The restoration of accommodation is generally considered a holy grail for cataract and refractive surgery. Until recently, it has remained largely beyond the reach of IOL design technology. The most generally accepted IOL-based strategy today is to extend the range of vision by creating multiple fixed focal points. Unfortunately, this multifocal approach tends to compromise visual quality.

The Crystalens (Bausch + Lomb) is the first accommodative IOL to be approved by the U.S. Food and Drug Administration (FDA). The lens is designed to mimic the motion of the natural crystalline lens to provide quality vision without the compromises typical of multifocal lenses.

The latest version of the Crystalens, the Crystalens AO, incorporates Bausch + Lomb’s proven aspheric lens technology into the design, further enhancing vision and contrast sensitivity. It looks good on paper, but does the lens actually deliver? EyeWorld brought together a team of experts to talk about their experiences with the Crystalens AO.

Design and capabilities
Dr. Lindstrom: The first question I would like to ask each of you is, why is Crystalens AO part of your offering? What is it about this lens, its design and capabilities, both objectively and subjectively, that led you to include it in your practice?

Dr. Dell: I was an original investigator in the FDA-required clinical study for the Crystalens when we developed the technology, so I have a lot of experience using the lens. I know where it excels and where it doesn’t. Any time we treat a patient with an IOL, we try to achieve a near correction, we try to treat presbyopia, and we walk a fine line between quantity of vision and quality of vision. I find that in that equation, I tend to err on the side of better visual quality and perhaps slightly less quantity. I would much rather get that greater quality of vision for the intermediate and distance areas of focus than reduce their quality in exchange for a little more near.

Dr. Lindstrom: The Crystalens AO is basically the same aspheric optic we would get with monofocal IOLs like the Akreos MI-60 (Bausch + Lomb), an aspheric monofocal optic, so we get the same quality we would expect from those lenses.
Dr. Dell: Yes, and we routinely see that.

Dr. Yogi: I think we have to have some experience with all premium IOLs to make that decision, and I think that the Crystalens AO, because of the high quality of vision it provides, is very important for patients who really care about this difference in quality.

Before surgery I used to discuss with my patients the shortcomings of all the different IOLs. I would find it easier to talk to them about losing some points in J1 with the Crystalens AO and having them complement their vision with the sporadic use of glasses than to deal with glare and halos with multifocal IOLs, concepts that are somewhat hard to transmit to patients.

Dr. Fernandez: In our experience, we have learned that one solution for presbyopia isn’t universal for our patients. We believe that we have to customize the solution; each patient is absolutely different from another. We have to identify the objectives of our patients for their vision after surgery, and we have to have all the types of lenses available to us, including the Crystalens AO, so that we can find the solution that will make the patient happy after surgery.

Dr. Dick: From an objective point of view, the Crystalens is an IOL that has been developed over a long time into its current state.

Subjectively, it is easy to implant, it offers good visual acuity for distance and intermediate, and has been refined over the years. And now, with this new optic, it is aberration-free, which is increasingly important not only for visual acuity but also for visual quality—quality of vision, in my opinion, means contrast sensitivity in mesopic conditions.

I feel confident offering this lens to my patients. We use it at our clinic on a routine basis. In our clinical experience, we have excellent results, and it works better than all models before. My experience comes with some of the very first models, beginning about 10 years ago.

Dr. Kent: I’m a refractive cataract surgeon, and I have used multifocal intraocular lenses since the late 1990s. When the Crystalens became available in New Zealand in early 2009, I started using it and I’ve been very happy with the results of my patients. My patient satisfaction levels are very high.

Overall, about 30% of my patients don’t need any spectacle correction; about 50% wear glasses only for reading fine print or in dim light; and about 20% still have to wear readers—but they’re low power readers.

With people undergoing lens replacement surgery, because they’ve got cataracts or if they’re having refractive lens exchange for hyperopia, the level of patient satisfaction is high as long as you counsel your patients. They can read if they’re in good light, but with small print or bad light, they might need low power readers.

