hour sessions were deemed the optimal allocated time for each surgeon," says Dr Matsou. "The emphasis is on basic cataract skills like anti-tremor tasks, bimanual coordination, and basic phacoemulsification steps, while some modules for more experienced surgeons will also be incorporated."

Trainees will be able to view their performance scores and compare them to previous scores to see if they improved their skills. They will also be able to download a record of completion for the various training modules to receive a certificate from the ESCRS verifying their progress.

More important than the certificate, however, is the self-assurance from practising surgical techniques in a secure, low-stress setting.

"The primary advantages of using a simulator, especially early on in surgical training, are that the surgeon has the opportunity to complete all the steps of a cataract procedure in a controlled environment and consolidate their theoretical knowledge of the surgical steps before operating on a real patient," says Dr Matsou. "It is a great advantage to do all that in a risk-free environment, with permission to fail, which is one of the big sources of anxiety for many trainees at the start of their surgical career. It is a great tool to build confidence and be the safest version of yourself before operating on a real patient."

Clinical Research Awards

Real-world studies with improved patient outcomes

ESCRS Launches New Clinical Research Awards

ESCRS is accepting applications for the 2023 Clinical Research Awards.

The ESCRS Clinical Research Awards (CRA) is an initiative to support and encourage independent clinical research in cataract, cornea, and refractive surgery.

For the 2023 Clinical Research Awards, the ESCRS invites applications in response to a specific topic identified by the ESCRS Research Committee and prioritised for its importance to the Society and its members and improving patient care. This year's topic is "A comparative, controlled trial evaluating different types of presbyopia-correcting IOLs for post-keratorefractive surgery patients undergoing lens surgery."

To assess their effectiveness in meeting the high expectations of this patient population, high-quality research is needed.

Topic background

This topic was one of two identified during a series of think tank sessions, explains Prof Dr Med Burkhard Dick, ESCRS Secretary and chair of the ESCRS Research Committee.

"Advancements in presbyopia-correcting IOL technology offer the potential for spectacle independence in patients with a history of keratorefractive surgery," explained Prof Dick. "To assess their effectiveness in meeting the high expectations of this patient population, high-quality research is needed." This is because there is an ever-increasing patient population who could benefit from this category of IOLs—patients who have previously undergone corneal refractive surgery and are now developing cataracts. For these patients, standard monofocal IOLs may not sufficiently address their needs since these patients have grown accustomed to life without the need for spectacles.

Expected impact

The results of the funded project will:

- Provide objective clinical evidence on presbyopia-correcting IOL use in patients who have previously undergone keratorefractive surgery.
- Establish an independent database of clinical outcomes on presbyopia-correcting IOLs, including guidelines/preferred practice patterns on IOL calculation optimisation in post-keratorefractive eyes.
- Increase surgeons' level of confidence towards presbyopia-correcting IOL use.

Initial application—Expression of interest

Interested applicants are invited to submit their expressions of interest through the ESCRS CRA webpage: www.escrs.org/education/grants-awards/clinical-research-awards/how-to-apply/.

The expressions of interest will be validated by ESCRS staff. Complete applications will be shared with an external panel of expert reviewers who will score and create a short list of proposals that will move to the second round of detailed submissions.

TODAY!

Balancing quantity and quality of vision with advanced technology IOLs

Lunch Symposium | Sunday 10 September 2023

Prof Graham Barrett

Keynote – The art of designing IOL optics

Prof Oliver Findl

Results from a comparative prospective study with RayOne EMV

Dr Damien Gatinel

Non-diffractive advanced optics – Reality or myth?

Mr Allon Barsam

Comparing RayOne EMV and AcrySof IQ Vivity in a large cohort

13:00-14:00, Room A5

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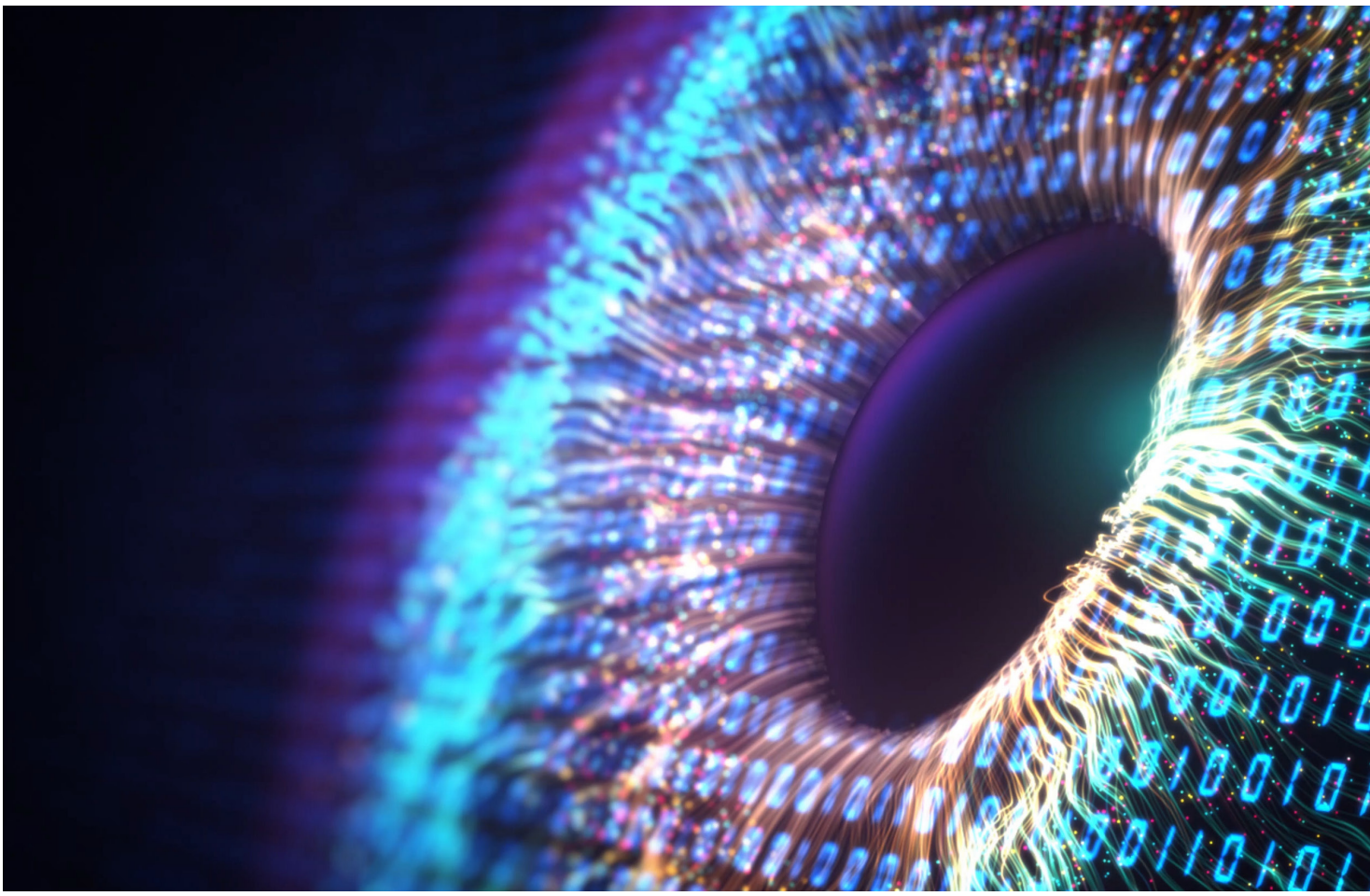

The Symphony of AI and Ophthalmology

The prize-winning Henahan essay explores how ophthalmologists can unlock AI's potential.

BY SIYIN LIU MD

Medicine is at a critical inflection point for artificial intelligence (AI). With a whopping 3,327 new AI companies in the mix and a projected $37 billion splurge on AI by 2025, this tech is drastically transforming every industry, including healthcare.

Ophthalmology, with its rich imaging data, presents an ideal setting for training algorithms in image recognition, segmentation, and disease detection. Current focus lies on prevalent ophthalmic conditions like diabetic retinopathy (DR), age-related macular degeneration (AMD), and glaucoma, leveraging large, standardised imaging data sets. The COVID pandemic accelerated the integration of AI into tele-ophthalmology, exemplified by the FDA-approved autonomous diagnostic device for DR, enabling point-of-care diagnosis without human oversight. Challenges exist in AI research for anterior segment diseases due to non-uniform slit-lamp images and limited data sets. Nevertheless, recent advancements demonstrate AI's potential in the anterior segment, including early detection of keratoconus, post-refractive surgery ectasia screening, and diagnosis of infectious keratitis.

