11th SEPTEMBER | 2023

ESCRS Today

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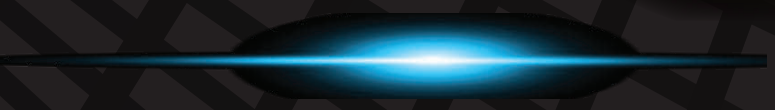

## Visual Acuity
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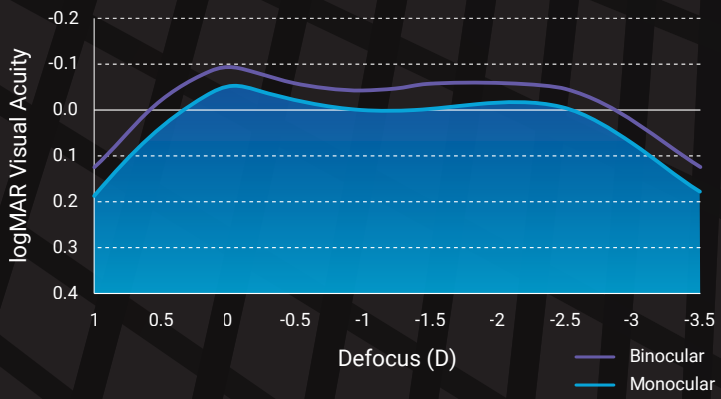


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# Mission Zero

Aiming for a green Congress.

ESCRS Mission Zero strives to reduce the carbon footprint of the ESCRS, aiming to be carbon neutral at this year's Congress. Among the key sustainability goals, ESCRS has committed to eliminating 90% of single-use plastic, polystyrene, and PVC from its operations. The hope is to set an example for other events and industries to follow suit. To this end, complimentary water stations throughout the conference centre offer delegates pure Austrian mountain spring water.

The ESCRS has also set an ambitious target of having 70% or more of all signage and branding at the conference made from sustainable materials, further emphasising the importance of responsible sourcing and manufacturing.

The Society encouraged delegates to do their part for at least 25% to arrive by climate-friendly transport options. By advocating for greener transportation choices, the organisation seeks to make a tangible impact in mitigating greenhouse gas emissions.

Attention has gone to the last detail, with more than 50% of food served as vegan or vegetarian and 70% sourced locally within a 160-kilometre radius. This not only reduces the event's ecological impact but showcases a commitment to supporting local economies and producers.

"In 2023, we are working together with interested parties to support our event participants' wellness, the local and global communities we visit and support, to protect and replenish affected ecosystems, and to inspire more regenerative actions all round," says Dr Oliver Findl, president of ESCRS. "We invite everyone to join us in this journey because we can achieve exponentially more positive impact together."

## Issue Highlights



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# Oliver Findl: A Memorable Presidency

BY H BURKHARD DICK MD

When Oliver Findl, President of the ESCRS, steps down at the end of this year, the Society shall remember his tenure as a time of both challenges and achievements—and, most certainly, will look back on the Viennese ophthalmologist's two years at the helm with gratitude.

"It will be just like before the pandemic," he mused a couple of weeks ago. He expected the ESCRS Congress in his hometown to be on par with the meetings before 2020—an understatement to say the least. This Congress puts all its predecessors in the shade. Not only did ESCRS 2023 see record numbers of registrants, but its programme featured insight into tomorrow's ophthalmology, such as the iNovation Day, and incredibly interactive and enlightening discussion, as with the Arena.

And the Vienna delegates had a social blast that can hardly be topped: a Grand Ball held in the Hofburg, the palace where the Habsburgs ruled over a vast empire. This and much more was Oliver Findl's doing.

Regarding ongoing education—one of the Society's primary aims—he has contributed not only as co-chair of the Clinical Guidelines Development Group for cataract surgery but has also encouraged many other initiatives, such as setting up a common e-learning platform to improve access to educational material.

He has supported the creation of a new Digital Health Aard that recently made its first grant. He also helped establish an online IOL calculator that now includes toric lenses. Under his guidance, the ESCRS purchased a state-of-the-art surgical simulator from Haag Streit that has already supported skills development to scores of trainees in Romania, Poland, and now, Austria (for Ukrainian trainees).

Under Oliver's leadership, the ESCRS has become a force for environmental and social conscience, as sustainability and fighting climate change have been a driving force for the Austrian ophthalmologist for many years. He was instrumental in making the ESCRS Congress carbon neutral and in promoting sustainability as a central theme internationally. He played a vital role in establishing EyeSustain with ASCRS and AAO, where key issues such as reducing OR waste can be investigated. He has also established the Sustainability Index for Disposables in Cataract Surgery (SIDICS) project—a tool developed to assist users in evaluating the sustainability of customised cataract packs used in medical facilities and provides insights into the environmental impact of different product configurations.

Oliver led the ESCRS in supporting Ukraine, encouraging industry partners to donate crucial surgical supplies. In addition to allocating a six-figure sum from its own reserves, ESCRS reached out to fellow societies to donate funds. He led the initiative to provide free congress registration for Ukrainian surgeons and emphasised the importance of relieving hardship in developing countries. Under his leadership, ESCRS funding for projects in developing countries has increased fivefold.

*H Burkhard Dick, Secretary of the ESCRS and chair of the department of ophthalmology at Bochum University, Germany.*

# A Night to Remember

## ESCRS Ball Raises Funds for Charity Programs

# CAIRS Gaining Momentum

Learn what you need to get started.

DR SOOSAN JACOB REPORTS

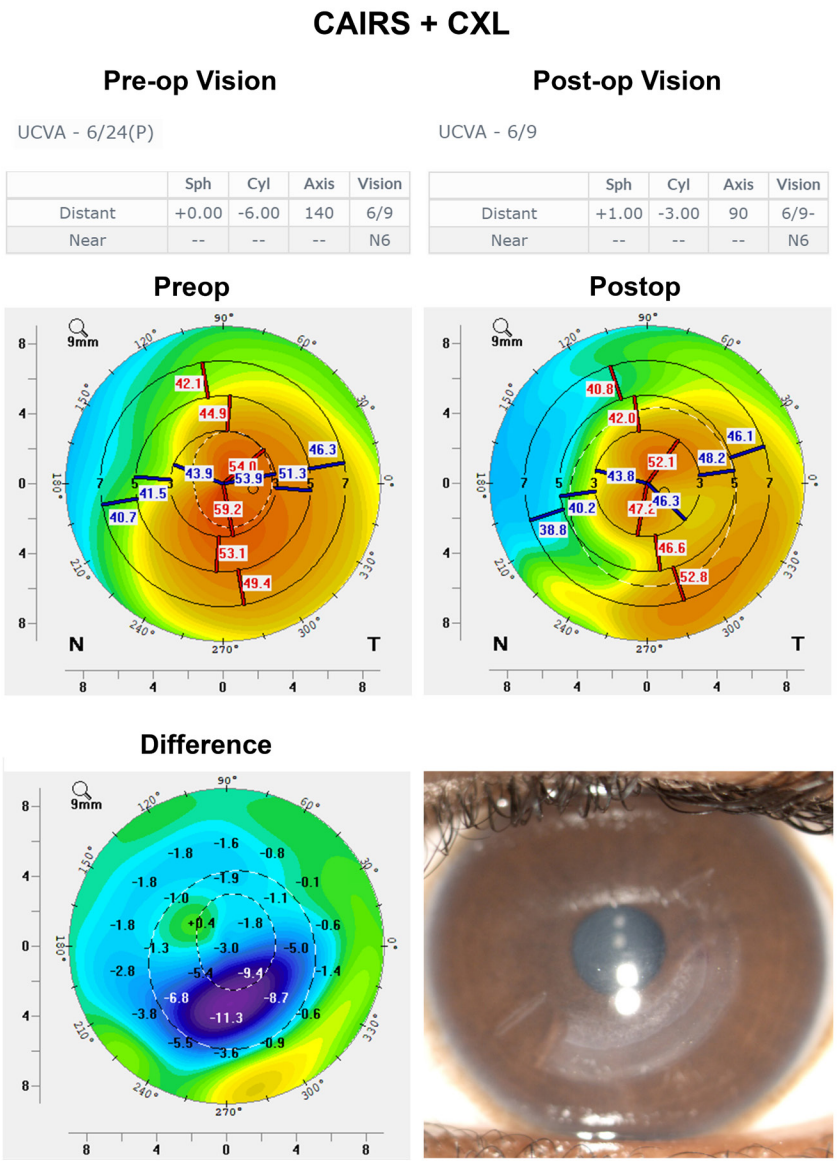
Corneal Allogenic Intrastromal Ring Segment or CAIRS refers to the use of any form of allogenic tissue—fresh, preserved, processed donor stroma, or any other alternate allogenic source placed within intrastromal corneal channels.

I started this technique in 2015 as a solution to complications seen with synthetic intracorneal ring segment (ICRS) implantation, such as extrusions and melts. I was pleasantly surprised to see that CAIRS's other advantages include as low risks even with superficial implantation and smaller optic zone, better effect, lower risk of glare and halos, and the possibility of implanting in advanced keratoconus (steeper than 58 D and thinner than 400–450 microns in implantation zone). In addition, synthetic ICRS—even when implanted in an optimal candidate—can, with time, result in overlying corneal melt if continued stromal thinning occurs secondary to progression or eye rubbing. Since CAIRS is allogenic, it becomes part of the host cornea and does not carry this risk.

