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FINEVISION

3focal optic Far Intermediate Near

The Latest Generation of Multifocal IOLs

Key opinion leaders share their opinions in a roundtable discussion.

- Jorge L. Alió, MD, PhD
- Gerd U. Auffarth, MD, PhD
- Béatrice Cochener, MD, PhD
- Sheraz M. Daya, MD, FACP, FACS, FRCS(Ed), FRCOphth
- Damien Gatinel, MD
- Jérôme C. Vryghem, MD

From left to right: Jérôme C. Vryghem, MD; Sheraz M. Daya, MD, FACP, FACS, FRCS(Ed), FRCOphth; Béatrice Cochener, MD, PhD; Gerd U. Auffarth, MD, PhD; Damien Gatinel, MD; and Jorge L. Alió, MD, PhD. This panel met in Vienna to discuss their experience with the FineVision IOL.

MODERATOR:

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The FineVision IOL: A New Trifocal Lens Design

A roundtable discussion between cataract surgeons reviews the lens' unique characteristics and unveils clinical practice pearls.

Daya: We have gathered a stellar panel of cataract surgeons here in Vienna, Austria, during the European Society of Cataract and Refractive Surgeons (ESCRS) meeting to discuss the FineVision Lens by PhysIOL (Liège, Belgium). As an introduction to this trifocal multifocal optic design, I would like Damien to explain the concept behind the FineVision IOL. We are all good clinicians here, but none of us have the insight that he has on this lens.

Gatinel: The idea we had was to combine two diffractive profiles, one for distance and near and one for distance and intermediate, to achieve a lens design that splits light into three useful orders—one for distance, one for intermediate, and one for near. Once this trifocal profile was designed, it was optimized using apodization, convolution, and also aspherization so that the lens would be pupil dependent and favor distance vision under mesopic conditions. In return, the lens would favor distance and intermediate vision when the pupil constricted in bright light. A detailed description of the trifocal diffractive lens profile was published in the November issue of the *Journal of Cataract and Refractive Surgery*.[1] (Editor's Note: *See Design and Optical Profile of the FineVision IOL*.)

Daya: For the benefit of us all, can you explain the term convolution?

Gatinel: Absolutely. Convolution is simply the equivalent of smoothing. So, for instance, the original optic profile design of the FineVision IOL was a sharp profile. During the manufacturing process, however, that profile changed and we found it would be more realistic to incorporate rounded optical steps as a function in the design. This convolution—or smoothing—process reduced unwanted diffraction and, therefore, increased optical quality.

Design and Optical Profile of the FineVision IOL

According to a study published in the *Journal of Cataract and Refractive Surgery*, combining two diffractive profiles into one optical design can provide three useful focal distances to improve intermediate vision without degrading near or far visual acuity.[1] In a study comparing theoretical findings with in vitro testing on the optical bench, investigators found that the FineVision IOL (Liège, Belgium) achieved good far, intermediate, and near visual correction.

This aspheric, diffractive, trifocal lens was designed with software simulation and later validated using optical calculation software tools. It has two kinoform patterns, the first of which is designed with a 3.50 D add as the first diffraction order. The second kinoform pattern has a vergence of 1.75 D in the first order and 3.50 D in the second order. The first order is responsible for intermediate vision and the second for near vision.

"As a result, the percentage of lost energy, which is usually 20% for standard diffractive bifocal IOLs, is reduced with this IOL to approximately 15%," the investigators wrote. "The relative gain in saved energy over standard diffractive IOLs is approximately 25%."

Additionally, the IOL boasts a continuous change in the distribution of light energy at near, intermediate, and distance vision due to a gradual attenuation throughout the optic profile of the FineVision IOL. This lens is designed so that the step height decreases toward the periphery and, as the pupil size increases, the lens' peripheral steps are incrementally exposed. This profile dedicates more light to distance vision and reduces the incidence of halos.

In the investigators' study, which compared theoretical findings with in vitro testing, light and focus distribution were similar between the simulated model and what was achieved with the IOL design. Additionally, the FineVision IOL provided an intermediate addition of 1.75 D, according to the investigators. "The PhysIOL multifocal IOL has an additional focus for intermediate vision at 1.75 D, which would improve intermediate vision relative to standard bifocal IOLs while maintaining near and far visual performance," the investigators concluded. "The risk (for the patient) associated with this intermediate focus seems limited with respect to the offered benefit because the diffractive structure of this trifocal IOL was designed to allocate less energy to intermediate vision than to far and near vision."

1. Gatinel D, Pagnoulle C, Houbrechts Y, Gobin L. Design and qualification of a diffractive trifocal optical profile for intraocular lenses. *J Cataract Refract Surg*. 2011;37:2060-2067.