The two main advantages over putting in multifocal IOLs are 1) the quality of the vision is better—the patient isn’t looking through a diffraction grating; rarely do patients complain of fuzzy or waxy vision, and 2) there are few reports of nighttime visual disturbances.

For most people, I think it’s a choice between quality of vision and a high level of (but not complete) spectacle independence, versus multifocal IOLs, which may provide more spectacle independence, but poorer quality vision. Most of my patients, when deciding between the two, do choose the Crystalens option because the quality of vision is better. There’s still a place for multifocals, and I still offer multifocal IOLs for those patients who are the right personality type. But for most of my patients, I’ve been getting good results with the Crystalens AO, with high levels of patient satisfaction.

More than just aspheric
Dr. Lindstrom: It’s great to have the same quality of vision that we have with the multifocal aspheric lens, but I think some critics of the Crystalens AO
Dr. Dick: I don’t consider comparing the Crystalsens AO to an aspheric monofocal a criticism; it’s an honor to have that comparison. Often you have this issue that aspheric IOLs have a narrow focus—when we talk about depth of focus, it is decreased routinely with a standard monofocal aspheric lens. The worst-case scenario with the Crystalsens AO is we end up with an aspheric lens that performs well at a wide range of intermediate distances.

Review of our internal records show that all our patients who have received the lens achieved excellent visual acuity.

Dr. Kent: I think it’s more than just a monofocal aspheric IOL. If it was just a monofocal aspheric IOL, then we could achieve no better than the same results with a standard monofocal IOL, and I know, from clinical experience, that doesn’t happen. Those researchers who’ve put people with the Crystalsens through the Tracey iTrace [Tracey Technologies, Houston, Texas] have been able to show movement of the Crystalsens AO. My average patient achieves very good distance vision; if the patient doesn’t achieve good distance vision, I could always correct that with either LASIK or PRK.

I target emmetropia in the dominant eye and about minus a half in the non-dominant eye, and most of my patients are reading about J2 or J3 with both eyes together. They’re all getting 20/20 distance binocularly because if they don’t get that, I’d do LASIK or PRK to make sure they do.

Dr. Lindstrom: Dr. Ang, do you have data that can tell us what kind of vision we can achieve with this lens?

Dr. Ang: Yes, we performed a prospective, randomized study comparing the Crystalsens AO with the ReSTOR +3 [Alcon, Fort Worth, Texas] and the Tecnis Multifocal lens [Abbott Medical Optics, Santa Ana, Calif.]. I have always wondered how these lenses compare with each other in an objective way, so we compared

Patient criteria and demographics

- Above 40 years old with cataract
- Potential acuity or BCVA of 20/30 or better
- Less than 1.25 D astigmatism by keratometry or topography
- No cornea, anterior chamber, zonular problems
- Signed informed consent

| Patient criteria and demographics from Dr. Ang’s study on Crystalsens AO | 78 patients (156 eyes) recruited |
|---|---|---|
| | Crystalsens AO | ReSTOR +3 | Tecnis MF |
| N= | 26 | 27 | 25 |
| MEAN AGE | 65.3 | 65.7 | 65.5 |
| GENDER (% M:F) | 27:73 | 18:82 | 20:80 |
| RACE: % Asian | 100 | 100 | 100 |

I would much rather get that greater quality of vision for the intermediate and distance areas of focus than reduce their quality in exchange for a little more near

Steven Dell, M.D.
contrast sensitivity, as well as high and low contrast distance, intermediate, and near vision.

First, we wanted to make sure that we targeted the lenses as accurately as possible to remove any bias. With the Crystalens AO, I’ve found that the sweet spot is between plano and –0.5 D spherical equivalent. Meanwhile, I targeted the multifocal to about plano to about +0.5 D.

In our study, we achieved these targets. With the Crystalens AO, we achieved a spherical equivalent of –0.3; with the Tecnis and ReSTOR, we achieved near plano.

Uncorrected distance vision was 20/20 to 20/25 in almost all the lenses at high contrast, but at low contrast, the accommodating lens performed better in the low lighting conditions. In intermediate, the Crystalens AO wins over the multifocals, with a statistically significant difference.

