• Letter to the Editor •

Simple technique for the rescue and refixation of a partially disenclavated retropupillary iris claw intraocular lens

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Dear Editor,

We would like to introduce a simple technique for the efficient rescue and refixation of a subluxated retropupillary iris claw intraocular lens (RPICIOL; Artisan® Aphakia model 205, Ophtec BV, Groningen, the Netherlands). The RPICIOL is a suture-less, posterior iris-fixated, polymethyl methacrylate intraocular lens (IOL) that has gained widespread recognition and expanding use because of its efficiency in management of aphakia, combined with long-term intraocular safety and excellent sustained visual outcomes[1-3]. Postoperative dislocation/disenclavation of the RPICIOL may occur spontaneously or following trauma, with a rate reportedly between 0 to 10%[4-6]. While still comparatively lower than the rate from suture breakage reported in scleral-fixated IOLs (7.8% to 27.9%), this visually compromising complication may be the source of significant patient discomfort and burden due its related costs and difficulties of already having undergone multiple operations[7-8].

Though the current literature is sparse, a review of published surgical methods appears to include the use a combination of the full 3-port vitrectomy or an anterior chamber maintainer, with creation of a scleral tunnel[1,9]. However, our experience has shown that with proper corneal wound construction, refixation of a dislocated RPICIOL can be managed relatively simply using only a Sinskey hook *via* clear corneal incisions, and the Artisan® fixation forceps. Our technique does not require any sclerotomies, anterior chamber maintainers, or the relatively more invasive scleral tunnel construction, thereby minimizing surgical time and eliminating unnecessary costs involved with the procedure and reducing patient burden.

A man in his late fifties presented with a partially dislocated RPICIOL in his right eye. His uncorrected distance visual acuity (UDVA) at that time was 20/1000. His history involved prior cataract surgery for both eyes at a different center 4y previously. He then received surgery for a subsequently dislocated IOL for his right eye at our center 3mo prior. His operation for the original subluxated IOL involved prompt vitrectomy to remove the dislocated single-piece acrylic IOL and implantation of the RPICIOL. Before the occurrence of postoperative RPICIOL disenclavation, the patient had a UDVA of 20/20 in the involved eye with no signs of instability or discomfort (Figure 1A, mid-dilated due to mydriatics). He underwent prompt surgery to rescue and re-fixate the subluxated RPICIOL using our simple technique. We obtained informed consent from the patient regarding the use of images and video of his surgery for this report and the study was conducted in accordance with the Declaration of Helsinki.

Disenclavation of the temporal haptics was observed preoperatively (Figure 1B). Local anesthesia (lidocaine 2%) was administered *via* sub-Tenon's injection. Two clear corneal side-port incisions were created at the nasal and supero-temporal periphery. A Sinskey hook was introduced into the eye through the more superior incision and positioned behind the RPICIOL (Figure 1C), carefully drawing the partially dislocated lens out of the vitreous cavity and into the anterior chamber (Figure 1D). Once the RPICIOL was anterior to the iris plane, carbachol intraocular solution (Miostat; Alcon Laboratories, Inc., Fort Worth, TX, USA) was injected into the anterior chamber through the nasal incision to constrict the pupil (Figure 1E). A 2.2 mm corneal incision with a standard keratome blade was created at the 12 o'clock position. After