Courtesy of Béatrice Cochener, MD

	Group 1 = FineVision (n=40)		*P* Value
Postoperative Sphere	-0.36 ± 0.49 D	-0.50 ± 0.66 D	0.37
Postoperative Cylinder	0.39 ± 0.36 D	0.56 ± 0.28 D	0.06
Percentage of patients within ± 0.50 D	75 (30)	58 (14)	0.15
Percentage of induced cylinder > 0.75 D	0	0	1

Figure 1. Refractive predictability in the FineVision IOL group was better than inthe Tecnis IOL group.

Vryghem: The first lens on the market with this profile was actually the Acri.LISA (Carl Zeiss Meditec, Jena, Germany).

Gatinel: True, Acri.LISA uses a similar concept in that its optical steps are slightly rounded. But this is generally common during the lens manufacturing process, because the optic design is never as sharp as it was mathematically figured to be due to additional constraints, such as grinding tool dimensions. We found that it would be pertinent to incorporate this into the design of the FineVision from the start, as well as to optimize the level of achieved convulation; that is what is unique about this multifocal IOL. In addition to this, the posterior surface of the IOL is aspheric, which reduces the corneal spherical aberration.

PERSONAL EXPERIENCE

Daya: When was the first FineVision IOL implanted?

Gatinel: I was not the first to implant the FineVision; but I do believe it was approximately 1.5 years ago.

Daya: Let's go around the table and talk about our personal experience with this lens. Ladies first, Béatrice.

Cochener: That is a good way to start, because I was in fact the first person to implant this lens in France. I was very attracted by the concept of the FineVision IOL in terms of the optical properties that Damien mentioned. We were very interested to see if this lens would provide an improvement in the quality of vision that we have seen with other diffractive multifocal IOL designs. Most specifically, we were eager to find out if we could provide patients with better intermediate vision. In other words, I wanted to know if this lens design would work in the true life of patients. We implanted the first lens more than 1 year ago, and what we have seen thus far is only excellent results.

Daya: How many lenses have you implanted to date?

Cochener: More than 50 lenses. In this time, we have also had the chance to compare the prospective results with this lens to the prospective results with the Tecnis Multifocal (Abbott Medical Optics Inc., Santa Ana, California). During the study, I implanted the FineVision lens in 40 eyes and the Tecnis in 24 eyes (Figure 1). After surgery, distance UCVA was better in the FineVision group (0.95 ±0.04 vs 0.91 ±0.05; *P*=.34). Intermediate vision was also better in the group that received the FineVision lens, with 87% achieving J2 or better. In the Tecnis group, only 58% achieved J2 or better (*P*=.22). All patients, regardless of lens, achieved J1 near binocular vision and J3 intermediate binocular UCVA.

I would like to backtrack and talk about my initial reaction to the FineVision lens, which was that I was very suspicious about a potential decrease in the quality of vision, such as what we have seen with other multifocal IOLs. These lenses have a difficult profile, and loss of quality of vision is not uncommon. We were expecting more visual disturbances, but we were fascinated to see that there was not as much loss in light energy as with other lenses. Additionally, no more than 10% to 15% of patients reported halos and glare.

Daya: Which point was that? One year? Six months?

Cochener: One year, and we compared this with 1-year results with the Acri.LISA. Beside that, we studied the mesopic effects with the FineVision IOL. We have seen that there is a slight decrease in the mesopic effect, especially for intermediate and near vision, but not so significant for far vision. But what we have to remember is that we are truly providing three distances of vision to the patient.

Daya: Jorge, what is your experience with the FineVision lens?

Alió: The FineVision uses a new concept in lens designs. We consider this technology a step forward in the available multifocal lens designs for our patients. In addition to the reasons that Béatrice mentioned, I was attracted to this lens because it is designed for use with microincision cataract surgery (MICS). Theoretically, we can implant the FineVision through a 1.8-mm incision.

My introduction to PhysIOL was through its microincision lenses, and once I heard that the FineVision was also MICS compatible, I wanted to try the lens immediately. I have outcomes for approximately 20 cases. I have to say, these results are better than results with other diffractive apodized lens designs. First, my patients are happier with their intermediate vision. Second, near vision is adequate—more adequate than with any other multifocal lens. Third, night vision complaints have decreased.

Daya: What is the follow-up like for your patients?

Alió: At this moment, it is variable. We have been implanting this lens for 9 months now; most of our follow-up only extends to 1 month.

Daya: My own impressions concur with what has been

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–Jorge L. Alió, MD, PhD

said thus far. Jérôme, you introduced me to PhysIOL and to the FineVision lens specifically approximately 9 months ago. I have to express my gratitude for that, because my experience has been fantastic. You were very enthusiastic when I met you at your live surgery symposium in January 2011. Can you recap your experience with this lens?

Vryghem: I have implanted various multifocal lens designs since 1997. In fact, I was the first surgeon in Belgium to implant the Array (Abbott Medical Optics Inc.; no longer available), and I did several trials with other multifocal lenses as well. Each time I tried a new design, I was more disappointed with the quality of near vision and by the fact that a lot of patients complained about halos. In earlier times, the incidence of halos was so disturbing to some patients that I had to explant several lenses. Over time, these experiences made me a bit cautious, and I stopped implanting multifocal lenses.