Dr. Lindstrom: Was there any difference between the ReSTOR and the Tecnis multifocal IOLs at intermediate?

Dr. Ang: The ReSTOR did a little better since it’s a +3 add.

With near vision, we expect the Crystalens AO to not perform as well as the multifocals; with high contrast, our data does suggest that the multifocals perform better, but this is not statistically significant. However, at low contrast, the Crystalens AO makes up for that difference; vision with the multifocals decreases in terms of low contrast near vision. So the Crystalens catches up. It’s not statistically different as long as you target patients to be close to 0.5 D.

In terms of contrast sensitivity, the accommodative IOL is better than the multifocals, and that difference was significant in our study. There was also a significant difference in terms of halos and starbursts between the Crystalens AO and the two multifocals.

Dr. Lindstrom: I expect we all have done both multifocal and Crystalens implantations. Are there any particular

Conclusions from Dr. Ang's study on Crystalens AO

Dr. Lindstrom: Was there any difference between the ReSTOR and the Tecnis multifocal IOLs at intermediate?
situations in which you’d prefer the Crystalens over multifocals?

**Dr. Dell:** Implanting a diffractive multifocal in both eyes of a patient with macular degeneration is probably a bad idea; any time we see macular pathology (and to some degree corneal pathology) that makes us worry about irregular astigmatism, multifocals are off the table. Those cases are automatically better off with a Crystalens AO.

**Dr. Lindstrom:** I think Dr. Ang’s data confirms multiple sets of data we’ve seen over the years: There is a difference between the lenses, and contrast sensitivity and intermediate vision are better with the aspheric optic of the Crystalens AO, but near is often slightly less. Now, really knowing how these lenses perform, how do you decide which one to use?

**Dr. Yogi:** A large number of baby boomers underwent refractive surgery in the last 15 years, and I think the Crystalens AO is a very nice option in these cases because I believe that patients who have undergone refractive surgery before will not want to wear glasses after surgery. The Crystalens AO provides good vision without inducing more aberrations. I think aberrations are a major cause of complaints that is sometimes underestimated by cataract surgeons.

**Dr. Lindstrom:** What about glaucoma and glaucoma damage? Would that make anyone shy away from multifocal IOLs?

**Dr. Ang:** Yes, I think so. With glaucoma, there’s some generalized decrease in sensitivity detectable by visual field testing. Multifocals will further decrease contrast sensitivity, so the Crystalens AO would definitely be a better option, causing the least harm to the patient.

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**Crystalens fulfills most, if not all, of these criteria**

- **Predictable.** Target desired refraction
- **Stable.** Maintain refractive outcome over time
- **Quantity of Vision**
  - Good distance vision
  - Good intermediate vision
  - Good near vision
- **Quality of vision**
  - Good contrast sensitivity
  - No undesired visual phenomena. Glare and halos
- **Acceptable exit strategy if patient is unhappy**

Dr. Ang determined that Crystalens AO fulfills most, if not all, of these criteria

**Dr. Lindstrom:** Dr. Fernandez, how do you decide on which lens to use?

**Dr. Fernandez:** You have to choose your patients carefully. You have to identify patients who will experience discomfort with dysphotopsias after surgery. It is the worst scenario to have that problem with a patient. I don’t believe so much in neuroadaptation, I think it’s more of a “neuroresignation”—and that is the worst scenario. You are going to need another surgery to explant the multifocal lens in a patient like that. After that, you have to choose the correct option for treating that patient.

**Dr. Dick:** The choice between multifocals and the Crystalens AO depends. If a patient really wants to read books long term, I would offer a multifocal lens. But if a patient will be reading more from computers, I would go for the Crystalens AO. Multifocal IOLs have an issue regarding photic phenomena—starbursts, halo, glare. It’s inherent in the system because you’re redistributing the light, part for the near focus, part for the distance focus, but also for some other foci that the patient cannot use. That means you always have some image degradation, some deterioration in the optical quality. On the other hand, the Crystalens AO has a much lower incidence of halo and glare complaints.

