

Implantation of Multipiece Intraocular Lens with Injector by Hand Rotation: A Simplified Technique

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Abstract

Implantation of multipiece intraocular lens (IOL) has been evolving over time. Earlier, it was implanted using the holder-folder system. With the advent of new injector system all the IOLs are now implanted with these systems. Injecting the multipiece IOL is not as smooth and easy as a single piece IOL. We herein describe a technique of implantation of multipiece IOL in the ciliary sulcus by rotation of wrist using the injector system. It provides a smooth implantation of the IOL and minimizes the risk of complications as well as damage to the IOL.

Del J Ophthalmol 2012;23(3):189-191.

Key Words: multipiece IOL, injector system, cartridge rotation

DOI: <http://dx.doi.org/10.7869/djo.2012.67>

With recent advances in intraocular lens (IOL) technology, cataract surgery has transitioned from being solely a treatment for visual rehabilitation to also being a refractive procedure with the aim of gaining visual function comparable to that of the noncataractous elderly eye. Self-sealing, small-incision cataract surgery using a foldable intraocular lens (IOL) has become popular, and the incidence of complications has significantly decreased.^{1,2} Although in-the-bag implantation is most physiological and desirable, there are some situations in which sulcus implantation is required. The 3 piece hydrophobic acrylic (Alcon, MA60AC) is more suitable for sulcus implantation. The haptic of this IOL is made of PMMA which is a rigid material and sometimes it is difficult to properly implant it. We propose a safe method of insertion of a 3-piece acrylic lens (AcrySof MA60AC, Alcon) using a Monarch III injector system. This IOL was either implanted in eyes with a posterior capsular tear with an intact anterior capsular rim or was implanted secondarily in eyes with defect in the posterior capsule with more than three quarters of intact capsular rim or after performing membranectomy in absorbed membranous cataract or in pediatric eyes with aphakia and posterior capsular opacification.

Surgical Technique

A clear corneal tunnel is made at the steep axis with a 2.8 mm keratome and a side port is created with

microvitrectomy blade. The preceding procedure in the form of anterior vitrectomy or membranectomy is performed. The IOL can be inserted through the 'A' cartridge provided with the multipiece IOL. However it requires an incision size of 3 mm. We implant this IOL through the 'C' cartridge provided with the single piece IOL and it does not require enlargement of the incision size.

Insertion of IOL

An AcrySof MA30BA (Alcon laboratories, Fortworth, TX) acrylic foldable IOL is placed straight in the cartridge

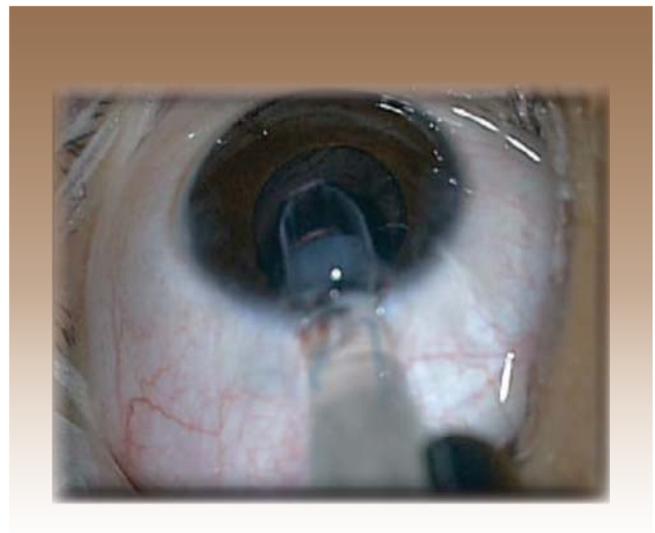


Figure 1: The cartridge tip being inserted in the eye through the corneal tunnel keeping the bevel downward.

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Figure 2: The cartridge is rotated clockwise by nearly 180°.



Figure 3: The haptic tip appears first, directed towards the left side of the surgeon.



Figure 4: Leading haptic being placed into the sulcus.

after putting very little viscoelastic and saline in the cartridge. Part of the back haptic is taken out and placed on a hook at the distal end of the cartridge. The haptic tip spontaneously tucks into the cartridge. The cartridge is then attached to the body of a Monarch III injector. The plunger is pushed forward and is confirmed to be pushing the optic from the rear so that the plunger tip does not become entangled with the optic. After injecting some viscoelastic substance into the anterior chamber, the cartridge tip is inserted in the eye through the corneal tunnel keeping the bevel downward (Figure 1). The plunger is slowly pushed to push the lens forward. With the rotation of the wrist, the cartridge is rotated clockwise by nearly 180° (Figure 2). The haptic tip appears first, directed towards the left side of the surgeon (Figure 3). The plunger is further pushed so that