The first IOL that again got me excited about multifocal lenses was the Acri.LISA. However, the downfall of this lens is that it is not suitable for younger patients and working professionals, because they want good intermediate vision for computer work. The Acri.LISA was lacking that. Then I tried the Lentis Mplus (Oculentis GmbH, Berlin), but again there were drawbacks. First, some of my patients lost lines of distance BCVA compared with what I would typically obtain with monofocal IOLs (1.02 ±0.22; 0.60 to -1.50), with many of them not reaching 1.2, which is the vision I expect in my monofocal IOL patients. Second, although the quality of vision was reasonable, my patients often found that intermediate vision was disappointing.

When PhysIOL invited me to participate in the European FineVision IOL study, I was very happy to be involved. I have to admit that I finally have found a lens that takes into account all of the drawbacks of the other multifocal lenses I have implanted. This lens provides good quality of vision for distant vision. Some patients mention halos, but they are not disturbing anymore. The FineVision also provides excellent quality of vision at near, with the additional benefit of good intermediate vision. I am comfortable implanting the FineVision in active people who do computer work.

If you asked me 4 years ago, I would tell you that I do not implant multifocals. But that gradually changed once I found acceptable lenses to implant. I started using the Acri.LISA in 25% of my patients, and now I implant a multifocal IOL in 66% of all my patients who I treat in the private practice setting. I am so enthusiastic that I am not only implanting these in cataract patients but in refractive lens exchange patients as well. *(Editor's Note: For a video demonstration of Dr. Vryghem's technique, visit eyetube.net/?v=savif.)*

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direct link to video:
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The only drawback is that implanting the FineVision in patients who have astigmatism, especially against-the-rule astigmatism, can result in some patient dissatisfaction. Even patients with slight astigmatism lose quality of UCVA with this implant. To allow this lens to be really powerful, you need to target use in patients with near emmetropia or warn patients with astigmatism that they could possibly need fine-tuning with laser enhancement after surgery. These patients must be told before surgery about any costs associated with fine-tuning procedures.

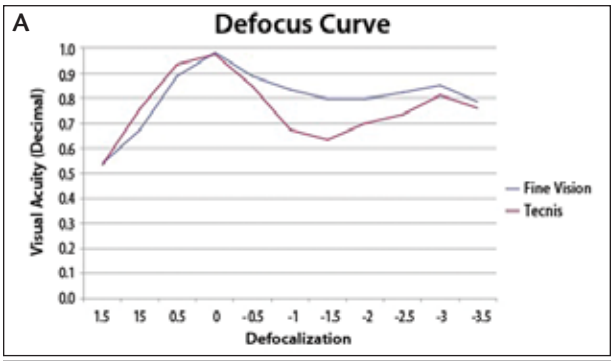
Cochener: True, but this is the case for most multifocals.

Daya: Gerd, would you share your experience with the FineVision?

Auffarth: I am the baby of the roundtable participants seated here, as I just started using this PhysIOL lens in September. What I noticed even before I started implanting the FineVision was that there were some similarities between this lens and the Lentis Mplus. I am very happy to see that there is some development in the diffractive IOL group. For 20 years we have, more or less, only seen copies of the 3M diffractive multifocal IOL, with no really big changes in lens designs over these years. But the FineVision and the Lentis Mplus, these IOLs represent a fundamental change in lens designs. PhysIOL really put some thought into designing the FineVision; they successfully designed a new lens but still based it on the principles that have been around for more than 20 years. With the exception of Oculentis, no one else has done that so far.

When you look at patient satisfaction with these new lens designs, only 10% of patients complain of halos and glare, furthering our observation that loss of light is a very big issue. If you can reduce that loss of light effectively, as is done with this PhysIOL lens, then we can pro-

Courtesy of Béatrice Cochener, MD



Courtesy of PhysIOL

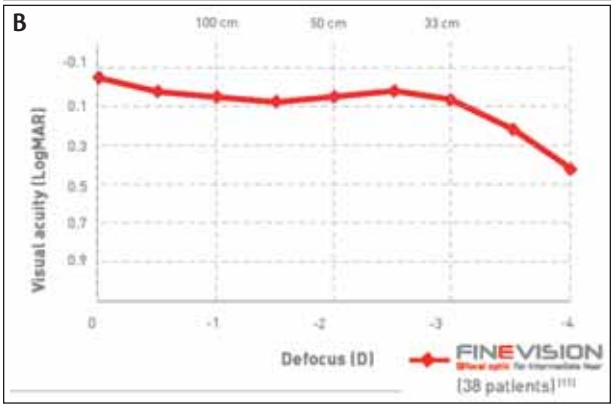


Figure 2. (A) Defocus curve of the FineVision versus the Tecnis IOLs. There was a significant difference for defocus from -1.00 to -2.50 D. (B) Defocus curve data from PhysIOL.

vide patients with better contrast sensitivity and visual quality. I think this lens is exactly on the right track.

