

Microincisional Sutureless Vitrectomy for Dislocated IOL

An alternative technique using 23-gauge surgery for refixation of a scleral-sutured lens.

**BY MEGAN. E. COLLINS, MD; VEERAL SHETH, MD; SUNIL RAICHAND, MD;
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In this issue of Retina Today, Megan. E. Collins, MD, Veeral Sheth, MD, Sunil Raichand, MD, Michael A. Saidel, MD, and Seenu M. Hariprasad MD, describe the details of an alternative technique for refixating a dislocated scleral-sutured intraocular lens using 23-gauge vitrectomy.



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

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

Transscleral suture fixation of a posterior chamber intraocular lens (TS-IOL) is a well-established technique to secure an IOL when there is loss of posterior capsular support. A number of postoperative complications have been described with transscleral suture fixation, including endophthalmitis, retinal detachments and breaks, vitreous and choroidal hemorrhage, and lens dislocation.¹ The reported incidence of lens dislocation following scleral suture fixation varies widely in the literature, from 1.5% to 27.9%.²⁻⁴ This is in contrast to the incidence of posterior chamber intraocular lens (PC-IOL) dislocation, which has been reported to range from 0.2% to 2%.⁵

In a case series by Kim et al,⁶ trauma and an underlying diagnosis of Marfan syndrome were associated with an increased incidence of lens dislocation with TS-IOL. Suture breakage may occur secondary to knot erosion, suture degradation, or iatrogenic severing of the suture by its contact with the lens haptic. Based on histopathology, Parekh et al⁷ reported that cutting of the suture by the sharp surface of the lens haptic was the most likely etiology for lens dislocation.

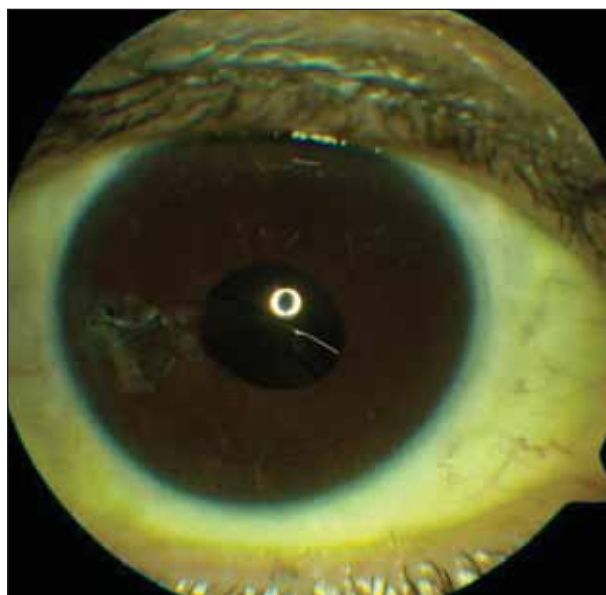


Figure 1. Preoperative slit lamp photo showing dislocated TS-IOL.

Over the past 2 decades, a number of techniques for scleral fixation of an IOL have been reported in the literature. Techniques for both primary insertion of a TS-IOL,⁸⁻¹⁰ as well as subsequent scleral fixation of dislocated PC-IOLs, have been described.¹¹⁻¹⁵ These techniques often involve a combined approach of pars plana vitrectomy (PPV) with a scleral-based flap to suture the lens. In some recent cases, clear corneal incisions, sometimes with haptic externalization, have also been used to aid in visualization and securing of the suture around the haptic.^{16,17} There are limited reports in the literature to describe techniques for refixation of a previously sutured TS-IOL that has subsequently dislocated.¹⁸

Recently, a patient presented with her second dislocation of a TS-IOL. In this article, we describe a novel approach using 23-gauge microincisional vitrectomy surgery (MIVS) to resuture a TS-IOL in a patient with two previous lens dislocations.

PREOPERATIVE CONSIDERATIONS

A 45-year-old patient was referred to our retina practice by a local cornea specialist for management of a TS-IOL that had dislocated two times in 8 years. The patient's ocular history was significant for a complicated cataract extraction in 2001 with a posterior capsular tear and retained lens fragment. The patient was left aphakic and referred to a retina specialist. She underwent a partial PPV/pars plana lensectomy to remove the residual lens fragment and had a TS-IOL placed. In 2005, the patient required additional surgery because the TS-IOL had dislocated.

