



Complicated Presentations: Diagnostic Approaches and Management

With Pravin U. Dugel, MD; Darin Goldman, MD; and J. Michael Jumper, MD

In this installment of Surgical Rounds, our panel members discuss their approaches to postoperative hyphema, acute retinal necrosis, and re-detached retina with severe proliferative retinopathy.

Your feedback on this column is welcome. If you have case scenarios that you would like to see discussed, please e-mail Rachel Renshaw at rrenshaw@bmcctoday.com. The addition of Surgical Rounds is in the spirit of education and it is you, the surgeon reader, who can help make it as relevant to your practice as possible.

-Rachel M. Renshaw, Editor-in-Chief

Case No. 1. *A postoperative patient who had a combined scleral buckle and vitrectomy for a pseudophakic inferior retinal detachment in his left eye has a 2-mm hyphema, intraocular pressure (IOP) of 30 mm Hg on maximal medical therapy, and a small inferior choroidal. What is your approach to management?*

Pravin U. Dugel, MD: The hyphema is likely due to the scleral buckle, which causes choroidal congestion. A phenomenon called peripheral annular choroidal syndrome was originally described for patients who underwent glaucoma surgery. This can apply, however, to any situation in which there is choroidal congestion in which these small, annular peripheral choroidal detachments rotate the ciliary body iris complex, often shallowing the chamber and causing both IOP elevation and slight hemorrhaging.

Often, if you dilate the eye and decrease inflammation, the ciliary body iris complex will rotate back deep in the chamber and the IOP will return to normal will become normal again. In this particular case, unless the patient has brittle glaucoma, a pressure of 30 mm Hg for a few days is tolerable for a few days is acceptable. Presuming that this is immediately postoperative, I will continue the patient on maximal medications, adding antiinflammatory steroid eye drops and atropine to dilate the pupil in an attempt to rotate the iris ciliary body complex and lower pressure.

A pressure of 30 mm Hg is most likely not going to cause the patient pain, so I would tell the patient that we will try to decrease the inflammation, and, once this has been addressed, the IOP should decrease. I would follow this

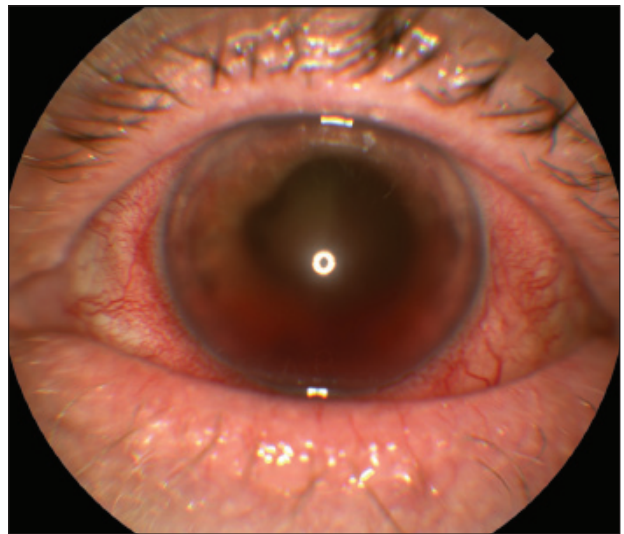


Image courtesy of Darin Goldman, MD

Figure 1. Hyphema in the setting of neovascular glaucoma. Although different than postoperative hyphema with high IOP, the image looks similar to the case described.

patient closely, seeing him or her within the next couple of days to ensure that the IOP has not risen higher.

Darin Goldman, MD: The key to this case is the etiology of the increased IOP and its timing after surgery. One likely scenario is that the patient was hypotonous in the perioperative period and then, due to the combination of a choroidal and a hyphema, the IOP became increased postoperatively. Generally, 30 mm Hg is not necessarily an alarming pressure, so if the



patient's optic nerve is fine and there is no history of advanced glaucoma, I would just watch the patient carefully. However, the IOP could be related to other mechanisms, which should be considered based on findings from the exam such as the appearance of the anterior chamber. Any secondary causes that are identified should be treated directly. I would see this patient back within a week and I would expect to see resolution of the hyphema and stabilization of the IOP within this time period.

J. Michael Jumper, MD: It is important to know whether this patient has a history of glaucoma and how well they can tolerate elevated intraocular pressure (IOP). It is my experience that the pressure will often improve with continuing the current management. It is also good to determine whether the cause of the IOP elevation is an open angle with blood blocking outflow or angle closure due to forward rotation of the ciliary body or push from the gas bubble.

If the IOP is too high to manage medically, I will remove a small amount of gas from the vitreous cavity. To remove gas, I prepare the eye with lidocaine, betadine, and a lid speculum. I use a 30-gauge needle on a tuberculin syringe with the plunger still in so that I can better control the volume of gas removed. I would enter the vitreous cavity through the pars plana away from any choroidal detachment, remove a small amount of gas and, with the other hand holding a sterile, cotton-tip applicator monitor the pressure reduction. I worry about worsened choroidal detachment or hemorrhage by reducing the pressure too rapidly from inserting a needle on a syringe without a plunger.

