

Single-point Scleral Fixation of a Decentered IOL Without Vitrectomy

A minimally invasive, straightforward rescue technique.

BY NICOLE SIEGEL, MD; STEVEN NESS, MD; AND VASILIKI POULAKI, MD, PhD

In this issue of Retina Today, Nicole Siegel, MD; Steven Ness, MD; and Vasiliki Poulaki, MD, PhD, describe a method that employs single-point fixation of a decentered IOL without the need for vitrectomy.

We extend an invitation to readers to submit pearls for publication in Retina Today. Please send submissions for consideration to Ingrid U. Scott, MD, MPH (iscott@psu.edu); or Dean Elliott, MD (dean_elliott@meei.harvard.edu). We look forward to hearing from you.



—Ingrid U. Scott, MD, MPH; and Dean Elliott, MD

Dislocated intraocular lenses (IOLs) are known possible sequelae of complicated or uncomplicated phacoemulsification surgery, particularly in patients with a history of trauma or pseudoexfoliation syndrome. Numerous techniques for lens refixation exist, most of which involve the need for a combined vitrectomy with scleral- or iris-fixation of lenses. Large studies have evaluated the optimal lens selection at the time of the initial cataract extraction in cases of sufficient and poor capsular support, but no definitive conclusion has been made at this time.¹⁻³ Scleral- or iris-fixated lenses can be placed without the need for a primary pars plana vitrectomy at the time of the initial cataract surgery. After a lens has dislocated, however, vitrectomy and posterior segment techniques are frequently employed.

An inferiorly dislocated IOL, with adequate support from the capsule or anterior hyaloid face to remain in the sulcus plane, can be retrieved safely and affixed to the sclera without the need for a concomitant vitrectomy. The single-point rescue technique described in this article is ideally used for an inferiorly dislocated 3-piece IOL with polymethylmethacrylate (PMMA) haptics; however, the indications can be expanded as additional cases are performed without observed long-term complications. The advantages of our technique are that it does not require special sutures or eyelets in the lens to stabilize it to the sclera, and it is relatively straightforward and easy to perform.

TECHNIQUE

A superior conjunctival peritomy is created extending from 10 to 2 o'clock. A partial thickness scleral flap is created and centered around 12 o'clock using a crescent blade. Next, a 20-gauge sclerotomy, placed 2 mm posterior to the limbus, is created parallel to the iris plane in the bed of the partial-thickness scleral flap (Figure 1A). A 10-0 polypropylene suture is loaded into the bore of a long, hollow 25-gauge needle with a tail emerging from the tip. Just posterior to the sclerotomy, within the bed of the partial-thickness scleral flap, the needle is inserted in the same plane, parallel and posterior to the iris plane, into the ciliary sulcus space. The needle, with the accompanying 10-0 polypropylene suture, is then passed under the iris and superior haptic and over the optic, exiting 180° from its initial insertion through the inferior peripheral clear cornea at the limbus (Figure 1B). The suture is externalized and held as the 25-gauge needle is withdrawn from the eye through its superior insertion site, leaving the suture in place across the sulcus and anterior chamber (Figure 1C).

Next, a curved, rounded "shepherd style" hook⁴ is passed through the previously created sclerotomy, coursing under the iris and over the superior haptic to retrieve the 10-0 polypropylene suture (Figure 1D). It is important to avoid using a straight or purely bent hook to prevent hooking the vitreous and creating posterior segment pathology. The suture is then removed with the hook