A patient who really wants to have perfect vision at near for long-term tasks, with the highest level of precision without glasses, would be a better candidate for a multifocal because that’s what multifocals offer. What a multifocal IOL often does not offer is sufficient intermediate vision, which is the realm of the Crystalens AO.

More people work on computers, laptops, iPads, and so forth, and these people work at intermediate more than near. Near is at about 30 to 40 cm; intermediate is more or less 70 to 80 cm—at this distance, the Crystalens AO is superior.
Dr. Dell: There is a perception that the Crystalens AO is more difficult to target for emmetropia than other lenses. Have you found that to be the case?

Dr. Dick: Not at all. The lens is highly predictable.

Dr. Ang: You need to keep using the lens to get your own technique to achieve the optimal target because we all have our own little intraoperative techniques and tricks. For instance, after I perform irrigation and aspiration, I tap the lens and push it toward the posterior capsule to give me an added sense that it is posteriorly vaulted. I also use atropine, whereas some of my colleagues don’t.

As with any surgery, the more we do it, the better we get at it. My data suggests that the lens is predictable—you just have to get your A-constants correct, as with any other IOL.

Long-term stability

Dr. Lindstrom: Another issue that comes up every now and then with the Crystalens is long-term stability. Dr. Dell, you have long-term follow-up, what is your experience?

Dr. Dell: We’ve looked at our original clinical study patients for about 10 years now. There was improvement between year 1 and 3, and slight improvement between year 3 and 4, but we did not see continued improvement after year 4. However, we did not see degradation either.

I think that a large percentage of patients wind up with capsulotomies; a physician unfamiliar with the Crystalens AO may attribute that degradation in near vision to a cessation of the movement of the lens, but in actuality it is posterior capsule opacification. If I see a patient who could read 6 months ago and now can’t, the first thing I do is perform a YAG laser capsulotomy, and that often resolves the issue.

Dr. Ang: I think the YAG laser is our ace-in-the-hole and needs to be done at the correct time. I perform YAG laser capsulotomy to lock in a good result, for example at 1 year, when a patient can see well at distance and at near.

I think Asians tend to have a lot of striae come into the capsule very early, so I tend to perform YAG capsulotomies between 3 and 12 months, and that often locks in the good result I had initially. I feel that when patients lose some near vision, it’s easier to talk to them than when patients lose good uncorrected distance vision. They’re unhappy, so I want to lock in the good distance vision first. That’s what they enjoy, and that’s what the Crystalens AO is for—to enjoy good quality distance vision with some added near.

Dr. Fernandez: In order to succeed with this lens, it’s critical to involve patients in the decision-making process before surgery. We have to tell them that the perfect vision they had when they were 18 years old is not going to return. Pre-operatively, we have to make them accept that idea, and we have to explain dysphotopsias and what we can achieve with each type of lens.

Dr. Yogi: First I tell them that their near vision is going to improve in the next weeks as long as they practice some exercises for near and intermediate vision, like crosswords. I give them exercises to do. The other thing is that I implant a lens in the non-dominant eye first, to achieve better near vision, and the next week I implant the IOL in the dominant eye, to get better distance vision. Then for special requests like reading, I make it clear to them that their vision is going to improve as weeks go by, and I make sure they understand the importance of the exercises I give them.

Dr. Lindstrom: The visual acuity results at near definitely get better with time, and we’ve had the opportunity to use a vision training program called RevitalVision [Lawrence, Kan.] that’s helped some of those patients achieve better performance at near. We’ve
actually found a 1.8-line improvement in near vision with RevitalVision training with the Crystalens AO.

Dr. Dick: We’ve been using the Crystalens AO since it came out. We’ve achieved excellent results, and we’ve had no complications.

**Patient selection, setting expectations**

Dr. Lindstrom: Dr. Ang, you have all this data now, how do you decide what to use on whom?