## CAIRS goes global

CAIRS has gained momentum worldwide, with cases conducted in multiple centres in the United States, Canada, Australia, Germany, France, Ireland, Lebanon, Turkey, Israel, South Africa, Dominican Republic, and multiple centres in India. An easy technique to prepare CAIRS is to use a special double-bladed trephine (Jacob CAIRS trephine™ [patent pending], Madhu Instruments, India) to punch a de-epithelialised and de-endothelialised donor corneoscleral rim. This gives a ring of stroma that can then be easily cut to the desired length and inserted into a circular femtosecond laser dissected or manually cut channel within the patient's cornea.

CAIRS can be easily cut by the surgeon with no risk of tissue loss, unlike DMEK. CAIRS is also available from eye banks such as the Alabama Eye Bank, which offers pre-cut segments as well as processed segments. It is, of course, ideal to use optical-grade cornea for CAIRS, but if unavailable, non-optical-grade cornea may suffice if the cornea is not oedematous.




**CAIRS (Corneal Allogenic Intrastromal Ring Segment): Preoperative (top left), postoperative (top right), and difference (bottom left) keratometric maps of an 11-year-old child who underwent CAIRS with contact lens-assisted corneal cross-linking. Lower right shows slit-lamp image with single CAIRS seen placed inferotemporally. The preoperative uncorrected visual acuity improved from 6/24p (20/80p) to 6/9 (20/30), and the topographic (6.6 D preoperatively to 4.3 D postoperatively), refractive cylinder, and spherical equivalent came down significantly.**

**On-the-table customisation offers the advantage of not needing to depend on fixed thickness and arc length combinations.**


As I have described, customised CAIRS is the latest modification where the segment can be customised to get differential flattening according to individual topography. This helps further optimise results and is especially beneficial in asymmetric keratoconus. It is like progressive thickness synthetic ICRS but with added advantages of greater customisation.

On-the-table customisation offers the advantage of not needing to depend on fixed thickness and arc length combinations. It also negates the need to maintain large inventories, unlike customised synthetic ICRS. Using a degree-zone marker (Jacob degree-zone marker™, Epsilon Eye instruments, United States), the surgeon or eye bank can easily create customised CAIRS.

Drawn on a topographical map with the patient's refraction and topography, plans are then translated to the CAIRS using the degree-zone marker. Customisation is based on the principle that placing a thicker portion of CAIRS under a steeper area gives greater flattening than placing a thinner segment, which makes tailoring the individual topography easier to improve (please see video link).

Various other modifications have now been proposed for CAIRS by different users from around the world. Jack Parker MD (United States) has described staining CAIRS with trypan blue and dehydrating it before insertion. Shady Awwad MD (Lebanon) has described the "Jerky Technique", where prolonged dehydration for 60 minutes in a room with 35–50% humidity results in a jerky-like stiffness to the CAIRS, thereby allowing it to be held by a forceps and inserted into the tunnel—much like an INTACS.

I also use a technique of staining the Bowman's membrane side of the CAIRS, which enables me to implant the thicker and stiffer side towards the pupil while also helping identify and rectify CAIRS twisting during implantation. My team and I have also performed other modifications, such as using cross-linked CAIRS, riboflavin-soaked CAIRS, and instilling riboflavin into the channel.

Our initial experience and pilot study were published in the *Journal of Refractive Surgery*, and since then, we have done more than 350 cases. The large majority were with simultaneous epithelium-off accelerated corneal cross-linking (CXL) protocol (10 mW/cm$^2$, 9 min). The total number of cases globally is significantly higher.

CAIRS has been used for treatment of progressive (TG-PRK) and non-progressive keratoconus, cross-linked ectatic corneas, post-LASIK ectasia, and pellucid marginal degeneration. Implantation patterns are well-defined, and surgeons can counsel patients confidently to expect a high chance of improvement in both uncorrected and best spectacle corrected distance visual acuity.

Even up to a year later (in my experience), reversibility and adjustability remain an advantage, as well as easy combination with cross-linking at the same stage. It also doesn't take away the ability to perform other adjunct procedures such as topography-guided PRK (TG-PRK), phakic IOL, and refractive lens exchange.

Implanting CAIRS first creates synergy by reducing irregular astigmatism and improving corneal topography so surgeons can minimise tissue removal with TG-PRK and obtain better results with intraocular lens-based procedures. CAIRS is a good substitute for deep anterior lamellar keratoplasty (DALK) in many cases. In combination with thin-cornea cross-linking techniques, it can help delay and/or avoid a DALK completely. CAIRS has an easy learning curve, performed easily even by surgeons not trained in DALK. It also removes risks of intra- and postoperative complications associated with DALK.

The risk of rejection, though theoretically present, has not been significant in my experience. A combined case series between my team and Dr Parker's yielded just one case (about 0.25% incidence) as compared to a higher rate of 14–64% reported after DALK. In addition, unlike DALK and other more recent stromal additive procedures, the visual axis remains untouched in CAIRS, making it safe even in the rare possibility of a rejection.

To conclude, CAIRS is gaining momentum around the world with not just increasing surgeon interest in learning and adopting this technique but also increased traction among keratoconic patients—who are generally well read about their disease and aware of advantages and disadvantages of various procedures. My hospital has an increasing number of patients walking in seeking CAIRS. That said, CAIRS is not a panacea for all keratoconic patients. Very advanced cases—those with visual axis scarring and those without sufficient corneal thickness even for thin-cornea cross-linking techniques—would still need other procedures such as DALK.

*Dr Jacob, Director and Chief of Dr Agarwal's Refractive and Cornea Foundation at Dr Agarwal's Eye Hospital, Chennai, India. will discuss "What You Need to Start CAIRS Now" in the Transitioning to CAIRS Session, 8:30, Tuesday, Room A7.*

# ESCRS Research Projects Driving Innovation

Education and research have always been at the heart of the ESCRS's mission to serve its members and advance patient care in the field of cataract and refractive surgery.

It's a commitment that takes concrete form in a number of ESCRS research awards regularly open for competition, which offer substantial funding for the best research projects as decided by an expert evaluation panel.

Two principal types of research funding are currently available from the ESCRS: the Clinical Research Awards and the Pioneer Awards. To these, the ESCRS has recently added the Systematic Review Awards and the Digital Research Awards as two new categories.

## Clinical Research Awards

The Clinical Research Awards ("CRA") aim to support and encourage independent clinical research in cataract and refractive surgery. The amount of funding awarded to a successful applicant is up to €750,000, which is open to clinicians and researchers with a current ESCRS membership who have been a member for at least the last three consecutive years. Applicants must hold a full-time clinical/research post at an EU-based clinical or academic centre.

Ideas and initiatives such as clinical research into the use of specific medical treatments and surgeries, clinical research on the pharmaco-economic analysis of particular treatments, or research into the optimal management of national and global healthcare systems in ophthalmology may be eligible for consideration in the Awards.

For 2023, ESCRS requests CRA applications on the following topic: A comparative, controlled trial evaluating different types of presbyopia-correcting IOLs for post-keratorefractive surgery patients undergoing lens surgery.

## Pioneer Awards

Open to young ophthalmologists aged 40 or younger, the Pioneer Awards support and encourage independent clinical research in cataract and refractive surgery. Applicants are invited to introduce and develop a body of clinical research work addressing a challenging "problem" to devise a practical "solution" for the benefit of patients.

The Pioneer Awards target funding any new initiative, which may include: a novel research idea for development of clinical trial studies, a non-interventional or observational study, a natural history/epidemiological study, a comprehensive series of retrospective case-control studies, and a patient or disease registry.

The awards are open to ESCRS members who have been a member for at least the last three consecutive years and who hold a full-time clinical/research post at an EU-based clinical or academic centre. The amount for funding awarded to a successful applicant is between €5,000 and €50,000 (maximum) for a project with a duration no longer than two years.

## Systematic Review Awards

The ESCRS Systematic Review Awards ("SRA") is a new initiative sponsored by the Society to produce a high-quality body of research intent on preparing, collating, analysing, synthesising, and reporting medical research.

The initiative provides a new scholarly output in cataract and refractive surgery or medicine focused on the methodology created by the Cochrane Library. The competition is open to all ophthalmologists (MD, and/or PhD, or experienced ophthalmic nurses) holding a full-time clinical/research post at an EU-based clinical or academic centre.

## Digital Research Awards

This latest ESCRS initiative is designed to support and encourage research leading to digital transformation in cataract, refractive, and corneal surgery. The competition is open to all clinicians and researchers.

Support of up to €500,000 is available over a maximum of three years for a project with suitable infrastructure and experience leading to the collection of high-quality healthcare data in routine clinical practice and/or the development of open access data sets for clinical research either from prospective data collection or the transfer of existing anonymized data sets to the public domain.

Projects may be small or large, with clear goals and a well-designed plan for project execution. Researchers should be able to frame at least one important clinical research question that appropriate analysis of collected data will ultimately help answer.

*Information on all awards is available at www.escrs.org*

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# An Open-Eyed View of AI

Reaping the benefits will require good data and careful design and oversight.

BY HOWARD LARKIN

"On two occasions I have been asked, 'Pray, Mr Babbage, if you put into the machine wrong figures, will the right answers come out?'... I am not able rightly to apprehend the kind of confusion of ideas that could provoke such a question." – Charles Babbage, inventor of the digital programmable computer, from Life of a Philosopher (London, 1864)

In 1837, Charles Babbage designed a programmable mechanical calculating device that is the conceptual model for most electronic digital computers today. With the above quote, he also articulated a computer truism later formulated as "GIGO"—garbage in, garbage out. In other words, the quality of any computer output depends on the quality of the data and programming going in.

