Tips and Tricks for Secondary Lens Placement

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Although cataract surgeons insert the majority of intraocular lens (IOL) implants, vitreoretinal surgeons are often called upon when things go awry. Situations may include complicated cataract surgery, trauma, and zonular instability due to conditions such as pseudoexfoliation , Marfan's syndrome, and homocysteinuria.

Numerous methods exist for the placement of secondary IOL implants. Here, we review some tips and tricks for secondary lens implantation. We also offer considerations as to when each method may be employed. Being comfortable with a variety of surgical approaches is advantageous because this will allow the surgeon to tailor the procedure to each individual situation.

IRIS-FIXATED POSTERIOR CHAMBER IOL IMPLANTS

Iris-haptic fixation is an ingenious technique first described by McCannel in 1976.[1] To summarize the technique (Figure 1), a lens is placed with the haptics in the ciliary sulcus and optic captured by the pupil. A curved CTC needle with 10-0 prolene suture is passed through cornea, under the haptic by entering and exiting the iris on either side of the haptic, and out through the cornea. The suture ends are externalized through a paracentesis and a knot is tied and trimmed, fixating the haptic to the iris. The procedure is repeated for the remaining haptic.

Occasionally, particularly with dark irides, the location of the haptics is difficult to visualize. If the optic is gently lifted anteriorly, either through a paracentesis or sclerotomy in cases with concurrent vitrectomy, the location of the haptic will be highlighted behind the iris. Incorporating only a small amount of peripheral iris will prevent "bunching" of the iris after the procedure and allow for good pupil movement.

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Grasping the prolene suture with a Sinsky hook to externalize it through the paracentesis can be a tricky maneuver, as the suture may slip off the instrument. Other instruments, such as a Kuglin hook, are better at retaining the suture but occasionally require a larger paracentesis. Using a 25-gauge retinal forcep makes this step simple. Another good method utilizes a Siepser slipknot[2] so that the iris need not be pulled to the paracentesis wound for tying.

SCLERAL-FIXATED POSTERIOR CHAMBER IOL IMPLANTS

Docking a prolene needle with a 27-gauge hollow-bore needle in the vitreous cavity is a clever method to pass sutures through the pars plana. Traditionally the corneal prolene suture pass is performed through a paracentesis; however, inadvertently piercing a portion of the corneal wound with the sharp needle can create a false passage, prohibiting the ability to tighten the knot. Using a 25-gauge trocar in place of a paracentesis can eliminate this issue.

One interesting technique involves creating a scleral flap without a conjunctival dissection. In this method, a limbal groove is created. Next, a crescent knife is used to dissect a partial-thickness scleral flap posteriorly. Suture-docking with the prolene needle can be performed by inserting a 27-gauge needle transconjuncti-

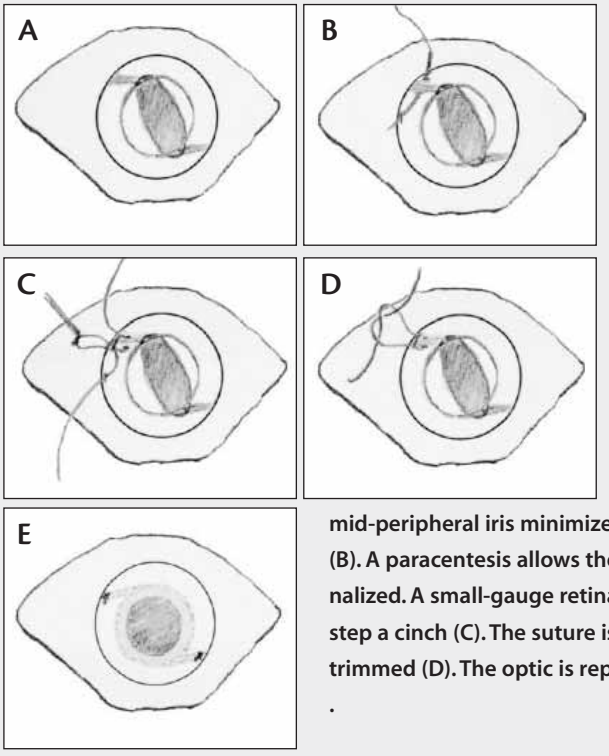

Figure 1. Iris fixation. Optic capture is achieved with the haptics in the sulcus and the optic anterior to the constricted pupil (A). The CTC needle with 9-0 prolene is passed underneath the haptic, both in and out through cornea and iris. Incorporating only a small bite of mid-peripheral iris minimizes pupillary distortion (B). A paracentesis allows the sutures to be externalized. A small-gauge retinal forceps makes this step a cinch (C). The suture is tied and the knot trimmed (D). The optic is replaced behind the iris (E).