Dr. Ang: What we usually do is we lay all the options down for patients. If they’re interested in presbyopia correction, and most people are, first we tell them that we will most likely improve their distance vision from before cataract surgery. For near they have two choices: Either we give them something that’s very good for near, but they will have to live with glare, halos, or a decrease in contrast sensitivity, or we have something that has lessened glare, halos, or contrast issues, but may occasionally require low power reading glasses to complement the near vision. We offer these choices to patients so that it’s very clear from the start what they can expect.

They will then likely throw the question back to you, asking what you recommend. I ask them simple daily life questions, such as if they drive. If yes, then I go for the Crystalens AO. If they say they don’t drive but do most of their work on the computer, the Crystalens AO is still an option. Only if they say they don’t mind glare and halos and just want good reading vision, then we veer toward the multifocals.

Dr. Lindstrom: Over time, I’ve learned I need to ask the right questions and get a feel for the patient and then make a recommendation, and that’s pretty much what I think many people experience. As you say, in the end, we have to listen to our patients and then make a recommendation. Dr. Dell, what tools are you using today that help you tune in to what you think will be best for your patients?

Dr. Dell: You’re absolutely right that it comes down to asking the appropriate questions. Unfortunately, we often...
have to make decisions about patients we don’t know very well. Frequently we’re meeting the patient for the first time, and we have precious little time to establish what kind of a person we are facing and what type of vision he will likely enjoy most after surgery.

One thing I look at is how the patient presents for surgery. A patient who presents hysterical about 20/20 minus 3 vision and is insisting on immediate intervention is very different from someone with a 20/80 cataract saying he doesn’t mind going on with the same vision for another year. Those are very different people because they’ve adapted to different levels of visual imperfection.

We also make great use of questionnaires, where we ask patients what they would like to see with and without spectacles post-operatively. We ask them how much visual compromise they’d be willing to accept and where they’d be most willing to use spectacles if they had to. We try to get some idea of their tolerance of glare and visual imperfections in general.

By the time they reach me, they realize that there are compromises associated with all these lenses, and they’ve got a common vocabulary because they’ve seen videos and they’ve read materials that explain the different options. Then I assess patients both on paper and in vivo, considering what they tell me, what they’ve written down, as well as what I see in them during their physical examination, whether they have glaucoma or macular degeneration, for instance, and then I issue them a recommendation.

Dr. Kent: We use a standardized questionnaire that asks questions that place patients on a scale between perfectionist and easygoing. The patients who tick the far end of the spectrum of perfectionist—don’t put multifocals in those ones; they do fine with the CrystaLens AO because they still have a good quality of vision. Even if they have to wear glasses for some things, those patients are happy.

Dr. Lindstrom: We assess everything, collecting all the subjective and objective information we can to make a recommendation. The good news is we now have multiple data sets that tell us what the different lenses can do.

Dr. Yogi: How do you set patient expectations? What do you emphasize when you’re going to implant a CrystaLens AO in a patient?

Dr. Yogi: In the beginning, I used to explain too much for the patient. I used to take 15-20 minutes explaining how the IOL might work or not. But as I gained more experience with the IOL and its performance, I found myself talking less and less because I think the IOL is more predictable in terms of side effects, and it’s rare for patients to complain of any kind of visual difficulties. I mainly tell them about the expectation of visual performance for near and intermediate.

That’s not the case with multifocals. With multifocals, I need to take the time to explain the side effects to make sure patients understand and will be tolerant of those symptoms if they appear.

I think it’s easier to talk to patients about the CrystaLens AO beforehand. On the other hand, I spend more time with them in the post-operative period following implantation with the CrystaLens AO because of the dynamic nature of its performance.

Dr. Fernandez: I tell patients what they can expect from the lens for sure—that the CrystaLens AO provides the best quality of vision, the best intermediate vision. I think they have to know that the near vision they can achieve is a kind of social near vision—they can read their watch, their smartphone—and that’s the key.

“In terms of contrast sensitivity, the accommodative IOL is better than the multifocals, and that difference is significant in our study. There was also a significant difference in terms of halos and starbursts between the CrystaLens AO and the two multifocals.”

