

Complications From Prior Cataract Surgery

IOL exchange with iris repair.

BY UDAY DEVGAN, MD, FRCS(GLASG)

Cataract surgery is a safe procedure with a long track record of success, but like every surgery, it carries some degree of risk. Multiple comorbidities in a patient may predispose him or her to complications, as in this case. In addition to poor pupillary dilation and a dense cataract, the complexity of the case was heightened by intraoperative floppy iris syndrome.

CASE PRESENTATION

The patient had undergone a complicated cataract surgery approximately 1 year prior to presenting to my clinic. During the initial consultation, he noted that the vision in his right eye was still blurred and that he was suffering from glare and ghosting, even with his optimal spectacle prescription. The examination showed a nasally decentered three-piece acrylic IOL, with the optic in the capsular bag but the trailing haptic above the capsulorhexis and in the sulcus. There was a 2-clock-hour area of sectoral iris loss under the temporal clear corneal incision. Presumably, the patient had experienced an extensive prolapse of the iris material and then iatrogenic damage, which led to the loss of iris stromal material and deformation of the pupil (Figure 1).

IOL EXCHANGE

This patient would certainly have benefited from at least a repositioning of the IOL. Because I could not determine if the nasal haptic were intact, however, I felt that the best course of action would be to perform an IOL exchange. I wanted to explant the decentered IOL and replace it with a new, defect-free lens. It turned out that the nasal haptic was bent and deformed, likely at the time of the IOL's insertion, and it would not have



Figure 1. There is a sectoral area of iris loss and a nasally decentered three-piece IOL. The dotted blue line indicates the position of the optic.

been possible to mend and preserve the damaged lens implant.

To surgically repair and rehabilitate an eye such as this one requires a lengthy and involved surgery, so it is crucial to schedule plenty of time in the OR. To ensure the patient's comfort during the surgery, an anesthetic block can be administered along with systemic sedation. The first step is to inflate the anterior chamber with a viscoelastic and then lift the iris in all four quadrants to determine the exact position of the IOL and the status of the posterior capsule as well as to identify any complicating factors. The surgeon can use iris hooks or a retracting device to keep the iris tissue out of the way during the lens exchange, although in this case, I simply used my chopper.