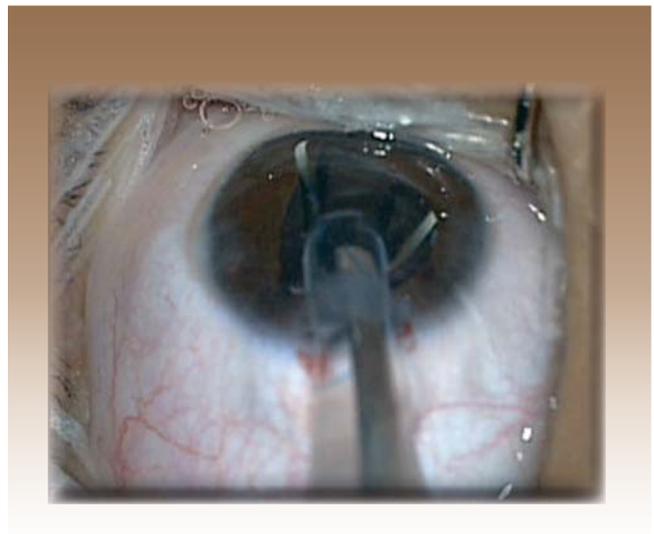


Figure 5: The optic being gently pushed out of the cartridge.

the leading haptic is placed in the sulcus (Figure 4). The wrist and the injector is now rotated anticlockwise so that the bevel of the injector body is turn downward again and the optic gently pushed out of the cartridge (Figure 5). The rod is turned counterclockwise, catching the back haptic, and the rear haptic is guided into the sulcus gently. The rear haptic can also be dialed into the sulcus with a Sinkey hook or a dialer. After the lens is inserted in the sulcus, the viscoelastic material is removed using an irrigation/aspiration (I/A) system. The corneal tunnel and the side port are hydrated with balanced salt solution (BSS) to make the incision watertight. Occasionally if the rigidity of the coats is not adequate and the tunnel is not becoming

watertight, a single suture with 10-0 monofilament nylon is placed. A subconjunctival injection of gentamicin and dexamethasone is given. Postoperatively, the patient is prescribed moxifloxacin 0.5% eye drops thrice daily for 3 weeks, prednisolone acetate 1% eye drop 4 times daily for 3 weeks, and tropicamide 1% eye drops twice daily for 1 week.

Results

This technique has been used successfully in many patients; however the records of only 56 patients available with us. There were 36 males and 20 females. Of these, 38 were secondary implantation in pediatric eyes with or without membranectomy. Ten adult eyes were implanted secondarily after fibrosis of capsular remnant following an intraoperative posterior capsular rupture (PCR) in a previous cataract surgery. In 8 eyes, the technique was used to implant the IOL in the primary surgery due to PCR but with adequate anterior capsular rim. The mean power of the implanted IOLs was 22.0 ± 2.1 diopters (D) (range 16.5 to 29.0 D). There was no case of lens drop occurring during IOL insertion. There was no incidence of haptic or optic damage during the implantation.

Discussion

The preferred IOL for implantation in the sulcus is a multipiece IOL. The implantation of these IOLs can be done either by using holder-folder or an injector system.³ Injector system is preferred these days for implantation of foldable IOLs. The implantation of multipiece IOL can be sometimes tricky and fraught with complications. The haptics may be deformed during the implantation procedure, causing slight kinking of the haptics that is not visible during unfolding in the eye. Further, the optic-haptic junction is more friable than with the thicker hydrophobic acrylic haptic of a single piece IOL. Sometimes while injecting a multi-piece IOL, if the hand is not rotated, there is risk of reverse unfolding of

the IOL inside the anterior chamber. At times it may stand erect and may touch the endothelium. The insertion of an acrylic 3 piece IOL by rotation of the injector is a simple and controlled method of implanting these IOLs. The leading haptic points to the right within cartridge barrel. Therefore, to ensure that the leading haptic points left and down the injector needs to be turned clockwise first so as to keep the haptic in correct position and direction. The returning of the cartridge in its previous bevel down position by rotating in anticlockwise direction enables the optic to be injection in the correct position and direct keeping it flat. Once this done the trailing haptic can either be pushed with the plunger into the sulcus or can be pushed into the anterior chamber and then dialed into the sulcus. By either way, the IOL can be positioned properly.

The technique provides a controlled implantation of a multipiece IOL into the sulcus. It is safe and there is negligible risk of complications in the form of damage to the haptic or optic of the IOL, corneal endothelial damage or reverse unfolding of the IOL.

In conclusion, insertion of a 3-piece acrylic IOL using rotation of injector is a safe and effective technique.

References

1. John T, Sims M, Hoffmann C. Intraocular bacterial contamination during sutureless, small incision, single-port phacoemulsification. *J Cataract Refract Surg* 2000; 26:1786-91.
2. Muller-Jensen K, Barlind B. Corneal refractive changes after Acrysof lens versus PMMA lens implantation. *Ophthalmologica* 2000; 214:320-3.
3. Barakova D, Kuchynka P, Cihelkova I. Implantation of the AcrySof MA30BA lens using the Monarch system. *Cesk Slov Oftalmol* 2002; 58(3):149-52.