Daya: I agree now that I understand the lens design. However, when Jérôme first told me about the FineVision lens, I thought, "Goodness, that sounds like a diffractive version of the Array." I did not know how the lens design separated images to avoid visual confusion on the retina, because the optical steps for 1.75 D, 3.50 D, and distance are fairly close to each other. After using this lens, I noticed that patients did not spontaneously complain of glare or halos as much, and when asked they just described the presence of halos as a nuisance. This is probably because of the low energy of the 1.75 D add as well as the additional effect of the second harmonic, which is 3.50 D and adds onto the near focus of 3.50 D. With this scenario, there should be fewer halos than expected and, in reality, I have the impression that patients are more enthusiastic about their vision than with other multifocal lenses. They also complain of halos less.

RESIDUAL ASTIGMATISM

Daya: I would like to touch on Jérôme's observation about astigmatism. He mentioned that astigmatism is less forgiving with the FineVision lens. Damien, do you have an explanation as to why—in terms of residual astigmatism—patients might be more sensitive to visual degradation with the FineVision?

Gatinel: Is it that Jérôme has seen more or less residual astigmatism after implantation of the FineVision?

Daya: More. I have had similar observations, but only in isolated cases. For instance, if a patient has 0.75 D of cylinder, his or her visual acuity will go from 6/6 preoperatively to 6/9 postoperatively. I corrected one patient now, and he is 6/5, which is quite a jump in visual acuity. So it seems that maybe Jérôme's observation is correct, that perhaps this lens is not as forgiving for astigmatism than other diffractive lenses. Is there an optical explanation for this? Could it be because there are not two but three zones of vision?

Gatinel: Not really. We have done individual studies showing that the energy required for distance vision—at least for the large pupil diameter—is equivalent to other diffractive lens designs such as the Acri.LISA. In other words, the amount of light dedicated to distance vision for the FineVision is equivalent to that dedicated to distance vision for the Acri.LISA. So astigmatism should not impair patients with the FineVision any more than it does with other diffractive IOL designs.

Daya: But when a patient has astigmatism, the conoid of Stürme is a little more spread out and distinct focal points start to overlap. It might make sense if patients were complaining of glare only, but the observations we have been seeing includes degradation of visual acuity. With that said, it is kind of hard to know what is going on with the patient, unless you have some objective way of analyzing it.

Vryghem: Correct. My patients do not complain about glare, they only complain about not having a perfect refractive outcome due to residual astigmatism. I have implanted a lot of FineVision IOLs—approximately 400—and the mean spherical equivalent (SE) is 0.10 ±0.36 D (-0.75 to -1.25 D), with 88% of eyes obtaining a SE less than or equal to -0.50 and 0.50 D.

Cochener: When you are talking about astigmatism, Jérôme, what kind of astigmatism are you referring to?

Vryghem: My surgical technique (MICS with a temporal 1.9-mm incision) does not induce astigmatism, and therefore you have to look at the preoperative corneal curvatures to predict which patients could be unhappy with the postoperative refractive result. A patient will not necessarily be satisfied with a UCVA of 0.8. If a patient has slight against-the-rule astigmatism, he or she will probably need a fine-tuning treatment such as LASIK or PRK. It is crucial that we tell our patients that, in 3% to 4% of cases, some fine-tuning adjustments will be required and that there are extra costs associated with it.

OBJECTIVE MEASURES

Daya: Jorge, you evaluate a lot of implants and quality of vision, and you have used a lot of objective measures. What sort of measures do you think we should be looking at to determine the visual function of this lens?

Alió: Well, first it is important to pinpoint the defocus curve. Second, we should determine the point spread function. The third consideration is the intraocular performance, because some of the other multifocal designs have demonstrated a low tolerance for stability in the capsular bag, which may be responsible for the decrease in vision that Jérôme has mentioned.

Daya: Do you mean lens position?

Alió: Yes. Lens position has a strong influence in the quality of BCVA. Eyes with tilted or decentered lenses are over-aberrated, which is the main reason for night vision complaints as well as driving complaints. But, if the lens design is stable, patients will not have these visual complaints. I have not heard of any visual complaints with the FineVision IOL. And lastly, the defocus curve should satisfy patient demands, and today's demands are near and intermediate vision.

"In some of my patients who complain about poor vision in dimmer light conditions, which is not as bad with the FineVision as it is with some other multifocal lenses out there, pupil size is not the culprit."

