May/June 2024

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KOL KNOCKOUT™ RETINA EDITION: EXPERTS FACE OFF ON 8 CHALLENGING CASES

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Release Date: May 2024
Expiration Date: June 2025

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Content Source

This continuing medical education (CME) activity captures content from a series of three live-virtual symposia.

Activity Description

This supplement summarizes content from a series of three unique, live-virtual symposia hosted by Sunil K. Srivastava, MD. The game show-style quiz competition with real-time audience voting featured retina-focused case studies and discussions on medical and surgical management approaches for common retinal diseases and their sequelae.

Target Audience

This certified CME activity is designed for retina specialists.

Learning Objectives

Upon completion of this activity, the participant should be able to:

- **Appraise** medical and surgical management approaches for common retinal diseases and their sequelae
- **Diagnose** vitreoretinal pathology by performing thorough clinical exams and using advanced imaging modalities
- **Discuss** how fluidics, intraocular tamponades, cutting rates, and gauge of surgery can impact surgical outcomes

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PRETEST QUESTIONS

Please complete prior to accessing the material and submit with Posttest/Activity Evaluation/Satisfaction Measures for credit.

1. Please rate your confidence in your ability to effectively diagnose and manage patients with retinal disease (based on a scale of 1 to 5, with 1 being not at all confident and 5 being extremely confident).

a. 1
b. 2
c. 3
d. 4
e. 5

2. A 43-year-old woman with methicillin-susceptible *Staphylococcus aureus* (MSSA) endocarditis presents with blurry vision in her right eye for 2 weeks. On exam, you note numerous chorioretinal lesions with no vitritis. The patient is currently on IV antibiotics. What is the next best step in management?

a. Stop her IV antibiotics and give intravitreal antiviral treatment
b. Continue IV antibiotics and supplement with intravitreal antibiotics
c. Continue IV antibiotics and observe closely for worsening
d. Continue IV antibiotics and start IV antifungal treatment

3. A 70-year-old man presents for follow-up. He is currently happy with his vision. He has a history of macula-off retinal detachment after a repair with buckle vitrectomy. He has some inferior fibrosis noted on the buckle during exam. What is the next best step in management?

a. Pars plana vitrectomy with peel to remove fibrosis
b. Laser barricade over the buckle and area of fibrosis
c. Close observation
d. Intravitreal steroid injection

4. A 70-year-old man presents to your office for evaluation of cystoid macular edema (CME) post cataract extraction with IOL. He has had two bevacizumab injections and two posterior subtenon triamcinolone acetate injections for his CME so far, which have been of some benefit initially, but his CME has returned. He has had a negative uveitis workup thus far and is being maintained on valacyclovir and prednisone with no improvement in CME. On exam, you note a small hypopyon in the inferior angle. What is the next best step in management?

a. Consider tap/inject for chronic endophthalmitis management
b. Start IV steroids
c. Focal laser to areas of leakage in macula
d. Panretinal photocoagulation

5. You are removing an IOL in an eye with *Propionibacterium acnes* endophthalmitis. Which of the following is a TRUE statement about this removal?

a. You should remove the IOL alone
b. You should remove the IOL-bag complex
c. You should remove the IOL and place a new IOL in the bag
d. You should remove the IOL-bag complex and immediately place a secondary IOL

6. You are performing an internal limiting membrane (ILM) peel but find it to be challenging. Which of the following techniques may help peel the ILM?

a. Use perfluoro-n-octane for countertraction
b. Stain with indocyanine green
c. Stain with brilliant blue
d. All of the above

KOL KNOCKOUT™

KOL KNOCKOUT™ RETINA EDITION: EXPERT OPINIONS ON 8 CHALLENGING CASES

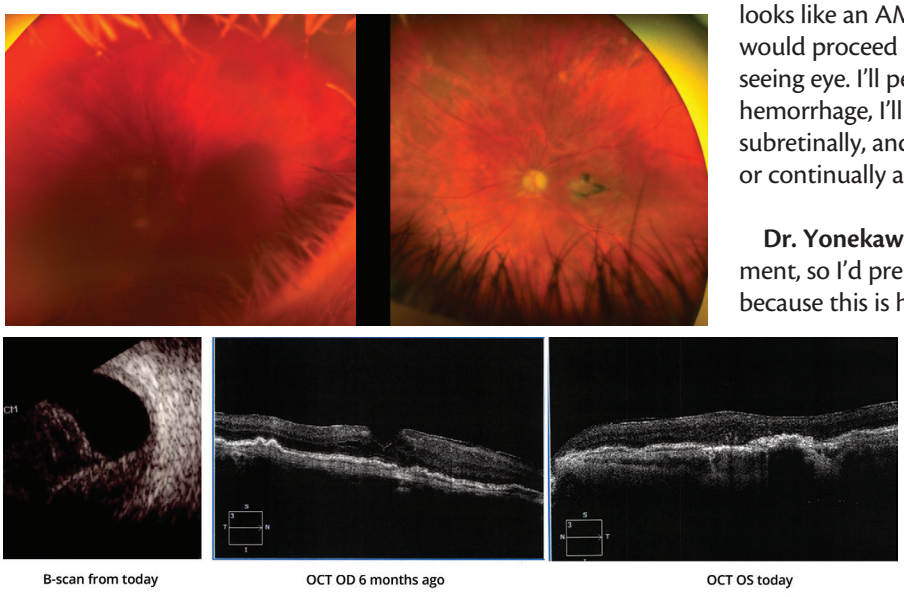
Retinal diseases are common in the United States, especially with the aging population and in those with diabetes. In the real world, retina specialists must be prepared to manage tough cases surgically, including patients with comorbidities such as glaucoma, syphilis, and diabetes. Clinicians must recognize potential masquerading syndromes and what workups to order and when to order them.

Captured from a series of three live-virtual "knockout rounds," this supplement features a distinguished panel of retina specialists discussing their rationale for diagnosing and managing complex surgical and medical retina cases.

–Sunil K. Srivastava, MD, Program Chair

ROUND 1 | CASE 1: PATIENT WITH AMD AND GLAUCOMA WITH NEW-ONSET VISION LOSS

Dr. Srivastava: Our Round 1 contestants are Parisa Emami-Naeini, MD; Prethy Rao, MD; and Yoshihiro Yonekawa, MD. Our first case is a 77-year-old woman with a history of age-related macular degeneration (AMD) and glaucoma. She presents with a new onset of vision loss in her right eye (OD). She already had poor vision in her left eye (OS) due to AMD and glaucoma. She developed choroidals OS after glaucoma surgery several years ago. She had cataract surgery OD, but not recently. On today's visit, she's 20/400 OD and count fingers (CF) OS. Her baseline VA is 20/100. She has a history of anti-VEGF injections, but they were several years ago. Figure 1 shows her current retinal imaging in both eyes, B-scan, and OCT. What are your thoughts on how you'd initially manage this patient?



Courtesy of Sunil K. Srivastava, MD

B-scan from today | OCT OD 6 months ago | OCT OS today

Figure 1. Baseline imaging of a 77-year-old woman.

Dr. Emami-Naeini: It looks like there is vitreous hemorrhage or opacities obscuring the view OD. In the B-scan, I can see debris anteriorly and elevated membranes. I don't see the nerve cuts, but it could be subretinal or choroidal hemorrhage. In a patient with a history of AMD, I would think about subretinal hemorrhage with some breakthrough into the vitreous cavity causing vitreous hemorrhage. There might also be something in the periphery. I would check for a mass lesion like a uveal melanoma, depending on how her scans and fundus looked prior to this examination. I'd also look for peripheral retinal changes or peripheral neovascularization.