And so it remains, even in the realm of artificial intelligence (AI). AI is any computer application that does something normally thought to require human intelligence, Dr Pearse A Keane, an ophthalmologist and professor of artificial medical intelligence, told *EuroTimes*. However, AI deep learning models go beyond traditional computer programs by independently identifying relationships among data points not prespecified by programmers. Further, they can be programmed to learn and adjust their algorithms based on new information. This gives AI enormous and unforeseeable transformational potential on par with the advent of personal computers—and ophthalmology is at the forefront, he said.

But whether they are narrowly focused, supervised applications trained on labelled ocular images or other curated data sets, or unsupervised or generative applications powered by large language models (LLM) accessing hundreds of billions of words, images, recordings, or medical records, AI-enabled programs are still computer programs. As such, they require careful design, testing, training, and ongoing supervision to work reliably and accurately—at least for now.

"We have seen a lot of hype around AI. The interesting and scary thing is progress is accelerating—even in the last few months—that is really blowing everyone's mind outside healthcare. It will be absolutely huge," Dr Keane said. "But we need to balance enthusiasm with caution for anything used in healthcare."

**No one is asserting that we should let algorithms treat our patients without oversight. In fact, that's exactly the opposite.**

So, just as ophthalmologists wouldn't send a referral note or answer a patient question using only what the electronic medical record provides or diagnose glaucoma progression based on automated visual field analysis alone, the output of any AI system, no matter how sophisticated, always should be carefully evaluated and edited, said Dr Ranya Habash, co-chair of AI for the American-European Congress of Ophthalmic Surgery.

"No one is asserting that we should let algorithms treat our patients without oversight. In fact, that's exactly the opposite," Dr Habash said. "We can allow AI to perform the tedious tasks to help us be more efficient; then, we oversee the output to make sure things are accurate before they go out. It's our responsibility and an obligation."

## Model drift and hallucinations

There are many types of AI, but those used in healthcare are predominantly deep learning variants of machine learning. They use neural networks to iteratively identify, examine, and statistically test correlations among data points based on images or other digital data such as biometry measurements or text.

The goal is to develop models capable of predicting likely diagnoses or outcomes in patients outside the training data set used, such as screening for diabetic retinopathy or selecting the appropriate IOL power for cataract surgery. LLMs may also help draft documentation, patient communication, surgical plans, reports, and papers, or even assist in resolving diagnostic dilemmas.

Because these statistical models are empirical, their predictive power depends heavily on the make-up of their data training sets. In general, the larger and more representative the training set is of the general patient population, the more accurate the model will be for clinical use.

Typically, only part of the sample data set trains the models, with the resulting algorithm tested for accuracy on the remaining portion. Tweaking and rerunning the model occurs at this stage. But before its use in practice, it should also be clinically validated with other methods, Dr Keane said.

Testing for approved AI medical devices is stringent, and devices in clinical use should meet that standard, he added. AI-trained devices currently approved by the US Food and Drug Administration (FDA) are locked, meaning they do not learn, and the model doesn't change. The agency is developing regulations to accommodate machine learning by requiring a prospective plan to revise and test models without further approval.

Data quality is also critical, Dr Mark Lobanoff told *EuroTimes*. But clinical data gathered from large groups of practices can be unreliable due to differences in when and how it is collected, even the calibration of test equipment.

In his work with Bausch + Lomb developing AI applications for eyeTELLIGENCE, an ophthalmology software platform, Dr Lobanoff addresses the issue by using a subgroup of data known to be meticulously collected. Models, such as those calculating IOL power or detecting glaucoma progression, are developed using this set and then tested in the larger, less curated data set to find tweaks to improve performance.

Clinical validation involves running beta versions alongside existing methods and comparing the outcomes the models predicted with those achieved using the existing methods. Only then will the AI models be ready for clinical use, which Dr Lobanoff said is about two years off for eyeTELLIGENCE.

Dr Lobanoff said care also must be taken using generative LLMs, such as ChatGPT. "We don't always really understand what AI is doing, how it finds a solution." This can lead to "hallucinations"—or a confident presentation of wildly wrong information. Generative AI systems making up references or describing how the Golden Gate Bridge moved to Egypt are examples. LLMs are being revised to reduce or eliminate these problems. But he advised always checking the text for accuracy before signing off on it.

## The clinician's role

While most clinicians will not participate directly in developing AI applications, these tools will likely become ubiquitous soon, Dr Keane said. Practising clinicians will not only use such applications—many will likely provide clinical data for updating them through electronic systems.

As AI applications become available, clinicians need to educate themselves on appropriate use, Dr Keane said. "Learn how to identify their strengths and weaknesses. In a certain type of patient, an algorithm might not be so accurate—that is the kind of learning we will need." For example, an algorithm developed on average axial lengths may not be as accurate as one developed specifically for shorter eyes.

Awareness of the importance of collecting accurate data is also critical, Dr Lobanoff said, noting precise postoperative manifest refractions are particularly needed to evaluate cataract procedures. This could drive culture changes in practices to collect such information more regularly and rigorously, benefitting these practices with better AI models. "Accuracy means a happier patient."

*Pearse A Keane MD is an ophthalmologist at Moorfields Eye Hospital, London, UK, and professor of artificial medical intelligence at University College London. p.keane@ucl.ac.uk*

*Ranya Habash MD is an ophthalmologist and assistant professor of ophthalmology at Bascom Palmer Eye Institute, Miami, US. ranya@habash.net*

*Mark Lobanoff MD is an ophthalmologist and founder and president of OVO LASIK + LENS, a private clinic; founder and CEO of Phorcides, a LASIK software firm. mlobanoff@gmail.com*

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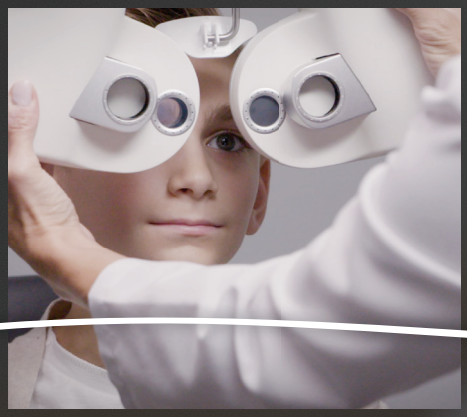



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# Eye-ing Savings and Efficiency

Removing unused tools from surgery trays could cut costs and waste.

HOWARD LARKIN REPORTS

Identifying and removing unused surgical tools from high-volume surgical trays could save money and reduce the environmental impact of ophthalmic surgery, said Dr Victoria Liu of the University of Ottawa Eye Institute, Canada. The savings would mostly come from reducing processing and sterilising costs, as well as those for replacing damaged surgical instruments.

In a formal audit of 85 cataract surgeries by multiple surgeons at the institute, Dr Liu found about half of the tools in its cataract surgery trays were not used in a typical surgery. Overall, surgeons used a median of 46% of the tools per surgery, ranging from 32% to 59%. Seven of 22 tools on the tray were used in less than 2% of surgeries, with three going entirely unused.

**Awareness and intervention to decrease unused surgical tools are important to reduce environmental costs in the OR, especially in the context of climate emergency and sustainability.**

Dr Liu estimated the total cost of these instruments, which did not include phacoemulsification tools, at more than $6,800 Canadian. Removing the eight tools used in less than 10% of surgeries would cut that total by about $2,470. Over just 50 trays, savings on the upfront cost of instruments would exceed $120,000. Actual savings would accrue through reduced handling, sterilisation, and replacement costs. Cataract surgery volume at her centre is about 8,500 cases per year.

An audit of corneal surgery trays for Descemet stripping automated endothelial keratoplasty (DSAEK) produced similar results, Dr Liu reported. A mean of just 32% of 32 tools on the tray was used per surgery, ranging from 22% to 38%, with 41%—or 13 instruments—used in no surgeries at all. The total cost of these 32 instruments is more than $12,000, so eliminating the unused tools for he more than 110 annual DSAEK procedures could save significant money.

However, Dr Liu acknowledged the study samples were small, adding result confirmation and the impact in the OR must be evaluated before making any changes to surgical trays. The audit project also demonstrated the complexity of opinions among multiple shareholders, including surgeons, nurses, and clinical care leaders, and generated resistance to making changes. "We are pending further feedback prior to making corneal tray changes."

Also, these costs are predicted, and the actual impact will need to be calculated after any future changes, Dr Liu added. However, while the environmental outcome is difficult to assess quantitatively, the impact on OR activities and financial waste can be calculated.

"Awareness and intervention to decrease unused surgical tools are important to reduce environmental costs in the OR, especially in the context of climate emergency and sustainability," Dr Liu concluded, noting optimising surgical trays may also have a positive impact on OR procedures, patient care, and patient safety.

# ESCRS CONGRESS
## KEY SUSTAINABILITY GOALS

## WASTE

**-90%**
**Decrease** single-use plastic, polystyrene and PVCty.

**<15%**
**Decrease** waste sent to landfills

**50%**
**Increase** recycling

**+70%**
**Increase** signage and branding made from sustainable materials

## EMISSIONS

**+25%**
**Increase** number of delegates arriving by climate-friendly transport

**+50%**
**Increase** amount of vegan and vegetarian food served

**+70%**
**Increase** amount of locally sourced food

**100% Offset**
**unavoidable carbon emissions**

ESCRS Research | EUREQUO

# Registry Data Drive Real-World Surgical Improvement

DERMOT MCGRATH REPORTS

With more than 4.1 million cataract cases and over 227,000 refractive surgeries now recorded since its launch in 2008, the European Registry of Quality Outcomes for Cataract and Refractive Surgery (EUREQUO) continues to yield extremely valuable data on surgical practices and outcomes, according to Professor Mor M Dickman.

Funded by the ESCRS, with initial support from the EU, EUREQUO is one of the largest international IT projects in ophthalmology, connecting surgeons all over the world and building a network to facilitate the exchange of expertise. All ESCRS members can access the registry free of charge.