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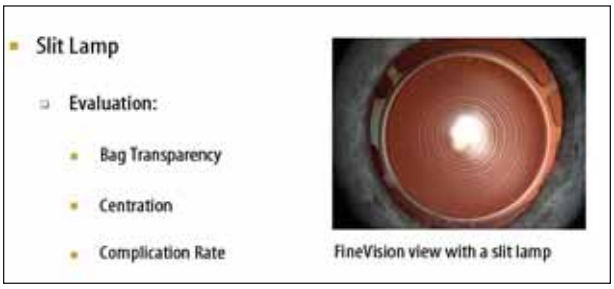
Cochener: May I add a comment about defocus curve? We have compared several diffractive and refractive lens designs. What we noticed is that the FineVision's unconventional diffractive design creates a true bifocal lens. We see this smooth aid, with some kind of plate between the two. In our study, the defocus curve of the FineVision lens was better than the defocus curve of the Tecnis (Figure 2), with significant difference for defocus from -1.00 to -2.50 D ($P<.05$). There was no significant difference in the incidence of halos or glare after surgery, and contrast sensitivity, reading speed, spectacle independence, and patient satisfaction were similar between groups.

PUPIL SIZE

Daya: Going back to the pupil, which is important for this kind of lens because it is apodized, do you think that preoperative pupil size matters? I have found that, in some of my patients who complain about poor vision in dimmer light conditions, which is not as bad with the FineVision as it is with some other multifocal lenses out there, pupil size is not the culprit. I measure pupil size for cataract patients and those undergoing refractive lens exchange, but there is really no correlation between pre- and postoperative pupil size. We still measure pupil size, but I do not take that into consideration.



Courtesy of Béatrice Cochener, MD

Figure 3. View of the FineVision IOL at the slit lamp.

Cochener: I have found that most of the time the pupil is not as reactive after surgery.

Vryghem: Rudy Nuijts published a paper in the *Journal of Cataract and Refractive Surgery* about pupil size in patients who received the Artisan phakic IOL (Abbott Medical Optics Inc.). What he found was that there is no correlation between patient complaints and pupil size.

Alió: We do not use pupillometry in cataract patients, because we do not see any practicality in it. We do not measure pupil size after surgery, either.

Daya: This makes sense, because you have taken out a natural 5-mm lens and implanted a synthetic 1-mm lens in its place. The iris is sort of suspended in free space, as it is no longer being held in place by contact with the crystalline lens. So, there are many reasons why the pupil is going to be quite different in sizing afterward. Again, this leads back to counseling your patients. You must talk to them about what to expect from the IOL, in this case from the FineVision. One of the things that I tell my patients is that they will have to turn up the lights when they read. They might be able to read a menu in the restaurant, but if they want to read for longer periods of time, for instance reading a book at home, they might have to turn up the lights.

Vryghem: Patients have to be aware that, even if they have multifocal lenses, the space at which they can read is limited. Reading vision goes from 40 to 50 cm and from 60 to 70 cm, but in between they miss something. Since the FineVision IOL is a trifocal IOL, they have to be aware that vision will not be sharp at all distances.

Daya: I am not seeing that with patients—I have not heard any complaints such as this.

Courtesy of Jérôme C. Vryghem, MD

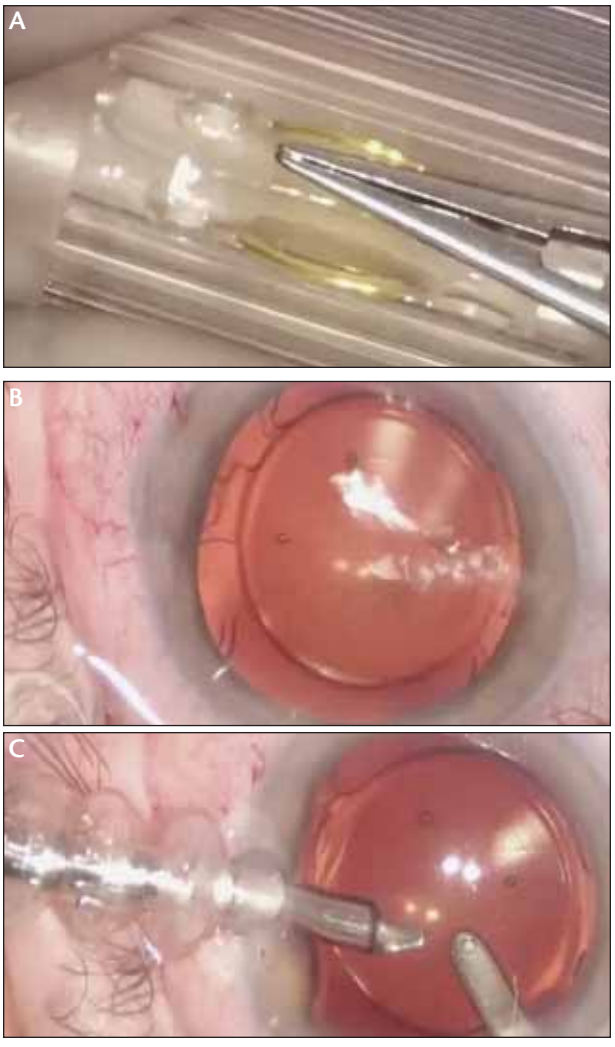


Figure 4. Lens implantation of the FineVision multifocal IOL. (A) The FineVision IOL is placed in the injector. (B and C) The lens is implanted and positioned in the eye.