Dr. Srivastava: The B-scan didn't show me anything beyond what is seen in Figure 1. It looks like a subretinal elevation. It does not look like there's a choroidal. Dilated fundus exams didn't show any masses, and there've been no real changes in her blood pressure. She's not on blood thinners either. Given that information, Dr. Rao, what would you do next?

Dr. Rao: Because this patient is monocular and the acute onset looks like an AMD-related vitreous breakthrough hemorrhage, I would proceed with a vitrectomy. Functionally, this is her better-seeing eye. I'll perform a vitrectomy and clear it out. If there's a hemorrhage, I'll probably inject tissue plasminogen activator (tPA) subretinally, and then give an intravitreal injection at the time of or continually afterward.

Dr. Yonekawa: These eyes tend to need chronic, monthly treatment, so I'd prepare her for that. I would also discuss a vitrectomy because this is her better-seeing eye. I don't see the macula in Figure 1, but assuming there is a submacular hemorrhage, I would administer a tPA injection. But if the B-scan shows the majority of the subretinal hemorrhage is outside the macula, then injections may be the way to go.

Dr. Srivastava: As far as I can tell from the B-scans, there is nothing within the macula itself. Given that, would you go to the OR sooner or would you try injections first?

Dr. Emami-Naeini: I agree with what has been said about submacular versus nonsubmacular hemorrhage. If it is not submacular, especially if it is inferior to the macula, there is no point in trying to displace it in the OR with subretinal tPA. I'm going with anti-VEGF injections, depending on my OR availability. If I can take the patient to the OR within a day or so, I would inject her in the clinic and then go to the OR and inject her again in the clinic. But I would also advocate for going to the OR to clear the vitreous hemorrhage and, at the time of surgery, get a better view to see if she needs a subretinal tPA.

Dr. Srivastava: Those are all great points. She opted for injections first. There was no real change in her condition, so we opted for surgery. Any tips for what to look for during a surgery like this?

Dr. Rao: The first thing is to talk with your anesthesiologist and make sure her blood pressure is well controlled throughout. You don't want it to be super high or low. The second thing is visualization of your infusion. If you're unsure if there's a low lying choroidal around in the pars plana, you could consider administering a 6 mm infusion. If not, I'll place my light pipe through my infusion port to see if I can see the light through it. The most important thing is to make sure that your infusion is in the right spot safely.

Dr. Yonekawa: Because there is no view, instead of performing the usual beveled incision, I would go straight into the eye. We have to make sure that the cannula fully enters the eye, and I like to place the light pipe into the cannula to confirm that we're in, before attaching the infusion.

Dr. Emami-Naeini: I would want to have a direct visualization on my instruments before diving deep into the unknown black hole. I'd recommend cleaning up anteriorly right behind the lens first.

Dr. Srivastava: The hemorrhage looks like it's been there for some time; it had a dense appearance. The macula didn't look terrible, but there was a very large subretinal elevation. Would you do anything else at this point? Should I go into the subretinal space?

Dr. Rao: I wouldn't do anything else. I would leave it alone and try to get out of the eye safely. I'd probably put a gas tamponad, have that patient position, and suture the wounds. I might consider administering an anti-VEGF injection at the time of, but I would want to attack that choroidal.

Dr. Yonekawa: I think less is more. A good scleral depressed exam at the end to make sure you didn't make any iatrogenic breaks will be important.

Dr. Srivastava: I agree; I think that's the key here. One month postoperative, her VA is 20/70. The OCT is flat, and there's no fluid. How often should I inject this patient?

Dr. Emami-Naeini: This is a monocular patient, so I would have a lower threshold in keeping her on injections. I would try to treat and extend.

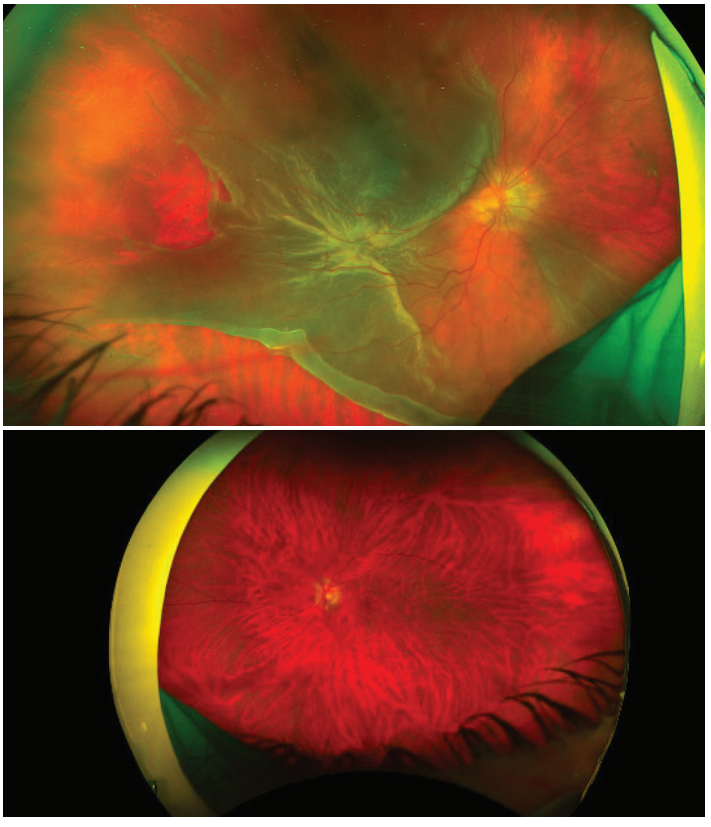
Dr. Srivastava: When you have this big amount of peripheral blood, was this a peripheral choroidal neovascularization (CNV) or was this a posterior CNV? What are your thoughts, and does that change how often you give an injection?

Dr. Rao: I would consider sending a sample of the vitreous to make sure it wasn't a tumor. It looks like CNV. I would inject the eye frequently, probably long-term with anti-VEGF treatment. I would observe this patient with serial B-scans to make sure that CNV is improving over time and make sure there's not a mass.

Dr. Srivastava: I've repeated the B-scan. It looks like it's all subretinal at this point, and hopefully we'll be able to hold her. Currently, she's on anti-VEGF injections, and we are monitoring.

ROUND 1 | CASE 2: GIANT RETINAL TEAR IN A PHAKIC PATIENT

Dr. Srivastava: Our second case is a 62-year-old man with a 4-week history of vision loss OD. He has no history of trauma or relevant family history. He did have a radial keratotomy (RK) years ago. His vision is hand motion, 20/400 OD and 20/25 OS; 1+ plus NSC OU. Figure 2 shows his imaging.



Courtesy of Sunil K. Srivastava, MD

Figure 2. Baseline imaging of a 62-year-old man.

Dr. Srivastava: It's not a diagnostic dilemma, but everyone can see this giant retinal tear (GRT) OD. There's another one, too. Early starfold, it looks like that's maybe the temporal macular area. The left eye looks good. Dr. Rao, how would you handle this?

Dr. Rao: Is that tear at 9 o'clock contiguous with that inferior GRT or is it separate?

Dr. Srivastava: It looks like it's separate on exam.

Dr. Rao: I would perform a buckle-vitrectomy in this patient.

Dr. Yonekawa: I would use a low-lying buckle and thorough membrane peeling. I'm going to try to peel as much internal limiting membrane (ILM) as possible. I think that's a great technique for these complex cases to make sure you minimize the risk for proliferative vitreoretinopathy (PVR) formation. Normally for GRTs, I would use gas for the superior surface tension, but here you have PVR on top of it, so I would use silicone oil as the tamponade for this eye.