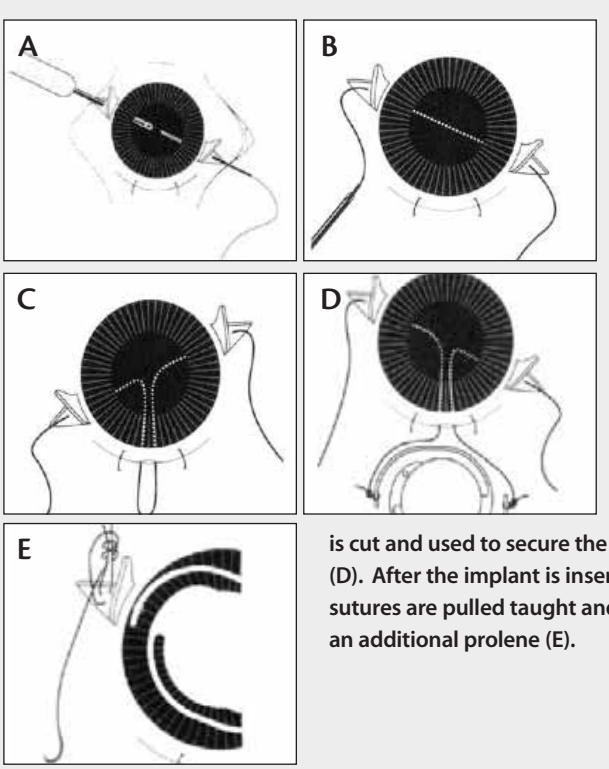

Figure 2. Scleral fixation. After scleral flaps are created, a hollow 27-gauge needle is inserted and used to "dock" a straight needle with 9-0 prolene (A). The prolene is passed safely through the opposite flap without necessitating a blind pass (B). The prolene is externalized through the keratome wound (C). The externalized prolene is cut and used to secure the intraocular lens implant (D). After the implant is inserted into the sulcus, the sutures are pulled taught and tied to the sclera with an additional prolene (E).

vally through the scleral flap, and into the vitreous cavity for docking. After extracting the prolene needle transconjunctivally, the surgeon needs only to grasp the suture from the partial-thickness scleral flap. One pass is made in this manner inside the haptic and one outside the haptic; the two ends are tied fixating the haptic to the sclera.

ANTERIOR CHAMBER IOL IMPLANTS

The anterior chamber IOL, although much maligned in the past, has greatly improved in design.[3] The vaulted architecture reduces iris chafing and is less likely to result in inflammation and cystoid macular edema. As opposed to previous iris-claw designs, modern anterior chamber IOL footplates commonly rest on the scleral spur, causing far fewer postoperative issues. The lens glide and a dollop of viscoelastic can help facilitate placement in the angle. The pupil should be round; a peaked pupil should warn the surgeon to recheck footplate placement.

Wound construction is an important part of anterior chamber IOL placement. Careful scleral tunnel construction can minimize postoperative astigmatism and the number of sutures required for wound closure (Figurea 3 and 4). It can also allow rapid oil removal in aphakic eyes that do not require concomitant mem-

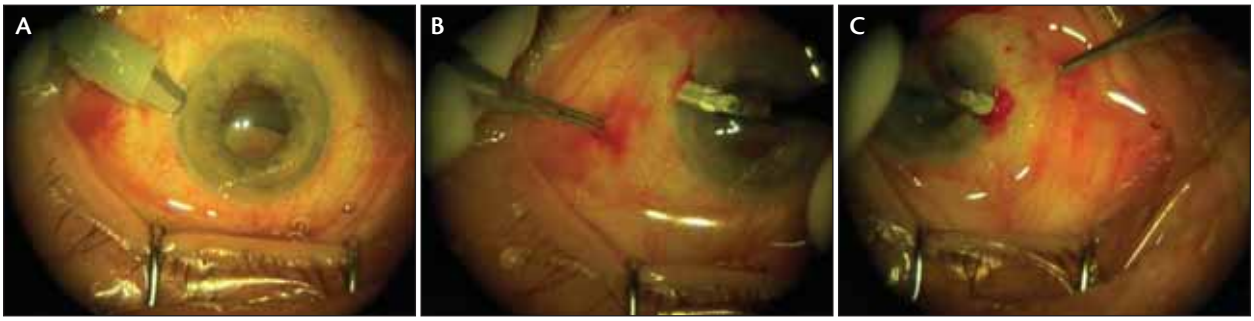

Figure 3. Posterior scleral tunnels. Posterior scleral tunnels can eliminate the need to open the conjunctiva with scleral fixation. An initial limbal groove is created (A). The crescent knife is used to create a tunnel posteriorly through partial-thickness sclera (B). A similar tunnel is made 180° away, and the remainder of the surgery is similar to traditional scleral fixation (C).