Vryghem: I have, especially for reading. After surgery, patients have to bring everything a bit closer to read.

Cochener: Yes, but you know there is a learning curve. They need to train their eyes.

Vryghem: Like with progressive glasses.

Cochener: Exactly. You must focus on these things during the preoperative discussion, and patients should know what level of neural adaptation is needed for that specific lens.

AREAS FOR IMPROVEMENT

Daya: Getting back to lens design, what improvements would you like to see in the FineVision lens, based on what you have experienced with this lens so far?

Alió: I would like the FineVision to have consistent contrast sensitivity function. For defocus curve, I would like to see the different distances in terms of visual performance after long-term follow-up, because all of the preliminary impressions have been positive. We have just started a PhysIOL-sponsored clinical study where we will be working as an independent group to test the contrast sensitivity and to study the lens' performance and provision of visual quality.

Daya: Several of us have had your same experience, Jorge. We know that this lens is credible, and we all have promising preliminary results. But right now it is a subjective conversation here. We have not mentioned much specific data yet, and I think a lot of that is because our numbers are fairly small, and in some cases we are waiting to be published as well.

Vryghem: I have a case series of 50 eyes that I plan to publish later this year.

Cochener: We are also waiting, in terms of follow-up, to see about the rate of posterior capsular opacification (PCO), too (Figure 3). This is an acrylic lens, so I expect that some patients will experience PCO after the lens has been left in the eye for some time. However, that is the general comment for multifocal IOL implantation; a Nd:YAG laser capsulotomy should not be performed before 6 months, waiting for a significant decrease in visual acuity. Concerning the FineVision IOL, the design of the 360° ring and the angulation of the optic should help to better prevent secondary ectasia compared with other hydrophilic acrylic IOL models.

Daya: Have you had to do any Nd:YAG laser capsulotomies on these patients?

Cochener: Not so far, and we now have 18 months' follow-up. We see this lens as a design that fits well in the capsular bag. This lens closely mimics the Akreos MI60's (Bausch + Lomb, Rochester, New York) barrier to PCO.

Daya: That is quite high, then.

Cochener: The barrier to PCO is more important in a hydrophobic lens, but it is still very convincing compared with any kind of hydrophilic lens on the market.

Daya: That raises the question: Is it the material, or is it the design and shape of the lens, that causes PCO? For instance, the Acri.LISA has a very high PCO rate, and I have to do a lot of Nd:YAG capsulotomies with those lenses. I have to say that, looking at the FineVision capsules, I have been very impressed. I expected the same thing, but I have yet to perform Nd:YAG capsulotomy, and my personal experience extends to about 80 FineVision lenses implanted. Visual quality really deteroriates once patients start to get PCO.

"I am already convinced that [the FineVision] is the best diffractive multifocal on the market."

– Béatrice Cochener, MD

Vryghem: The population of patients who elect multifocal IOL implantation (Figure 4) is very demanding in terms of quality of vision. Once they lose quality of vision, we have the tendency to apply capsulotomy earlier than we would in monofocal patients.

Daya: So how many capsulotomies have you done?

Vryghem: Not many.

Cochener: Patients complain earlier when they have PCO.

Vryghem: Well sure, because a patient with a multifocal IOL loses even more contrast sensitivity once PCO occurs.

Daya: Are there other improvements you would like to see for the FineVision?

Gatinel: Another improvement to the FineVision lens design would be introduction of a toric version.

Daya: I am glad you brought that up, because I think that is an excellent idea.

Cochener: That was my comment as well, Damien. This lens is, in terms of stability, truly fascinating. I think that even compared with the other valuable toric lenses already on the market, this IOL could be a big contender. Many of these toric lenses rotate, and I think this model is very stable and may therefore be a better toric lens design.

Vryghem: Additionally, when a toric model of the FineVision does become available, PhysIOL should manufacture standard cylinders, thus allowing us to avoid the wait associated with special-ordering some toric lens designs today. Only if the patient really wants customized cylinder for high astigmatism would we have to go through the company directly.

Daya: Keeping on the same subject, I would like to see a wider range lens powers for the multifocal lens. Right now, the FineVision is available up to 30.00 D, but it needs to go up to at least 34.00 D, and it needs to go down to low levels of correction as well—I would suggest down to 3.00 D for those patients with long axial lengths looking for multifocality.

Vryghem: So that means you would like to implant this lens in myopic patients? How many of us are implanting the lens in myopic patients?