AI in ophthalmology has primarily focused on image-based deep learning. Yet, the adoption of electronic health records has unveiled the untapped potential of unstructured free-text data. Natural Language Processing (NLP) and algorithmic rule-based text extraction techniques have shown promise in leveraging this data to enhance care delivery and for big data analysis, predictive modelling, cohort identification, and stratification. NLP also standardises specialised ophthalmic terminology, facilitating interactions among healthcare providers and patients. With predictions that 85% of customer interactions will be managed without human agents by 2025, NLP-based chatbots hold tremendous potential in triaging symptoms, monitoring treatment adherence, and providing support in areas with limited ophthalmology services.

AI chasm

A core challenge in applying AI is the clinical validation of recently developed concepts and tools. Clinical AI research faces limitations due to retrospective design, leading to biased algorithms "overfitted" to specific data sets. The conventional approach of pitting AI against clinicians may not demonstrate real-world performance, as its realistic application likely involves interaction between clinicians and algorithms. Clinicians, the end users, must grasp AI's strengths and limitations to foster mutual learning. Envisioning AI's role in high-risk real-time situations like surgery, where surgeons adapt their approach on the fly, is challenging.

AI regulatory approval is another challenging obstacle. Many algorithms rely on complex and opaque mathematical models, often referred to as "black boxes." The lack of transparency raises concerns about data mishandling and understanding of the algorithms' inner workings. Agencies like the FDA/EMA require extensive transparency in scientific methods, but researchers and companies may hesitate to expose proprietary algorithms publicly due to potential financial risks. Further, without a clear understanding of algorithmic processes, AI may struggle to gain patients' trust and approval. Would it be worse for patients to be misdiagnosed by a human or a machine? What if the algorithm had demonstrated superior performance in research settings? Ultimately, trust and confidence in algorithmic decision-making play a pivotal role.

Overall, more rigorous work is needed to combat the disparity between AI hype and application in healthcare, the so-called "AI chasm."

The glass cage

The integration of AI into healthcare runs the risk of stripping medicine of its human touch. With advancing algorithms, we may see clinics where machines take the lead, like a macular clinic where an OCT machine decides on intravitreal anti-VEGF injections for AMD without ophthalmologist involvement. Even with fancy AI voice synthesizers like Siri, the empathy and intuition of the doctor-patient relationship diminishes. After all, to these machines, patients are reduced to mere data points where efficiency and cost-effectiveness are the sole measures of success. Further, overreliance on AI-powered automated diagnosis or treatment decisions may stunt the clinicians' development of critical thinking and decision-making skills, which may, with time, add them to the list of skills lost due to technology.

Biases embedded in the training data can perpetuate inequalities by providing inaccurate or inadequate recommendations for certain groups or populations. With training data predominantly derived in the Western world, algorithms may struggle to effectively generalise to diverse groups. Unchecked, AI can reinforce and amplify existing disparities in healthcare outcomes. Also, the ethical implications of data ownership and privacy protection arise in an era of round-the-clock data collection from gadgets and wearables. Algorithms may exploit this data and stigmatise the chronically ill or those who don't fit the "healthy lifestyle" mould, potentially leading to unjust financial and health penalties, such as reduced access to insurance.

The rise of AI

We are told AI-powered healthcare is not about replacing ophthalmologists, but rather augmenting their knowledge and expertise. The integration of genomic data, lifestyle factors, and imaging will lead to AI-powered decision support systems that can guide targeted therapies and tailored interventions. Although AI's current capabilities fall short of the hype, overcoming challenges could unlock its potential in achieving the holy grail of personalised medicine. Yet, the question remains whether the rise of AI lead to the "machinification" of medicine.

Dr Liu is in Specialty training year 4 at UCL Institute of Ophthalmology, London, UK.
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Everyone Will Be Affected

The "Who Owns Ophthalmology?" symposium examines the impact of external investors on ophthalmology and ophthalmologists.

The ESCRS Congress main symposium, "Who Owns Ophthalmology?" examined the implications not only for surgeons buying or selling private practices but all ophthalmologists, including those in academic and public systems.

"We see a lot of change in ophthalmology now; we have private equity stakeholders coming in, private investors coming in, as well as ophthalmologists making bigger groups," said Dr Guy Sallet, who helped develop the programme.

How individual ophthalmologists are affected depends in part on where they are in their careers, which Dr Sallet broke down into three large groups.

"Ophthalmologists over the age of 55 or 60 are thinking about retirement and are looking for an exit strategy," Dr Sallet said. Having invested for years in their private practices, they seek a return. Selling to private investors or a large, consolidated group are options.

These exit moves shape the employment opportunities available to the second group: young ophthalmologists entering practice, who look for work-life balance and opportunities to practice their subspecialty in addition to financial rewards.

Mid-career ophthalmologists are the third group. They often seek leadership and advancement opportunities to build value in their practices, and a larger financial group may provide them, Dr Sallet said.

The "Who Owns Ophthalmology?" symposium started with Dr Luisa Elia presenting on valuing a private practice—an essential first step towards partnering with investors or other practices. Management consultant and ophthalmologist Dr Victor Chua explained private equity and how it works.

Dr Markus Hamm presented on the Veonet network of 210 clinics in Germany, Switzerland, the United Kingdom, the Netherlands, and Spain while Dr Guy Kezirian examined the physician equity model.

Other presenters included Dr Tobias Koesters, who discussed the impact of external investors on ophthalmic care and emergencies in ophthalmology, and Dr Wim Groot, who covered the effects of independent providers on training in academic institutions.

External investors and physician groups

The session highlighted two very different models: large corporate entities providing ophthalmology services and physician-owned and managed practices. They have different perspectives, but symposium co-chair Dr Paul Rosen noted both contribute to modern ophthalmology.

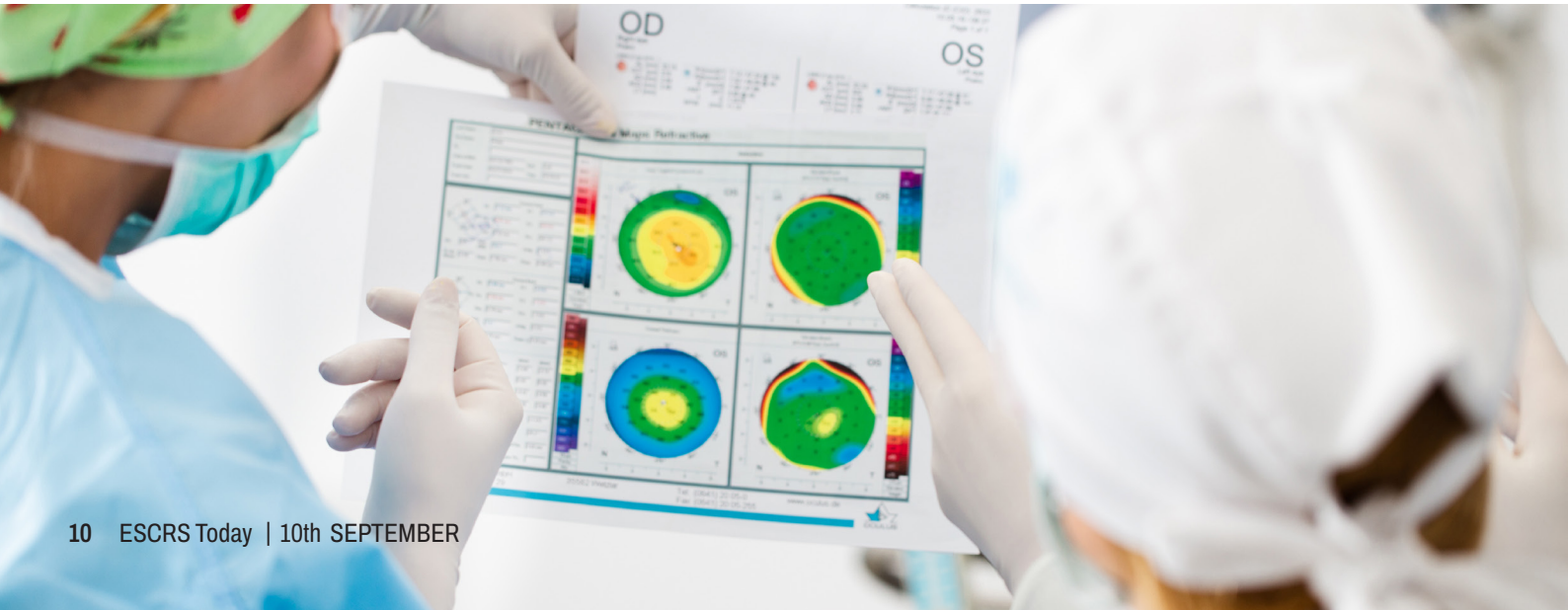
Corporate providers may start de novo and grow organically or start by investing in established practices. External investors, including private equity and other private investors, are becoming a significant source of funding for private ophthalmology groups. But some may find their focus on efficiency, holding down costs, and stressing conversions to surgery interferes with clinical practice and caring for complex—and less profitable—patients, Dr Rosen said.

