

Editorial: Journal of Eye Study and Treatment

Dear valued reader,

Welcome to our new International Journal for Ophthalmologists, JEST, the “Journal of Eye Study and Treatment”.

What an amazing project to start a brand new journal and publish latest news from the wide field of ophthalmology!

Refractive errors are most probably as old as mankind. Higher refractive anomalies of the eye were in former times of great disadvantage for the patients: being a hunter or being the bait for enemies, such a refractive error proved to be extremely hindering or possibly being even fatal. Over the course of thousands of years, refractive errors were often perceived as “infirmity” which condemned people to passivity, reduced options for communication and orientation - and thus to isolation. Visual performance was and still is the most important sensory function for humans, about 75-80% of the environmental information is delivered by our eyes to our brain.

Worldwide, there are around 37 million blind people, 90% of these live in developing countries. 75% of their blindness could be avoided. By far the most common cause of blindness globally is cataract, in industrialized countries cataract is ranking after glaucoma and Diabetes related eye diseases on position three. Although cataract surgeries have been performed for more than 3,000 years, the history of intraocular lens implantation began in 1949 only: An invention by the military eye surgeon Harold Ridley which offered a satisfactory possibility of an optical implant for cataract patients after surgery was found for the first time.

Cataract surgery is facing new challenges nowadays: well-informed “Baby Boomer” generation and post-LASIK patients are coming to age and show up for cataract surgery. These highly demanding cataract patients put ophthalmologists under pressure for optimal refractive outcome of their surgery, which also leads to the need of suitable, modern biometry and IOL calculation formulas for these special cases, because former standard schemes may fail. The “European Registry of Quality Outcomes for Cataract and Refractive Surgery” (EUREQUO, funded by ESRC) provides a global platform, which also includes the refractive outcome of more than 2.6 million cataract surgeries to date. Having a closer look at their data, we see that 93.8% of all monitored patients achieved $\pm 1.0D$. This might sound quite satisfactorily at first sight but then leads to think about the remaining 6.2% of all patients who suffer from more than 1.D of post-surgical refractive error, which might “only” be caused by incorrect or inappropriate biometry and IOL calculation. In regards of the number of cataract surgeries mentioned in EUREQUO this are 161.200 patients that suffer from bad refractive outcome after their surgery – and that’s a quite impressive number!

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One parameter that seems to be essential in calculating the individual IOL power for the respective patient is the correct and ongoing updated value of the IOL constant provided by the manufacturer.

By the dedicated collaboration of cataract surgeons, IOL manufacturers, manufacturers of biometry devices and scientists, a company-independent database for optimal IOL selection was created lately which takes all important factors into account: IOLCon. This globally available and active database, which has been set up as an, "Alliance for better Vision" is an internet platform which enables on one hand all IOL manufacturers to provide all the relevant data and specifications of their IOLs, on the other hand IOLCon offers a platform for characteristics of intraocular lenses and the optimization of lens constants for all ophthalmologists worldwide. By collecting many datasets (consisting of pre-OP biometry data, implanted IOLs and post-OP refraction) IOLCon allows offering reliably optimized IOL constants for formula-based IOL calculation. Mass does it: The more reliable data ophthalmologists upload to the platform, the more reliable the optimized constants are. By IOLCon a new web-based, open access database for continuous archiving and automatic, manufacturer-independent optimization of IOL constants for common IOL calculation formulas (e.g. calculation according to SRK/T, Hoffer Q, Holladay 1, Haigis) was implemented. The data regarding IOLs is internationally provided by both, IOL manufacturers and ophthalmologists and is continually adapted, expanded and updated which allows a timely and standardized publication and distribution of optimized IOL constants for the benefit of physicians and patients.

Through their individually protected access to the platform, IOL manufacturers are enabled to enter and manage their own IOLs as well as respective parameters. Features include e.g. material of optic and haptic, available lens powers, optical concept (monofocal, multifocal, toric, EDOF), amount of aberration correction, filter characteristics or availability and

nominal IOL constants. The use of the platform is free of charge for ophthalmologists. They can search the database for suitable IOL models, look up the properties of specific models, and get an overview of the selected types of IOLs and download data to their biometer. If the surgeons are interested in receiving individually optimized constants they have to register to the platform, which is free of charge as well.

This database offers physicians a comprehensive overview of lens models and their technical specifications, easy IOL selection of models based on criteria and/or manual selection as well as the option of individual optimization of lens constants. Currently, IOLCon includes more than 368 IOL models from 24 different manufacturers and about 10.000 clinical results. Biometry device manufacturers are implementing IOLCon's open XML interface to integrate IOLCon with their devices. IOLCon is settled at the University of Homburg/Saar (Germany) at the Department for Experimental Ophthalmology and driven by Prof. Achim Langenbucher and his team of biometry experts. IOLCon is owned by "Steinbeis Transfer Center - Vision Research". Surgeons can register IOLCon at <https://www.IOLCon.org> and check their parameters with the most up-to-date constants by IOLCon.

To me, IOLCon is a real asset to ophthalmology which provides an essential step in successful cataract surgery, especially in our challenging times facing cataract surgery in more difficult post LASIK eyes.

Please enjoy reading our first issue of "Journal of Eye Study and Treatment," and benefit of the science we covered by the content!

Sincerely yours,

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