By collecting data, surgeons can monitor their results over time, anonymously comparing them with other colleagues, clinics, and countries. Cataract, refractive, and patient-reported outcomes are all available in one web-based platform.

"EUREQUO provides a means to audit surgical results and encourages surgeons to make adjustments to their techniques and improve their outcomes," Prof Dickman said.

For its part, the ESCRS believes that a continuing audit of surgical outcomes—making comprehensive data available for comparison—is necessary to ensure the best patient care.

Among the key trends identified in 2022, Prof Dickman noted a total of 271,347 surgeries, with 57% of the patients being women and 43% men. The majority of intraocular lenses (IOLs), 92%, were hydrophobic acrylic. Additionally, 4% of IOLs used were toric, multifocal, or extended depth of focus.

Approximately a quarter of patients (24%) had ocular comorbidities. Femtosecond laser-assisted cataract surgery was employed in only 0.13% of cases. Notably, 2% of patients exhibited a vision of 0.1 or worse, while a significant portion (48%) had a baseline vision of 0.5 or better.

The mean best-corrected distance visual acuity (BCDVA) was 0.46 before surgery and 0.95 after. A final 1.0 BCVA or better was achieved in 68% of cases, and 93% achieved a final 0.5 BCVA or better. Improvement by two lines or more was observed in 90% of cases, while 53% improved by five lines or more. In 2022, the most frequently registered perioperative complications were posterior capsule rupture (PCR) in 0.45%, dropped nucleus in 0.01%, iris damage in 0.06%, and other complications in 0.94%.

More than 220,000 accumulated refractive surgery cases have now been recorded in the database, Prof Dickman noted. The average age of refractive patients was 47 years, with a standard deviation of 14 years. The mean preoperative vision measured was 0.03 logMAR. Among the patients, 58% were myopic, 40% were hyperopic, and 1% were emmetropic. In 71% of eyes, the final uncorrected distance visual acuity was 1.0 (6/6) or better. In 81% of cases, the final refraction was between -0.5 D and +0.5 D.

Prof Dickman added three new registry task forces were introduced in 2022.

"The global task force brings together international experts, contributing diverse perspectives to broaden the reach of the registries, enhance transparency and accountability, and ensure patient needs are accurately addressed," he said.

Two other task forces of note are the PROMs and industry task forces. PROMs bridges the gap in capturing patient-reported outcomes in cataract and refractive surgery across European healthcare systems, while the industry task force encourages collaboration in real-world outcome data collection, digital tool development and implementation, post-market safety assurance, and standardisation and implementation of data sets, including patient-reported outcomes and interoperability.

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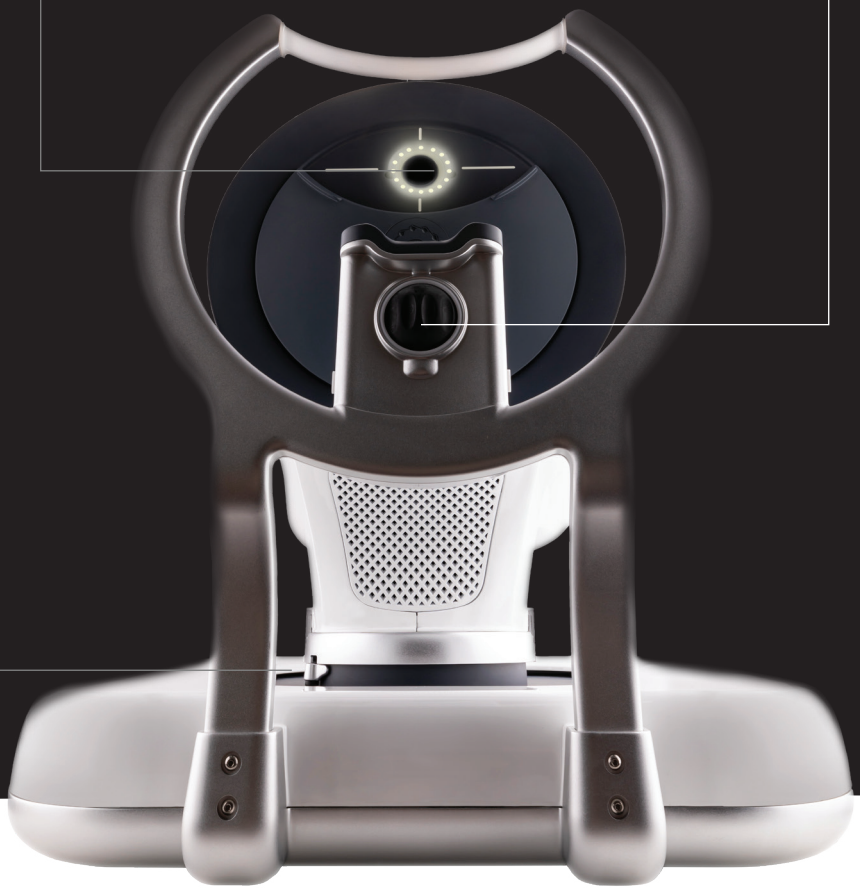

# Experience our Exciting On-Booth Program!

## TODAY'S ON-BOOTH AGENDA:

September 11, 2023

Hall C, Booth **C217**

**11:15**

**Dr. Ike Ahmed in conversation with Dr. Sheraz Daya**

Glaucoma is Only Young Once: DSLT as a First-Line Therapy

**Everyday at 16h**

Prof. Michael Belkin

Daily Q&A Session

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# MIGS and SLT Slug it Out in Bruising ARENA contest

DERMOT MCGRATH REPORTS

When a jackal is confronted with a jackhammer, the only possible outcome is a violent struggle for dominance. And while there was thankfully no blood left on the canvas, the audience at the Arena debate on microinvasive glaucoma surgery (MIGS) versus selective laser trabeculoplasty (SLT) were still treated to a fiery contest as Karl "The Jackal" Mercieca from Germany slugged it out against Carlos "Jackhammer" Traverso from Italy.

Making the case for MIGS, Karl Mercieca came hurtling out of the blue corner with a volley of persuasive arguments.

"MIGS is way better than SLT. It can be combined with phacoemulsification, and the IOP lowering potential is way better than SLT," he said. "If you look at the long-term results, with one procedure, you can get consistent pressures over a much longer period. With SLT, you need to repeat and repeat and repeat, and not all patients respond."

Barely pausing for breath, Dr Mercieca followed up with another devastating combination.

"People say that SLT is cost effective and non-invasive, and so forth. But actually, it's not that cost effective at all. If you look at MIGS combined with phaco, for example, the quality of life is better for your patient, and it's actually more cost effective."

The real appeal of MIGS is its versatility, argued Dr Mercieca.

"MIGS doesn't mean one procedure—you have got so many options to choose from. The other thing is it doesn't depend on having a nice open angle, whereas SLT can only be used in eyes with large, wide angles. MIGS can be used in other situations, especially combined with phaco, whereas SLT is not indicated in uveitis, narrower angles, and so forth. But the true beauty of MIGS is you can really tailor it. It's truly personalised medicine for your glaucoma patients," he concluded.

## The Jackhammer fights back

In the red corner, the "Jackhammer" Traverso took the blows without complaint and decided to come out all guns blazing.

"First of all, what is the spelling for MIGS? If you are using MIGS, this means 'my income grows steadily,'" he said to laughter from the assembled audience.

After this opening uppercut, Dr Traverso continued his verbal assault.



**In the red corner, the "Jackhammer" Traverso took the blows without complaint and decided to come out all guns blazing.**

"Let us face it—MIGS are minimally effective. There is no comparable risk when we look at SLT," he said. "With MIGS, we have seen endophthalmitis, choroidal issues, [etc.]. SLT is also doable without using the gonioscope. SLT is really not expensive, it is somewhat repeatable, and as a primary treatment, it is not only effective, it's ethical. It is evident that there is no evidence whatsoever that trabecular MIGS are really working."

Dr Mercieca responded that Dr Traverso's arguments were strictly in the featherweight category.

"You are in the wrong boxing category because SLT is comparable to drops," he said. "We are here at ESCRS with cataract surgeons who want to combine something with a cataract removal to get effective results, not something which they have to wait six weeks to see something positive."

Dr Traverso was having none of it, delivering another stinging financial argument to his opponent: "Yes, of course, combine MIGS with phaco, so you get two surgical fees in 30 seconds. Who is going to pay for this?" he asked.

Dr Mercieca was quick to respond, adding long-term data showed that MIGS is a cost-effective procedure. "I would like to quote one Carlos Traverso back in 2014 who said, 'MIGS is definitely the way forward and an alternative to current treatment with really expanding horizons'," he said.

However, Dr Traverso wasn't taking this potential hammer blow lying down.

"Yes, but those were the early data. We were part of the very first trial on this trabecular stent, and we participated enthusiastically. But what are the long-term results published in the literature? If it's not confirmed by data, what is that for? My income grows steadily if I use MIGS, but I'm not there for income. I'm there for the patient's well-being. So, I think that as a first step, SLT is really the only way out," he said.

After some more lively trading of verbal blows in a hugely entertaining contest, both contestants retreated bloodied but unbowed to their corners and awaited the verdict of the audience present.

Summing up, the referee, Leon "The Lion" Au, thanked both opponents for a lively debate and announced Dr Mercieca as the winner on points in a tight contest.

# The Automated Future of Glaucoma First-Line Treatment

Direct selective laser trabeculoplasty is easy, fast, and user and patient friendly

TIMOTHY NORRIS REPORTS

Roughly 140 million patients suffer from glaucoma. Not all of them have access to a glaucoma specialist, and the eye drop treatment does not have high adherence due to side effects, with the patients often being unhappy.