Physician equity is an alternate model in which smaller groups and physician investors pool their investments to maintain control and take a longer view, Dr Sallet said. With the high and growing cost of running a practice, it might make sense to join a larger group. "You don't want to miss the train, so take a closer look."

The topics raised in the symposium will continue during the Leadership and Business Innovation workshops at the Congress and in future issues of *EuroTimes*.

Paul Rosen BSc, MB ChB, FRCS, FRCOphth, MBA

Guy Sallet MD, FEBO



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[1] *Gazzard G, Konstantakopoulou E, Garway-Heath D,et al. Selective laser trabeculoplasty versus eye drops for first-line treatment of ocular hypertension and glaucoma (LiGHT): a multicentre randomised controlled trial. Lancet 2019, Mar 9;393(10180):1505-16.*

[2] *Based on system performance testing (data on file)*

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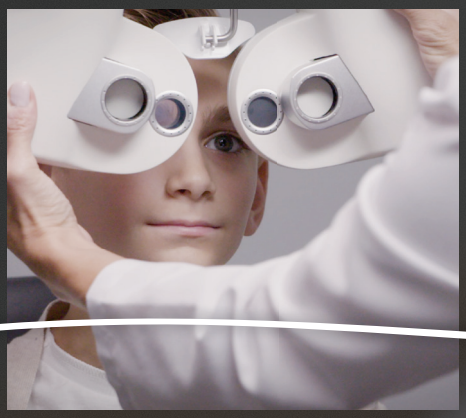

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Deep Learning OCT

Advancements in OCT imaging and machine learning techniques portend a new era of anterior chamber diagnosis.

TIMOTHY NORRIS REPORTS

Imaging advancements in OCT have reached extremely high standards in terms of quality and resolution, according to Dr Pierre Zéboulon during the "OR Digitalisation: Truth and Myths" clinical research symposium at the ESCRS Congress, adding cutting-edge OCT potentiality is still under-exploited in clinical practice.

"We now have access to beautiful anterior segment OCT images with high levels of detail of the cornea and the lens," he said. "We need to build new tools to take advantage of this advanced imaging."

Using deep learning with OCT scans could be a very important step for ophthalmology, helping design new techniques and approaches to different diagnoses and bringing valuable insight to ocular pathology. "With this, we will create new standards in the future, entering a new era of anterior segment diagnosis," Dr Zéboulon said.

"Why do we need objective cataract grading?" he asked the audience. "It is obviously better for the patient's follow-up. It helps in complicated cases of visual activity loss. It will certainly be useful for the near future of telemedicine."

Dr Zéboulon used Heidelberg's Anterion for high-quality OCT scans of the anterior segment to show his cases. "We wanted to build something entirely new—that takes full advantage of the high-resolution images, a new approach not based on a calculated subjective clinical classification. We wanted it to be as objective as possible, with a clinically relevant output," he said. "So, we went for individual continuous metrics for each lens layer with good interpretability."

The cornerstone, he noted, is a deep learning model detecting pixel-wise cataracts on the OCT images, correctly and directly detecting any cataract type with great accuracy, as demonstrated in a study published by the author in the *Journal of Optometry* in 2022. "And so, we built our grading solution on top of that model to access layer-wise information," he said.

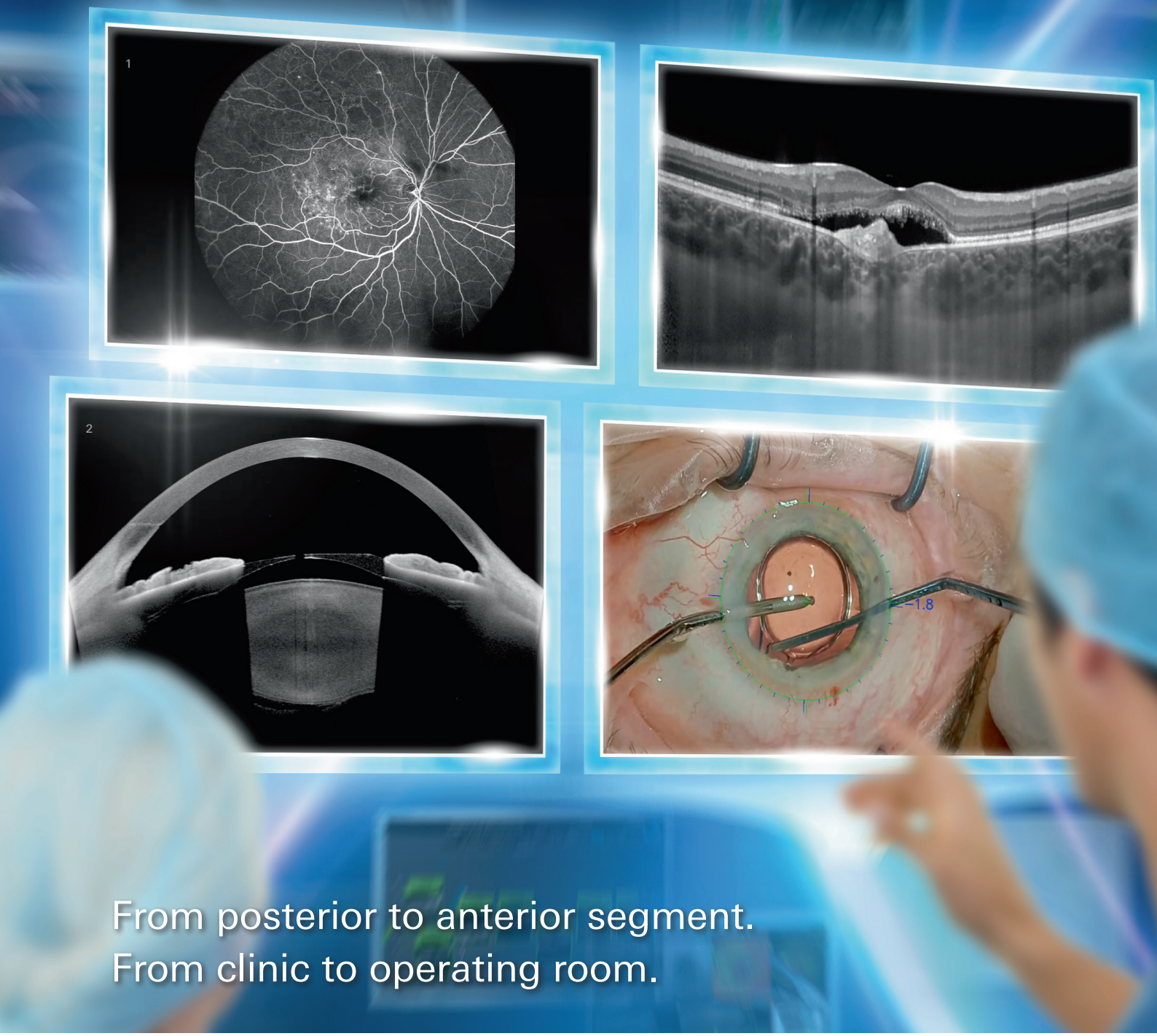
Global Cataract Score was created using linear discriminant analysis and the six variables on a development set of 331 eyes and tested on 217 eyes. "The output of this score is very simple," Dr Zéboulon explained. "It's a single value: If it's positive, there's clinically significant cataract."

Deep learning-empowered OCT can also be used for the early detection of corneal oedema, a very useful tool given the constant growth of DMEK procedures worldwide. "Our solution is capable of detecting an oedema corresponding to a change of 20µm with an AUC of 0.96, also providing an easy to read and en-face map," Zéboulon said.