Case No. 2. A 66 year-old, otherwise healthy, man presents with what appears to be acute retinal necrosis (ARN) clinically in his right eye. How do you manage the case?

Dr. Dugel: It is important to take this type of scenario seriously because the outcome could be devastating to not only the involved eye, but also the fellow eye. In terms of workup, we know ARN is often associated with herpes zoster, which is more common in the age group of this patient. If this is the case, there is little further workup. If, however, there is any reason to believe the patient might be immunocompromised, further workup is required. For example, patients who are immunosuppressed may actually have progressive outer retinal necrosis (PORN), which is particularly aggressive. PORN requires IV medications, often supplemented with intravitreal medications.

For a typical case of ARN, which this appears to be, there are reports of successful treatment using only oral medications, but I treat aggressively and use IV medications (acyclovir) first on an outpatient basis for 5 to 6 days, followed by oral medications (acyclovir) for approximately 6 months.

I make sure the patient understands the serious nature

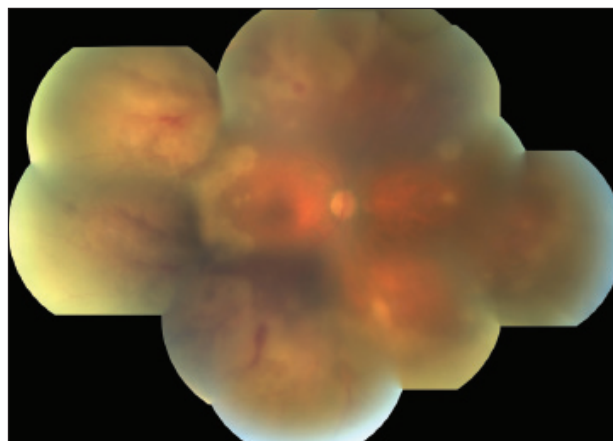


Image courtesy of Caroline Baurnal, MD

Figure 2. Classic case of ARN.

of the disease and that without intervention, there is the potential for bilateral blindness in a matter of weeks. I would then tell him that we are fortunate to know the diagnosis and that there are several safe options for treatment.

Dr. Goldman: The first thing I would do is obtain a diagnostic sample via paracentesis for VZV, HSV1, and HSV2 testing. It is important to know if the patient is immunocompromised, as a more aggressive variant of ARN (PORN) can occur in this population. However, the patient appears to be otherwise healthy in this case.

Currently, there is no standard care for ARN, as it is a rare disease and so it is hard to pool data to understand what works best. That said, my preference would depend on whether I have easy access to an inpatient facility. If so, I would consult with an infectious disease specialist and start IV acyclovir followed by transition to an oral antiviral medication such as valacyclovir or valganciclovir for 3 months after the initial occurrence. Additionally, I have a very low threshold to supplement treatment with intravitreal ganciclovir or foscarnet.

Typically, if ARN is caught early, it tends to be peripheral and outside the macula, but it moves rapidly, so treatment as soon as possible is imperative. If disease is threatening the macula, I treat more aggressively, and typically would supplement with intravitreal therapy.

I would advise the patient that they have a rare, extremely serious condition that is essentially an infection of the retina that is caused by a virus. I would impress that the main purpose of treatment is to preserve this eye and to prevent fellow eye involvement and that unfortunately, the prognosis for visual recovery in the affected eye is often poor.

Dr. Jumper: The first step in managing a case such as this is to be sure there are no risk factors for an endogenous infectious process. If there are, one should consider cultures and stains of the blood, urine and vitreous. Assuming the patient is healthy, I typically perform an aqueous or vitreous



biopsy in the clinic to be sent for polymerase chain reaction (PCR) testing against primers for varicella zoster virus, herpes simplex virus, cytomegalovirus, and toxoplasmosis. I also order serology to test for syphilis, toxoplasmosis, tuberculosis, and HIV. That same day, I empirically treat with an intravitreal injection of foscarnet or ganciclovir and begin oral valacyclovir or famciclovir. For more severe cases or in situations where I am uncertain whether a patient will be able to absorb the oral antiviral (eg, severe diarrhea), I would consider admitting the patient to the hospital for intravenous acyclovir. Depending on the extent of retinitis, I then consider barrier laser around the retinitis to reduce the risk of retinal detachment. I also consider a course of oral steroids to begin within 72 hours of starting antiviral medications to help control inflammation. I then tailor further treatment based on the serology, PCR results, and response to therapy. Patients with ARN from HSV typically respond to treatment within the first week and are usually on oral antivirals for up to 4 months.