"So, we eye doctors are happy that the European Glaucoma Society considers SLT as a first line therapy in glaucoma," said Dr Matthias Elling during the free paper session Sunday. "Conventional SLT is dependent on glaucoma specialists, time consuming, and the question is if that is the real best first-line treatment."

Direct selective laser trabeculoplasty (DLST) is a recent welcome addition for glaucoma specialists who are looking for different options for a first-line treatment of glaucoma patients.

"We are glad to have now at the University Eye Hospital of Bochum the DSLT, in commercial use since November 2022, that has already treated 400 eyes," Dr Elling said. "An automated treatment, very user and patient friendly, with an integrated algorithm that recognises the treatment area and an integrated eye tracker."

"The patients come in; lid speculums are placed. Eye drops are put in. They walk to the laser and stand there," said Dr Peng Tee Khaw. "You focus on the limbus, and after the three seconds the actual treatment takes, they walk off and you can do the second eye. This is an extraordinary type of innovative treatment."

"It is a drop-free, easy repeatable and efficient alternative for a first line therapy, and we can treat the patient only with a touch of one button, applying 120 laser spots in a 180° or 360° treatment area," Dr Elling observed.

As demonstrated in the GLAUrious study, DSLT is safe and effective in providing a clinically meaningful reduction in IOP that is sustained out to 12 months.

"At six months we had a washout comparison of mean IOP, then at 12 months the results were similar," Dr Khaw said. "A slight difference can be observed in the mean IOP reduction of -0.7mmHG for the DSLT, not a huge amount."

"After 12 months we have in both groups nearly an identical IOP lowering effect of 3.4 mmHg," Dr Elling added.

The standard evaluator-masked, randomised, controlled, non-inferiority trial was conducted on 99 and 93 patients in 14 study sites across the UK, Italy, Israel, and Georgia.

"Although you see there are some differences in the patients, there's no differences that would obviously burst the direct or the standard SLT," Dr Khaw observed. "70% of all patients with one medication were off all treatments at 12 months, and 50% of patients who were under 3 medications were also off at 12 months compared to 39% of the standard SLT."

**Regarding safety results, only minor adverse effects were underlined in the study, with an identical safety profile compared to conventional SLT (with only one slight exception).**

According to Dr Elling, patient selection is optimal. "Most of the glaucoma patients are really suitable for DSLT treatment, not only in naïf eyes as a first-line therapy, but also in eyes with advanced diseases and even after glaucoma surgery," he explained.

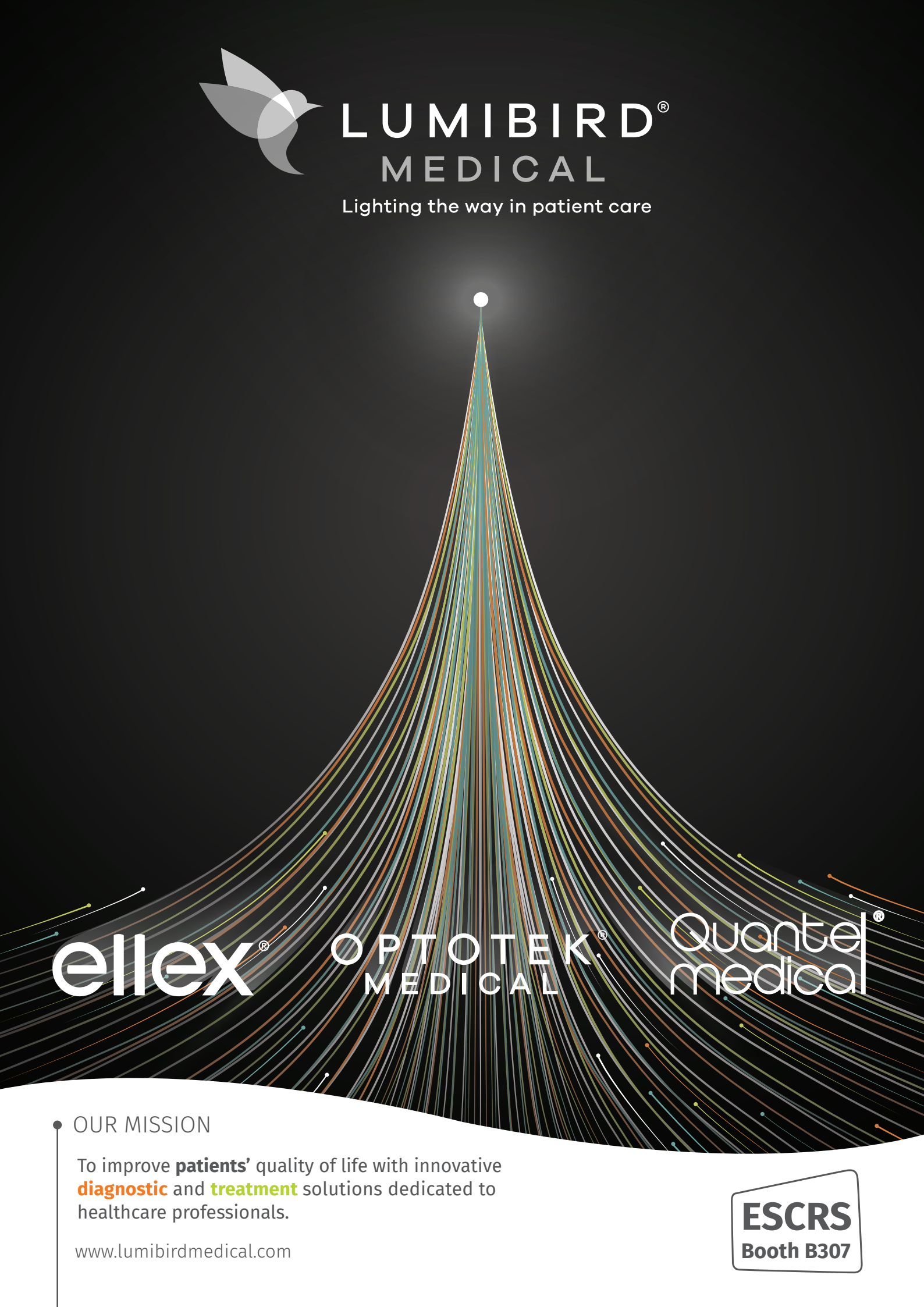
Exclusion criteria for DSLT are very forgiving. "We can treat patients in a sitting or in a standing position but not in a lying position, and eyes with a previous surgery like a trabeculectomy could give some difficulty for the algorithm to find the limbus, making the treatment difficult to perform," Dr Elling said.

Regarding safety results, only minor adverse effects were underlined in the study, with an identical safety profile compared to conventional SLT (with only one slight exception). "There are small punctuates of the conjunctival haemorrhages in 20% of cases, and they are very mild and reabsorb shortly," Dr Khaw observed.

According to both the presenters, DSLT is a very safe and simple procedure.

"DSLT definitely provides a meaningful reduction in IOP at 6 months that is sustained out at 12 months," Dr Khaw said. "The pressure lowering is very similar to SLT, and 70% of the naive patients are still drop free, not dissimilar to the LiGHT study at a longer time period. The extraordinary ease and speed of use, of the patient walking in, lid speculum, drops chin up, laser and treatment done in a couple of seconds, may considerably improve efficiency and access to care, which is a resource that today tackles one of the biggest issues in glaucoma worldwide."

"The future is automated," Dr Elling concluded. "DSLT can be used as a first-line therapy as mentioned by the Glaucoma Society. It is an effective and gentle treatment that can optimise the adherence of treatment and the care of an increasing number of glaucoma patients."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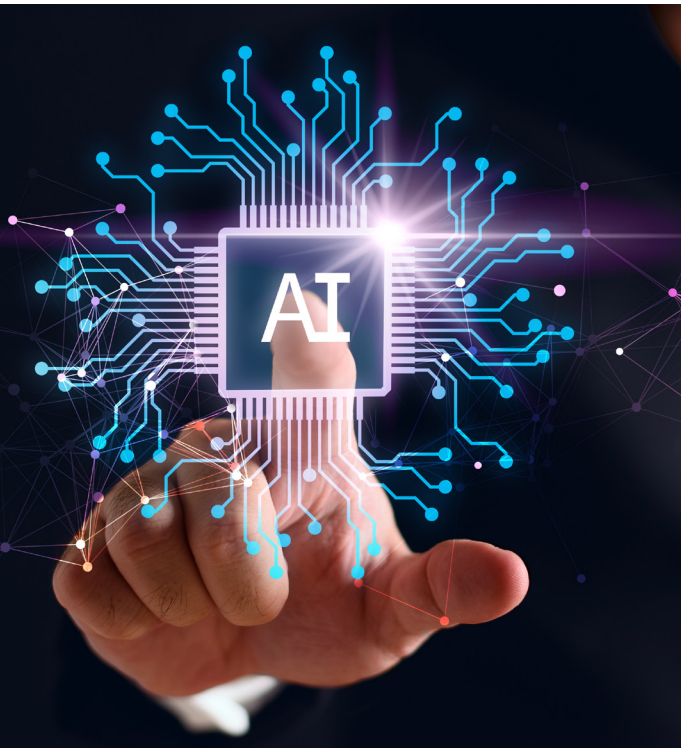
# The AI conundrum: Unleashing Potential or Awakening the Terminator?




BY YARROW SCANTLING BIRCH MD

The year is 2079. The artificially intelligent (AI) machines have won—the once sacred doctor-patient relationship has decayed under the weight of ruthless standardisation. Time, a once cherished human resource for building understanding, has been replaced by AI-driven algorithms that economise on human interaction. Empathy has become an antiquated notion, trampled under the boots of scientific progression. As an ophthalmologist of the future, you work virtually to moderate the activity of numerous clinical rooms, hearing synthetic conversations, and witnessing the replacement of human touch with the sterility of a robotic handshake.