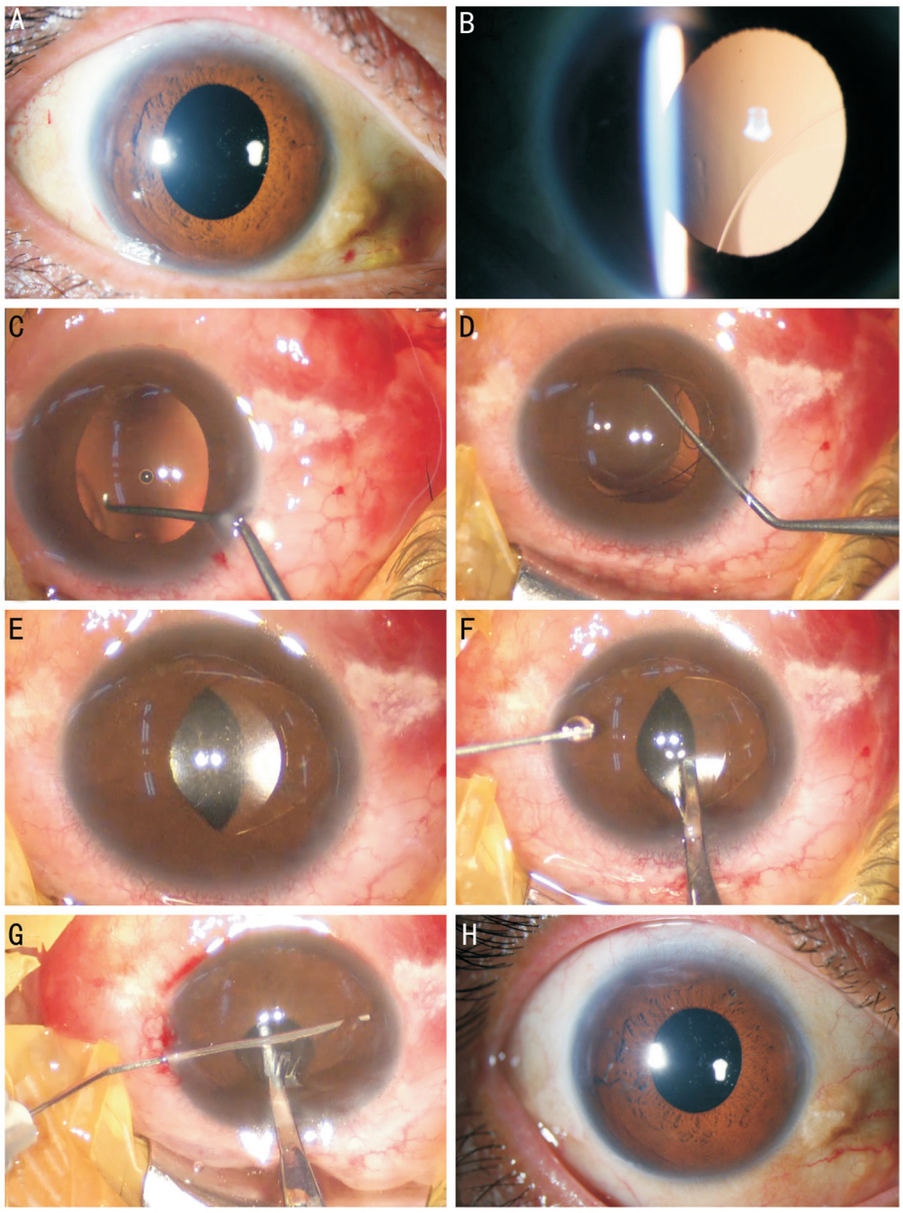

Figure 1 Multimodal imaging at various stages of treatment for a partially disenclavated retropupillary IOL A: After successful removal of a dislocated IOL, RPICIOL appeared to have good stability with excellent centration (mid-dilated due to mydriatics); B: 3mo later, partial disenclavation of the temporal haptics were noted; C, D: A Sinskey hook was positioned behind the RPICIOL, then carefully tugged the lens into the anterior chamber, in front of the iris plane; E: Pupillary constriction was induced with carbachol intraocular solution; F, G: After creating a 2.2 mm corneal incision, the RPICIOL was grasped and pushed posterior to the iris and re-fixated; H: At his most recent follow-up at 2 years' post-operation, the patient's RPICIOL remained stable and well centered.

grasping the RPICIOL with the Artisan® forceps (Figure 1F), the RPICIOL was gently pushed and positioned posterior to the iris and re-fixated using a modified technique[10] *via* the 27-guage bent cannula connected a viscoelastic device (Figure 1G). Briefly, the modified technique involves carefully bending the 27-guage cannula connected to the viscoelastic device at a point at least 13 mm from the tip to form an approximately 60º angle, which allows for injection of viscoelastics to create working space and counter-pressure to expose the haptics behind the iris, and to enclavate either haptics as needed.

Finally, we remove all instruments from the eye, checking for proper centration and fixation of the RPICIOL. No corneal suturing was needed after hydration of all of our incisions. Any residual viscoelastics can be removed using the manual irrigation and aspiration device. The total surgical time was less than 10min. At his most recent follow-up at 2 years' post-operation, the patient's RPICIOL remained stable and well centered (Figure 1H), and he had a UDVA of 20/20. Evaluation with specular microscopy revealed a pre-operative endothelial cell density count of 2674, with a post-operative result of 2603 at his most recent visit. He experienced little discomfort with no signs of complications.

We utilized a Sinskey hook, Artisan® forceps, and the 27-gauge cannula connected to the viscoelastics device to rescue and re-fixate the RPICIOL in a minimally invasive manner with a simple clear corneal incision approach without the need for placement of a trocar/cannula in previously vitrecomized eyes. This surgical technique reduces the operating time and costs while accelerating visual recovery. This is particularly important to these patients with dislocated RPICIOL, as in most cases the procedure for rescue and refixation would at least be the third intraocular surgery for the patient.

Utilizing our simple technique, we observed excellent post-operative results with significant long-term RPICIOL stability, sustained UDVA improvement, and minimal endothelial damage.

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