Robert T. Ang, M.D.
I also take the time to explain to them what I think would be the worse option for them. With a diffractive lens, if they can’t accept it, they will likely need explantation, whereas with an accommodative lens, after 6 months, if they have a complaint, they will likely only need occasional reading glasses.

Dr. Ang: I usually discuss with them the possibility of different targets for each eye. I base the second eye on the refractive outcome of the first eye. I tell them not to expect the same vision, but that when both eyes help each other out, they will achieve a greater range of vision for far and near.

I usually target the second eye at least –0.5 to –0.75 so that we provide a little bit more near vision.

I also talk to them about capsular fibrosis. I tell them that whichever lens we use, there is a chance that as the eye heals the capsule will thicken. That way, they aren’t surprised and upset that we need to perform another treatment such as a YAG capsulotomy later on. I think the YAG laser is an important part of post-op care for our premium IOL patients.

Dr. Dick: Setting patient expectations can be useful, but I would rather listen to what a patient wants, explore the patient’s needs—what he does, what his job is, what kinds of tasks he performs every day. What are his interests? What about driving? Driving is a task for which the Crystalens AO is better suited than multifocal IOLs.

We have a questionnaire that patients fill out while they are waiting—it is our own questionnaire that we developed at our clinic. At our clinic, we offer a wide range of premium IOLs in addition to the Crystalens AO. The questionnaire allows us to evaluate the patients’ desires and psychology first with basic questions that I will not need to repeat later on. Then we make recommendations, presenting them with the pros and cons of each IOL, and we guide them to the decision that best suits their wants and needs. In the end the choice is up to the patient, but we do everything we can to give them the ability to make a completely informed decision.

Dr. Kent: We always try to under-promise and overdeliver. I counsel my Crystalens AO patients on the anticipated outcome, and I follow them for 12 months. I tell them that they can expect to have good distance vision, good intermediate vision, and can read good print in good light. But if they have small print or are in bad light, they’ll need some low power readers.

Enhancing satisfaction

Dr. Lindstrom: Sometimes, in spite of all that counseling, patients will come back dissatisfied with their vision. Having looked at my own data, I’ve found the amount of additional depth of focus that I get with the Crystalens AO is about 1.25 D versus a monofocal, so that when I have a Crystalens AO with plano sphere, the add required for best near acuity is on average +1.25 and with a monofocal it is +2.50. With patients who are disappointed, I sit them down and simulate what their near and intermediate vision would be like with monofocal lenses by placing a −1.25 diopter loose lens in front of their eye. This can give patients insight into the benefit they have achieved.

What do each of you do with patients who are unhappy with their near vision? Do you find yourself performing enhancements, making one eye more myopic?

Dr. Yogi: We target mild myopia in the non-dominant eye. I target –0.25 in the dominant eye and –0.5 in the non-dominant eye. I think my patients are very happy with this performance, and surprisingly, the most satisfied patients are the younger ones. I’ve had some experience with patients 30 years old, 40 years old, and they are young workers, they use computers a lot, and like Dr. Fernandez said, they use smartphones. They are really happy with the Crystalens AO, and I think this is better than a multifocal option because they are drivers. So young patients with cataract are very satisfied with the Crystalens AO, too.

Dr. Fernandez: I think an unhappy patient results from a mistake in the decision-making process; it’s our responsibility to communicate the pros and cons of a lens to a patient, to find the perfect solution. I do something similar to Dr. Lindstrom’s loose lens trick, but I do it before surgery.

The key to a happy patient is the decision-making process and communication before the surgery.

Dr. Ang: LASIK is probably the best trick we have. I do hyperopic LASIK if a patient is too hyperopic.

I think corneal strategies are our best tricks.

Dr. Fernandez: If we are going to operate on a patient’s cornea, to manipulate a spherical aberration using a laser platform, I think that the Crystalens AO is the best option for that patient.

Dr. Dick: Patient satisfaction with the lens is extremely high. In our experience, patients have been dissatisfied with other lenses, but not with the Crystalens AO. We’ve had excellent performance with the lens.