## The revolution

As we enter the Fourth Industrial Revolution, technologies capable of surpassing human intelligence are emerging. AI encompasses data-driven computer systems that use algorithms and machine learning to rapidly process large quantities of data and solve complex problems. Deep learning (DL), a variant of machine learning, is inspired by the cortical architecture of our own brains. DL employs deep neural networks (DNN) to analyse inputs through interconnected artificial neurons across multiple layers.

## A wealth of pixelated information

AI in ophthalmology shows promising potential in detecting retinal disease and glaucoma, the leading causes of blindness in Western society. Optical computed tomography (OCT) scans use infrared light to capture detailed retinal structures and is becoming the gold standard ophthalmic imaging tool. DNNs can digest the wealth of pixelated data on OCT into lower-level inputs. These DNNs can outperform ophthalmic experts in the diagnosis of various retinal conditions and have been developed into autonomous commercial AI systems, such as IDx-DR (LumineticsCore). Similar advancements have been made in detecting early glaucoma. Integrating AI systems in front-of-house triage and screening services has the potential to improve accessibility and affordability of eye care, as well as alleviate work from busy eye clinics. Moving forward, AI needs to expand beyond ophthalmic imaging to other ocular biomarkers such as the oculome, which holds promises for the early detection of systemic disease. This would unlock an era of personalised and whole-system medicine.

## Black box learning

The lack of transparency in AI poses a significant challenge. DNNs resemble enigmatic black boxes, making it difficult to unravel their inner workings. This obscurity compromises the principle of nonmaleficence, as AI models generate outputs without clear rationales and erode trust in their validity. An unexpected revelation occurred when Google researchers developed a DNN model to predict cardiovascular risk, only to discover that gender could be identified from fundus photographs alone. This surprised the researchers due to the seemingly implausible nature of such a hypothesis, but equally, there was no means to investigate the underlying reasoning behind this output.

## Collaboration, regulation, and bias

Commercial interests are driving an unregulated arms race in AI innovation with no consideration for potential

harm. In ophthalmology, there are numerous patented algorithms but few fully approved regulatory devices on the AI market. Given these AI models thrive off large quality data sets, it appears wasteful that data sharing and collaborations are not being forged amongst medical technology firms. This results in greater bias within individual AI models, less standardisation of diagnostic inputs, and less generalisability to larger populations. Efforts like the EU's AI Act aim to establish legal legislation for AI products and address issues regarding safety and bias, but these are not keeping up with the progress of AI technology.

The issue of privacy is crucial as ophthalmic images used to train AI models can be reverse-engineered to reveal confidential information. Patient autonomy is maximised when patient-derived data is obtained with informed consent, lawfulness, and compliance with data regulations. However, the use of patient-derived data for commercial ventures remains a major challenge and may create future disputes.

Liability is another ethical challenge. AI engineers responsible for developing algorithms impacting clinical care should bear equal responsibility for adverse outcomes from AI errors, especially if the technology is claimed to be autonomous. This remains a major argument for why eye care professionals still need to oversee AI decision-making and will not be replaced anytime soon. AI models still lack the ability to contextualise information within the wider clinical picture and undertake nuanced decision-making.

## Conclusions

Currently, AI has the potential to revolutionise the screening and diagnostic workflow within ophthalmology. However, as we navigate this new revolution, it is crucial for humanity to take an active role in steering the trajectory of AI research. AI has the potential to open Pandora's box, both unleashing immense potential, but also raising ethical dilemmas regarding transparency, commercial bias, and ownership of confidential data. Taking a moment to pause and ensure AI legislation keeps up pace with technological advancements will allow us to establish ethical frameworks to safeguard humans. In the immortal words of the Terminator, we embark on a future where AI machines and ophthalmologists will stand side by side to deliver outstanding patient care.

*Dr Birch 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 Birch is a first-year trainee at Whipps Cross Hospital, Barts Health NHS Trust, London, UK.*

# Built-in Efficiency

Pressure sensor in handpiece cuts phaco energy and surgery time.

HOWARD LARKIN REPORTS

Building a pressure sensor into the phacoemulsification handpiece, where it can more readily detect and respond to tip occlusions, rather than into the phaco machine body significantly reduced both the cumulative dissipated energy (CDE) and surgery time in cataract surgery, said Professor Antoine Pierre Brezin of University Paris Descartes, Paris, France. Reducing the CDE could be important in protecting the corneal endothelium and other delicate ocular tissues.

The Study of Active Sentry in Cataract Surgery (SACSA) study that Prof Brezin reported on involved 1,432 cases by six surgeons in five centres in France, with 800 using the built-in Active Sentry (AS, Alcon) handpiece and 632 using a non-AS machine. All surgeons used the Centurion (Alcon) phaco machine, and patient characteristics were similar for the two treatment groups. Because it was a real-life study, there were no fixed surgical parameters, leaving surgeons free to adjust them to their preference and patient needs, Prof Brezin said. "The only comparative factor was Active Sentry or non-Active sentry."

Mean CDE for the AS group was lower, at 8.0—ranging from 0.0 to 70.4—than in the non-AS group, at 9.3, ranging from 0.0 to 77.6 (p=0.0001). CDE was consistently lower for the AS group in each cataract grade, and both torsional and longitudinal ultrasound energy and time were lower in the AS group, with a torsional median of 661.4 versus 725.0 (p=0.0074) and longitudinal median of 49.3 versus 74.4 (p=0.0001). Ultrasound times were significantly reduced with AS. No adverse events were recorded in either group.

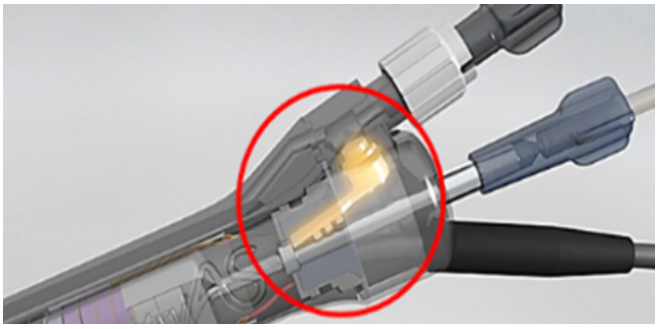
**This means the surgeon was sufficiently confident to press the pedal and use high vacuum rather than high ultrasound to complete the phaco cases.**

Surgical duration was also shorter in the AS group, at 9.8 minutes, than in the non-AS group, at 11.0 minutes (p=0.002), Prof Brezin reported. The more immediate fluidic response with the AS to prevent pressure surges might be the cause. "This means the surgeon was sufficiently confident to press the pedal and use high vacuum rather than high ultrasound to complete the phaco cases."

Analysing the data also showed longitudinal energy cut back 34% and torsional energy 9%, Prof Brezin noted, providing further evidence of surgeon confidence in the ability of the handpiece-mounted sensor to better mitigate pressure surges.

"When you have a pressure sensor built into the handpiece, you deliver less energy to the eye overall; we use less ultrasound, especially less longitudinal ultrasound, and we know that this longitudinal energy is the most deleterious for the corneal endothelium," Prof Brezin explained.

"We know if we can spare energy and longitudinal energy—and have overall less ultrasound time—we have shorter surgery that will increase patient comfort; and overall safety will improve."



Although no complications were recorded in either group, on a larger scale, Prof Brezin anticipates that the significant energy reduction linked to using the AS system will increase the overall safety of cataract surgery. The benefits of the AS-based, low-energy strategy for phacoemulsification will be further investigated.

*This work was supported by an investigator-initiated study grant funded by Alcon.*

# ESCRS Launches Leadership and Business Innovation Weekends

Frankfurt programme will feature interactive education on leadership and finance.

The ESCRS Leadership and Business Innovation weekend programme returns—this year, held in Frankfurt, Germany, on Saturday and Sunday, 7 and 8 October 2023. The two-day programme will focus on Leadership and Finance, delivered by keynote ESCRS speakers and leading business innovation consultants.

"This will be a unique learning opportunity for ophthalmologists," said Dr Paul Rosen, Chairperson of the ESCRS Leadership and Business Innovation Committee. The weekend is the first of a series the committee plans through 2024.

The Saturday session will be devoted to "Principles of Leadership and Innovation for Ophthalmologists." The second session on Sunday will discuss "Practical Tools for Ophthalmologists in Planning and Managing Financial Resources and Creating Value." Both sessions will feature a combination of keynote lectures on these topics and practical exercises for delegates to help them put their learning into practice.

"On the first day, we will examine the skills needed for ophthalmologists who wish to become leaders and innovators in their public and private practices. Among the topics we will discuss are leadership values and leadership culture, leadership and innovation from concept to implementation, and avoiding physician burnout," Dr Rosen said. The Sunday session will focus on finance, discussing cost management, raising funds, preparing business plans, and market analysis and segmentation.

"All ophthalmologists are very skilled clinicians," said Dr Rosen, "but they will face challenges in dealing with the complex issues of leading teams in private and public practice. We need to learn how to be creative in our day-to-day work, as in the future, telehealth and artificial intelligence will profoundly affect every aspect of ophthalmic practice."

### Expert faculty

The Frankfurt programme facilitators are Dr Karl Thomas and Mr Matt Jensen.

Dr Thomas, based in Dublin, Ireland, has acted as a mentor at various innovation and entrepreneurship events. He also provides coaching support to start-ups and business leaders, focusing on developing people who think differently in the field of innovation and creating future leaders who understand the value of communication, collaboration, critical thinking, and creative problem solving.