The patient had done well until approximately 3 months prior to presentation, when she began to

notice "shifting images" in her right eye. She reported no history of recent trauma. Her visual acuity was 20/25 OD. On slit-lamp examination, her TS-IOL was displaced inferotemporally (Figure 1). The loose lens haptic was suspended over the macula. There was no evidence of retinal detachment or a retinal tear, although the view to the posterior pole was limited due to the displaced TS-IOL.

After weighing the risks and benefits of various surgical approaches, including lens removal and insertion of an anterior chamber intraocular lens, we decided to attempt refixation of the subluxed lens haptic.

Although the patient had undergone a previous vitrectomy, there was still significant vitreous present. In consultation with our cornea specialist, we elected to proceed with a combined 23-gauge MIVS and transscleral approach using a novel technique to refixate the subluxed lens haptic.

DESCRIPTION OF SURGICAL TECHNIQUE

In the OR, three cannulas were placed to perform 23-gauge MIVS. Because we planned to create our scleral flap nasally, we had to displace our superonasal port clockwise 2 clock hours relative to where it is typically placed. A 360° vitrectomy was performed using diluted triamcinolone acetonide (Triesence, Alcon Laboratories, Inc.) to enhance vitreous visualization during vitreous base shaving with skilled scleral depression from an assistant. Although our patient had undergone a previous vitrectomy, multiple adhesions between the vitreous and lens implant were noted. The dislocated TS-IOL was still secured temporally while the nasal haptic was suspended in the vitreous cavity

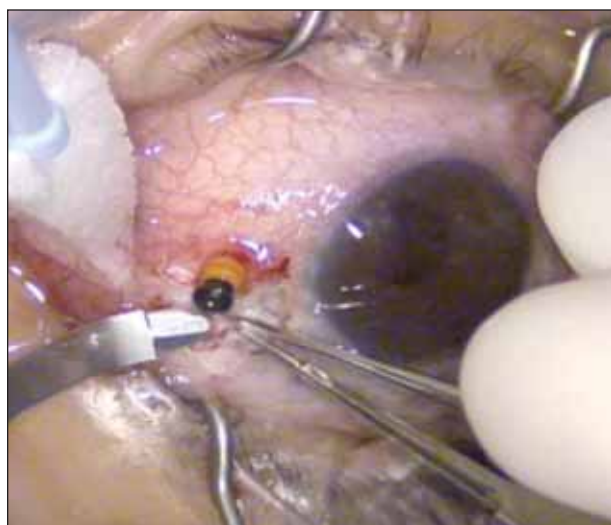


Figure 2. Intraoperative picture of scleral flap creation.



Figure 3. Intraoperative picture of docking STC6 needle in 27-gauge needle.

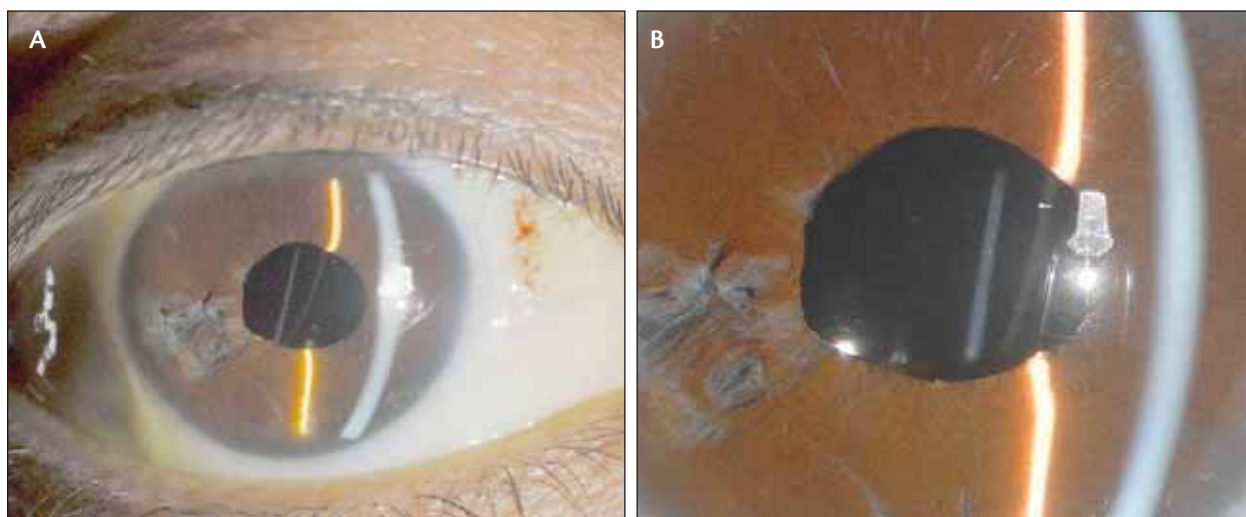


Figure 4. Postoperative slit lamp photos showing repositioned TS-IOL.

over the macula. No retinal tears or breaks were noted on scleral depression under the binocular indirect ophthalmoscope.

