

ORIGINAL RESEARCH

Simplified technique of Loading and insertion of foldable intraocular lens

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ABSTRACT

Introduction: We have described a simple technique for loading and insertion of single piece foldable intraocular lens in cataract surgery. In this technique cartridge lumen is filled with viscoelastic solution and then intraocular lens (IOL) is placed over it. Left edge of the optic is pushed behind the ridge of the groove with McPherson forcep. Then the wings of the cartridge are slightly approximated and right side of the optic is pushed behind the ridge. This locks the optic behind the ridge of cartridge. The leading haptic is placed inside the groove. Now the trailing haptic is pushed in the groove, the tip of the haptic is pushed below the optic as much as possible. This will tuck the haptic not allowing to get it trapped in between the wings of cartridge and also do not leave space in between the haptic and cartridge lumen for a chance for overriding of plunger over trailing haptic or optic. Both wings of the cartridge are approximated properly. Cartridge is fitted on to the injector. Cartridge tip is inserted in a rotating manner through the corneal wound. While delivering IOL, injector is rotated in such a way that the lens is delivered in a desired horizontal placement.

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INTRODUCTION

Use of foldable intraocular lenses is increasing with the increase in number of cataract cases being operated by Phacoemulsification. Most of the foldable lenses available in the Indian market are not preloaded. Also preloaded lenses are costly thereby limiting its use. It needs to load the IOL in the cartridge before insertion and place in the capsular bag. Novice surgeons are anxious while loading and insertion of foldable IOL. If not loaded properly there are chances of damage to the lens optic and / or haptic. Also IOL may be delivered in upside down manner. In our technique an attempt is made to make it simple to load the lens into cartridge and deliver it in proper place thereby minimizing damage to the lens and its easy insertion. This technique is useful for closed loop plate type (Reiner) haptics and single piece acrylic IOL with 'C' haptics.

Technique-

Cartridge is held in left hand (authors are right handed) horizontally with its wings wide open. image 1 Wings are held such that you should be able to maneuver them easily during loading of IOL. Cartridge lumen and groove is filled with sufficient amount of viscoelastic solution. An IOL is placed in groove in reverse 'S' manner (the way we want an IOL to be positioned in the bag). image 2 Left side of optic is pushed with McPherson forcep so that it gets behind the left ridge of cartridge and wings slightly closed so that the distance between right and left grooves becomes less than 6mm (diameter of optic). Now the right side of optic is pushed behind the right groove so that optic gets locked behind the grooves. Leading haptic is then pushed behind the groove and its tip can be pushed slightly in the lumen of cartridge. Now the tip of the trailing haptic is pushed below the optic as much as possible. Both wings of the cartridge are approximated properly. Cartridge is now fitted on to injector. Plunger is pushed till the intraocular lens. With slight movement of plunger, free advancement of IOL is checked. The tip of the cartridge is inserted with bevel down position through the corneal incision and is advanced into the anterior chamber. If the cartridge is not entering easily through the wound then the cartridge is advanced with slow rotating movements. Tip of cartridge is kept in bevel down position in anterior chamber. Leading haptic is delivered directly into the capsular bag. While injecting IOL care is taken to keep the optic horizontal with haptic delivery in reverse S manner. This is facilitated by slow delivery of lens and rotating the injector as required during delivery of the lens optic. Trailing haptic is delivered in the anterior chamber and then dialed in the bag with IOL dialer.

YouTube video link- <https://youtu.be/8DXlko6hkYQ>

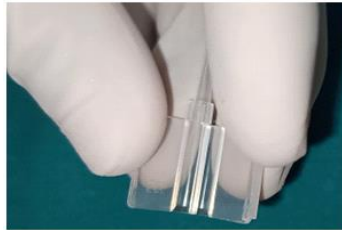


Image 1: holding of cartridge

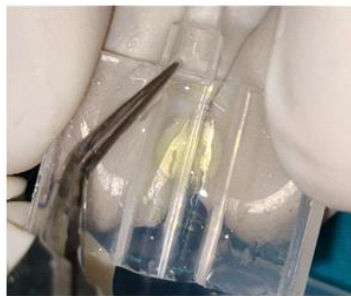


Image 2: placement of IOL in cartridge

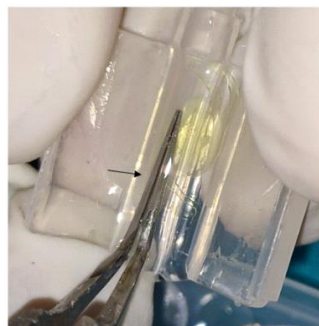


Image 3: pushing left optic edge behind the ridge

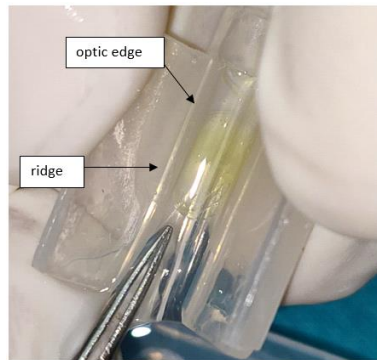


Image 4: placing right optic edge behind ridge

Clinical experience- Author has experience of more than 10000 cases of loading and insertion of foldable IOL with this technique. Single piece C loop haptic and Reiner haptic IOLs can be loaded and inserted easily without any chance of damage to the optic and haptic. This technique is not useful for three piece IOL as the haptics are thin, rigid with poor memory. In three piece IOL if the plunger overrides the haptic this will cause damage to the haptic and might cause distortion of IOL haptic making it difficult to insert and proper positioning of the IOL. Author has experience of 1 such 3 piece IOL insertion and do not recommend to use this technique for 3 piece IOL.

DISCUSSION

Foldable IOL's those are not preloaded needs to be loaded before insertion. At times novice surgeon gets anxious while loading and insertion of foldable IOL. Routinely after putting the viscoelastic solution in lumen and groove of the cartridge, IOL is placed in the groove and optic and haptics are pushed behind the ridges of cartridge, then the wings are approximated. In this technique trailing haptic is placed behind the optic. Also the haptic or optic tends to get out of the grooves of the cartridge in between the wings while approximating them. Placement of IOL is checked by free movement of IOL by pushing with plunger during insertion. During loading of the IOL many times the haptic gets trapped in between the wings as it is thin. Also keeping the haptic behind the optic gives a space for the plunger to override the haptic during delivery of the IOL. This causes damage to the haptic as the haptic gets trapped between the plunger and wall of the cartridge/ lumen. During delivery in the anterior chamber optic tends to rotate. This causes upside down delivery of the lens making dialing difficult and in case of angulated haptic IOL it causes myopic shift.

In our technique optic is carefully kept behind the ridges of the cartridge by maneuvering the wings of the cartridge. This locks the optic in the groove.

The trailing haptic is kept below the optic. This does not leave space between the haptic and walls of the cartridge lumen. This avoids overriding of plunger over haptic and / or optic thereby avoids damage to IOL. Leading haptic is carefully placed in the cartridge lumen.

While delivery of IOL in the anterior chamber an injector is held in such a way that it can be rotated as required. This facilitates proper positioning of IOL and avoids upside down positioning of it.

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