To viscodissect the anterior capsule from the optical

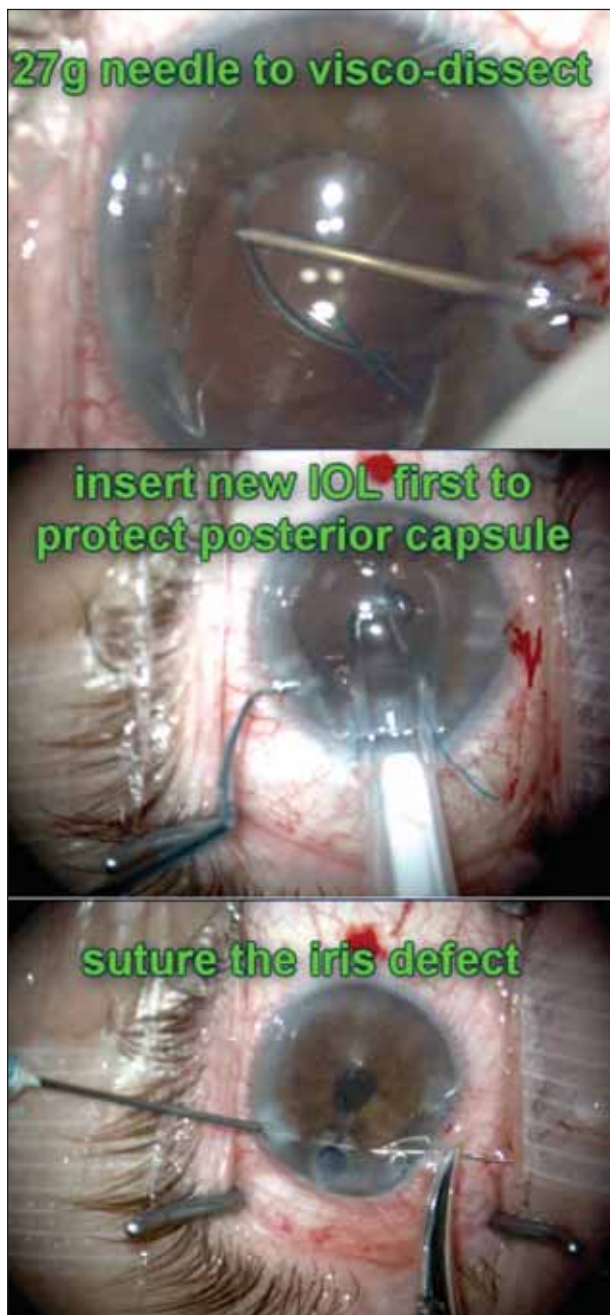


Figure 2. First, Dr. Devgan uses a 27-gauge needle on the viscoelastic syringe to dissect the anterior capsular rim away from the IOL optic. Next, he inserts the new IOL before cutting out the old IOL so that the former can protect the posterior capsule. Using a 25-gauge needle to dock and guide the 10-0 suture needle out of the eye, Dr. Devgan then sutures the iris defect while the eye is full of viscoelastic.

surface, I placed a sharp 27-gauge needle on my dispersive viscoelastic syringe via the Condon technique. This allowed the viscoelastic to penetrate under the anterior

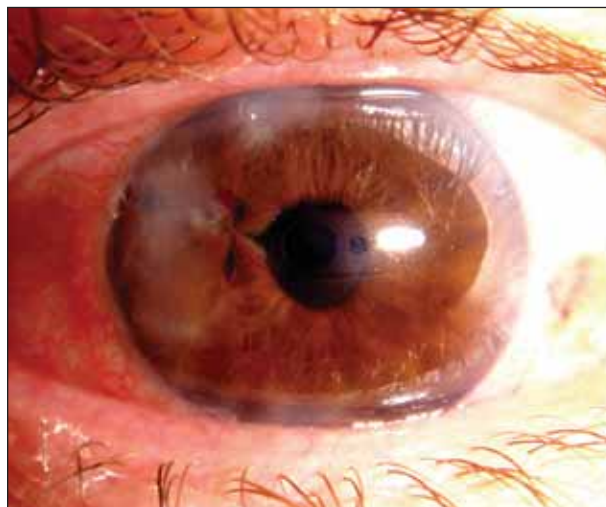


Figure 3. At the end of the case, the new IOL is well centered, and the iris defect is closed, resulting in a round pupil.

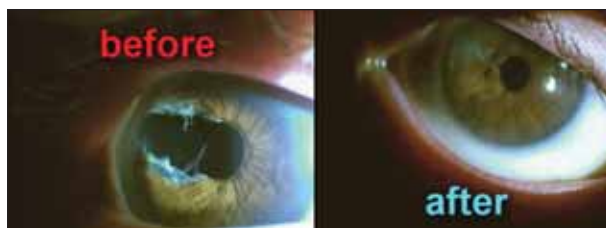


Figure 4. The before and after pictures show a significant improvement in the cosmetic appearance of the eye. More importantly, the patient reported a dramatic improvement in his vision.

capsular edge and dissect apart the capsular leaflets in this narrow space. After creating a gap between the optic and the capsule, I switched back to the 27-gauge blunt cannula in order to prevent capsular damage. Making two paracentesis incisions 180° apart from each other allowed me full access to the capsular bag for complete viscodissection of the IOL.

I carefully dissected the old IOL out of the capsular bag and brought the lens into the anterior chamber. While the old IOL was still in the anterior chamber, I injected the new IOL into the ciliary sulcus, because the capsular bag was partially closed due to fusion of the anterior and posterior leaflets. The new IOL thus protected the posterior capsule from damage, as I bisected and removed the old IOL from the eye. The microscissors have sharp tips that could have damaged the posterior capsule if the new IOL had not been there to protect it. I removed the pieces of the old IOL from the anterior chamber and reassembled them outside the eye to ensure that all of them had been successfully explanted.