Following the vitrectomy, a partial thickness limbal-based scleral flap was created using #66 and a #69 blades 1-mm posterior to the nasal limbus (Figure 2). One end of a double-armed STC6 needle (Ethicon, Inc, 10-0 Prolene, 16.0 mm) was passed through the superotemporal 23-gauge cannula, through the eyelet of the free-floating nasal haptic of the CZ70 BD lens (Alcon Laboratories, Inc., Fort Worth, TX) with 23-gauge disposable forceps assistance through the nasal 23-gauge cannula. A hollow bore 27-gauge needle was then inserted through the nasal scleral flap into the posterior chamber. Both the STC6 needle and the tip of the 27-gauge needle could be directly visualized under the microscope. The STC6 needle was docked into the hollow bore of the 27-gauge needle (Figure 3). With the STC6 needle engaged by frictional forces, the 27-gauge needle was slowly removed with resultant externalization of the STC6 needle through the scleral flap. The other half of the double-armed STC6 needle was passed in a similar fashion temporally through the 23-gauge cannula. Instead of passing the second half of the STC6 needle through the eyelet, however, it was passed anterior to the haptic. The second half of the STC6 needle was docked within the bore of the 27-gauge needle and removed through the scleral flap in a manner similar to the first half. The two ends of the STC6 needle were pulled to the appropriate tension to re-suspend and center the TS-IOL and then tied. The scleral flap was then closed with 8-0 Vicryl suture. The entire case time less than local anesthesia/retrorbular block was under 25 minutes.

POSTOPERATIVE RESULTS

Our patient has done well postoperatively. Her visual acuity remains 20/25, and her TS- IOL is well-centered without evidence of dislocation (Figure 4). She has remained stable for 6 months since surgery and will continue to be followed by the referring cornea specialist.

CONCLUSIONS

Although there have been several case reports of multiple episodes of suture breakage after insertion of a TS-IOL, the actual incidence of rebreakage remains unknown. In our patient, this was her second case of a dislocated TS-IOL, each episode occurring approximately 4 years after lens insertion or repair. A number of techniques have been described for initial insertion of a TS-IOL or scleral fixation of a PC-IOL following lens dislocation. There are limited data on surgical approaches for refixation of a recurrently dislocated TS-IOL.

Our surgical approach was based on the principles established for scleral suture fixation of a dislocated PC-IOL. We combined a three-port MIVS with a limbal-based partial thickness scleral flap to refixate the subluxed lens haptic. There are several unique aspects to our minimally invasive approach in comparison with those reported previously. First, to the best of our knowledge, this is the first time an STC6 needle has been used to refixate a dislocated TS-IOL. In addition, this is the only description in the literature of directing the STC6 needle through the vitrectomy port rather than through a scleral flap to secure a lens haptic. Second, although several previous authors have used a 25- or 27-gauge needle as a docking port, this is the first report of the use of a 23-gauge MIVS cannula; as previous cases reported the need for creation of an addition-

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al scleral flap or a corneal incision. Finally, most of the techniques described previously involve suturing the haptic arm of a foldable IOL. We had to develop an approach for securing the suture through the eyelet of the CZ70 lens. The use of disposable 23-gauge MIVS forceps (disposable is preferred as the forceps tip may be damaged during this procedure) to hold the haptic while the STC6 needle was passed through the eyelet proved to be invaluable and easy to perform. By using a combined PPV/transscleral approach, we were able to have adequate visualization of the haptic eyelet without the need for haptic externalization.

In conclusion, this is the first reported case of performing a combined 23-gauge MIVS-transscleral approach to secure a dislocated TS-IOL. There are several advantages of our technique, including its minimally invasive approach; direct visualization of the haptic while it is being secured with the STC6 needle; passing the STC6 needle through the 23-gauge cannula to avoid the creation of a second scleral flap or a corneal incision; and using the 27 gauge needle to guide externalization of the STC6 needle. ■

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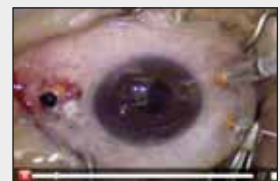
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By Seenu M. Hariprasad, MD



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