

# RAYONE EMV: A NEW DIRECTION IN PRESBYOPIA CORRECTION

A roundtable discussion on the benefits of this premium monofocal IOL and the opportunities for its use.

## MODERATOR



### PAUL ROSEN, FRCS, FRCOPHTH

- Consultant Ophthalmologist, Oxford Eye Hospital, Oxford, United Kingdom
- Financial disclosure: Honorarium (Rayner)

## PANELISTS



### JAMES BALL, MA, MB BChir, FRCOPHTH, CertLRS

- Consultant Ophthalmologist, Custom Vision Clinic, West Yorkshire, United Kingdom
- Financial disclosure: None



### ARTHUR B. CUMMINGS, MB ChB, FCS(SA), MMed(OPHTH), FRCS(Edin)

- Consultant Ophthalmologist, Wellington Eye Clinic, Dublin, Ireland
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### ALASTAIR STUART, MD

- Consultant Ophthalmologist, London Vision Clinic, London, United Kingdom
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**Paul Rosen, FRCS, FRCOPHTH:** Patient expectations are at an all-time high, and today, surgeons have a variety of presbyopia-correcting IOLs to choose from when determining what type of IOL might best benefit their patients' needs. One of these is the first and only IOL designed to enhance patient outcomes through monovision, Rayner's RayOne EMV. This roundtable discussion will provide an overview on the RayOne EMV technology, how the lens is used, and how to master the patient conversation. Dr. Stuart, would you like to kick off the discussion with an overview of RayOne EMV?

**Alastair Stuart, MD:** In a nutshell, RayOne EMV is a premium nondiffractive monofocal lens that extends depth of field by inducing positive spherical aberration across a controlled aspheric surface. It can provide approximately 2.25 D depth of focus when

used in a modest monovision setting with approximately a -0.75 to -1.50 D offset between the dominant and nondominant eye. When compared to standard monofocal IOLs, RayOne EMV promotes superior intermediate vision. Unlike trifocal and diffractive extended depth of focus (EDOF) IOLs, it is not associated with night vision symptoms and contrast loss.

**Dr. Rosen:** Is RayOne EMV better tolerated by patients compared to other premium IOL technologies?

**James Ball, MA, MB BChir, FRCOPHTH, CertLRS:** Inducing positive spherical aberration with this IOL is an interesting concept. I think one key to success is measuring total corneal spherical aberration on every patient. Patients with naturally high positive spherical aberration in the cornea typically don't do well with a trifocal IOL, for instance. The patient should have an average amount of positive spherical aberration preoperatively to hit that sweet spot of spherical aberration postoperatively.

**Dr. Stuart:** I do the same. I think it is essential to know what the patient is bringing to the table, so to speak, and to know what you should be targeting rather than putting the lens in an eye and fudging it.

**Dr. Rosen:** Dr. Cummings, how do you plan to position RayOne EMV in your practice compared to EDOF trifocal IOLs?

**Arthur B. Cummings, MB ChB, FCS(SA), MMed(OPHTH), FRCS(Edin):** It seems to me this lens could replace standard monofocal IOLs in the future. There's almost no downside in terms of contrast, and it's suited to a wide range of patients who want a monofocal emmetropic outcome. Targeting emmetropia in one eye and -0.75 to -1.00 D in the other should, for most patients, add at least 10% to 15% of functionality at focus and provide quite a good range of vision and low dysphotopsias.

For patients who spend most of their time at distance and intermediate ranges and seldomly at near, especially if they don't mind wearing glasses for near work, RayOne EMV is a great choice. From my experience with monovision for the past 20 years, I know that most people can tolerate up to 1.25 D of anisometropia well.

**Dr. Stuart:** When I set an eye for reading, I usually target -1.25 or -1.50 D. That eye is then seeing 20/50 or 20/40 at distance. In my

## EARLY RESULTS WITH RAYONE EMV



By **Mariano Royo, MD**

I recently reported my clinical results of 22 eyes of 11 patients implanted with RayOne EMV.<sup>1</sup>

At 6 months postoperative, all patients achieved spectacle independence for distance and intermediate vision, and one in three patients achieved functional near vision without spectacle correction. Patients also were able to read without spectacles at 40 cm, which is a visual acuity of about 0.6. The average reading aid at 33 cm was 1.50 D. According to patients' feedback from an objective questionnaire, postoperative satisfaction was high.