Matt Jensen is the principal and founder of Matt Jensen Marketing. Mr Jensen was previously CEO at Vance Thompson Vision in Sioux Falls, South Dakota, US. He now runs his own marketing and communications firm with extensive expertise in eye care. He is also an international speaker on customer experience design in business and healthcare.

The ESCRS faculty includes Professor John Marshall, Drs Paul Rosen, Daniel Kook, Artemis Matsou, Arthur Cummings, David Lockington, and Ms Celine Reibel, who will show how they have successfully led teams in their public and private practices and introduced innovative ideas into these practices.

Registration for the weekend at the Hilton Frankfurt Hotel costs €750. Early registration is advised, as the course is limited to 30 delegates. For further details, visit www.escrs.org.

# Advances Bode Well for Future of Refractive Surgery

CHERYL GUTTMAN KRADER REPORTS

A poll of attendees at a Sunday morning session focusing on the future of refractive surgery showed that approximately 50% are not performing lenticular extraction and approximately the same proportion are not implanting phakic IOLs. These findings are consistent with data from the 2022 ESCRS Clinical Trends Survey showing that only a minority of survey respondents were including those approaches among their solutions for refractive surgery.

Reporting on the survey results, Dr Beatrice Cochener-Lamard noted that there was an upward trend in the average annual volume of corneal refractive surgery cases performed between 2020 and 2022. Most survey respondents were performing excimer laser procedures, while about 12% were conducting a femtosecond laser intrastromal lenticule extraction and 54% were currently implanting phakic IOLs.

Dr Cochener-Lamard also highlighted that only 64% of the survey respondents said they were systematically checking the ocular surface in their preoperative laser vision correction examination.

"That is better than before, but of course, the target should be 100%," she said.

Subsequent speakers discussing developments in the above-named refractive surgery approaches hoped that the latest advances and data demonstrating the efficacy and safety of these options will convert more surgeons into users.

Dr Viktor Derhartunian (Austria) described the re-emergence of refractive surgery. Noting that concerns about dry eye, visual symptoms, flap-related complications, and corneal ectasia represent the largest barriers to patient interest in refractive surgery, he described advances in diagnostics and laser technologies that have addressed these issues.

He also discussed the role of LASIK alternatives in a refractive surgery practice given that the rate of dry eye is higher after LASIK compared to lenticule extraction and that dry eye can be nearly avoided using phakic IOLs,

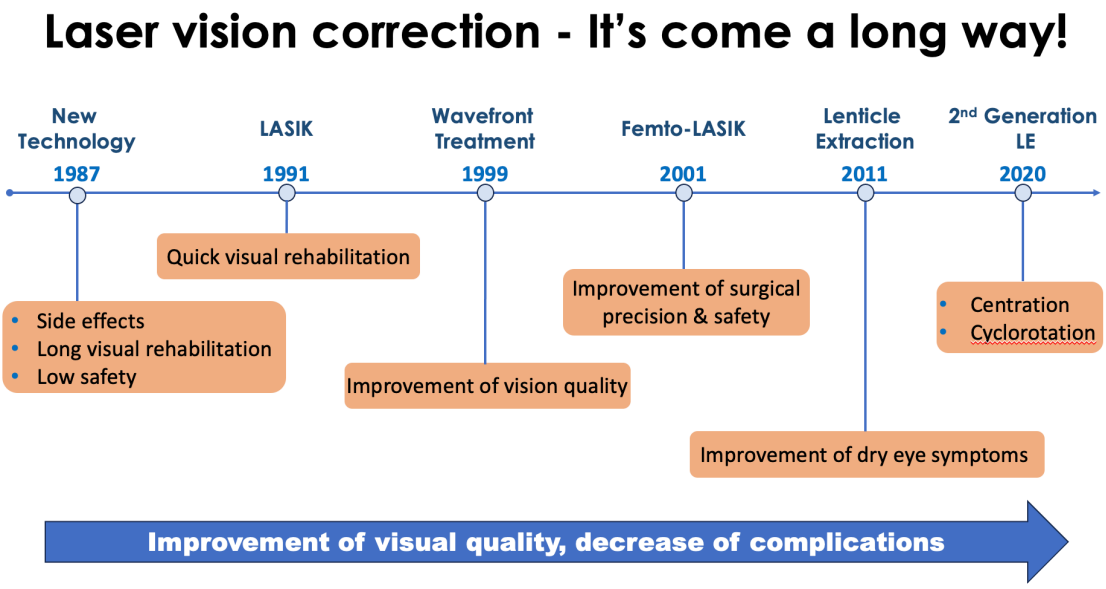
"Lenticule extraction is an effective, safe, and predictable procedure for treating high myopia, myopic astigmatism and, hopefully soon, hyperopia and can be offered to patients with dry eye," he said. "Phakic lenses are also an option for patients with dry eye and for those with a cornea at risk for ectasia. In addition, phakic lenses expand the range of refractive surgery, covering treatment of high degrees of myopic astigmatism, hyperopia, and also presbyopia.

"LASIK and femto-LASIK remain the gold standard for refractive surgery, but we now have a refractive solution for 99.9% of patients," he said. "We just need to choose the right treatment."

## Advances in lenticule extraction

Dr Rohit Shetty (India) introduced attendees to the new SILK lenticule extraction procedure for myopia/myopic astigmatism using the ELITA platform by describing its use in a 29-year-old patient who, because of her profession and hobbies, had concerns about flap displacement, dry eye, quality of vision, night vision, and depth of focus.

Dr Shetty explained how the novel biconvex-shaped lenticule created in the procedure and its minimal-to-no effect on Bowmans membrane regularity, spherical aberration, and (potentially) corneal nerves have positive implications



for quality of vision, depth of focus, dry eye development, epithelium, and speed of wound healing.

Dr Walter Sekundo (Germany) focused on SMILE for hyperopia/hyperopic astigmatism, a new indication for the VISUMAX 800 laser that is awaiting regulatory approval. He provided a timeline of modifications in hyperopic lenticule extraction using the VISUMAX (500 kHz) laser that led to improved refractive and predictive outcomes and excellent stability, and he illustrated the results that could be achieved with a patient treated 8 years prior.

Dr Sekundo noted, however, that there was an unacceptably high rate of suction loss using the first generation VISUMAX laser due to the prolonged treatment time of up to 35 seconds.

"The solution is the VISUMAX 800. In a porcine eye model, we showed the hyperopic treatment time was just 12 seconds," Dr Sekundo said, adding that he has not had a single case of suction loss since he began using the VISUMAX 800 in October 2021.

### The phakic IOL solution

Dr Roger Zaldivar (Argentina) talked about the EVO+ Visian ICL.

"By 2050 there will be about 1 billion people with more than 6 D of myopia, and piggybacking on this, consider that about 6 million people drop out of contact lenses yearly," he said. "Today, we have a very accurate, precise, and safe procedure to address these trends."

Dr Zaldivar underscored that since the introduction of technology in the ICL that optimises fluid flow in the eye, there has not been a single cataract procedure caused by touch of the lens. He also highlighted the benefit of this phakic IOL for improving best spectacle-corrected visual acuity.

"This is the only procedure that I experience that has a positive safety index of 1.24," he said.

Dr Zaldivar reviewed patient selection criteria for the ICL, showed its implantation, observed that it can address a wide range of refractive errors, and said that he has become more aggressive in offering it to patients as old as 50 to 52 years of age.

"This is a very safe and effective procedure, and in my opinion, it will be the procedure that will grow the most in the next couple of years," he concluded.

# Hand-held FS Laser for Capsulotomy Found Easily Usable

HOWARD LARKIN REPORTS

In a preliminary usability test, a handheld femtosecond (FS) laser for cutting capsulotomies was found easy to set up and generally easy to use, though centration was challenging early in the learning curve, said Dr Francois J Lignereux of the Institut Ophtalmologique Sourdille Atlantique, Nantes, France.

The Rx laser system (Helix Surgical) is a small-footprint, portable FS laser with a handheld interface for producing capsulotomies. Because it uses a curved liquid interface without suction for docking on a closed eye, it can be employed in the preoperative setting or the sterile OR without disrupting surgical flow. "No time is wasted," Dr Lignereux said. Its ease of use is intended to increase FS capsulotomy use and bring the advantages of perfect sizing and circularity to more patients.

The study Dr Lignereux reported involved one centre and an experienced cataract surgeon who used the device on one eye of 78 cataract patients who had conventional capsulorhexes in the fellow eye. The surgeon filled out a usability survey to report their feelings at different steps for each case, ranking them as very easy, rather easy, rather difficult, or difficult.

**The surgeon filled out a usability survey to report their feelings at different steps for each case, ranking them as very easy, rather easy, rather difficult, or difficult.**

Preparation and handling were considered very easy in more than 98% of cases, reflecting the design intent to lower the operational burden of using FS capsulotomies. Visualisation through the system was considered easy in 70% of cases and very easy in 30%. Centration was more challenging, ranking very difficult in 3% of cases, rather difficult in 35%, rather easy in 46%, and very easy in 16%, though the ratings improved with increased expertise, Dr Lignereux reported. "This is due to the learning curve. Once this is over it becomes much easier." Once centred by looking through a reticule on the top of the laser handpiece, holding the device steadily in place during firing was considered very easy in 92% of cases.

Patients were also surveyed on their experience. No significant pain during the laser or discomfort after was reported by patients, with 93% reporting none for either and 7% a little pain or discomfort. Patients were also satisfied, with 89% very satisfied and 11% rather satisfied—and 90% said they would do it again.