Dr. Emami-Naeini: There's some PVR with vitreous debris in this picture. If the cataract is not too bad, I would not touch it at the same time. I would use PFO and try to peel the ILM. I'd also perform a low-lying buckle, probably a 41 or 42 band, and vitrectomy.

Dr. Srivastava: We did put a 40/50 buckle on. Dr. Rao, do you like to stain? Is that something you'll do for these cases?

Dr. Rao: Yes. By definition, for GRTs, that hyaloid should be up but it's not always. I would definitely use triamcinolone to double check, especially because of the PVR that was present postoperatively. Sometimes I use the PFO to walk out the PVD. I lift it past the arcades, and then use PFO to help lift the rest of that peripheral hyaloid to stabilize the macula and peripheral retina so there's not a lot of movement during the case.

Dr. Srivastava: When you perform a low-lying buckle, how do you know you have the correct buckle height? Do you have a criterion for where it should be supporting in a case like this?

Dr. Yonekawa: If we're using an encircling band, it doesn't matter how much we "imbricate"; it's all about how much you tighten. If you tighten a centimeter, you're going to get 2 mm of height. So here, I would do less than a centimeter of tightening. We're trying to support the horns in this case. I'm a little worried that the hyaloid was down; the hyaloid is supposed to be up in GRTs. When it's down, it's usually in young kids or patients with collagen disorders. He may have a collagen disorder, which brings me to the question of what to do for the other eye in terms of prophylaxis. Even though you have no lesions there, as shown on the Optos imaging, you may want to consider prophylactic 360˚ laser.

Dr. Srivastava: That's a good point; we did depress the other. Regarding the hyaloid, it was up, but it wasn't all the way up. What do you do about the anterior part of your GRT?

Dr. Emami-Naeini: I would try to take it down as much as possible. We do have some buckle effect over there, but I would also perform a depressed exam. I would try to take off as much as possible, and if I couldn't, I would laser that area.

Dr. Srivastava: What is your peeling technique in a GRT detachment?

Dr. Rao: I'd start with triamcinolone, as that often helps highlight the membrane. I'd also use an ILM staining agent. Because the retina is attached, I'm concerned about indocyanine green (ICG) being introduced into the subretinal space, so I'd probably use more of a blue stain. In terms of technique, it's really hard to peel these membranes or ILM. You can start with a tiny MVR blade to get the peel started and then Maxgrip forceps. I talked earlier about using a small amount of PFO. You can use that as a third hand to help stabilize the retina because, oftentimes, it's very gummy to remove ILM.

Dr. Yonekawa: ICG toxicity is very rare, and here I'm not concerned because the visual potential is not great. I want the best stain possible because getting the PVR off is the most important thing. Personally, I'd use ICG in this case. I used brilliant blue recently for a PVR case, and I was not impressed with the staining. I try to keep the ICG confined on the retinal surface, take it out, put PFO in, and peel widely under PFO.

Dr. Emami-Naeini: I agree; I've had more success in staining ILM with ICG in these cases. But if I end up using brilliant blue, I would keep it in the eye for a good minute or so. Sometimes, I don't even remove it.

Dr. Srivastava: Aright, I'll tell you what we did. We went after the starfold initially with just forceps. We used ICG and got it everywhere. Dr. Rao, you mentioned using your MVR blade to start. Where do you start? Do you start posteriorly or closer to the starfold?

Dr. Rao: I would start closer to the starfold, but I would actually try to peel over the macula to get a good grip of the ILM.

Dr. Srivastava: When you put PFO in on a case like this, how do you initiate the peel? Do you use forceps straight or something else?

Dr. Yonekawa: ILM forceps, pinch and peel. I would start in the nasal macula and peel the entire macula and make my way toward the starfold, if I couldn't get the starfold initially. I also try to go beyond the arcades with the ILM peeling. Outcomes are better when you can extend the ILM peeling beyond the arcades.

Dr. Srivastava: I didn't get much of the superior side; I couldn't remove it. Should I have continued going on based on what Dr. Yonekawa is telling me here?

Dr. Emami-Naeini: It is difficult to peel the ILM in this detached retina. Using PFO is helpful, sometimes a bimanual technique helps. I would try to peel past the arcade as much as I safely could, but sometimes peeling and manipulating past the arcade causes more breaks.

Dr. Srivastava: I did the peel and put the PFO in, but the posterior edge of the GRT rolled down. Should I amputate it? Is this a sign of traction? How would you handle this?

Dr. Rao: I think the first step is to make sure there's no traction on that rolled edge, and tno immature PVR. I'd try to gently unravel it to see if there's traction. If there's no traction, I would try to withdraw some of the PFO and then steamroll the retina in the opposite direction. If this is temporal, I'd go nasal to make sure I squeegee out everything to see if I can get that rolled edge open and gently use a soft tip to unravel it. If that doesn't work, then I probably would shave it down a little.

Dr. Srivastava: Should I be peeling ILM to that rolled edge?

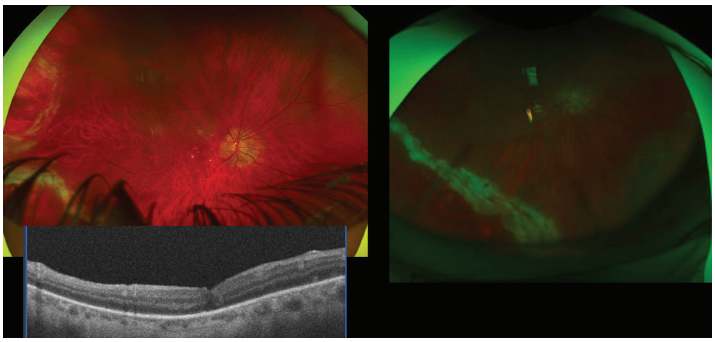
Dr. Yonekawa: If you can, it's beneficial because wherever you peel ILM, you won't get PVR. And if it's really rolled from intrinsic PVR, you need to make a retinectomy or you can make radial incisions, which relaxes the retina. I think it's going to flatten if you put in more PFO. The Tano Diamond Dusted Membrane Scraper is also a great tool for unrolling the edges, either that or a Flex Loop.

Dr. Srivastava: How aggressive should I be? Is it important to get this whole thing flat?

Dr. Emami-Naeini: I would try to lay it as flat as possible. I'd remove some of the PFO and then inject more PFO steamrolling from the opposite side and try to flatten it and then use the Tano scraper.

Dr. Srivastava: It worked nicely with the Tano scraper, and I was able to flatten it. Figure 3 shows his images from postopertaive week 2. He's actually flat, and doing well. His VA is in the range of 21/50, 22/100. We're making progress. Should I give him methotrexate?

Dr. Yonekawa: It may be beneficial, and I do use methotrexate for select cases, but I don't use it routinely. It's not an FDA-approved treatment at the moment, so it'd be off-label. Here, I think it's all about keeping the retina attached. I don't think you need methotrexate in this particular case. There are important side effects like corneal toxicity, especially in dry eyes.