Daya: Well, you can't on high myopes presently, because you have a problem with the available lens powers.

Vryghem: But if you already have the option of implanting a 15.00 D lens, you can operate on patients who have -3.00 or -4.00 D of myopia. In your opinion, Sheraz, are patients with myopic good candidates for the FineVision?

Daya: Yes, and I have done them. I have implanted many different refractive lenses in myopic patients, and they have all been very happy. However, lens calculation is another issue. You need a macular OCT when implanting a refractive lens in the myopic eye. You also need to look at the back of the eye, to employ ultrasound, and to make sure that biometry is done correctly on the macula as opposed to anywhere else.

Vryghem: I agree, and specifically for me the FineVision is one of the first multifocal lenses I have successfully implanted in a myopic eye. Before this lens, I was not daring enough to do that with other models.

Cochener: I did it with the Acri.LISA many years ago.

Vryghem: I only did it in special circumstances with the Acri.LISA, but I do it frequently now that I use the FineVision.

Alió: What is the limit of myopia you will allow when implanting a multifocal lens? For us it is around -6.00 D or an axial length of 26 or 27 cm. The axial length in patients with extreme myopia is more than 27 or 28 cm, and in these cases, I would not recommend multifocal lens implantation. Higher myopia is a contraindication, and lower myopia I would not recommend, either, because these patients have a decrease in contrast sensitivity that they will not easily regain.

TILT AND CENTRATION

Daya: I am finding with more frequency that surgeons opt to use a capsular tension ring (CTR) in every single patient who receives a multifocal IOL. I understand the rationale behind this technique, and I have started to do so, too.

Alió: Me too, but I really think that tilt and centration occurs with some lenses more than others. For instance, we found that outcomes with the Acri.LISA were better when a CTR was implanted, not only because this lens tilts and the ocular performance changes, but because it provided better near and far vision for our patients as well. With the other lenses, we noticed a similar trend. But I think that first we need to assess whether the lens does, at 3 or 6 months after surgery, cause an adequate increase in ocular aberrations. If it

"I use this lens in 100% of my multifocal patients."
– Damien Gatinel, MD

is not, than a CTR is not necessary. To put in a CTR is one more maneuver inside the eye, and it can be risky.

Cochener: Correct. You can induce more inflammation with flare by implanting a CTR. We did a study on flare a few years ago, and you do get an increase; unfortunately, the study was not published. Additionally, you can damage the capsular bag. The design of this FineVision lens is such that the lens itself puts some tension on the capsular bag, and therefore it is not necessary to use a CTR.

Daya: So what if the capsular bag contracts later on? More specifically, if the bag contracts with an asymmetric contraction, the lens can tilt or become decentered. I have put CTRs in a couple of cases that I implanted the FineVision. One case in particular had 1 clock-hour of dehiscience, and I was afraid that without the CTR I would decenter the lens. In another case, I got the impression that the zonules were a bit loose when I was doing the capsulorrhexis.

Cochener: But those are very specific instances, and I think everybody would have used a CTR in those cases.

Vryghem: I have been using other PhysIOL lenses, like the Slimflex and the Micro AY for more than 6 years, and we have not had any problems of shifting refraction 6 months after surgery. These lenses are the same design and the same material as the FineVision. I don't have the impression—and I have implanted quite a few of the FineVision lenses now—that they shift after 6 months, either.

USE OF THE FINEVISION IN CLINICAL PRACTICE

Daya: Jorge, where do you see the FineVision lens in your practice now that you have completed a preliminary evaluation? I ask this question because there are quite a lot of lenses out there now, and one of the biggest mistakes that doctors make is that they think that one lens is a panacea—that it is going to suit everybody. That is not necessarily the case, and I do think we need to be selective for our patients. We must be their advocate. Where would you see the FineVision in your lens armamentarium for patients? Who of your patients do you see benefitting the most from this lens?

Alió: At this moment, I implant a multifocal lens in approximately 50% of my patients. I select patients with no pathologies on OCT. I rule out macular problems and disease states, as these are contraindications for multifocal IOLs. Additionally, in the presence of astigmatism, I will implant a toric lens.

The nice thing about the FineVision lens is that it does not induce any astigmatism. To summarize, if I do not find any ocular pathologies, such as macular degeneration, and the patient does not have any irregular astigmatism, I aim to implant a multifocal lens. My rationale for implanting a multifocal IOL is it provides better optical performance and optical quality than a monofocal IOL.

Daya: So you see this lens as taking up a greater proportion of your multifocal lens practice?

Alió: If the lens is convincing enough, it could be the only multifocal lens I implant, because I think the best lens is the one that you have to use in every suitable case. Once I identify this lens, I will use it regularly.

Cochener: I am already convinced that this is the best diffractive multifocal on the market. The FineVision lens consumes 60% to 70% of my patients who undergo multifocal lens implantation. After all, today's IOL market is a refractive market. I will not use a diffractive lens in myopic patients or in those who have already been operated on, but the FineVision is my first choice for a diffractive lens in my practice.