"Complications from cataract surgery can happen at the hands of any surgeon. Fortunately, it is often possible to restore [patients'] vision."

REPAIR OF THE IRIS

I used 10-0 Prolene (Ethicon, Inc., Somerville, NJ) on a long straight needle to repair the iris defect. In most situations, iris defects of 2 clock hours or less can be successfully sutured, whereas larger sectoral defects may be better addressed by a prosthetic iris implant. The 10-0 suture was passed through the peripheral cornea or limbus and into the iris stroma, which was somewhat atrophic and fragile. A 25-gauge needle helped to guide the suture into the receiving iris tissue and then out the paracentesis incision. I used a McCannell knotting technique to tie the suture securely via the main temporal incision. Alternatively, one could use the Siepser knotting technique if the iris defect were located away from the temporal corneal incision. I repeated this process and placed more interrupted 10-0 sutures to completely close the defect (Figure 2). After removing the viscoelastic from the eye, I hydrated and sealed the corneal incisions.

OUTCOME

The postoperative period was uneventful, with progressive healing over the course of the next few weeks. The patient recovered excellent vision and no longer had issues with glare or ghosting. An additional benefit was restoration of the anatomy with an excellent cosmetic appearance (Figure 3).

Complications from cataract surgery can happen at the hands of any surgeon. Fortunately, it is often possible to restore vision to the patients who have suffered from these difficulties. The risks are higher, and the procedure is more challenging than the original cataract surgery. Nevertheless, the potential benefit often makes the effort worthwhile (Figure 4). ■

A video of this case is available at <http://eyetube.net/?v=murim>.



Uday Devgan, MD, FRCS(Glasg), is in private practice at Devgan Eye Surgery in Los Angeles, Beverly Hills, and Newport Beach, California. He acknowledged no financial interest in the product or company mentioned herein. Dr. Devgan may be reached at (800) 337-1969; devgan@gmail.com.



RESTASIS®

(cyclosporine ophthalmic emulsion) 0.05%
Sterile, Preservative-Free

INDICATIONS AND USAGE

RESTASIS® ophthalmic emulsion is indicated to increase tear production in patients whose tear production is presumed to be suppressed due to ocular inflammation associated with keratoconjunctivitis sicca. Increased tear production was not seen in patients currently taking topical anti-inflammatory drugs or using punctal plugs.

CONTRAINDICATIONS

RESTASIS® is contraindicated in patients with active ocular infections and in patients with known or suspected hypersensitivity to any of the ingredients in the formulation.

WARNING

RESTASIS® ophthalmic emulsion has not been studied in patients with a history of herpes keratitis.

PRECAUTIONS

General: For ophthalmic use only.

Information for Patients

The emulsion from one individual single-use vial is to be used immediately after opening for administration to one or both eyes, and the remaining contents should be discarded immediately after administration.

Do not allow the tip of the vial to touch the eye or any surface, as this may contaminate the emulsion.

RESTASIS® should not be administered while wearing contact lenses. Patients with decreased tear production typically should not wear contact lenses. If contact lenses are worn, they should be removed prior to the administration of the emulsion. Lenses may be reinserted 15 minutes following administration of RESTASIS® ophthalmic emulsion.

Carcinogenesis, Mutagenesis, and Impairment of Fertility

Systemic carcinogenicity studies were carried out in male and female mice and rats. In the 78-week oral (diet) mouse study, at doses of 1, 4, and 16 mg/kg/day, evidence of a statistically significant trend was found for lymphocytic lymphomas in females, and the incidence of hepatocellular carcinomas in mid-dose males significantly exceeded the control value.