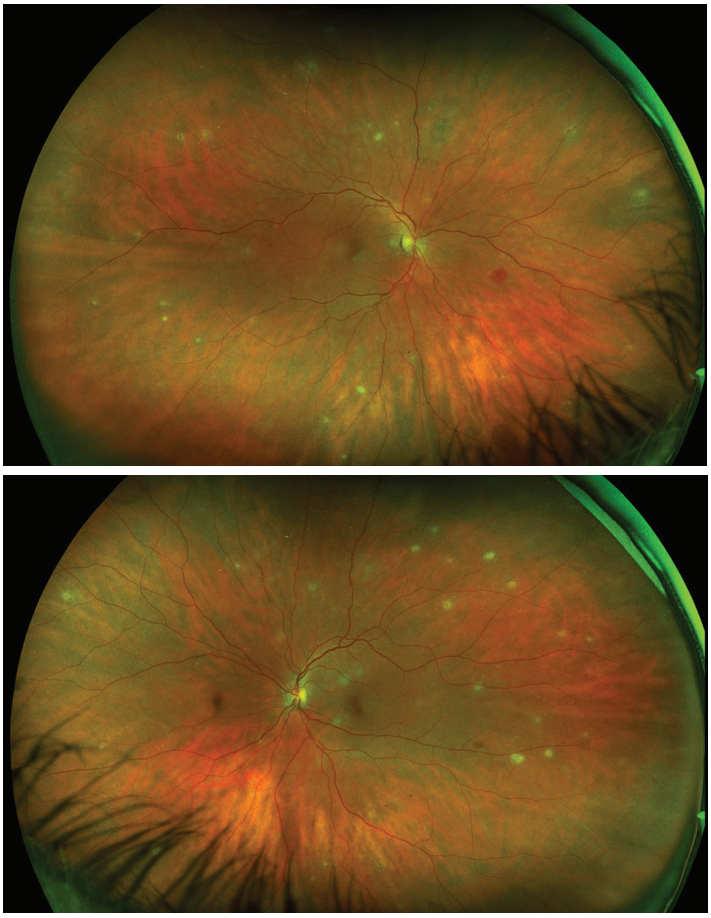


Courtesy of Sunil K. Srivastava, MD

Figure 3. Postoperative week 2 images of a 62-year-old man.

ROUND 1 | CASE 3: PATIENT WITH MSSA ENDOCARDITIS

Dr. Srivastava: Our next case is a 53-year-old woman with methicillin-susceptible *Staphylococcus aureus* (MSSA) endocarditis. She had septic arthritis and endocarditis and was admitted to cardiology. She's had blurry vision OD for a couple of weeks. She has a history of an orbital fracture, which was repaired. Her VA is 20/40 OD and 20/20 OS, and has no cell in the anterior chamber or posterior segment. Figure 4 shows her baseline images. The images show a lot happening—MSSA and chorioretinal lesions but no vitritis. This patient is still on IV antibiotics. What do you do?



Courtesy of Sunil K. Srivastava, MD

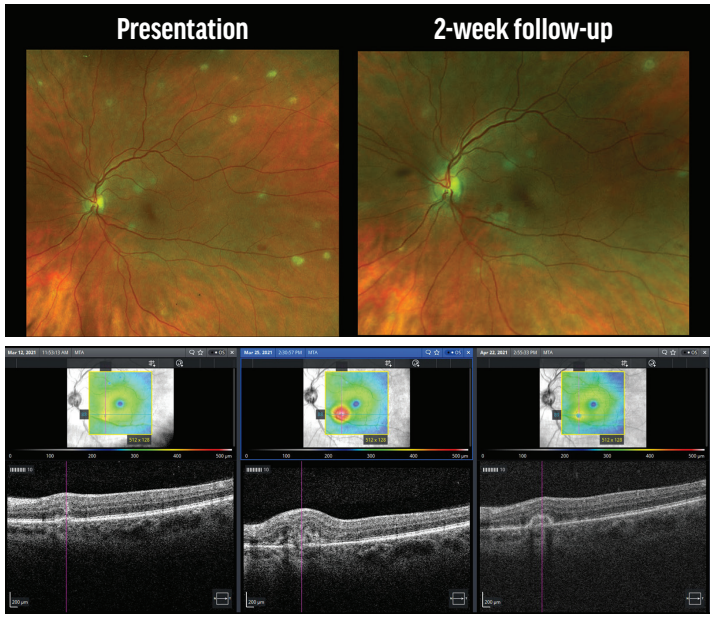
Figure 4. Baseline images of a 53-year-old woman.

Dr. Rao: There are multifocal lesions in both eyes. I would consider starting this patient on systemic antibiotics, but I might want to perform an anterior chamber tap to make sure there is no viral component. Sometimes HSV-2 can look insidious.

Dr. Yonekawa: The patient is on systemic antibiotics, so this is probably going to get better. I would monitor carefully. No needles in the eye here.

Dr. Emami-Naeini: I would obtain a fluorescein angiography (FA) with ICG to see how these lesions look. Some look old and deep. Are these choroidal lesions or deeper retinal lesions? Has this patient had any history of heart surgery?

Dr. Srivastava: I decided to observe her while she was on antibiotics. She returns 2 weeks later with black spots and worse vision. Figure 5 are her images at presentation versus 2-week follow-up and OCT. What do you think? Is the infection worsening or recurring?



Courtesy of Sunil K. Srivastava, MD

Figure 5. Presentation versus follow-up OCT of a 53-year-old woman.

Dr. Yonekawa: I'm not sure. I don't see any overlying vitritis, but it looks like more than just a hemorrhage because it looks heterogeneous. I'm a little worried about the infection getting worse.

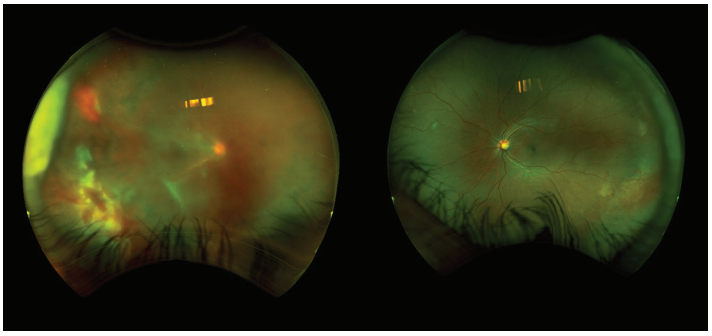
Dr. Rao: My answer is the same; I would perform an anterior chamber tap to see if there's some other type of infection.

Dr. Emami-Naeini: I would get an OCT-A over this area.

Dr. Srivastava: The patient had CNV. She was treated with two rounds of anti-VEGF, and it settled down. Afterward, you could see fibrosis, which is rare. It's been almost a year, and she's doing very well; her VA is 20/20 in the affected eye.

ROUND 2 | CASE 4: PATIENT WITH PREVIOUSLY TREATED SYPHILIS AND TRACTIONAL RETINAL DETACHMENT

Dr. Srivastava: Our Round 2 contestants are Avni Finn, MD; Michael Jumper, MD; and Prithvi Mruthyunjaya, MD. This patient is a 51-year-old African-American man who presents with decreased vision OU, but he is seeing better OS. He had surgery a year ago but doesn't know what it was. He has a history of hepatitis C, hypertension, psoriasis, and previously treated syphilis. This is not a syphilis case. His VA is 20/100 OD and 20/20 OS. His anterior segment is normal. There's no neovascularization of the iris, which will be important here. Figure 6 shows his fundus appearance OU. What do you see here?



Courtesy of Sunil K. Srivastava, MD

Figure 6. Baseline fundus images OU of a 51-year-old man.

Dr. Mruthyunjaya: There's a hemorrhage OD, but peripherally there's some whitening. I don't know if that's in the vitreous. The nerve looks slightly swollen, but the hemorrhages are preretinal and there's also some pigmentary changes in the periphery.

Dr. Srivastava: I think the pigmentary change is from a laser. His surgery wasn't incisional; it was laser surgery.