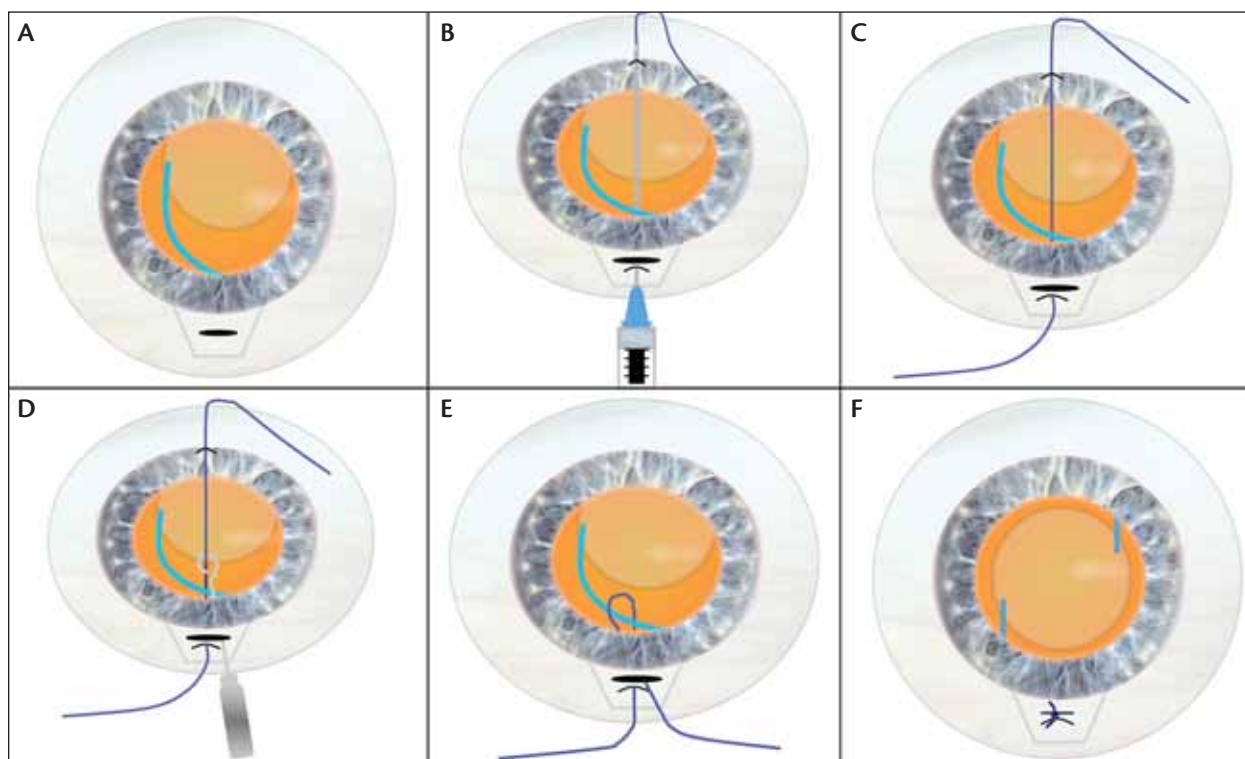


Figure 1. A superior partial-thickness scleral flap has been created, and a sclerotomy has been placed 2 mm posterior to the limbus at 12 o'clock (A). A 10-0 polypropylene suture is fed through the bore of a long 25-gauge needle, which is passed through the sclera just posterior to the sclerotomy and under the iris and superior lens haptic. It is then passed over the lens optic and out through inferior peripheral clear cornea (B). The externalized suture is held, and the 25-gauge needle is withdrawn, leaving the suture in place (C). A "shepherd style" hook is passed through the sclerotomy, under the iris and over the haptic, to snag the suture (D). The hook and suture are withdrawn, leaving a suture loop around the haptic (E). The suture ends are drawn up, recentering the IOL, and tied off. The sclerotomy is sutured, and the scleral flap covers the suture knots (F).

through the sclerotomy, creating a suture loop around the haptic with the 2 loose suture ends exiting at 12 o'clock (Figure 1E). The 2 ends of the suture are drawn up and subsequently tied in position, recentering the dislocated IOL. At this point, the haptics should both be under the peripheral iris, and the optic should be in a central position. The sclerotomy and scleral flaps are sutured closed, and the scleral flap should be overlying the buried suture knots, reducing the risk of exposure (Figure 1F).

DISCUSSION

In the November/December 2011 issue of *Retina Today*, Wheatley et al⁵ described a well-designed approach to fixate a posterior chamber IOL with a sutureless technique. Although our approach requires sutures, it has the added advantage of not involving a combined vitrectomy. Lin et al⁶ also described a similar yet more involved procedure for secondary IOL placement in eyes without sufficient capsular support. Scleral fixation of lenses has been used for several years, but this technique involves a cumbersome

method with a significant learning curve as well as special sutures and lenses that frequently must be preordered—a step that adds significant complexity to the procedure. In addition, scleral-fixated lenses frequently require a very thorough posterior vitrectomy with vitreous base shaving that adds time and significant risks to the surgery. Our method involves a minimally invasive, straightforward surgery without the need for vitrectomy or removal of the previously placed IOL. Further, the approach described in this article does not require special instrumentation and involves minimal manipulation of the IOL.

The advantage of creating the partial-thickness scleral flap is the ability to bury the final polypropylene and nylon suture knots. However, it is not critical to the successful rescue of the lens and can be omitted based on surgeon preference. Instead, a radial scleral groove can be placed, which will allow the suture and knot to sit beneath the sclera; surface and reduce the risk of conjunctival erosion.⁶

A limitation of the described procedure is a theoretical increased risk of uveitis-glaucoma-hyphema (UGH) syn-

drome if a 1-piece acrylic IOL is used as opposed to a 3-piece IOL with PMMA haptics. Fixation of the IOL may limit its movement and, therefore, the subsequent development of UGH syndrome, as compared with placing a one-piece acrylic IOL in the sulcus without fixation. If the IOL is no longer within the sulcus plane at the time of the rescue surgery, the chance of success is lower, unless both haptics are sutured and a core vitrectomy is performed. The greatest chance of success occurs if the superior haptic is located superiorly, between 11 and 1 o'clock, as opposed to nasally or temporally, to avoid postoperative tilt, induced astigmatism, and spherical error.

In conclusion, we describe a novel, straightforward technique that employs single-point fixation of a decentered IOL without the need for vitrectomy and involves minimal manipulation of the IOL. ■

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