Some limitations are still present in the model, especially in the en-face oedema map. "With flat posterior surface, it can be a bit tricky to know if there's a posterior displacement, and our model doesn't fit the image. Also, if the posterior surface is prolate, such in the case of keratoconus, it cancels out every feature of the presentation itself. The third limitation is in case of homogeneous thickness increase," Dr Zéboulon explained.

Global Cataract Score was created using linear discriminant analysis and the six variables on a development set of 331 eyes and tested on 217 eyes.

UNCOVER MORE



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HEIDELBERG ENGINEERING

New Era in Treating Corneal Disease

Binkhorst Medal lecture outlines a future with better outcomes, fewer burdens, and improved quality of life for patients.

DERMOT MCGRATH REPORTS

The treatment of corneal diseases is undergoing a paradigm shift, which will overcome many of the shortcomings of current approaches to dealing with corneal dystrophies and other potentially blinding conditions, said Professor Jorge L Alió in his Binkhorst Medal Lecture at the 2023 ESCRS Congress in Vienna.

"We are at the forefront of an exciting revolution in the treatment of corneal blindness, moving from the old paradigm of cornea tissue substitution to one where cornea tissue regeneration becomes the new standard," Prof Alió said.

The need for new treatments is pressing, he stressed, noting that corneal blindness is the second most common cause of blindness worldwide, with treatment limited by the number of donors for corneal transplants.

"The shortage of corneas results in over 40,000 visually impaired people waiting for corneal transplants every year in Europe alone, with 10 million untreated corneal blindness patients globally and 1.5 million new cases of corneal blindness annually," he said.

This number is rising due to the ageing population and corneal graft failure, which often occurs due to rejection, becoming even more likely with each successive graft and new indication.

"There is a need for new solutions to avoid tissue substitution, preferably immunologically neutral ones, independent from human donor tissue, with unlimited accessibility that will probably be more cost effective than corneal grafts in the long term," he said.

Advanced stem cell therapies may be the game-changer everyone has been waiting for, added Prof Alió, who outlined some of the latest research in regenerative techniques for a wide range of corneal diseases.

Looking to the future, Prof Alió predicted corneal organoids could potentially solve the corneal graft tissue shortages.

Adipose-derived stem cells (ADSCs), for instance, have been shown to provide a viable cell source for stromal regeneration and repopulation in diseased corneas. ADSCs are typically isolated from adipose (fat) tissue obtained from the patient's body, which reduces the risk of rejection or immune-related complications.

ADSCs can be induced to differentiate into epithelial cells or stromal cells in the laboratory and can help repair the

corneal epithelium, stroma, or endothelium, depending on the specific corneal injury or disease.

These cells have demonstrated anti-inflammatory and immunomodulatory properties, which can be beneficial for reducing inflammation and immune responses in the damaged cornea. They may also stimulate endogenous repair mechanisms in the cornea by releasing growth factors and cytokines that promote tissue healing.

The first-in-human trials successfully tested the technique using ADSCs implanted into corneal stroma in five patients with advanced keratoconus.

Other approaches using mesenchymal stem cells (MSCs) have shown promise for treating ocular surface diseases such as dry eye, corneal burns, ulcers, and limbal stem cell deficiency (LSCD).

As well as epithelial repair, MSCs can be differentiated into corneal stromal cells in vitro and then transplanted into the corneal stroma to promote tissue regeneration. The cells can also be incorporated into tissue-engineered constructs or biodegradable scaffolds for corneal transplantation in thin corneas or cases where injection alone is insufficient to promote corneal regeneration, said Prof Alió.

"MSCs have a present and future critical role in the management of corneal epithelial failure due to limbal stem cell deficiency. Severe forms of dry eye disease have already been improved with MSC therapy in open-label clinical trials, with randomised controlled clinical trials to follow," he said. "Cell-free therapy such as PRP—especially with MSC-extracellular vesicles (such as exosomes)—could be a future better option than MSCs, provided the many existing challenges can be solved."

Looking to the future, Prof Alió predicted corneal organoids could potentially solve the corneal graft tissue shortages.

He explained the corneal organoids are bio-constructs made with corneal epithelium tissue, stromal laminas from non-human origin, and endothelial tissue shaped with 5D printing techniques to deliver customised corneal optical power.

"This will improve patient quality of life and reduce the economic burden of corneal transplants on healthcare," he said. "Furthermore, we expect these bio-constructs to provide better therapeutic outcomes over donor corneas, such as avoiding allograft rejection."

A full report on Prof Alió's lecture will appear in a future edition of EuroTimes.

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BELKIN VISION

Evaluating a Game-Changer

More cost-effectiveness research could make intraoperative OCT available.

HOWARD LARKIN REPORTS

Optical coherence tomography (OCT) has revolutionised ophthalmic imaging, providing invaluable diagnostic information for both posterior and anterior segment structures. More recently, intraoperative OCT systems have been developed to help guide surgery and are now integrated with operating microscopes.

But does intraoperative OCT add enough value to justify its added cost? For corneal surgery, the answer is a qualified "yes," but for cataract surgery, there isn't yet enough data to tell, said Dr Sorcha Ní Dhubhghaill (Belgium).

To be sure, research shows intraoperative OCT is useful in cataract surgery, Dr Ní Dhubhghaill said. It can help visualise anterior chamber structures, evaluate lens tilt and capsular position after lens or capsular tension ring insertion, distinguish posterior polar cataracts from high-risk adhesions, and detect viscoelastics or lens particles left behind after lens implantation. And it is great for evaluating the retrolenticular space, including the anterior hyaloid and vitreous movement—which can be very helpful in posterior capsulotomy cases, such as in high myopes and delicate paediatric procedures.

"We can see previously invisible structures; we can see movement in real time," Dr Ní Dhubhghaill said. Combining OCT with low-flow fluidics could lead to better understanding of how surgical activity in the anterior chamber affects the posterior areas, possibly shedding light on why posterior complications such as macular oedema and retinal detachments develop.

These kinds of applications are widely reported at clinical meetings. But when you get back to the clinic, the first response from management is, "'Prove to us that this is a wise investment.' So, we have a disconnection between this beautiful research and our ability to convince our providers to install this technology," Dr Ní Dhubhghaill said.

What's needed are cost-effectiveness studies. "To date, there are no cost economic analyses to support increased efficiency or improved safety with intraoperative OCT in cataract surgery." And though she believes intraoperative OCT does improve cataract surgery, more studies must demonstrate it.

The situation is better for corneal surgery applications. "It's a game changer in lamellar surgery," Dr Ní Dhubhghaill said. OCT makes it possible to see various corneal layers and behind corneal grafts. It can be invaluable for positioning delicate grafts in Descemet membrane endothelial keratoplasty (DMEK). A Netherlands study found OCT information influenced surgical decisions in 40% of DMEK procedures.[1]

That same study also found intraoperative OCT saved a mean of €107 per DMEK surgery. "When I discuss these options with decision-makers at the financial level, I tell them there have been studies that can prove cost-effectiveness. I don't tell them it's €107 per patient because of the number of DMEKs I'd have to do to offset the cost."

The key is to universalise the benefits. "This is just one surgery. If we could find the cost-effectiveness spread out through all surgeries, we could really all help each other to bring these technologies to our patients."

References:
1. Acta Ophthalmol., 2023 Jun 20.

It's in the Bag

Heritage Lecture explores the enigma of the anterior surface.

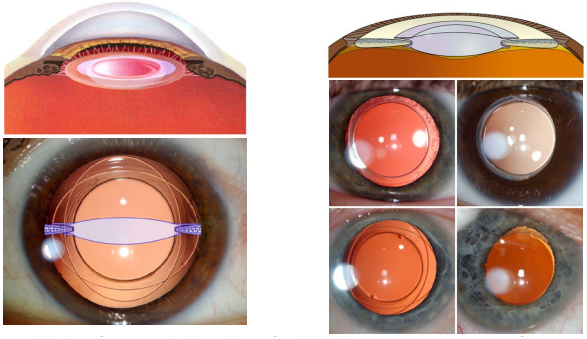
This year's ESCRS Heritage Lecture will be given by Marie-José Tassignon MD, PhD, FEBO. She is Chief of the Department of Ophthalmology and Immediate Past Medical Director of the University Hospital Antwerp, Belgium.

Professor Tassignon, a former president of the ESCRS, will give some historical context on cataract surgery from the time of Harold Ridley to the present. She will discuss the bag-in-the-lens approach to cataract surgery, which she pioneered. This will include videos showing the evolution of the procedure and its current use.