Daya: Do you use the Lentis Mplus?

Cochener: Yes, I do.

Daya: So where does that sit?

Cochener: I tend to use the Lentis Mplus in patients who have been already operated, because it is a refractive lens. I think that multifocal IOLs with a refractive design do not cause as many disturbances for intermediate vision. I can tell you that compared to 2 years ago, where the AcrySof ReStor (Alcon Laboratories, Inc., Fort Worth Texas), the Tecnis Multifocal, and the Acri.LISA had a huge place in our practice, now the FineVision for me is in the first position.

Daya: That reflects our practice as well. I am sure that all of you ask your patients what their visual needs are. I had a patient who told me, "I cannot tell you what I do for a living, but I jump out of aircraft and I need to read maps in the dark." I asked him, "What do you want me to do for you?" He knew that I used the Tecnis Multifocal and the Acri.LISA, and he had already done his research. He knew those two lenses would give him what he wanted. So I implanted the Acri.LISA, and when he came back I asked if he was still jumping out of aircrafts, which he was with no

"The FineVision is the best thing that has happened to my surgical technique in the past years."
– Jérôme C. Vryghem, MD

problem, and I asked if he was still reading maps in the dark, which he was with no problem. So that is an extreme case; maybe the FineVision would not have been suitable for him, but I think it is very important to know what patients want and then work toward those needs.

Cochener: We are customizing vision for our patients.

Daya: We certainly are. Damien, please tell us where the FineVision fits in your choice of IOLs.

Gatinel: If I thought there was a better multifocal lens, I would have designed it. In all seriousness, I use this lens in 100% of my multifocal patients, provided they do not have corneal astigmatism. If they do, then I use a toric multifocal diffractive IOL or I play with the incision a bit. Alternatively, if astigmatism is an issue for the patient, then we will do PRK or LASIK enhancement.

Daya: How much astigmatism will you treat?

Gatinel: 0.75 D.

Cochener: Me too.

Daya: Gerd, in your personal experience, where do you think the FineVision IOL will fit in your practice?

Auffarth: I think the FineVision lens has the potential to outrun other lenses. But, I must be honest. When a new lens comes on the market, there is always a lot of hype in the beginning. Only after we have tested it and used it does it have the potential to become a stronger part of our daily work. There will probably never be a lens that I use in every situation, in every patient—as there are no guarantees for anything.

I think the FineVision has the potential to outrun the other diffractive lenses, but I also think we have a head-to-head competition with the Lentis Mplus in terms of the new concepts that work. Both lenses have a lot of possible advantages to offer.

Daya: So you need more experience with the lens before you can see where it will fit in to your practice?

Auffarth: Yes.

Cochener: I think that goes for everybody.

Vryghem: The FineVision is the best thing that has happened to my surgical technique in the past years. We have also used the Lentis Mplus, but patient satisfaction is much higher with the FineVision. Therefore, I will use the FineVision unless I also have to treat astigmatism. In those cases, I will implant the Acri.LISA toric. Even then sometimes I will implant the FineVision and then compensate for slight astigmatism by performing arcuate keratotomy using the Mastel Arcuate Corneal Compass (Mastel Precision Surgical Instruments, Rapid City, South Dakota). But, as you know, in Belgium we have a history with incisions, so we are not afraid to cut in the cornea.

FINAL THOUGHTS

Daya: Before I bring this roundtable to a close, are there any other comments?

Alió: Yes. I believe that the FineVision will be a top choice for MICS. We have entered a new generation of small-incision surgery, and multifocal IOLs that can be implanted through sub–2-mm incisions are compatible with this era. I think that we are in the emergence point of new technologies, and the FineVision IOL is one of these new technologies to look out for.

"I think the FineVision lens has the potential to outrun other lenses."
– Gerd U. Auffarth, MD

Daya: Yes, I think that the microincisional aspect of this lens is vital, because there is no sense in doing smaller incisions if we need to enlarge them to put the implant in.

Cochener: We are already dealing with a new generation of multifocal lenses. We know that we will never achieve perfection with the concept of multifocality, but I think we are closer to perfection with this FineVision lens. And the next generation will include a toric version, hopefully.

Vryghem: I think that for the first time we have a multifocal IOL that is responsive to the demands of the majority of our patients.

Daya: That is a good point. This discussion has shed light on many aspects of the FineVision lens, including where it belongs in our armamentarium. I am honored to be among the first surgeons using this lens, as I believe it has a bright future as we move further into MICS techniques. I would like to thank all of you for participating in this roundtable. ■

1. Gatinel D, Pagnoulle C, Houbrechts Y, Gobin L. Design and qualification of a diffractive trifocal optical profile for intraocular lenses. *J Cataract Refract Surg.* 2011;37:2060-2067.

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