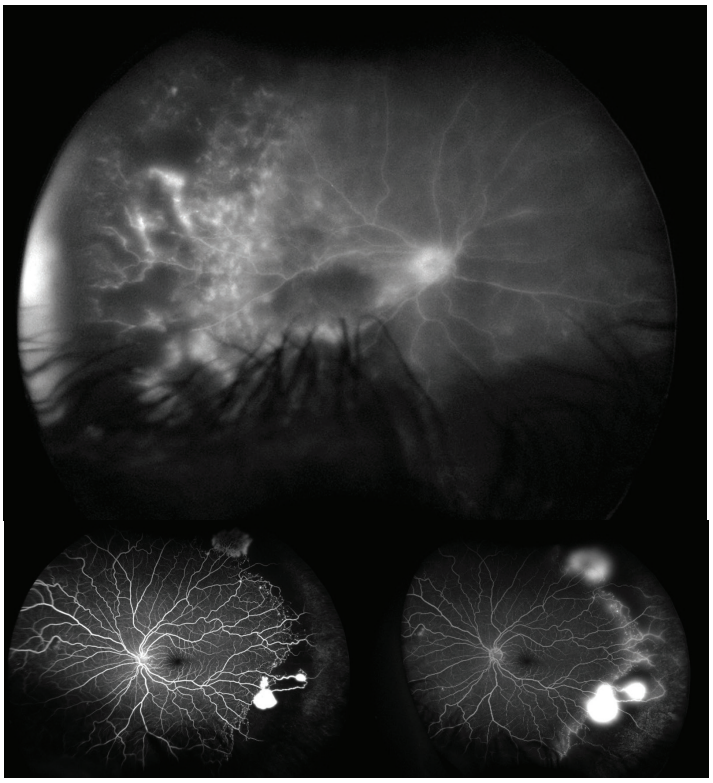
Dr. Mruthyunjaya: In the left eye, interestingly, there's some whitening and what looks like vascular loops, or some kind neovascularization or fronding, in the periphery temporally.

Dr. Finn: The vessels are dragged temporally. That hemorrhage looks classic for sickle cell retinopathy.

Dr. Srivastava: Figure 7 shows the FA for the left eye. What do you see here?

Dr. Finn: There's leakage temporally in the left eye, as well as nonperfusion, and some leakage at the disc. This may be neovascularization of the disc but, due to the media haze, it is difficult to tell.

Dr. Jumper: The left eye is classic sickle retinopathy. There is an acquired vasoproliferation in the temporal periphery. There's the neovascularization, and this is an eye deserving of panretinal photocoagulation. Going back to the right eye, I think that it appears there's an area that wasn't treated with laser. But I have a feeling



Courtesy of Sunil K. Srivastava, MD

Figure 7. Fluorescein angiography OS of a 51-year-old man.

that's an area where there's traction and couldn't get takes. It's been well treated so far, but the left eye needs laser.

Dr. Srivastava: At this point, what do you do?

Dr. Mruthyunjaya: I want to make sure that he's not diabetic hypertensive. I'd recheck because it will impact the next steps.

Dr. Finn: I would laser his left eye, and think about surgery for his right eye to clear the vitreous hemorrhage and treat it.

Dr. Mruthyunjaya: I would want an ultrasound preoperatively. Dr. Jumper pointed out that there could be tractional elevation there, which is why they didn't treat with laser. I just want to see what it looks like.

Dr. Srivastava: Dr. Jumper, would you operate at this point in the right eye?

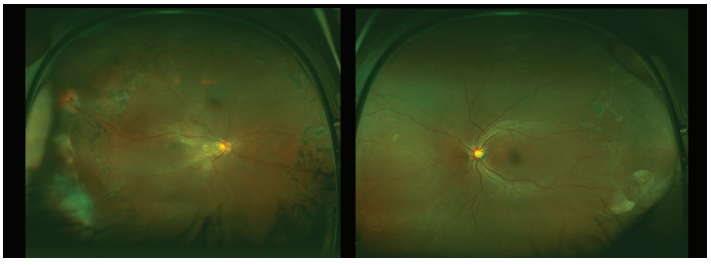
Dr. Jumper: I'd consider it. The changes that were on the nerve and the dragging may mean that the hyaloid is down, and it's going to be a tough case. Those tractional and fibrotic changes along the inferotemporal arcade will make this a challenging case. I'd probably buckle the right eye, even though there's some controversy about a sickle patient getting a buckle. However, losing vision from a detachment is probably a greater risk than losing vision from ischemia.

Dr. Srivastava: The sickle workup was negative. His HbA1c is normal. He was previously treated for syphilis and tuberculosis. He has proliferative retinopathy and ischemia. What do you want to do from here?

Dr. Mruthyunjaya: I'd look for a carotid scan to make sure that this isn't some sort of ocular ischemic syndrome. We have to start considering secondary possibilities.

Dr. Jumper: I'd want to have him examined by an infectious disease specialist to make sure he was properly treated for the syphilis and tuberculosis.

Dr. Srivastava: I agree. I sent him to an infectious disease specialist, and everyone agreed he had been properly treated. He then developed a significant hemorrhage OD. He gets bevacizumab and a vitrectomy, and develops significant traction OD. One year later his VA is 20/70 OD and 20/20 OS. He returns 9 months later, and his VA has dropped to 20/60 OD and 20/40 OS (Figure 8).

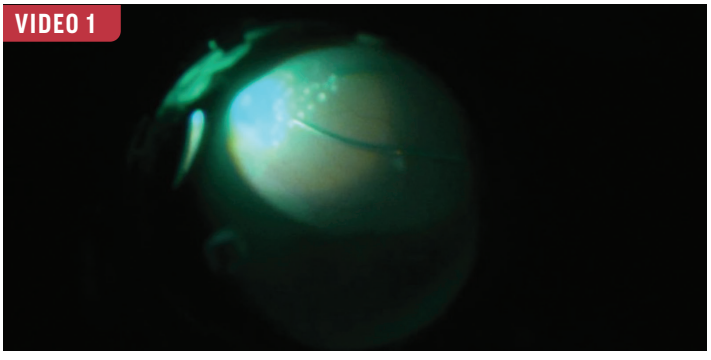


Courtesy of Sunil K. Srivastava, MD

Figure 8. Fundus images OU of a 51-year-old man.

Dr. Finn: I see old hemorrhage here. There's also some subretinal fluid now, temporally. I'm concerened that's an area of traction. I think this patient requires surgery. Laser alone won't be adequate.

Dr. Srivastava: We opt to take him into the OR, and he bleeds before he gets there (Video 1). In this scenario with that peripheral detachment, should I put a buckle on now? What do you think?



Courtesy of Sunil K. Srivastava, MD

Surgical video showing proliferative retinopathy with TRD/VH.
Note: To view the video, log in to your Evolve account and go to https://evolvemeded.com/course/2335-supp or scan the QR code on page 3.

Dr. Jumper: In a phakic patient with this amount of tractional change, I don't think it hurts to put in a segmental circumferential buckle to support the area with the neovascularization.

Dr. Srivastava: Is it reasonable to make him pseudophakic?

Dr. Jumper: I wouldn't do that in a 51-year-old. You've got a good chance of him staying phakic, and keeping his good vision without that.

Dr. Srivastava: The hyaloid looks like it's up, which is promising. How aggressive should we be with shaving (Video 1)?

Dr. Mruthyunjaya: I think you try to peel what you can. There's going to be a lot of laser and some barricade. But I think if you don't relieve some of that superficial traction, it's going to be trouble. That buckle sounds like a good idea.

Dr. Srivastava: I was able to actually get most of the traction off with a cutter (Video 1). He's doing really well postoperatively. His VA is 20/60 OS and 20/20 OD.