Known for her work mentoring young ophthalmologists, Prof Tassignon's accolades include the Kritzinger Award, the ESCRS Binkhorst Medal, and the Peter Eustace Medal from the European Board of Ophthalmology for excellence in education.

10:30, Monday, 11 September, Room A1.

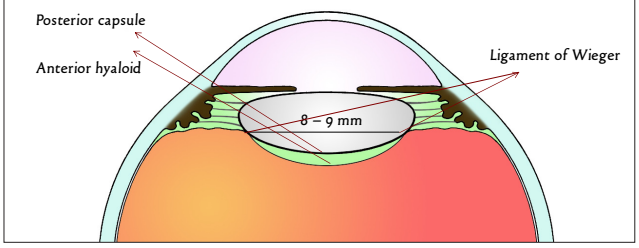
The bag-in-the-lens solution for PCO takes benefit of the Berger space to accommodate the posterior flanges of the BIL



2000 - US patent: 6,027,531 - PCT 120268: licensed to Morcher, Germany

Space of Berger

Dimensions: approximately 8 to 9 mm of diameter, defined by ligament of Wieger, anterior hyloid and posterior capsule



Will Marking Go Digital?

Reducing globe rotation error can better improve toric IOL performances.

TIMOTHY NORRIS REPORTS

Toric IOL alignment is not a problem of modern IOLs, according to Dr Tim Schutz. Of all patients presenting in the OR for cataract surgery, 20% to 45% present at least 0.5 D of astigmatism and up to 15% show an average of 1.0 D. On the other hand, the implantation rate of toric IOLs is still growing, but one surgeon out of three may not opt for a toric IOL with a 2.5 D of astigmatism.

"These surgeons are not using toric IOLs in these cases because alignment is still a big problem," Dr Schultz observed. "With just three degrees of misalignment we have a 10% of C misalignment, reducing the functionality of the IOL. So, perfect marking could make a perfect result? No, there is much more behind this. We must address the whole workflow. Many problems can come from every step. Digital marking, however, can be a solution."

While Dr Schultz said digitalising the workflow can be helpful to avoid errors, it is something that must be managed with care. "We can have big variations in our measurements. Using an online calculator can lead to some error even if the calculator comes from a reliable source, and sometimes it is the surgeon's error," he explained. The next step is axis calculation. "Even in the biggest calculators, a deviation of 5 to 10 degrees occurs in 20% of cases. It is huge."

Yet manual markers also come with a price. "If you ask a surgeon what the best marker is, they will reply, 'The marker I use is the best,'" Shultz said. But there are several markers with different advantages and disadvantages, especially regarding accuracy. "And they all have one problem in common: globe rotation," he explained.

We must address the whole workflow. Many problems can come from every step. Digital marking, however, can be a solution.

Several digital markings are already available to surgeons: Digital Drawing ("a superb, underrated option, but it is time consuming"), Intraoperative Measurements ("helpful in IOL alignment, but you must enter the patient's full biometry"), Digital Overlay ("automated data in a closed system with good usability but also has a high cost"), and Intraoperative Marking, which has two systems, the camera and the laser that can do very thin lines on the cornea. "This is the game changer."

However, literature shows slightly better results of digital marking compared to manual.

"In the trials, very well-performed makings will end up with something around four or five degrees of marginal error. With the laser marking, the margin error is two or three degrees average,"Dr Schultz explained. "Of all the errors that can come up in the workflow, globe rotation is surely one of the most important. Having some laser markings that can remain visible after surgery—helping to find the correct position during and after surgery—shows how digital marking has an exciting potential to improve surgery. We will see how computer vision and artificial intelligence can further help us."

Evolutions to enhance your experience

We're showcasing at ESCRS, with plenty of exciting news to share with you

Take a second look at Keeler slit lamps

- Keeler Konnect digital imaging software now comes with DICOM capabilities, so you can integrate your slit lamp into your patient management system.
- 14mm slit aperture allows you to see a larger area of the retina.
- Finer slit width diaphragm scale enabling you to precisely measure pathologies, within even smaller increments.

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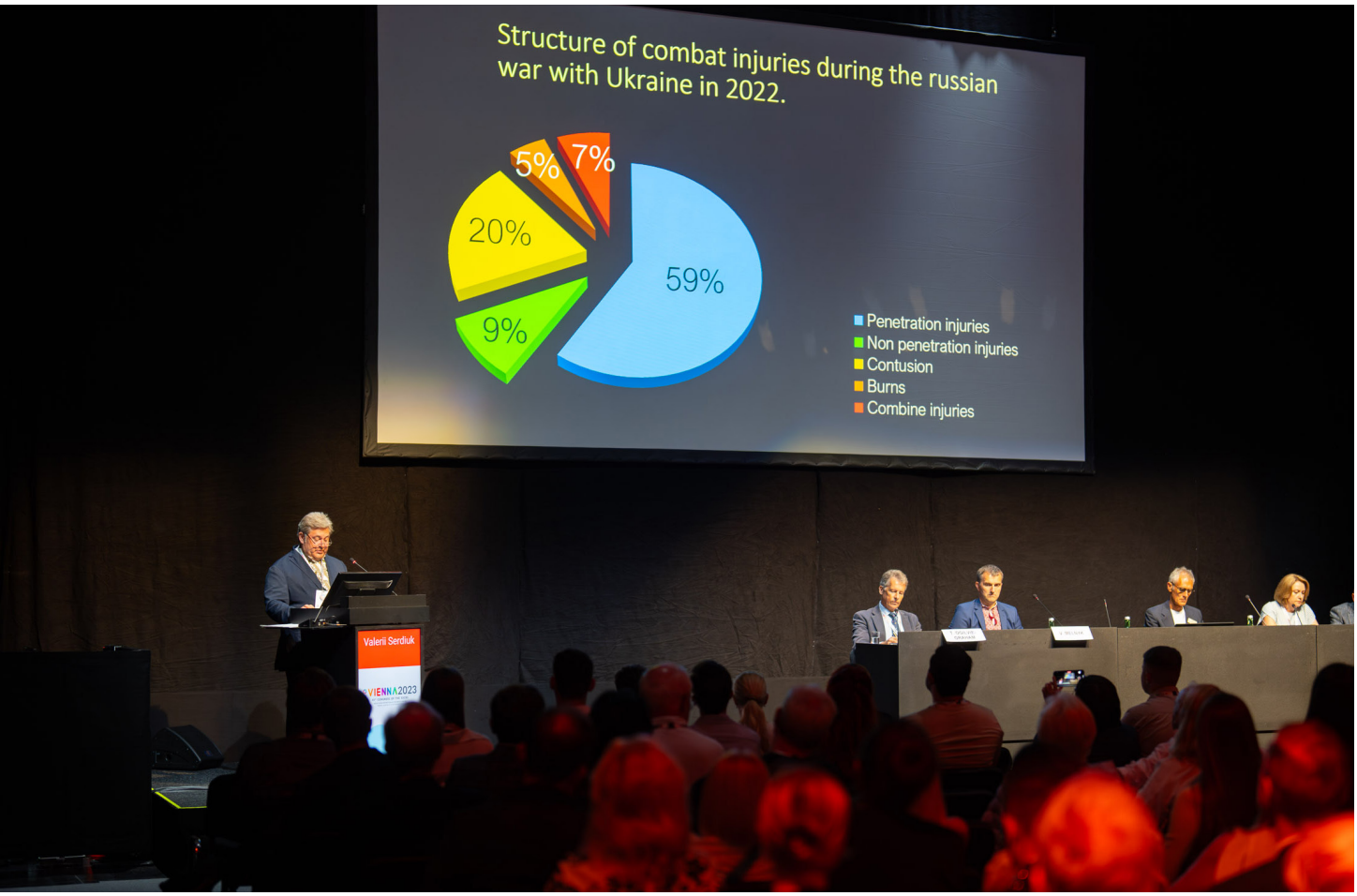


Saving Sight on the Front Lines

DERMOT MCGRATH REPORTS

Ukrainian ophthalmologists continue to push their medical and surgical skills to the limit in dealing with the devastating impact of eye injuries incurred among both the civilian population and military personnel in the ongoing war with Russia.

The horrific extent of those injuries—and the various strategies employed by Ukrainian ophthalmologists to deal with them—were brought forcibly home to delegates during a special session on ocular trauma at the 2023 ESCRS Congress in Vienna.

