

ISRS Externship Program: Hong Kong 2019
What I Have Learned During My ISRS Externship

How to choose the intraocular lens (IOL) with best refractive result and stay alive?

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Introduction:

During being an ophthalmology resident in Tel Aviv medical center I was exposed to multiple cataract surgeries from the easiest cases to the most complicated. Though being one of the biggest ophthalmology centers in Israel, in most of the performed cataract surgeries a simple, monofocal IOL is inserted. I felt that the exposure the refractive planning of the cataract surgery was missing. My plan was to find a place where I would be able to learn the best strategy for planning of the right, premium IOL for the right person using a cutting edge technology and learning from the best specialist.

I could not expect to get more than I got in Hong Kong Sanatorium and Hospital. I met an excellent surgeon, wonderful teacher and great person dr. John Chang. Dr. Chang touch me all the current approach to get the best refractive results after cataract surgery. From the very begging - meeting the patient, explanation about the surgery, matching expectations. Further, the evaluation of the patients ophthalmic exam, biometric and topo/tomographic data, and performing additional tests if needed. The next step was to find out the best formula and the best IOL for getting the perfect postoperative result. And of course the final post operative evaluation and follow up. Dr. Chang, who was the ISRS president in during 2019 was the perfect person to learn this complicated topic. Not only because of the great knowledge and experience, but also because of his willing to teach during the busiest clinic or in the operating room.

During my one month stay in the Hong Kong Sanatorium and Hospital under close, daily supervision of dr. Chang I learned how not to afraid from "too much" preoperative examinations and data, and "too much" types of IOLs. I learned how can I adjust the perfect IOL for the right patient and supply the best refractive result after the cataract surgery.

Topic Presentation:

The topic of course is huge, but I would like to present the most important steps for the refractive cataract surgery as I learned from the preoperative evaluation, through the IOL choice, surgical pearls and ending with the postoperative follow up.

Preoperative evaluation: I have learned How to great the patient. Find if cataract surgery is needed or maybe other operative or non operative option is preferred. Understand patient's expectations from the surgery and his postoperative needs to choose focus preferences. Explain the pros and cons of the surgery with its risks and.

IOL choice: Use as much data as you can, and don't afraid of it! Calculate the IOL using IOL Master(ZEISS) and Pantacam (OCULUS). Check the topographic properties using multiple sources: Biometry, Placido disc based topography, rotating Scheimpflug camera based tomography such as Pentacam (OCULUS), optometric measurements. Don't afraid to have discrepancies between the data, and don't afraid to drown in too much data. In most cases there will not be too much discrepancy. Actually, if there is a difference between calculations, you should pay more attention to this case and understand the best IOL choice using your knowledge and experience. Concentrate on the patients preferences and data such as the distance for the best focus (near, intermediate, far), previous or possibly future ophthalmic problems and diseases such as high myopia, macular degeneration and retinal diseases which may need a treatment or close follow up, such as Diabetes with or without Diabetic retinopathy.

The surgery: Chose which patient is appropriate for the local anesthesia, and who needs a general one. Stay cool and calm even at the most complicated cases. Use as few energy as possible and protect the endothelium. Don't drop the anterior chamber, this may disrupt the vitreous body and cause postoperative retinal complications.

Postoperative follow up: Follow the patients and record the data. These data records and further extrapolation will be very helpful for easier IOL choice in future cases and for dealing more easily with special cases. Try to see if the post operative results are corresponding to the preoperative calculations. Try to make future conclusions from either good and bad results. Find out what caused the incorrect result and think how to prevent it in the future. Remember that a laser refractive correction maybe an appropriate option for the unsatisfied postoperative refractive result.

Discussion and What I Learned:

Here are some of the most important pearls that I have learned from dr. Chang during my externship in Hong Kong Sanatorium and Hospital.

Preoperative evaluation: Match expectations. Don't show just the perfect result. Explain the risks, not just the surgical, but also postoperative. Explain the patient that multifocal IOL may cause temporary or permanent halos¹ and sometimes even permanently prevent the patient to drive. Explain that toric IOL may move (usually during the first hour from the surgery)². Explain how the surgeon and the patient may prevent this complications. Explain that in extreme cases additional surgery for IOL reposition may be needed.

IOL choice: Choose according to patients preferences for the final vision and patients biometric, ophthalmic and general health condition. Here are some examples:

ZCB00, Technis was used as a monofocal IOL.

PhysiOL, Ankosis is a monofocal toric with good spherical and cylindrical power range.

Comfort, Lentis is a plate haptic extended depth of focus (EDOF) lens. Multifocal but with less halos. This lens is good for macula visualization and hence good if proper fundus follow up is needed (e.g Diabetic retinopathy in patient with diabetes). The intermediate focus is best with this lens. The implantation is not easy, and so also lens rotation toward the marked axis.

Symphony, Technis is an EDOF IOL. It has some halos, but no glare. The calculation is more reliable for the post-LASIK patients compared to the Comfort, Lentis.

PanOptix, AcrySof is a good option for best intermediate distance result.

AT LISA, Ziess is a good option for best far focus. Has large options for extreme biometric values such as high myopia and high astigmatism values. One of the disadvantages of this lens is a high rate of posterior capsular opacity (PCO).

The surgery: Many of the patients in Hong Kong have high myopia³. During the surgery extra attention should be given to prevent sudden intraocular pressure(IOP) drop. This sudden pressure drop, especially in high myopic eyes, may cause extreme changes in vitreous body, cause vitreo-retinal traction and end up with retinal tear and detachment⁴. Protection of the corneal endothelium is also one of the most important aims during the cataract surgery. Using of a proper ophthalmic viscosurgical device(OVD) may help for either prevention of the IOP drop and protection of the endothelium⁵. I have found that a DiscoVisc (Alcon) was very efficient for both. This OVD has either dispersive and cohesive properties.

Postoperative follow up: I have learned a lot about the postoperative care, how to exam the patient, how to treat after the surgery, prevent postoperative complications and reassure the patient. Dr. Chang's calm, empathic and professional attitude toward the patient is a perfect postoperative pearl, that I definitely will take with me. The data record and rigorous

analysis is last but not least in all the process. I found it to be the best way for future improvement in choosing the right IOL for the right patient.

Supporting Information:

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