Self-drainage of a posttrabeculectomy choroidal effusion: loss of protective effect

Ocular hypotony is a known complication of filtering surgery for glaucoma, and its incidence has increased as adjunctive mitomycin C (MMC) has become more commonly used with the procedure. Hypotony may be associated with a shallow anterior chamber (AC) and a choroidal detachment (CD) with an accumulation of fluid in the suprachoroidal space.

We report a case of posttrabeculectomy hypotony where the choroidal effusion (CE) drained spontaneously from an old surgical incision. A 50-year-old man was referred for fixation loss in his left eye secondary to advanced primary open-angle glaucoma. His history was remarkable for high myopia (axial length 31.28 mm OD; 33.47 mm OS) and a remote history of extracapsular cataract extraction (ECCE) and intraocular lens implant (IOL). His visual fields showed mean deviations of −29.1 dB OD and −28.9 dB OS (SITA standard 24-2 threshold test).

It was decided to treat his right eye surgically in the hope of preserving his remaining visual field. His preoperative visual acuity was 20/40 OD with an IOP of 24 mm Hg on maximum tolerated medical therapy. His central corneal thickness was 574 μm OD and 562 μm OS. The anterior chamber (AC) was deep, with a well-positioned sulcus IOL. The limbus appeared thin and surgically scarred from his previous surgery. Fundus examination showed subtotal cupping and myopic changes in both eyes.

A trabeculectomy with MMC (0.5 mg/mL for 2 minutes) was performed on his right eye. The trabeculectomy scleral flap was 5 mm × 5 mm and traversed the relatively posterior ECCE incision 3 mm posterior to the limbus (this had been a “scleral flap-type” ECCE incision, performed to reduce induced astigmatism). Because of the thin sclera, intraoperative closure of the scleral flap required multiple sutures but was considered adequate.

On the first postoperative day (POD), his vision was hand motion (HM) and IOP was 1.5 mm Hg. The bleb was flaccid and the Seidel test was negative. The AC was deep but the globe was unusually soft, with the cornea being readily deformed with every movement of the eyelid. Viscoelastic material was injected into the AC to give some shape to the globe, and topical steroids and cycloplegics were given to the patient.

On the fourth POD, his vision was still HM and IOP was 0 mm Hg. Again, the cornea deformed readily with movement of the eyelid. The anterior chamber was formed with 0.5+ white cells. The bleb was large, without leakage. Dilated fundus examination revealed only a small CD temporally and some choroidal folds in the macula region. Because of the progressive symptomatic hypotony, a decision was made to perform a bleb revision on the next day. Upon opening the superior conjunctiva, we noted a collection of straw-colored fluid that appeared to issue from the temporal side of the scleral flap. Both the scleral flap and the subconjunctival-suprachoroidal communication were sutured and covered with a scleral patch. After the revision, the IOP gradually increased to 16 mm Hg OD, the CD resolved, and the macula was flat on the fourth day after the revision surgery. At 4 months after the surgery, a topical IOP-lowering agent was added because the bleb was not filtering and the IOP fluctuated between 13 and 25 mm Hg. Eventually, the patient required tube shunt surgery (Baerveldt, Advanced Medical Optics Inc, Santa Ana, Calif) in his right eye because of progression on maximum medical therapy. The second surgery went well, with no complications.

The patient’s vision never improved beyond 20/400 OD after 24 months of follow-up. Since there were no identifiable retinal, corneal, or inflammatory factors that could explain his poor vision, we speculate that the poor visual acuity was due to the progression of glaucoma, leading to fixation loss in the right eye. Goldmann perimetry was done postoperatively and showed involvement of central vision. The episode of hypotony may have contributed to a so-called “wipe-out” of fixation through a mechanism that is poorly defined.