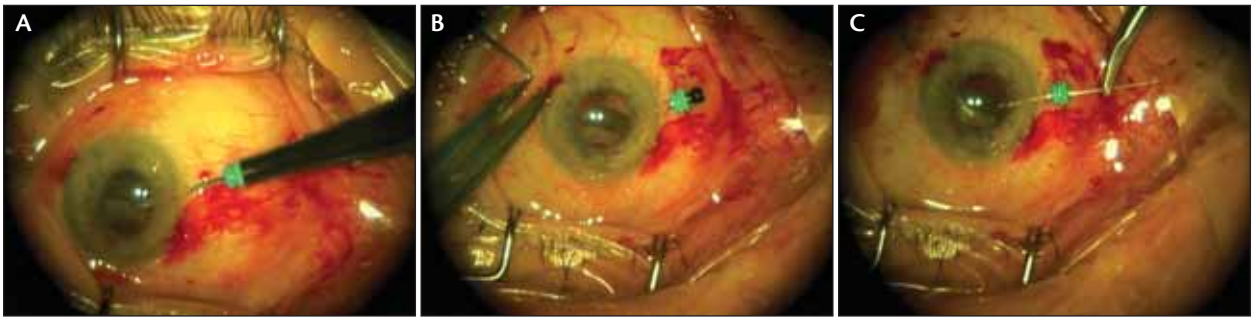

Figure 4. Trocar/cannula assistance. The 25-gauge cannula can be used to avoid creating false passages through the cornea. The trocar/cannula is inserted at the limbus into the anterior chamber (A). The straight needle with 9-0 prolene is passed through the posterior scleral flap (B). Needle capture is facilitated by the 25-gauge cannula for easy access. The remainder of the surgery is similar to traditional scleral IOL fixation (C).

brane peeling. For example, manual small-incision cataract surgery is a technique pioneered in India that allows for sutureless extracapsular cataract extraction—without phacoemulsification—due to the "frown"-shaped wound construction (Figure 5).[4]

This frown incision can also be used in anterior chamber IOL placement. In aphakic eyes that do not require membrane peeling, the oil can be easily "burped" out of the wound without necessitating a full three-port vitrectomy; only an infusion cannula is needed. Whether vitrectomy is performed, after anterior chamber IOL placement, this stable wound can be closed with a minimum number of sutures, often with a single figure-of-eight pass.

CONCLUSIONS

Possessing a number of approaches in the surgical armamentarium is important for retina specialists to adapt to unusual situations and tailor the procedure to the patient. Placement of secondary IOLs, whether they are scleral-fixated, iris-fixated, or anterior chamber IOLs, is a perfect example. Countless variations have been described, and each retina surgeon must find tips and tricks that work best in their own hands. ■

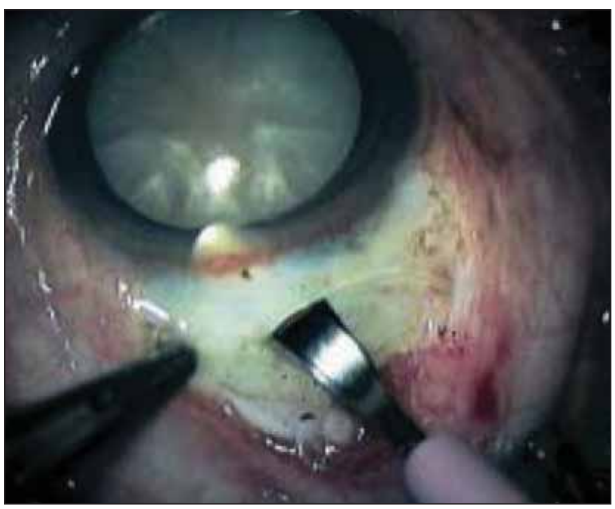

Figure 5. Anterior chamber IOL implant. After an initial "frown" groove incision is performed, the crescent knife is used to dissect a scleral tunnel. The "frown" incision, developed for sutureless manual small incision extracapsular cataract surgery, is helpful in anterior chamber IOL placement to minimize astigmatism and the number of sutures required for closure.

Figure 5 adapted with permission from Haldipurkar SS, Shikari HT, Gokhale V. Wound construction in manual small incision cataract surgery. *Indian J Ophthalmol.* 2009;57(1):9-13. Copyright © All India Ophthalmological Society.




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