Thousands of military and civilian patients have been treated by the eye specialists at Dnipropetrovsk Hospital since the outbreak of conflict.

Eye trauma is estimated to account for up to 13% of all injuries in modern warfare, and the war in Ukraine is no exception, said Dr Valerii Serdiuk, who recounted his experience of combat surgery over the past nine years.

"Evolution in warfare tactics means that anti-personnel mines and various explosive devices—both improvised and produced by industry—have become the main causes of eye combat trauma in all military conflicts," he said. "Other causes include wounds from firearms and accidents."

Thousands of military and civilian patients have been treated by the eye specialists at Dnipropetrovsk Hospital since the outbreak of conflict, said Dr Serdiuk, adding his teams typically encounter a high level of complex ocular polytrauma, often in association with other head, neck, face, or systemic injuries.

The advanced fragmentation weapons used in modern conflicts results in a high rate of ocular trauma, with binocular injuries in 34% and penetrating injuries in 42% of cases.

"The high percentage of eye injuries in the first months of the war was related to the shortage of protective eyewear and a lack of awareness on the part of military personnel about the threat to their visual health," he said.

In this regard, he noted eight eviscerations/enucleations were performed from 2014 to 2021, but seven of those were carried out before September 2014, when protective eyewear use became widespread.

Dealing with ocular polytrauma requires a clear strategy on the part of the surgeon, Dr Serdiuk said. In penetrating and blunt eye injuries, there is usually combined damage to the anterior and posterior segments, including the cornea, iris, and retina, causing significant and diverse clinical and functional disorders in the injured eye.

Rapid intervention is also important to improve the prospects of saving sight in patients with severe ocular polytrauma, Dr Serdiuk added.

The complex nature of the ocular injuries facing surgeons in Ukraine was also described in detail by Professor Nadiia Ulianova, who reported on her experience treating combat victims at the Filatov Institute of Eye Diseases and Tissue Therapy in Odesa.

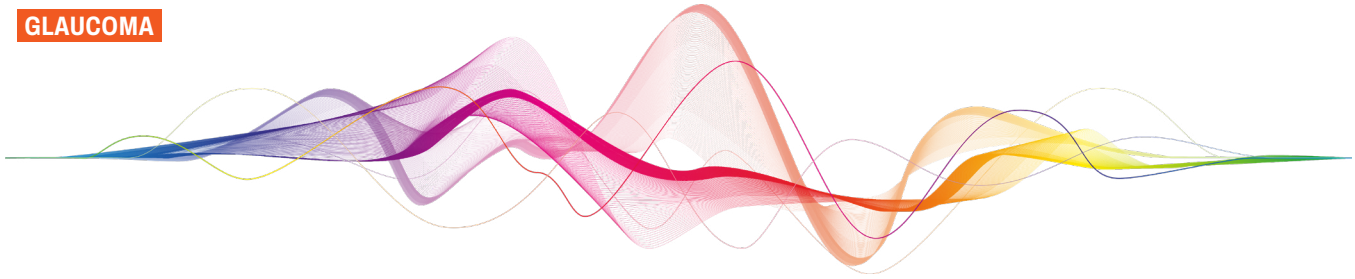
"Modern combat trauma is particularly severe and requires complex reconstructive treatment," she said. "The optimal timing for pars plana vitrectomy (PPV) for open globe injury varies from one to four weeks from the moment of injury and eight weeks post-injury for keratoplasty."

Prof Ulianova outlined the challenges of performing vitrectomy in traumatic injury cases.

"The most common indications for vitrectomy in cases of ocular trauma are vitreal haemorrhage, retinal front lines, intraocular foreign bodies, and macular holes," she said. "All of these indications are usually present in severe combat injuries."

Although vitrectomy in trauma cases should ideally be performed as soon as possible, the reality is logistical difficulties in displacing wounded individuals from the front-lines and ensuring treatment of other life-threatening injuries often affect the timing of ocular surgery, she added.

Prof Ulianova listed some specific features of eye trauma due to modern combat, including extensive open globe injuries and multiple foreign bodies in the cornea. She highlighted strategies to deal with some of these scenarios, including using keratoprostheses, amniotic membrane, and soft contact lenses—either individually or in combination with PPV to try to rehabilitate the ocular structures and save vision.



Harmonizing Eye Health

Cataract surgeons in the glaucoma symphony.

Over the past two decades, glaucoma treatments have proliferated with laser and less-invasive surgical options, filling in some of the gap between medical treatment for mild to moderate glaucoma and trabeculectomy to control advanced disease. As a result, ophthalmologists who mainly do cataract surgery now have glaucoma treatment options compatible with phacoemulsification, notably the various minimally invasive glaucoma surgery (MIGS) procedures.

"The advent of MIGS signifies a change in glaucoma care for cataract surgeons," Dr Roberto Bellucci said. Though his practice is primarily cataract and refractive surgery, having trained in a glaucoma clinic, he has done 2,000 glaucoma procedures—including trabeculectomies before filtering implants were available.

However, while glaucoma and cataract procedures use the same basic surgical skills, glaucoma surgery also typically requires intraoperative gonioscopy and detailed knowledge of angle anatomy.

In addition, glaucoma requires lifelong follow-up to detect and treat progression, which may not fit well with a streamlined cataract practice. Lack of reimbursement for more recent glaucoma devices and procedures, as well as the local out-of-pocket cost of eye drops, are other factors that may affect their uptake.

As a result, adding glaucoma treatment, especially surgical procedures, to a (primarily) cataract practice can be challenging—technically, operationally, and economically. Indeed, between 2016 and 2021, the proportion of respondents to the ESCRS annual Clinical Trends Survey performing glaucoma surgery declined significantly, while a growing proportion offered only medical glaucoma treatment.[1]

Still, proponents say non-filtering MIGS procedures are a generally low-risk method that may reduce intraocular pressure (IOP) enough to address mild to moderate glaucoma with fewer or no topical medications. Moreover, since they don't alter the anatomy as much as trabeculectomy, non-filtering MIGS do not preclude later additional MIGS or more invasive procedures, Dr Bellucci said.

Glaucoma specialist Dr Inder Paul Singh noted that five-year data show reduced IOP and medication need—and better quality of life in some cases—with meshwork stenting procedures compared with cataract surgery alone.[2] He has used conventional outflow MIGS for select moderate to severe cases to limit fluctuating IOP and delay subconjunctival surgery for those at high risk for complications.

However, glaucoma experts caution that non-filtering MIGS devices may not be suitable, even for patients with mild to moderate glaucoma, if the disease is likely to progress or they need a low-target IOP. And the only way to tell is to follow them for a year or more, said glaucoma specialist Dr Luis Abegão Pinto.

Complicating the issue are inconsistencies in how trials report data and a lack of large randomised prospective trials to determine efficacy of some MIGS procedures. "We need better data to know what really works," said Dr Pinto, who co-chairs a task force of the European Glaucoma Society that has developed recommendations for uniform data collection in glaucoma studies.

Below are some factors to consider when deciding to treat or refer glaucoma patients in a primarily cataract practice.

What to look for

Since many cataract patients have no contact with ophthalmologists until their vision declines, the preoperative workup goal should be to determine why the patient does not see well, including any comorbidities such as glaucoma, Dr Pinto said. Then, any treatment decision—including medical treatment, MIGS, or filtration surgery—should be driven by the treatment goal, though this can be difficult to establish at the first visit. Dr Singh added glaucoma surgery goals also vary by patient, with some requiring lower IOP regardless of eye drop need.

IOP over 20 mmHg is an obvious red flag. Asymmetry between the optic nerve heads in the two eyes is another, Dr Bellucci said. Optical coherence tomography (OCT) helps spot optic nerve head tissue loss. Visual fields are mandatory when any optic nerve damage is evident on OCT, and gonioscopy should be performed if not previously documented.

Dr Pinto stressed doing a complete diagnostic workup rather than relying on OCT, which cannot be the sole source of diagnosis. Visual fields, he noted, are the best way to detect and track progression.

Training for surgeons and staff

As with any new procedure, attend lectures and training, and try MIGS first in wet labs before starting with uncomplicated glaucoma patients, Dr Bellucci said. Learning to accurately identify the trabecular meshwork and where to position bypass devices to be effective is critical, said specialty expert Dr Antonio Maria Fea.