A MEDLINE search revealed no similar report in the literature. Serous CEs are understood to be a transudative process due to severe hypotony. The most common causes of glaucoma surgery–related hypotony are excessive filtration and wound leak. The size of the CD is often proportional to the severity and duration of the hypotony. The interesting findings in our patient were the disproportionately small size of the CD in the setting of acute hypotony and an impressively soft globe. The cause of these findings became clear during the bleb revision, when an accumulation of straw-colored fluids was seen in the subconjunctival space. It was apparent to the surgeon that this was the spontaneous drainage of a suprachoroidal effusion. The trabeculectomy scleral flap dissection may have renewed a tract to the suprachoroidal space that had been initially created during the old ECCE. A second explanation may be that the dissection through thin myopic sclera during the trabeculectomy created a communication between the suprachoroidal and subconjunctival spaces. The self-drainage of the CE explains the small size of the CD that, if larger, would have contributed to the shape and volume of the globe, preventing it from collapse. CEs have also been shown to have a protective role in the development of hypotony maculopathy. The finding of an unusually soft globe in our patient, with self-drainage of the choroidal fluid, suggests that CEs help maintain the shape of the globe during ocular hypotony.

The poor visual outcome in our patient may be due to the marked hypotony on POD 1 in an eye with threatened fixation. The acute drop in IOP from 24 mm Hg to 0 mm Hg had deleterious effects on the already tenuous optic nerve, possibly through a vascular-ischemic mechanism. The very rare controversial “wipe-out” phenomenon was linked to acute hypotony on POD 1 in a retrospective study. Tube-shunt surgery, which may provide more resistance to...
aqueous humor outflow with valves or ligating sutures, may have been an alternative choice in our case that could have prevented the acute and marked drop of IOP postoperatively. The patient eventually underwent Baerveldt implants in both eyes without complication.

In conclusion, surgeons should be cautious when performing scleral flaps in highly myopic eyes with previous scleral incisions. Careful surgical planning in these patients is warranted. Secondly, self-drainage of suprachoroidal fluid may explain the profound hypotony in an eye with a disproportionately small CD. Finally, this case demonstrates the role of CEs in maintaining the shape of a hypotonic globe.

References


Jing Wang,* Hady El-Saheb,* Mark R. Lesk*
*Université de Montréal and Maisononneuve-Rosemont Hospital Research Centre, and †McGill University, Montréal, Qué.
Correspondence to Mark R. Lesk, MD: lesk@videotron.ca

Correspondence

Medulloepithelioma of the ciliary body associated with massive intravitreal hemorrhage in an adult

Intraocular medulloepithelioma is a rare tumor of embryonal origin arising from primitive neuroepithelial cells. It occurs mainly in children and, to the best of our knowledge, only 13 cases have been reported in adults. None of these cases was associated with a large intravitreal hemorrhage. We herein report a case of malignant nonteratoid medulloepithelioma presenting in an adult with massive intraocular hemorrhage.

A 38-year-old woman presented with pain, redness, and loss of vision in her left eye for 6 months. She had a past history of surgery for complicated cataract in both eyes, 2 years previously. The previous records revealed normal posterior segments.

On examination, the vision was no light perception OS and 6/9 OD. A sentinel vessel was seen nasally, the iris was plastered to the cornea, and the intraocular pressure was raised. The right eye was normal. Ultrasonography revealed a mass of 12.7 mm × 8.8 mm superonasal to the disc, with choroidal excavation and vitreous hemorrhage. Magnetic resonance imaging (MRI) of the orbits showed 2 intraocular masses that were continuous in a few sections. One was in the region of the ciliary body and the second was posteronasal to it, involving the retina. No extraocular spread was noted (Fig. 1). Based on these findings, a presumptive diagnosis of choroidal melanoma was made, for which the patient underwent enucleation.

Gross examination of the enucleated globe revealed a grayish mass in the vitreous cavity measuring 18 mm × 15 mm × 10 mm near the ciliary body that extended anteriorly up to the iris and posteriorly along the retinal surface. Posteriorly, it was joined by a second, slightly smaller mass. The entire vitreous cavity was filled with hemorrhage (Fig. 2). Microscopically, a tumor consisting of epithelial...