ROUND 2 | CASE 5: PATIENT WITH MACULA-OFF RETINAL DETACHMENT

Dr. Srivastava: A 70-year-old man presents with new vision loss OS. He has a macula-off retinal detachment, which was repaired with a buckle vitrectomy. His VA is 20/40, and is happy with his vision. He has some inferior fibrosis that I see on his buckle, but he's completely attached. Should I be concerned about a PVR on the buckle?

Dr. Finn: I would watch it. While the PVR can cause some traction, it appears to be well supported by the buckle and could potentially be fine in the long term.

Dr. Mruthyunjaya: Is the patient pseudophakic?

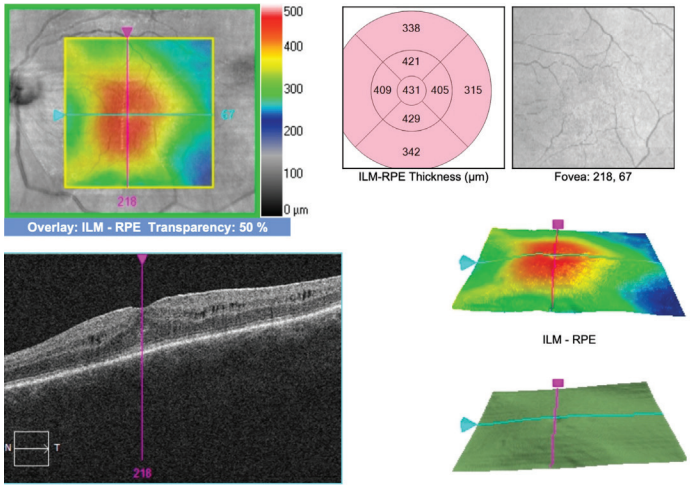
Dr. Srivastava: Yes, the patient is pseudophakic.

Dr. Mruthyunjaya: Therefore, I believe watching it is very reasonable. If I was concerned about it, I could try to barricade it on the buckle itself.

Dr. Srivastava: Dr. Jumper, what is your experience with this? When you see fibrosis that is stable for 3 to 6 months, does it stay like that or can things change?

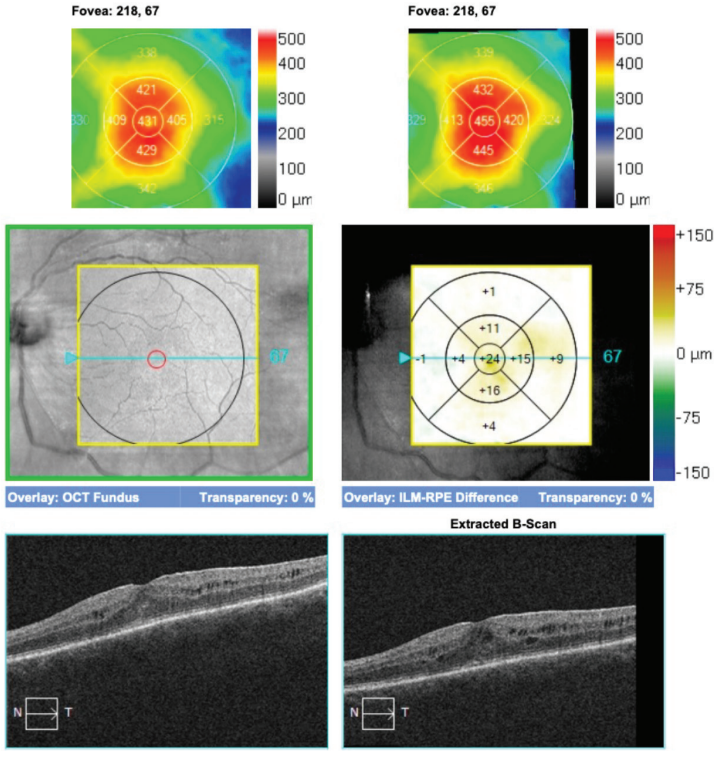
Dr. Jumper: They can change, but it's unusual. I would review the warning signs with the patient and let him know that he needs to tell me if he sees a shadow up above.

Dr. Srivastava: Figure 9 shows his imaging at week 12. He has an epiretinal membrane (ERM) on the surface, and his vision is good. We decided to observe him. Figure 10 shows his images 6 months later. His VA is 20/50 and still happy. Would anyone peel at this point?



Courtesy of Sunil K. Srivastava, MD

Figure 9. Images at week 12 of a 70-year-old man.

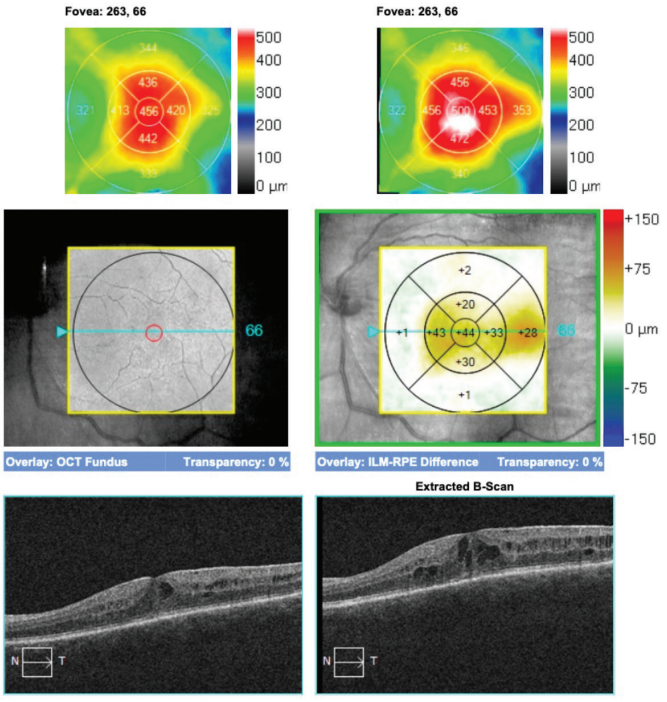


Courtesy of Sunil K. Srivastava, MD

Figure 10. Six-month follow-up after observation of a 70-year-old man.

Dr. Finn: If the patient is happy with his vision, I'm happy and would not intervene at this time.

Dr. Srivastava: We put him on an NSAID. Four months later, he is 1-2+cell OS and has trace cell OD. Figure 11 shows his right and left eyes. The DFE is exactly the same, but his CME is worse in his left eye. We now have new-onset cystoid edema and some anterior



Courtesy of Sunil K. Srivastava, MD

Figure 11. Four-month follow-up post-NSAIDs of a 70-year-old man.

segment inflammation. How aggressive, at this point, are we working up this patient?

Dr. Finn: It's unusual to have the cell along with the CME. I would work up this patient and obtain additional imaging to look for reasons for inflammation.