Case No. 3. *Ten weeks after an uncomplicated primary vitrectomy in his right eye for a superior phakic retinal detachment with mild vitreous hemorrhage, a 56-year-old moderately cataractous patient has a recurrent inferior detachment with CA4 proliferative vitreoretinopathy (PVR). What is your approach?*

Dr. Dugel: In this particular case, the success rate has gone from over 90% with initial vitrectomy to approximately 50% with a redetachment and PVR, so it is important to do everything possible to increase the success rate of this next surgery. So one has to do everything possible to

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increase the success rate because the success rate is exponentially lower for any subsequent procedures.

I would perform a buckle vitrectomy with laser photocoagulation and a long-acting gas bubble. It is extremely important to remove all the membranes in a PVR, and, as with macular hole surgery, I am careful to also remove the internal limiting membrane (ILM). I stain the ILM with a very dilute, filtered concentration of indocyanine green. I find that a single-handed approach is sufficient for a case like this.

Because surgery success rates are so much lower than initial vitrectomy and due to the fact that the case is complicated with the high degree of PVR, counseling is particularly important. It is a good idea to include the patient's family in the discussion to ensure the patient knows that this is a significantly more complex surgery. I would tell the patient that he has a tendency to develop more scar tissue than normal for reasons that are not completely understood and the surgical plan is changing to meet his particular needs. The patient should understand why a buckle is being placed, what positioning will be required for the gas bubble, and that if this surgery fails, the success rate drops even further so it is important to do whatever possible this time.

Dr. Goldman: Essentially, this is a case of severe inferior PVR involving 4 o'clock hours in a phakic patient, so my approach would be to perform combined phacoemulsification with vitrectomy and a scleral buckle. I would use an encircling 41 or 42 band as the buckle. I would perform 360° vitreous base shaving, and, depending on what is occurring inferiorly, I would attempt to peel any visible membranes. In the setting of severe PVR, despite my best attempts at peeling, I would most likely resort to a localized retinectomy in the involved area. These are the rare cases where I might use perfluorocarbon liquid instead of a drainage retinotomy (which I otherwise prefer). Once the retina is flattened, I would apply generous laser. For tamponade, I prefer silicone oil in severe PVR cases but would consider C3F8 depending on the intraoperative appearance. I do not typically use a bimanual approach to peeling membranes and I would not stain the PVR membranes. .

If silicone oil was used, I would position overnight. If I

Image courtesy of Darin Goldman, MD

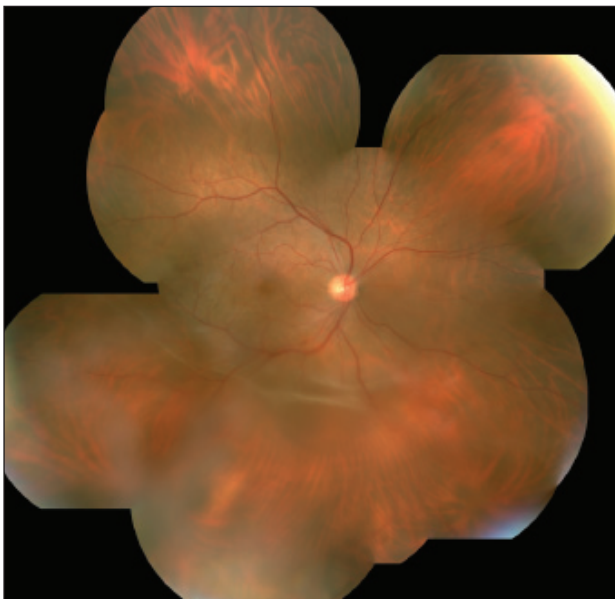


Figure 3. Inferior retinal detachment with PVR, similar to the case described.



use gas, which is unlikely in this scenario, I would have the patient position facedown for 1 week.

I would explain to the patient that recurrent detachments can occur in as many of 10% to 20% of cases of primary retinal detachments as a result of scar tissue that develops and tugs on the retina. I would tell him that although the scar tissue can be difficult to remove, some of it should be taken away while sparing the central retina, but unfortunately the chances for another detachment are even higher now and the visual prognosis is guarded with a long recovery ahead.

Assuming the retina is stable after surgery and considering that this patient will have silicone oil in his eye, I would wait at least 6 months prior to considering him as a candidate for an intraocular lens implant, if the visual potential allows for one.

Dr. Jumper: First of all, I would rarely perform primary vitrectomy for a phakic retinal detachment. My typical approach would either be a pneumatic retinopexy (if the patient was a suitable candidate) or a scleral buckle. For anterior and circumferential proliferative vitreoretinopathy after primary vitrectomy for a phakic retinal detachment, I would perform a scleral buckle, lensectomy (with removal of the entire lens capsule), membrane peeling, and extended tamponade with either C3F8 gas or silicone oil. I typically use chandelier lighting and a bimanual technique to remove the peripheral membranes. Unless I had to perform a relaxing retinotomy, I typically avoid the use of perfluorocarbon liquid, preferring a drainage retinotomy. Once attached and stable, I would consider a secondary implant lens depending on the patient's level of vision recovery, which can be done at the time of silicone oil removal. ■

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