Bimanual bipolar diathermy for recurrent hyphema after anterior segment intraocular surgery

I. Howard Fine, MD, Richard S. Hoffman, MD, Mark Packer, MD

Phacoemulsification with mechanical pupil dilation was performed on a functionally monocular glaucoma patient with pseudoexfoliation syndrome. The postoperative course was complicated by persistent intraocular hemorrhaging from the pupil margin in multiple locations that ceased temporarily with a marked elevation in intraocular pressure (IOP). Normalization of IOP with medication or paracentesis resulted in recurrent bleeding and a subsequent increase in IOP elevation. Surgical intervention using bipolar diathermy was required to control the bleeding and the elevated IOP. A bimanual approach allowed the corrective procedure to be performed in a simple and efficacious manner.

J Cataract Refract Surg 2004; 30:2017–2020 © 2004 ASCRS and ESCRS

Hemorrhages within the anterior chamber (AC) during anterior segment surgery are infrequent and usually benign complications of intraocular surgery. Bleeding is usually self-limiting, and moderate hyphemas will resolve without permanent sequelae if the increased intraocular pressure (IOP) is controlled. Rarely, intraocular bleeding results in uncontrolled IOP elevations that require intervention. We present a case of unremitting intraocular hemorrhaging in a functionally monocular glaucoma patient that resolved with the use of intraocular bipolar diathermy. The use of a bimanual technique allowed the procedure to be performed in a straightforward and efficacious manner.

Case Report

The patient was a 81-year-old white woman with pseudoexfoliation syndrome (PXE) and moderately advanced glaucoma. The cup-to-disc ratio was 0.6 in the right eye and 0.7 in the left eye. The patient's pupils dilated poorly, and she had advanced nuclear sclerotic cataracts with a visual acuity of 20/100 in the eye with better vision.

Six months before the patient was evaluated in our clinic, phacoemulsification was performed in the left eye by an experienced cataract surgeon. The surgery was complicated by zonular dialysis toward the end of the procedure that required a limited anterior vitrectomy. The postoperative course was complicated by intense sterile anterior segment inflammation, a rhegmatogenous retinal detachment (RD) requiring a scleral buckle, intractable glaucoma treated with a filtering procedure, and a second RD with a second scleral buckle. The final outcome in the left eye was a visual acuity of counting fingers (CF) temporally.

Phacoemulsification in the right eye was performed under topical anesthesia (I.H.F.). Poor pupil dilation was addressed with a 2-prong Beehler pupil dilator (19009/2.8, Moria). Multiple small hemorrhages were noted around the pupil margin (Figure 1) but did not appear unusual in an iris stretched with this device. The presence of PXE in both eyes and the history of zonular dialysis in the first eye prompted the use of a capsular tension ring (CTR). After a capsulorhexis was formed, the CTR (Morcher GmbH) was injected into the capsular bag and phacoemulsification and intraocular lens implantation were completed uneventfully. At the end of the procedure, 0.5 cc of carbachol (Carbistat®) was injected into the AC and stromal hydration of the incisions performed. A few red blood cells were noted in the AC, but no active bleeding was observed.

The patient's advanced glaucoma and monocular status required close follow-up. One hour after surgery, the IOP was 10 mm Hg and the visual acuity was 20/200 secondary to a small amount of scattered blood in the AC. The next

Accepted for publication January 12, 2004.

From a private practice, Eugene, Oregon, USA.

Presented at the ASCRS Symposium on Cataract, IOL and Refractive Surgery, San Francisco, California, USA, April 2003.

None of the authors has a financial or proprietary interest in any material or method mentioned.

Reprint requests to Richard S. Hoffman, MD, 1550 Oak Street, Suite 5, Eugene, Oregon 97401, USA. E-mail: rshoffman@finemd.com.

0886-3350/04/$–see front matter
doi:10.1016/j.jcrs.2004.01.025

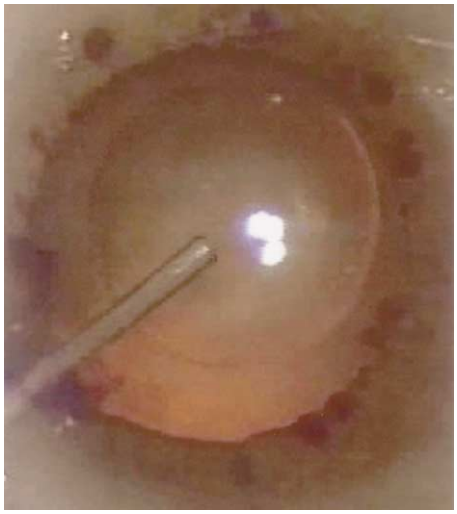

Figure 1. (Fine) Multiple pinpoint sites of hemorrhaging around the pupil margin after pupil stretching.