Dr. Kent: There is a small proportion of patients who do not read as well as I’d hoped they would. In the small proportion of my patients who find they still require occasional low power
reading glasses, an even smaller proportion don’t think their vision is as good as they were hoping it would be. But they are not so unhappy that they request that something be done about it. For those who do want something done, I can usually manage those patients by making the non-dominant eye more myopic with LASIK. But no one has insisted that I remove the intraocular lens, whereas I’ve explanted more than 10 multifocal IOLs over the years because with someone who has intractable halos or fuzzy vision, you have to remove the lens.

Advice for beginners
Dr. Lindstrom: If a surgeon tells you he/she is thinking about getting started with the Crystalens AO, what would you say to him/her? What pearls would you give to get him/her off to a good start?

Dr. Dell: We talked about refractive predictability early on, and every IOL that has ever been manufactured has its effective lens position altered by the size and the regularity of the capsulorhexis. If you have a surgeon whose rhexit is different in every case, if it’s not a round, regularly shaped, centered rhexit of a constant size, then he needs to get much better at doing that before he begins with the Crystalens AO.

Probably the easiest way for most surgeons is to physically mark the cornea over the visual axis with a 5.5-mm marker and trace the circle with the capsulorhexis.

They also need to make sure that their surgical technique is such that they have exquisite cortical cleanup.

Although capsular breakage rates have gone down in the U.S. in the last several years with better phaco machines and silicone I/A tips, if the surgeon has a substantial percentage of capsular breakage, the Crystalens AO is no longer an option; it might not be worth it for a surgeon who doesn’t achieve those goals to begin working with the Crystalens AO.

Dr. Lindstrom: Are you using atropine?

Dr. Dell: No, I haven’t used atropine in a long time. We do, however, use carbachol intraocular solution. We put a few microliters at the end of the case, effectively constricting the pupil for several days and preventing the excursions of movement that we think have to do with variable lens position in the eye.

Dr. Lindstrom: I actually do the same. I do not use atropine either, my patients don’t seem to like it. I dilute the carbachol 3:1 so patients avoid the brow ache. I bring the pupil down, and the nice thing about it is the “wow factor” because they often see 20/25 and J2 or better on day 1, although they tend to lose a bit of that with time as the miotic pupil returns to normal size. I explain that, but I like the fact that they see fabulously on the first day.

Dr. Yogi: I don’t use atropine anymore. Regarding the surgery, I would say that there are many variables that may affect the performance of a Crystalens AO, including the incision and the sealing of the incision. There have been experienced surgeons who went back to suturing the incision to make sure it doesn’t leak. I usually don’t suture my incisions, but I have perfected it in terms of avoiding leakage.

In terms of polishing the capsule, I do some redundant cleaning with an I/A tip and an instrument to make sure that the capsular bag is as clean as I can get it.

I think these key points in terms of performing the surgery are ever-evolving. A surgeon who wants to get into the Crystalens AO must understand that the results, even in his first cases, might not reach his expectations, but can be improved as he gains practice with the surgery.

Dr. Fernandez: We need to choose a lens for the patient instead of for the surgeon. Some lenses can provide good outcomes without requiring too much skill with technique, but then you have this lens that many ophthalmologists perceive as being technically more difficult than other lenses to implant, but gives the best results in terms of quality of vision.
As has been mentioned, you have to keep performing the surgery and implanting the lens to gain more confidence and make your patients happier.

Dr. Ang: I tell my colleagues that the Crystalens AO is a vital addition to their armamentarium of cataract and refractive products. They shouldn’t let themselves get stuck in the multifocal age where, if someone asks, that’s all they offer. There is a place for the Crystalens AO in practice; if they talk to their patients and ask them what they need, what they want, some of them will need a Crystalens AO more than a multifocal.

It’s important to offer all the lenses to all your patients so you’re not biased and stuck with just one kind of lens.