Safety was also good, with two cuts requiring two strokes, two cuts uncompleted, one anterior tear, and one posterior rupture unrelated to laser use. No cases of myosis, inflammation, or excess endothelial cell loss were reported.

Efficacy was excellent, with continuous precuts achieved in 96% and an $R^2$ value of 98% for circularity. Centration relative to pupil within 360 microns was achieved in all cases, suggesting that while more difficult at first, it was readily achieved. These results exceeded the study objective of achieving 95% perfect capsulorhexis, Dr Lignereux said. Refractive outcomes were excellent as well, with 96% achieving a spherical equivalent refractive outcome within 0.50 D of target.

"This laser is based on frugality," Dr Lignereux said. "Rx provides a solution to the contradictory conjunction between the desire for perfection and economic constraints."

# EDUCATIONAL SYMPOSIA

The ESCRS IME Educational Forum offers a series of comprehensive and interactive symposia that promise an update on ophthalmic practice and technology. There are two symposia offered on Monday.

The symposia are as follows:

**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*

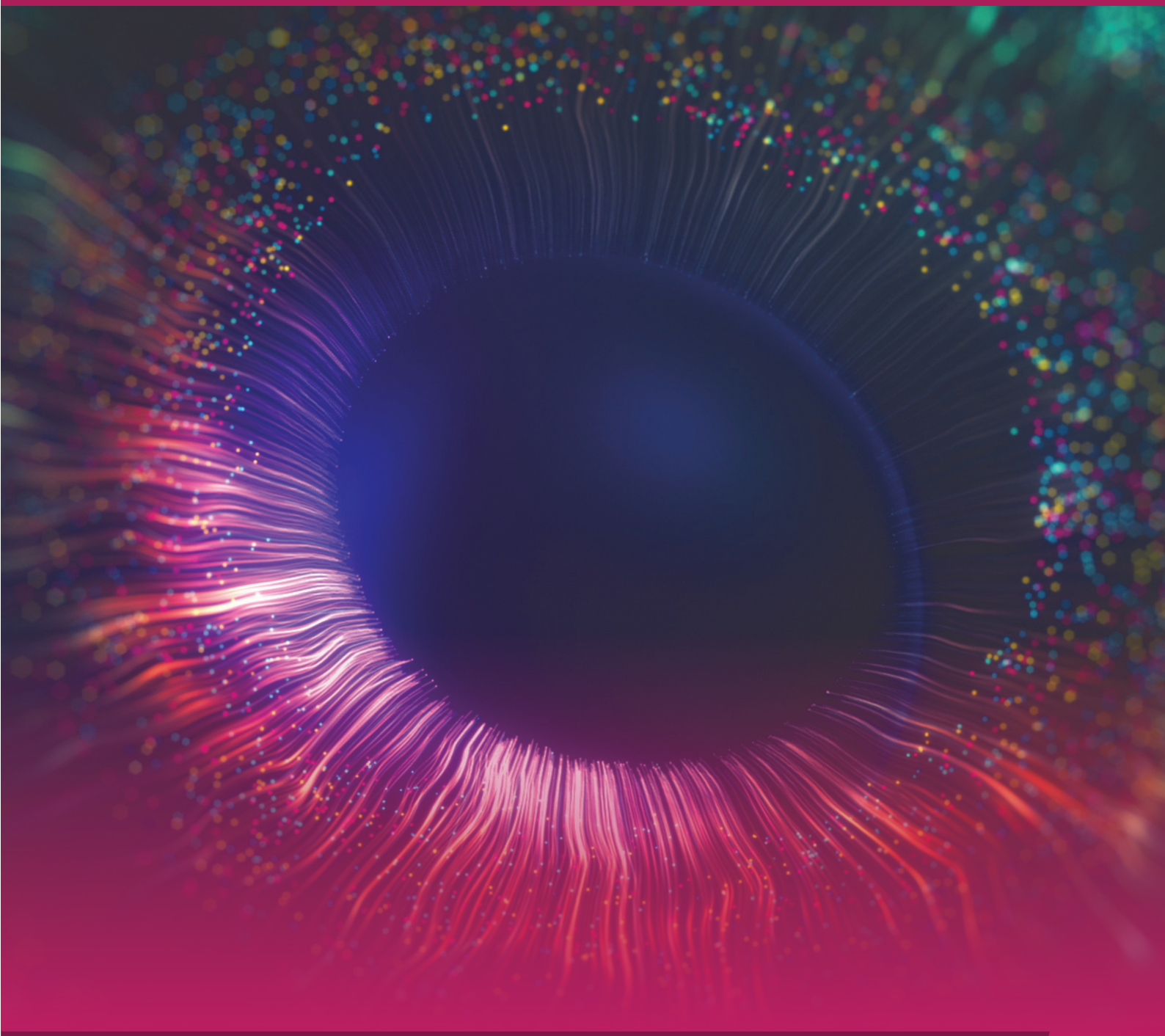
*Space is limited, so please arrive early to secure a seat and receive your audience response device.*

# THE CONTINENTS GO DIGITAL

**CSCRS Symposium Looks to the Future**
*Chairs Oliver Findl (Austria) and Ronald Yeoh (Singapore)*

Researchers from around the world will discuss how digital innovations can improve your practice at the Combined Symposium of Cataract and Refractive Societies (CSCRS),
Tuesday, 12 September, 8:15–10:15, Room A1.

Vance Thompson (US) will begin with a discussion of digital tools for patient education. Elizabeth Yeu, current president of the ASCRS, will follow with a presentation on new cataract planning technologies. Vaishali Vasavada (India) will discuss incorporating AI in your practice. Ben LaHood (Australia) will look at improving your digital presence. Hylke Kingma (Netherlands) will address the use of digital medical records. Mor Dickman (Netherlands) considers the best use of machine learning and the ESCRS Registries.



ESCRS
YOUNG
OPHTHALMOLOGISTS

https://escrs.org/special-interest-groups/yos/

# Views from *Vienna*

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




ESCRS SUSTAINA
CAT-PACK
Example:
HANUSCH HOSPITAL SET
(May '23)
19% cheaper
424 g less
- 5.4 kg CO2 eq
- 1612 l water demand
9.6 kg CO2 eq
1974 l water demand
Total weight - 922 g
- 56%
4.2 kg CO2 eq
362 l water demand
Total weight - 498 g
NO added covers,
reduce drape sizes
NO eye shield –
abolished in
many centres


ESCRS
ESCRS
MISSION ZERO
MISSION
ZERO
ESCRS
MISSION ZERO


RENT A WATER DISPENSER
for sustainable events
Water Station
Enjoy Vienna's Pure, Ice Cool
Mountain Water!

# NOTES

# ESCRS LEADERSHIP & BUSINESS INNOVATION WEEKEND

**HILTON FRANKFURT CITY CENTRE, GERMANY**

**SATURDAY OCTOBER 7–SUNDAY OCTOBER 8, 2023**

ESCRS
Leadership, Business & Innovation

## CHALLENGING THE NORM—REDUCING COSTS, IMPROVING PRODUCTIVITY, AND ENHANCING PATIENT EXPERIENCE WITH GREAT LEADERSHIP AND INNOVATION

## MODERATORS:

**Matt Jensen,**
Principal/Founder
Matt Jensen Marketing, US

**Karl Thomas,**
Innovation Trainer & Consultant and Leadership Coach, Ireland

## FACULTY:

**Paul Rosen,**
Consultant Ophthalmologist, Oxford Eye Hospital, UK, and Chairperson of the ESCRS Leadership and Business Innovation Committee and Chairman of the Trustees of ESCRS

**John Marshall,**
Frost Professor of Ophthalmology, Institute of Ophthalmology in association with Moorfield's Eye Hospital, UK

**Daniel Kook,**
Consultant Ophthalmologist, Gräfelfing, Germany

**Artemis Matsou,**
Consultant Ophthalmologist, Queen Victoria Hospital, East Grinstead, UK

## 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**
- **Raising Funds**
- **Preparing Your Business Plan**
- **Market Analysis and Segmentation**
- **Pitching Your Business Idea to a Venture Capital Company**
- **Lean Business Canvas Model for a New Private Practice**

**Arthur Cummings,**
Consultant Ophthalmologist, Beacon Hospital, Dublin, Ireland

**David Lockington,**
Consultant Ophthalmologist, Nuffield Health, Glasgow Hospital, UK

**Celine Reibel,**
Responsable Relations Patients, France

## REGISTRATION €750

**https://www.escrs.org/education/leadership-business-and-innovation/leadership-weekend-2023/**

**www.hilton.com/en/hotels/frahitw-hilton-frankfurt-city-centre**

iLink™ V

# INTERVENE EARLY WITH THE iLINK V CORNEAL CROSS-LINKING PLATFORM

Slow or halt progressive keratoconus and help preserve your patients' vision.


## VISIT OUR BOOTH B204
TO LEARN MORE ABOUT iLINK™ V

The iLink™ V corneal cross-linking platform comprises of proprietary VibeX® Rapid riboflavin and the ultra-violet A (UVA) light from the KXL® System used for the treatment of keratoconus.

INDICATIONS: The KXL™ system delivers a uniform, metered dose of UVA light to a targeted treatment area for the intended use of illuminating the cornea during corneal crosslinking procedures stabilising cornea which have been weakened by disease or by refractive surgery. VibeX Rapid™ (riboflavin) are indicated for use in the treatment of corneal strengthening, progressive keratoconus, iatrogenic ectasia, pellucid marginal degeneration. VibeX Rapid™ riboflavin formulation is CE Marked.

Glaukos Corporation • 229 Avenida Fabricante • San Clemente, CA • 92672 • USA
EMAIL: info@glaukos.com WEBSITE: www.glaukos.com



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