Eyes that received RayOne EMV also were compared to a second group of eyes that received

the Tecnis Eyhance IOL (Johnson & Johnson Vision). In this analysis, RayOne EMV was more tolerant to small residual refractive errors.

The conclusions of our study were very clear: RayOne EMV provides patients with an excellent opportunity to achieve spectacle independence at distance and intermediate.

1. Royo M. RayOne EMV and TECNIS Eyhance: a comparative clinical defocus curve. Data on file with Rayner. 2021.

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more functionality than a standard monofocal IOL with minimal risk for glare and halos, especially in corneas that haven't had previous surgery. In terms of corneas with previous surgery, it's reasonable to think that RayOne EMV will be a better choice than a trifocal.

**Dr. Rosen:** Dr. Ball, do you perform a contact lens trial?

**Dr. Ball:** I am comfortable not performing a contact lens trial. We do so much blended laser vision eye surgery. If we don't hit our target with either of these IOLs or are not getting the performance that the patient wants, we can put them under the laser and either reduce their anisometropia or give them more reading vision if they want.

For patients with previous laser eye surgery, the broader landing zone of RayOne EMV is more forgiving. This is advantageous because biometry is usually more challenging in these patients.

**Dr. Cummings:** What we do for cataract patients is tell them that we are planning on targeting emmetropia in both eyes, but we separate the surgery in the two eyes by a couple of weeks. This means the patient will experience one eye seeing better than the other after the first eye is done.

Prior to operating on the second eye, we evaluate the patient's near vision with the monofocal. In our experience, some people achieve more reading than expected. Patients who come back incredibly pleased with their distance vision and do not notice a difference or anything bothersome between the two eyes are indicating that targeting reading in the second eye is likely to work. This also allows you to give the patient what they really want when choosing a target for their second eye: Do they want to improve their distance vision, or do they want to improve their near vision? With RayOne EMV lens, you can do either one and still preserve something of the other. ■

experience, the principle behind RayOne EMV works.

**Dr. Ball:** We now use very few trifocal IOLs in our clinic. We have had to explant these lenses in somewhere between 1% and 2% of patients because of either intolerable halos or compromised visual quality. A blended vision approach is better tolerated by patients, and it's not associated with any more night vision symptoms or loss of contrast than implanting two standard monofocal IOLs.

**Dr. Rosen:** Dr. Stuart, do you implant RayOne EMV in both eyes, or do you implant it in the nondominant eye only?

**Dr. Stuart:** I implant it in both. Anecdotally, the distance vision of the reading eye and the reading vision of the distance eye are much more than I would expect with a standard monofocal.

**Dr. Rosen:** How do you describe RayOne EMV to patients? Do you tell them that it is a monofocal? A premium? Do you treat it as a standard monofocal albeit at a premium level?

**Dr. Stuart:** For me, I try simply to get the best outcomes for patients. Especially if patients are paying privately, I feel I owe it to them to do everything I can to offer them an IOL I believe will provide the best outcome for them.

**Dr. Cummings:** You can hardly make a mistake with RayOne EMV in an eye that hasn't had previous surgery. Also, I think more patients will achieve 20/20 or better distance visual acuity because this lens has a much bigger landing zone. I would target plano or slightly plus. Once I'm more familiar with the lens, I will start pushing minus on the reading eye to figure out what is the most amount of myopia I can target and still expect a good distance visual acuity.

**Dr. Rosen:** Do you charge a differential for RayOne EMV compared to a standard monofocal?

**Dr. Cummings:** We're not planning on charging a huge differential, if any. If we do end up charging for this lens, I will tell patients that for a nominal amount—less than a pair of new glasses frames—they will get a lens that'll provide