MIGS procedures:

- Trabecular meshwork bypass, such as the iStent (Glaukos) and Hydrus (Ivantis)
- Trabeculotomy devices such as the Kahook Dual Blade (New World Medical), Trabectome (MicroSurgical Technology), OMNI (Sight Sciences), and gonioscopy-assisted transluminal trabeculotomy
- Viscodilation of Schlemm's canal devices such as the Visco 360/OMNI, the iTrack microcatheter (Ellex iScience), and the Streamline goniotomy and dilation system (New World Medical)
- Bleb-forming subconjunctivalfiltration implants such as the Xen gel stent (AbbVie) and PreserFlo Microshunt (Santen)

For ophthalmologists out of practise with gonioscopy, fellow specialist Professor Carlo Enrico Traverso recommends first performing intraoperative gonioscopy on a patient who doesn't need glaucoma surgery. Dr Pinto suggested starting with one or two procedures. "It is impossible to master 10 different technologies with the same proficiency you have in cataract surgery."

And don't forget training staff. "There will have to be a certain number of [MIGS] procedures you have to do routinely for the nurse to know the next step to make sure it is as efficient as if you are doing a phaco alone," Dr Pinto said.

He noted some cataract surgeons are reluctant to adopt even trabecular bypass MIGS because it interferes with cataract surgery efficiency, particularly for those using a superior incision approach. Implanting a stent then requires moving the microscope to a temporal position. "At the end of the day, you've probably done two fewer cataracts to account for that time." Dr Fea added setting aside one day a week for glaucoma patients or moving them to the end of the schedule can help improve efficiency, while Dr Singh said reducing eye drop use with MIGS may save time on follow-up.

Bleb-forming procedures require additional training in managing antimetabolites, ensuring the tube enters the subconjunctival space, and managing complications such as choroidal detachments and fibrosis, Dr Fea said. He recommends following cases closely for the first three to four months after surgery—or even longer if the bleb has to be revised. The period between visits can be extended for uneventful cases, but "I would not leave the patient alone for more than three months for the first two years."

Treat versus refer

Not all glaucoma patients can be treated without the expertise of a glaucoma surgeon, Dr Bellucci said. He mostly treats patients with early primary open-angle glaucoma who are aware of their condition, but generally refers low-tension glaucoma patients. He also refers patients with significant nerve damage or progression, especially young or myopic patients. Most importantly, he refers advanced glaucoma patients possibly at risk of losing vision permanently due to surgery, known as wipeout syndrome. High myopia, uveitis, secondary glaucoma, and congenital glaucoma, Dr Fea said, should likewise be referred.

Dr Pinto suggests treating patients with whom surgeons have an established relationship. That patient will likely return for follow-up and can be referred if they progress to a glaucoma surgeon with more treatment options, he said.

Combined or separate procedures

MIGS procedures are designed to be used with cataract surgery or alone. But for cases requiring a lower target IOP, filtration procedures, including trabeculectomy and the filtering implants, are better, Prof Traverso said. For these options, the evidence and consensus are for cataract surgery first, followed three months (or more) later by the glaucoma procedure on a quiet eye, is generally easier and yields better results. However, patients with severe disease and very high IOP that cannot be controlled without immediate filtration indicate combined surgery, he added.

Educating patients

Educating patients on the limitations of glaucoma procedures and the need for lifelong follow-up is essential for good long-term outcomes. Dr Pinto advises having an honest conversation with the patient that does not overpromise or discard the safety concerns. Dr Singh suggests telling the patients, "we are on a journey," and will use a combination of therapies and technologies to help protect them from losing vision and maintain their quality of life.

"You don't want to say to the patient that he is cured," Dr Fea said. "I've seen patients who forget everything [after glaucoma surgery] and then come back five years later, and they are miserable."

Above all, follow the Hippocratic oath: do no harm. Whether slowing progression, lowering IOP, or reducing medication burden, know the goal and only do the procedure if it will help the patient, Dr Pinto said.

Dr Bellucci largely agreed. In patients with early glaucoma without visual field or nerve loss and low IOP, he will use a multifocal lens and femto-cataract surgery. However, for more advanced cases, he does not do anything to risk an IOP spike, avoiding femtosecond lasers, instead opting for advanced fluidics phaco machines. He also will not place a multifocal lens into an eye with contrast sensitivity already reduced due to glaucoma.

References:
1. JCRS, 49(2): 133–141.
2. Ophthalmology, 2022 Jul, 129(7): 742–751; Am J Ophthalmol., 2022 Feb, 234: 329.

Benefits of IA

Intraoperative aberrometry can improve predictability of refractive correction, but with some factors considered.

TIMOTHY NORRIS REPORTS

More predictable refractive correction outcomes and significant clinical benefits in challenging cases (such as toric IOL implantation in patients with low levels of corneal astigmatism) can be achieved using intraoperative aberrometry (IA). According to Dr David Pablo Piñero Llorens, IA can be a better tool for calculating IOL power if some factors are kept under control.

"IA measures the refractive state of the eye during cataract surgery, guiding surgeons in real time for IOL power selection and positioning, as well as detecting corneal curvature changes," Dr Piñero Llorens said. "Currently, there is only one commercially available model, the Optiware Refractive Analysis (ORA, Alcon), a device connected to a software with its own proprietary closed database."

He further explained several variables can affect IA measure accuracy, lowering the repeatability—intracameral presence of viscosurgical devices, ocular surface irregularity, intraocular pressure, the lid speculum and its position—"because it makes some pressure on the globe and can make some modifications of the geometry of the cornea and other structures of the anterior chamber."

Moreover, IA comes with some inconveniences that must be addressed, including the main inconvenience: increased surgery length, which Dr Piñero Llorens said can lead to less surgical efficiency. "We must prepare the eye for this measurement, the device for the analysis, and look at the data.

Despite some complications and needed observations, he believes IA can be used to improve surgical outcomes.

On average, the use of an IA increases the overall time by 3 minutes and 45 seconds compared to normal surgical time."

Yet one of IA measurement's major benefits, the potential optimisation of surgical outcomes, carries a controversial aspect. "Many studies have demonstrated that the use of the currently available generation formulas should seem sufficient to produce clinical outcomes with toric IOLs as good as we can achieve with IA."

One of the most difficult challenges comes with using IA and FLACS in low corneal astigmatisms. "Compensation with toric IOLs will have a lower predictability of refractive correction, with a significant contribution of posterior corneal astigmatism and a significant impact of small IOL misalignments or rotations," he said. "However, the combination of FLACS and IA to optimise the position and calculation of a toric IOL may allow a very efficacious correction of preexisting low-to-moderate corneal astigmatism."

Despite some complications and needed observations, he believes IA can be used to improve surgical outcomes.

"Intraoperative Aberrometry can be useful to improve the predictability of refractive correction with toric IOLs, especially in eyes with corneas with low astigmatism, but some factors must be controlled for an accurate procedure, such as lid speculum and OVD," he concluded.

"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."

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Digital Microscopes May Improve Anterior Segment Surgery

HOWARD LARKIN REPORTS

Digital microscopes offer a range of advantages for anterior segment surgery, making them far more than gadgets. These include ergonomics, teaching opportunities, enhanced visualisation, reduced risk of phototoxicity and photophobia, and interconnectivity with other devices and digital networks, said Heidelberg Engineering's Kfir Azoulay.

Azoulay discussed three categories of digital microscopes—retrofitted, hybrid, and fully digital. Retrofitted scopes are conventional optical scopes converted to digital by replacing optical viewing systems with digital cameras. They are less expensive and do not require replacing existing surgical microscopes, but they give up the optical viewing option and are not optimised for digital imaging. They are also less compatible with add-on technologies such as intraoperative OCT.

Hybrid microscopes offer both optical and digital viewing options. This provides a fallback in case of power outages or monitor failures. But because hybrids inherently compromise between two competing approaches, they do not fully optimise either, Azoulay said.

Fully digital microscopes have no optical viewing option. They are designed from the ground up for digital visualisation, allowing them to use different light wavelengths and filters to enhance imaging and reduced intensity light sources. They are also optimised for integration with other digital devices and add-on devices, such as OCT or wavefront analysers, to create a digital OR. However, they are generally more expensive than an optical or retrofitted microscope.

Ergonomics is a major potential benefit of digital microscopes, Azoulay said. They do not require bending over the patient, reducing the risk of musculoskeletal injuries such as lumbar and cervical spinal problems and rotator cuff injuries. However, some scopes place the viewing screen at the side, requiring the surgeon to turn their head, replacing one ergonomic challenge with another. Others place the external monitor in front of the surgeon or use augmented reality visors or digital binoculars, allowing the surgeon to adopt a comfortable posture for them.

