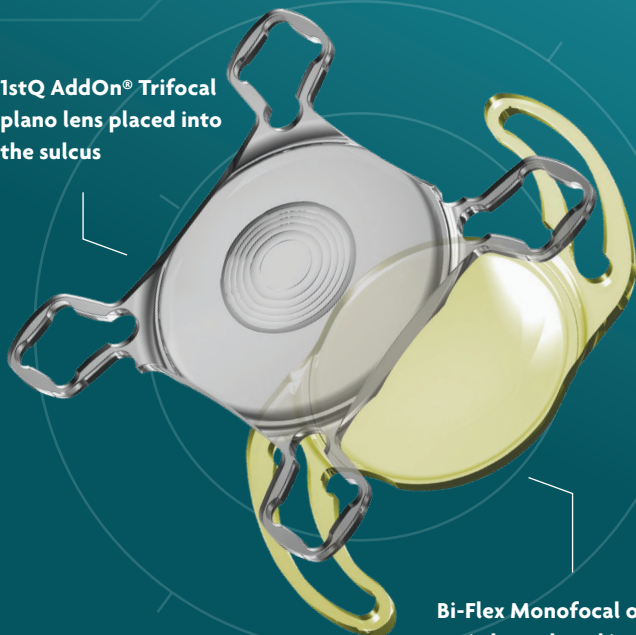


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# Outcomes with the Dual Lens Procedure

WRITER **Dr Brian Harrisberg**

Cataract surgery today is considered a refractive procedure thanks to improved technological advances and surgical techniques. This facilitates spherical equivalent outcomes within  $\pm 0.50$  dioptres in up to 90% of cases.<sup>1-6</sup>

I have performed cataract surgery with in-the-bag multifocal intraocular lenses (IOLs) for several years. More recently, I have offered the dual lens procedure to a select group of patients. This procedure involves the implantation of two IOLs during the same surgery, with the aim being multifocal correction. This is dependent on an accurate and safe insertion of the monofocal or monofocal toric IOL into the capsular bag. Immediately thereafter, a plano powered trifocal 1stQ AddOn IOL is placed above the original lens into the sulcus. The dual procedure offers a safe and reversible solution for patients who are unsure about receiving multifocal in-the-bag implants. Moreover, the ability to reverse the procedure can be very useful in situations where patients are prone to develop ocular disease later in life, such as macular degeneration, in which case removal of the multifocal component may be advantageous to the patient to maximise contrast sensitivity. The ease of removing a sulcus lens, and leaving the full corrective power for distance correction, is essentially a 'get out of jail free' card. It allows the patient to have the procedure reversed without affecting visual acuity.

## Retrospective Analysis

I recently presented the results of a retrospective analysis, which compared the refractive and visual outcomes of 72 eyes (43 cataract patients) studied in three groups: in patients implanted with the trifocal in-the-bag MediconTur Liberty 677MY IOL (MediconTur Medical Engineering Ltd, Zsámbék, Hungary); in patients with the toric model of the same capsular bag lens; and in patients receiving a monofocal primary lens supplemented with the MediconTur 1stQ AddOn trifocal secondary IOL.<sup>7</sup>

The 1stQ AddOn is a platform specifically designed to fit into the sulcus (Figure 1). These are square-shaped hydrophilic lenses with four haptics, which are able to anchor the lens in various sizes and shapes of ciliary sulci. One of the advantages of the 1stQ AddOn sulcus lens is the ability to maintain rotational stability due to the four-point fixation design. Gundersen and Potvin reported good data with toric corrections showing axis stability within the sulcus.<sup>8</sup>

Moreover, the 1stQ AddOn lenses have a convex anterior surface and a concave posterior surface on the optic, which allows adequate spacing between the lens in the bag of at least 0.34mm.<sup>9-10</sup> This helps to avoid development of interlenticular opacification. Adequate

clearance from the iris avoids red rock syndrome and iris chafing.<sup>11-13</sup>

The 1stQ AddOn trifocal and trifocal toric lenses have six diffractive rings as apodised powers on the anterior surface. This is similar to the MediconTur Liberty trifocal lens, which has seven diffractive rings and is made from the same hydrophilic material.