Dr. Lindstrom: I couldn’t agree more. One other thing that I do is treat my patients a little bit longer with anti-inflammatory drops. I’m wary of capsular fibrosis, and I’m also much more aggressive with the YAG laser with the Crystalens AO than I am with a monofocal lens. With the longer-term anti-inflammatory therapy, I’m hoping to retard capsular fibrosis, so I have my patients on a topical steroid twice a day for a full 2 months, which is more than many use on monofocals. So maybe a little more anti-inflammatory therapy may have value as well.

Dr. Kent: My advice would depend on who the surgeon is. If he is a refractive surgeon, then I’d say yes, it’s good for a lot of patients in a refractive practice, patients who are getting too old for LASIK or are outside the range of LASIK or have a bit of cataract. You can provide a solution that gives them a high level of spectacle independence, particularly if there are patients who have the wrong personality type for multifocal IOLs—again, the perfectionist types don’t do well with multifocals, they don’t like their quality of vision. It has a place at any refractive surgical practice, in my opinion.

That’s different from the advice I would give a cataract surgeon. For a cataract surgeon, it’s a different mindset—Crystalens AO implantation is refractive surgery. They can still do it, as long as they have a plan for who’s going to fix the refraction if it is wrong. Surgeons can’t ask the patient to pay for that. They’ve got to include that in the original fee. There’s nothing worse than having to say to a patient 6 months later, “Your distance vision is blurry and you’re not happy, but it’ll cost you to fix it.” Then the patient says, “Doctor, this is your botch-up, you should fix it for free.” Surgeons can’t ask patients to pay for fixing their refractive error as they were trying to give them more distance vision. They’ve got to factor that into the original fee or the original surcharge.

If you are a cataract surgeon, I think you to need to develop a relationship with a refractive surgeon and come up with an agreed price for doing laser refractive surgery where the refractive surgeon does the procedure and you do the follow-up.
Faculty biographies

Richard Lindstrom, M.D., who has been in ophthalmology for 40 years, is founder and attending surgeon, Minnesota Eye Consultants, a large practice in Minneapolis. While he currently only practices half time, he still performs about 1,000 procedures a year, half cataract, cornea, and reconstructive surgery in complex cases, and half corneal refractive surgery. He was involved with Eyeonics from the beginning and is familiar with the Crystalens (Bausch + Lomb, Rochester, N.Y.).

Steven Dell, M.D., practices in a large multispecialty ophthalmology group in Austin, Texas. Dr. Dell was an investigator in the original clinical study required for FDA approval of the Crystalens in its early days and has over a decade of experience with the lens.

Milton Yogi, M.D., practices in São Paulo, Brazil. Exclusively a cataract surgeon, he implants all types of premium IOLs and has had 2 years of experience with the Crystalens, ever since the platform was introduced in Brazil. Dr. Yogi is head of the Cataract Sector, Ophthalmology Department, Universidade Federal de São Paulo (UNIFESP).

Joaquin Fernandez, M.D., works in the national health service of Spain while maintaining a private practice. He has had extensive experience with premium lenses and intraocular lenses for presbyopia, as well as with refractive surgery and laser-based corrections for presbyopia.

Robert T. Ang, M.D., works at the Asian Eye Institute in the Philippines. About 60% of Dr. Ang’s practice is refractive, focusing on all presbyopic corrections, including INTRACOR (Technolas Perfect Vision, Munich, Germany), SUPRACOR (Technolas Perfect Vision), AcuFocus (Irvine, Calif.), multifocal lenses, and the Crystalens. He recently completed a study comparing the Crystalens with two multifocal lenses. “The Crystalens is part of the whole armamentarium of presbyopic corrections,” he said.

H. Burkhard Dick, M.D., practices at the Center for Vision Science, University Eye Hospital Bochum, Bochum, Germany. An internationally renowned ophthalmic surgeon specializing in cataract and refractive surgery, he has covered the full spectrum of ophthalmic surgeries. His experience with the Crystalens goes all the way back to the very beginning, with the earliest versions of the lens.

David Kent, M.B.Ch.B., F.R.A.N.Z.C.O., F.R.A.C.S., is one of Australasia’s leading refractive and cataract surgeons. Dr. Kent was the first surgeon in New Zealand to implant the Crystalens.

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