Education is another area where digital microscopes shine, Azoulay said. "They really transform the OR into an immersive environment not just for surgeons but for students, residents, nurses, and techs." Added technologies such as a mouse or touchscreen allow teachers to point out what to do and what to look for in real time.

Visualisation can be enhanced using different light sources and digital filters to highlight various structures during critical steps such as capsulorhexis, Azoulay noted. Areas of interest can be augmented while irrelevant areas are suppressed. Adding OCT creates another dimension to visualisation, and digital scopes are set up to provide it.

Other benefits include overlaying digital surgical guides on a digital scope, performing intraoperative measurements to guide surgery, and significantly enhancing workflow by integrating digital scopes with other digital devices.

Safety may be enhanced by digitally identifying patients and reducing phototoxicity with lower light, Azoulay added. And with the rise of AI, digital scopes are primed to use predictive technologies that might alert surgeons to impending risks such as posterior capsule ruptures.

"The optical microscope is an island in the OR. The digital microscope interfaces seamlessly with the entire ecosystem," Azoulay said, which could potentially transform the current surgical paradigm. "I encourage the surgeons to engage with industry to make this the next-generation solution."

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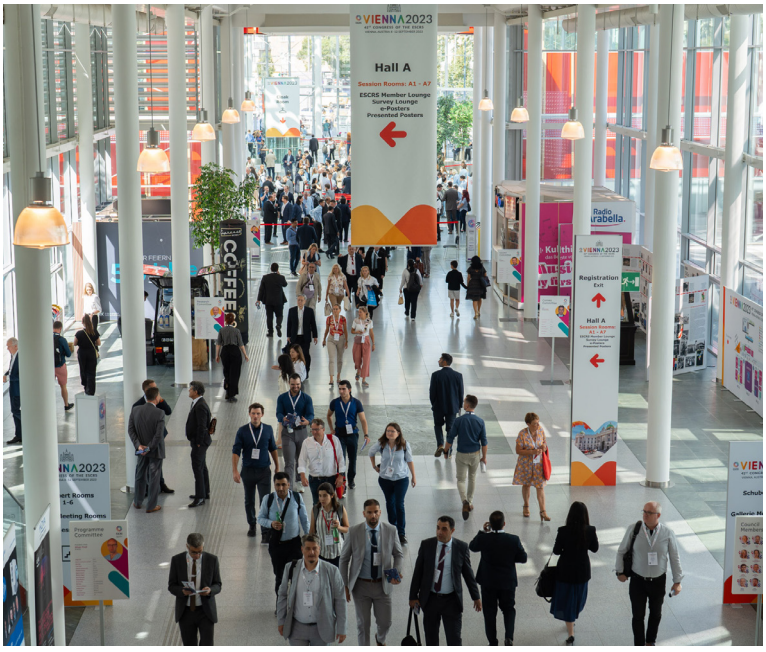
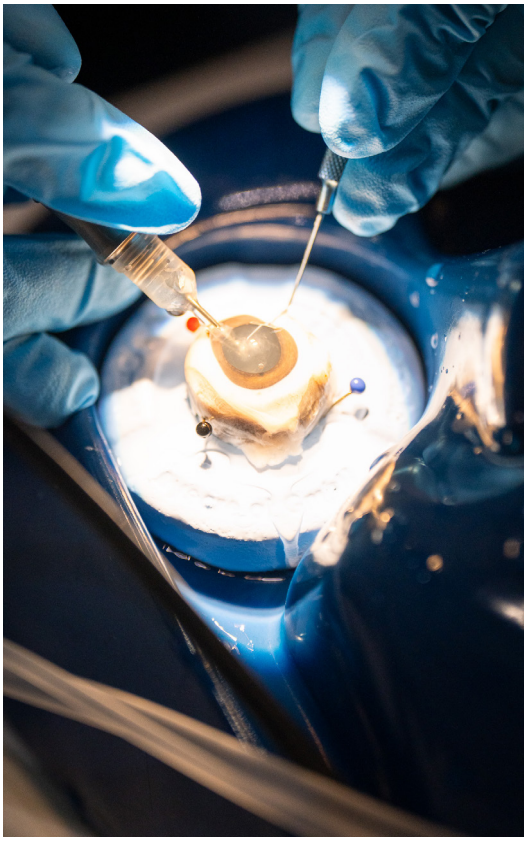
- MANAGING PATIENT FLOW IN A BUSY OPHTHALMOLOGICAL PRACTICE
- MARKET LEADERSHIP: HOW THREE REFRACTIVE SURGEONS 3X'ED THEIR PRACTICES IN THE LAST THREE YEARS

Views from *Vienna*

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



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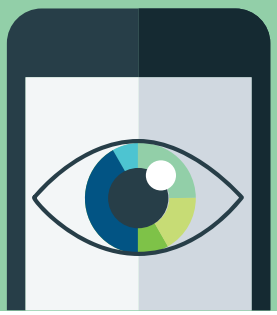
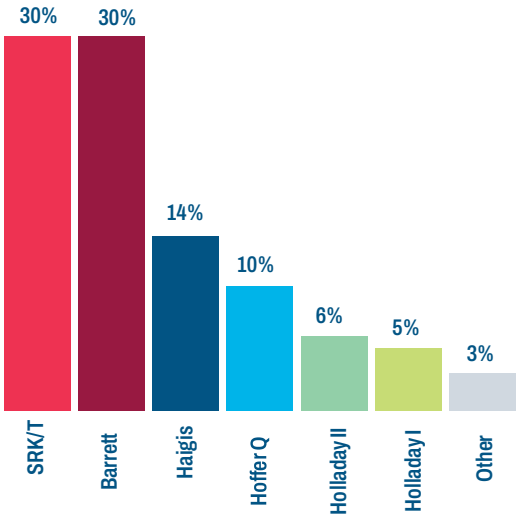
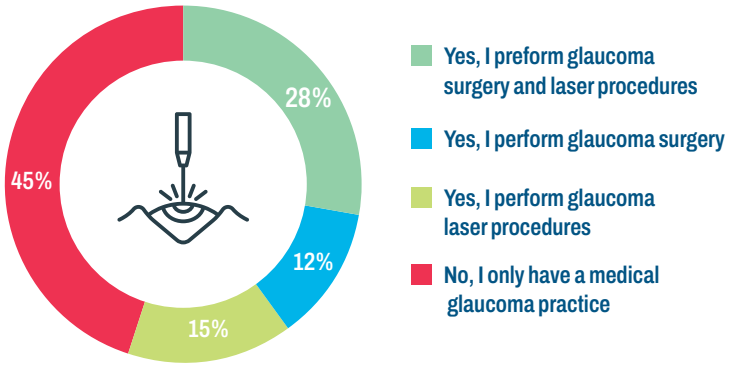


This report contains the results of the 2022 ESCRS Clinical Trends Survey. Questions addressed several areas of clinical practice, including general cataract surgery, astigmatism and toric IOLs, presbyopia correction, glaucoma and MIGS, and corneal refractive surgery.

What is your preferred lens formula for the majority of your cataract surgeries? (select all that apply)



Do you perform any glaucoma surgery (including MIGS) or laser procedures?



What do you consider to be the most efficient way to educate patients on refractive IOL options available to them?

28 average number of patients seen each month that are considered as having glaucoma

16% of cataract surgery patients, currently on topical therapy for glaucoma, are candidates for a minimally invasive glaucoma surgery (MIGS) device

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The symposia are as follows:

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

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

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.

DON'T MISS!

AI in Ophthalmology 2023
You can get up to date on deep learning, generative AI, and new ways of working in the digital era at this special symposium.
Monday, 11 September @ 14:15, Room C2, Messe Wien Exhibition & Congress Centre

Brush up Sessions
"Brush up" sessions are a new feature of the ESCRS Congress. You can spend less than one hour brushing up on the latest developments in retina, glaucoma, and oculoplastic surgery.
Monday, 11 September @ 08:30–11:30, Room Stolz 1–2, Messe Wien Exhibition & Congress Centre

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TOPICS:

- Leadership Values and Culture
- Leadership and Innovation in Ophthalmology
- Avoiding Physician Burnout
- Leading a Team in a Private Ophthalmological Practice
- Innovating to Reduce Costs
- Optimising Workflow to Maximise Productivity and Enhance Patient Experience
- Artificial Intelligence and Innovation in Ophthalmology
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- Pitching Your Business Idea to a Venture Capital Company
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