The trifocal AddOn model has plano power, but it is possible to order this lens in a variety of spherical and cylinder powers as well.

The technique for a dual lens procedure follows a normal cataract operation with insertion of a single piece in-the-bag monofocal or monofocal toric IOL. The toric in-the-bag lens is positioned on axis and all viscoelastic is removed.

The wound is then enlarged to 2.4mm and viscoelastic is placed discreetly above the iris distal to the wound, as well as in the sulcus, allowing an expansion of the sulcus space. The AddOn lens is loaded under the microscope into the Medicec Accuject 2.1 top loaded injector system, allowing good clearance of all the haptics within the injector system. On injecting, the lens can pass into the anterior chamber, or the forward haptics can possibly be positioned into the sulcus from the injector.

Ideally, manipulation of the haptics is best performed away from the wound, with minimal downward pressure. It is possible to rotate one of the four haptics at a time. Once the lens is located in the sulcus, it is best to rock it forward and backwards, and side to side to make sure that each haptic has unfolded adequately. A sign that a haptic has not unfolded correctly would be a prominence within the iris, suggesting that the haptic is pressing into the posterior iris surface.

Once the lens is secured, all viscoelastic must be removed extremely thoroughly, above and in between the two lenses. Intracameral Miochol is used to secure the optic behind the iris. In the recovery room, following a dual procedure, every patient should be examined on the slit lamp for adequate placement of the lens and to ensure that none of the haptics have prolapsed into the anterior chamber.

Post-operatively, uncorrected and best-corrected visual acuities and subjective refraction were assessed. The difference between the predicted residual refraction and actual post-operative refraction was determined as spherical equivalent, residual cylinder and axis. A patient satisfaction questionnaire was completed three months after surgery. The results of my retrospective analysis showed that outcomes between each of the groups were identical, with no loss of best-corrected or uncorrected visual




Figure 1. The 1stQ AddOn Trifocal secondary IOL is designed specifically for sulcus implantation.

acuity, hence giving confidence that this procedure is safe and accurate.

Of all patients, 90% or more achieved unaided distance visual acuity of 6/7.5 or better and all obtained N5 reading, in good lighting, in all three groups examined. Dysphotopic events were rare and easily tolerated in all three groups.

According to my personal experience, it appears that the dual lens system offers patients a viable opportunity for reversibility of multifocal implants, whereby the multifocal platform can easily be removed from the sulcus at any time. The primary lens remains within the capsular bag and the original refractive outcome would remain the same.

With informed consent a priority, all options, including distance correction, monovision options, multifocal lenses, and dual lens procedures are discussed with all of my patients. All patients are given ample chair time to understand the concept of the dual procedure.

I do believe the dual lens system offers an opportunity for some patients who are unsure if they will cope with the potential side effects of multifocal lenses. I will reserve this procedure for patients who cannot clearly make up their mind as to which system they would prefer, but do not want to miss an opportunity for spectacle independence. I would recommend the dual implantation approach to surgeons who are already experienced and highly efficient in cataract surgery. Although the 1stQ AddOn lenses are easy to implant, careful and prudent manipulation is essential to achieve the best possible surgical outcomes. 

Dr Brian Harrisberg is an expert in cataract surgery, refractive surgery and diabetic eye disease with many years of experience. As one of Australia's leading ophthalmologists he offers the latest innovations in surgery. Dr Harrisberg is a pioneer in the area of implantation of secondary sulcus pseudophakic intraocular lenses in Australia and was the first surgeon to implant a Scharioth Macula Lens (SML) for macular degeneration in Australia. Dr Harrisberg has published multiple research papers in peer-reviewed journals and regularly presents at local and international meetings.

References available online at [mivision.com.au](http://mivision.com.au)