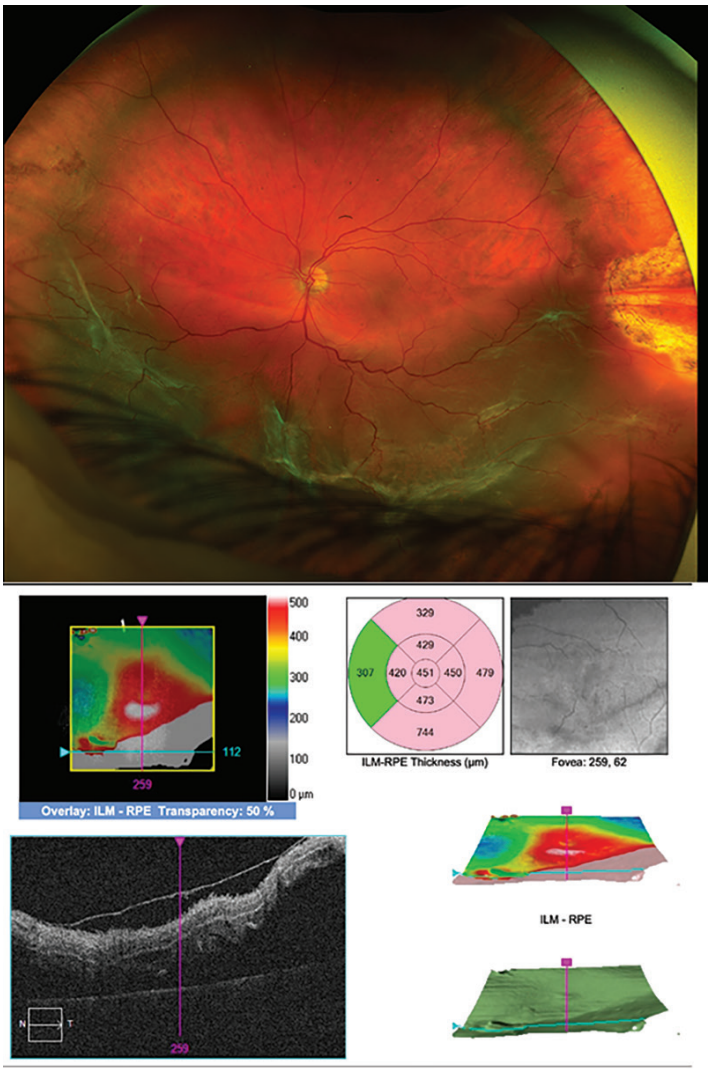
Dr. Jumper: This is unusual. I would work up this patient and prescribe topical difluprednate with the idea that he may need treatment. We'll see if he responds to the steroid. If it worsens, we may consider the dexamethasone implant to control it.

Dr. Mruthyunjaya: You have to start thinking about masquerades and whether this could be an early presentation of lymphoma.

Dr. Srivastava: You're on the right track. The reason this is happening is because he has cancer. He's on ipilimumab. We put him on topical steroids, and he does very well overall, but it waxes and wanes over the next 18 months. His VA always returns to 20/40 OS. There's no change in DFE. Can I keep him on steroids forever?

Dr. Jumper: Yes, you can. I've seen the same scenario with ipilimumab with a detachment repair. Their eyes get inflamed, and it's very hard to control. They may need to be on topical steroids forever. That's how I would approach this.

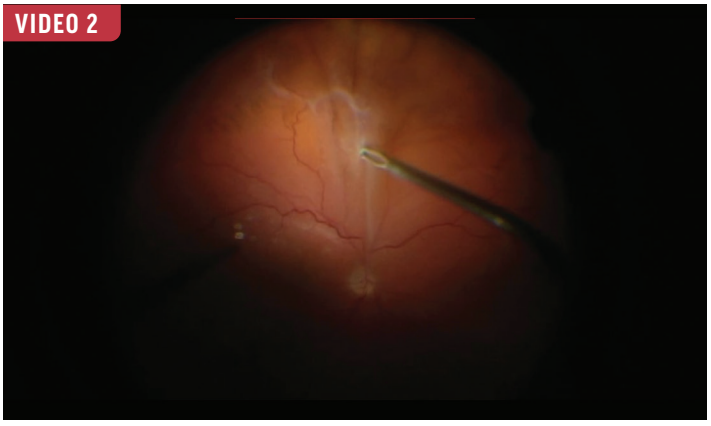
Dr. Finn: I would put him on topical steroids until he's quiet. He may need and can be on a low dose of topical steroids for a long time to maintain quiescence.



Courtesy of Sunil K. Srivastava, MD

Figure 12. Seventy-year-old man with worsening edema on topical steroids.

VIDEO 2



Courtesy of Sunil K. Srivastava, MD

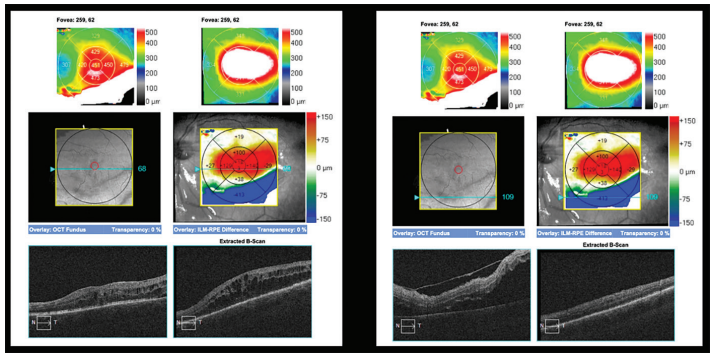
Surgical video of a 70-year-old man.
Note: To view the video, log in to your Evolve account and go to https://evolvemeded.com/course/2335-supp or scan the QR code on page 3.

Dr. Srivastava: He calls in with a new change in vision and worsening edema. His left eye is now showing a detachment that wasn't there before (Figure 12). This patient has had ERM fibrosis inferiorly for almost 3 years. Is this going to be easy to take out when we take him back to surgery?

Dr. Finn: You can see on the OCT that it looks like a very taut membrane and there may even be a little hyaloid left there that acted as a scaffold. These membranes in the setting of PVR detachments can be very adherent and difficult to peel.

Dr. Jumper: These are the kind of eyes that I stain. I peel the ILM and the macula as far out as I can. I may perform a retinotomy. I may put oil in this eye because it has chronic low-grade inflammation.

Dr. Srivastava: So very adherent here, as you can see on Video 2. We're going to stain here. Any tricks for doing these types of cases?



Courtesy of Sunil K. Srivastava, MD

Figure 13. Postoperative images of a 70-year-old man.

Dr. Finn: Sometimes I like to put a PFO down to provide a little countertraction, especially if it's difficult to peel and it's detached.

Dr. Srivastava: Would anyone remove the IOL?

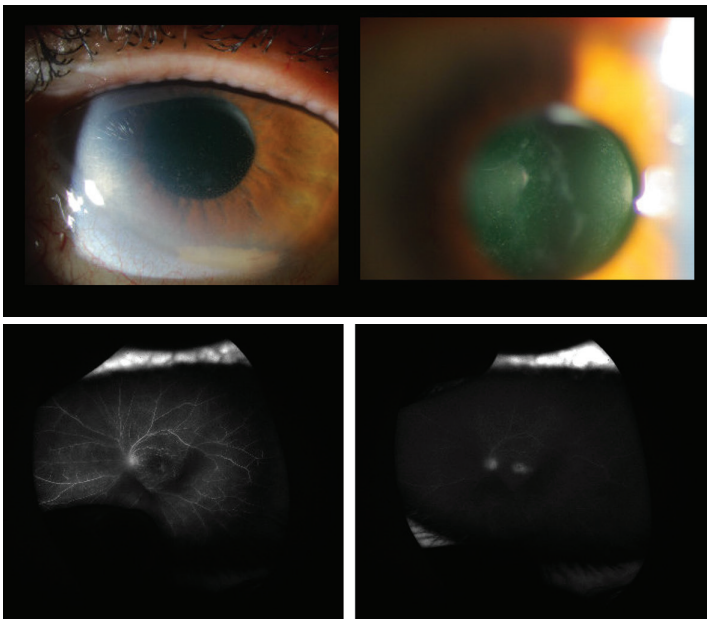
Dr. Mruthyunjaya: Not at this point.