In the 24-month oral (diet) rat study, conducted at 0.5, 2, and 8 mg/kg/day, pancreatic islet cell adenomas significantly exceeded the control rate in the low dose level. The hepatocellular carcinomas and pancreatic islet cell adenomas were not dose related. The low doses in mice and rats are approximately 1000 and 500 times greater, respectively, than the daily human dose of one drop (28 µL) of 0.05% RESTASIS® BID into each eye of a 60 kg person (0.001 mg/kg/day), assuming that the entire dose is absorbed.

Cyclosporine has not been found mutagenic/genotoxic in the Ames Test, the V79-HGPRT Test, the micronucleus test in mice and Chinese hamsters, the chromosome-aberration tests in Chinese hamster bone-marrow, the mouse dominant lethal assay, and the DNA-repair test in sperm from treated mice. A study analyzing sister chromatid exchange (SCE) induction by cyclosporine using human lymphocytes *in vitro* gave indication of a positive effect (i.e., induction of SCE).

No impairment in fertility was demonstrated in studies in male and female rats receiving oral doses of cyclosporine up to 15 mg/kg/day (approximately 15,000 times the human daily dose of 0.001 mg/kg/day) for 9 weeks (male) and 2 weeks (female) prior to mating.

Pregnancy-Teratogenic Effects

Pregnancy category C.

Teratogenic Effects: No evidence of teratogenicity was observed in rats or rabbits receiving oral doses of cyclosporine up to 300 mg/kg/day during organogenesis. These doses in rats and rabbits are approximately 300,000 times greater than the daily human dose of one drop (28 µL) 0.05% RESTASIS® BID into each eye of a 60 kg person (0.001 mg/kg/day), assuming that the entire dose is absorbed.

Non-Teratogenic Effects: Adverse effects were seen in reproduction studies in rats and rabbits only at dose levels toxic to dams. At toxic doses (rats at 30 mg/kg/day and rabbits at 100 mg/kg/day), cyclosporine oral solution, USP, was embryo- and fetotoxic as indicated by increased pre- and postnatal mortality and reduced fetal weight together with related skeletal retardations. These doses are 30,000 and 100,000 times greater, respectively than the daily human dose of one-drop (28 µL) of 0.05% RESTASIS® BID into each eye of a 60 kg person (0.001 mg/kg/day), assuming that the entire dose is absorbed. No evidence of embryofetal toxicity was observed in rats or rabbits receiving cyclosporine at oral doses up to 17 mg/kg/day or 30 mg/kg/day, respectively, during organogenesis. These doses in rats and rabbits are approximately 17,000 and 30,000 times greater, respectively, than the daily human dose.

Offspring of rats receiving a 45 mg/kg/day oral dose of cyclosporine from Day 15 of pregnancy until Day 21 post partum, a maternally toxic level, exhibited an increase in postnatal mortality; this dose is 45,000 times greater than the daily human topical dose, 0.001 mg/kg/day, assuming that the entire dose is absorbed. No adverse events were observed at oral doses up to 15 mg/kg/day (15,000 times greater than the daily human dose).

There are no adequate and well-controlled studies of RESTASIS® in pregnant women. RESTASIS® should be administered to a pregnant woman only if clearly needed.

Nursing Mothers

Cyclosporine is known to be excreted in human milk following systemic administration but excretion in human milk after topical treatment has not been investigated. Although blood concentrations are undetectable after topical administration of RESTASIS® ophthalmic emulsion, caution should be exercised when RESTASIS® is administered to a nursing woman.

Pediatric Use

The safety and efficacy of RESTASIS® ophthalmic emulsion have not been established in pediatric patients below the age of 16.

Geriatric Use

No overall difference in safety or effectiveness has been observed between elderly and younger patients.

ADVERSE REACTIONS

The most common adverse event following the use of RESTASIS® was ocular burning (17%).

Other events reported in 1% to 5% of patients included conjunctival hyperemia, discharge, epiphora, eye pain, foreign body sensation, pruritus, stinging, and visual disturbance (most often blurring).

Rx Only

ALLERGAN

Based on package insert 71876US14B Revised February 2010

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U.S. Patent 5,474,979

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