day, the patient had a visual acuity of hand motions (HM), a 10% hyphema, and an IOP of 42 mm Hg in the right eye. Aqueous was released by depressing the posterior lip of the paracentesis. This successfully lowered the IOP to 16 mm Hg but resulted in immediate profuse hemorrhaging from the pupil margin (Figure 2). Two hours later, the visual acuity was CF. The patient had a 10% hyphema with no active bleeding, but the IOP was again elevated to 41 mm Hg. One drop of brimonidine tartrate (Alphagan-P®) and 1 drop of timolol and dorzolamide (Cosopt®) were administered. Four hours later, the IOP had decreased to 16 mm Hg, with a subsequent rebleed from the pupil margin and decreased visual acuity to HM. No additional glaucoma medication was prescribed.

On day 2, the patient returned with a 20% hyphema and an IOP of 39 mm Hg. The patient's trepidation and the surgeon's concern for potential irreversible vascular events or glaucomatous damage prompted surgical intervention. A surgical solution seemed necessary because hemorrhaging appeared to cease only in the presence of marked IOP elevation, a condition undesirable in a monocular patient with significant glaucomatous optic nerve damage.

The patient had no history of a bleeding diathesis and was not taking blood thinners or anticoagulants. A hematologic workup was thought to be unproductive and was not performed.

Surgical Technique

The same day, the patient was taken to the OR to control the bleeding with bipolar diathermy (I.H.F.). The original paracentesis at 10 o'clock was opened, and the subsequent lowered IOP resulted in rebleeding from the pupil margin. Sodium hyaluronate 3.0%–sodium chondroitin sulfate 4.0% (Viscoat®) was injected into the AC followed by a second 1.2 mm incision at 7 o'clock. These microincisions allowed a bimanual approach to the AC. Irrigation was accomplished with a 20-gauge bimanual irrigating cannula (Microsurgical Technology), and bipolar diathermy was administered with a bipolar 23-gauge Mentor Wetfield Hemostatic Eraser with a needlepoint tip (22-1266, Medtronics Solan) (Figure 3). With the insulating sleeves on these bipolar needles, all diathermy energy was localized to the tip, avoiding the possibility of corneal wound burns. The diathermy unit was an ASSI Polar-Mate (Accurate Surgical & Scientific Instruments Corp.) set at an output level of 1-2.

The irrigating cannula cleared blood from the AC, allowing an unobstructed view of the iris and pupil

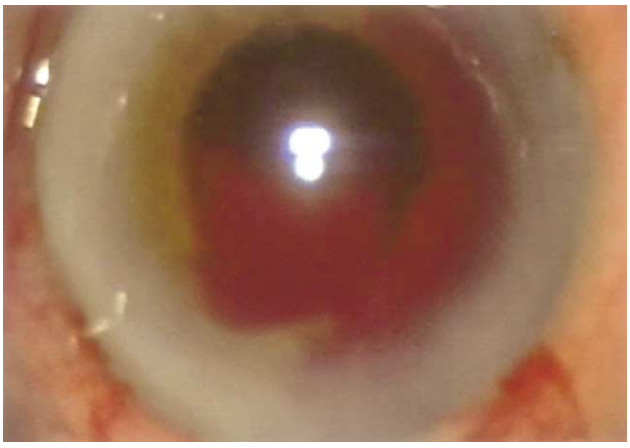

Figure 2. (Fine) Profuse bleeding from the pupil margin after paracentesis and lowered IOP.

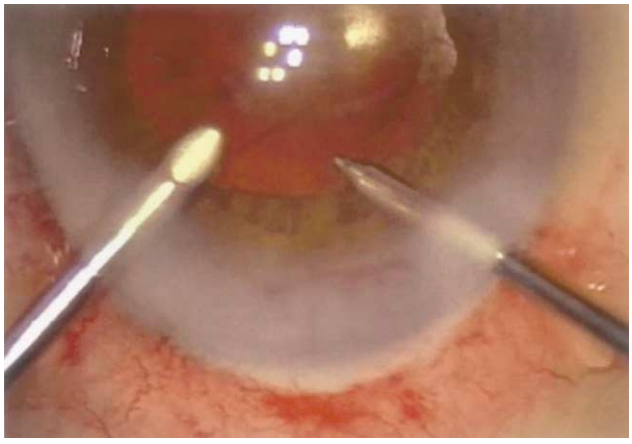

Figure 3. (Fine) Bimanual bipolar diathermy instrumentation: a 20-gauge irrigating cannula (*left*) and bipolar diathermy (*right*).