Dr. Srivastava: It peels well (Video 2). I do end up performing a small retinectomy. Video 2 shows the PFO going in, and we're now trying to get this anterior membrane that seems very adherent. We try to peel it off and end up cutting the area, but it won't fully peel. How aggressive should I be taking this all the way up the anterior?

Dr. Mruthyunjaya: I'd try to get it as far up as I can and be thorough with a peripheral depression.

Dr. Jumper: This is a special situation. PVR usually starts within a millimeter of the nerve, so that's why you peeled back there.

Dr. Srivastava: Figure 13 shows his postoperative images 3 weeks later. You can see the CME. He hasn't taken ipilimumab, so I put him back on topicals. Everything looks good. His VA is 20/100, and slowly recovering.



Courtesy of Sunil K. Srivastava, MD

Figure 14. Baseline images of a 74-year-old man.

ROUND 3 | CASE 6: CME POSTCATARACT SURGERY

Dr. Srivastava: Our Round 3 contestants are Michael Jumper, MD; Ajay Kuriyan, MD; and Yoshihiro Yonekawa, MD. This is a 74-year-old man with a 9-month history of decreased vision OS. He had phacoemulsification and IOLs placed in both eyes 12 months ago and was diagnosed with CME 9 months ago. He received two bevacizumab injections. He then saw another doctor and was treated with two rounds of intravitreal steroids and one posterior subtenon's kenalog injection (PSTK). There was a mild benefit at first, then he worsened. The uveitis workup was negative. He's on valacyclovir and prednisone with no improvement. His VA is 20/20 and 20/80. Figure 14 shows how he looks at baseline. What concerns do you have about an eye like this?

Dr. Jumper: This is a great example of how, had you not pulled down the lower lid, you might not have seen the hypopyon that seems somewhat organized with a small amount of blood in the inferior angle. It appears there's some plaque behind the lens. This could be chronic endophthalmitis. If this was a complicated cataract surgery with some retained lens material, sometimes that can become organized and inflamed and turn into a chronic low-grade inflammation. You also have to think beyond the obvious such as masquerading syndromes, Behcet disease, or other inflammatory conditions. It's a long list, but I would start with a *P. acnes* endophthalmitis workup.

Dr. Srivastava: Dr. Jumper brought up a good point about pulling down the lower lid; that's something we don't do enough.

What other clues indicate chronic endophthalmitis?

Dr. Yonekawa: The chronic injection and endothelial deposits on the lens. Most cases of purely inflammatory uveitis respond very well to steroids, but that's not the case here. You'll also want to look beyond the anterior segment at the retina to make sure there's no vasculitis.

Dr. Srivastava: The small pupil dilation is a nice clue (Figure 14). These pupils after cataract surgery should dilate. When they don't dilate, that tells you something else is going on. You can see some petaloid leakage. The disk is a bit hot, but there doesn't seem to be any other area of leakage outside of that. When you see this, do you tap and inject first, or do you take them straight for vitrectomy?

Dr. Kuriyan: I don't think it's wrong to perform a tap and inject, but you might not get an answer and you might have incomplete response, either because it's not chronic uveitis or it is chronic endophthalmitis. I'm usually only performing a tap and inject in this case if there's a barrier to scheduling a PPV. We may end up performing a PPV down the line anyway.

Dr. Srivastava: I tend to perform tap and inject for the reasons you mentioned, which is to try to get a diagnosis before I go to the OR. Sometimes they're negative, though, so I agree with you. If taking the patient to the OR is on your list, do you remove the lens or are you only performing a vitrectomy?

Dr. Jumper: I think it's reasonable to try to avoid initial IOL removal if you can. I've not had a true chronic endophthalmitis case where I've successfully kept the lens. If I take this patient to the OR, I would perform a vitreous biopsy. I perform this by placing my vitrectomy cannulas and attaching the infusion line without turning it on. I attach a syringe to the aspiration line of the vitreous cutter and, while observing through the operating microscope with the light pipe in the eye, I carefully cut while the assistant aspirates. I then turn the infusion on as the eye starts to collapse. This can yield up to 1.5 mL of undilute vitreous. It is important to work with the pathologist and microbiology lab to give the best chance of identifying the pathogen. After the biopsy, I complete the vitrectomy and try to remove the posterior capsule and any material around the implant lens. The material from the vitrectomy cassette can also be sent for culture. For cases of suspected chronic endophthalmitis, I will inject antibiotics (vancomycin and ceftazidime) at the end of the case. If the cultures are positive for *P. acnes* or a similar, indolent bacteria, I will observe and remove the IOL if inflammation returns.

Dr. Yonekawa: Clinically, this looks like *P. acnes* here, but lymphoma is always in the back of your mind. I would start with a tap and inject; I don't think you have to rush to the OR. If it's *P. acnes* you're not going to lose the eye overnight, therefore you can take a stepwise approach. When I go to the OR, initially I'll get the undiluted sample and send it to our pathology lab to make sure they rule out lymphoma, because that's a life-changing diagnosis. You'll have plenty of diluted samples you can use for microbiology.

If I suspect endophthalmitis, I want everything out: the lens, and the capsule especially. I tell my patients they are going to lose the lens but we can potentially place another one in the future.

Courtesy of Sunil K. Srivastava, MD

Surgical video of a 74-year-old man.
Note: To view the video, log in to your Evolve account and go to https://evolvemeded.com/course/2335-supp or scan the QR code on page 3.

Dr. Srivastava: Let's look at the surgical video (Video 3). When I perform surgery in these cases, I squirt the eye aggressively before I start. It helps, but I always place hooks and look at the capsule. I think it's really important to get that look, as Dr. Jumper mentioned, as an undiluted specimen. I've modified my approach and I now perform a semidiluted specimen. I clamp on and off and take a sample, but I'll refill the eye to get purer vitreous. I did take the lens out in this scenario. What pearls do you have for IOL removal in these cases?

Dr. Kuriyan: I fill it up with viscoelastic first to protect the endothelium. Then, I use the light pipe to prolapse the entire bag lens complex into the anterior chamber and make sure I have a second wound. I usually use the MST forceps and scissors, using the forceps through the power wound and using the scissors with the main wound. I essentially use a Pac-Man technique to cut almost all the way through. I make sure I have enough viscoelastic right before I take it out. I try to do the whole bag and lens complex together.

Dr. Srivastava: Do you ever put a secondary IOL in at the same time?

Dr. Jumper: I won't place a secondary IOL in this situation. I remove the IOL much like Dr. Kuriyan described, although I have begun to twirl one-piece acrylic IOLs out of the eye rather than cutting them. This technique employs straight tying forceps and a cyclodialysis spatula. By grasping one side of the lens and twirling the forceps while pushing the lens with the cyclodialysis spatula

from a second incision, you can get the lens back in the configuration it was when it was injected into the eye. For me, it has been a good technique that has helped me remove lenses safely.

Dr. Srivastava: Would anyone put in a secondary IOL at this time?

Dr. Yonekawa: No, I'd recommend an aphakic contact lens for the time being.

Dr. Kuriyan: No, I'm not placing a secondary lens. My only other tip is to make sure to perform a good depressed exam because, sometimes, you'll see small deposits in the pars plana that have migrated from the lens, and its helpful to remove those.

Dr. Srivastava: This patient was positive for *P. acnes*. I prescribed vancomycin at the time and put a secondary IOL in a couple of months later. These patients tend to develop chronic postoperative inflammation, so I treat them with chronic steroids for a long time. How long do you wait before you put in the next lens?

Dr. Jumper: I'd like them to be off steroids for 3 months and not having recurrent inflammation before I am comfortable putting in an IOL.

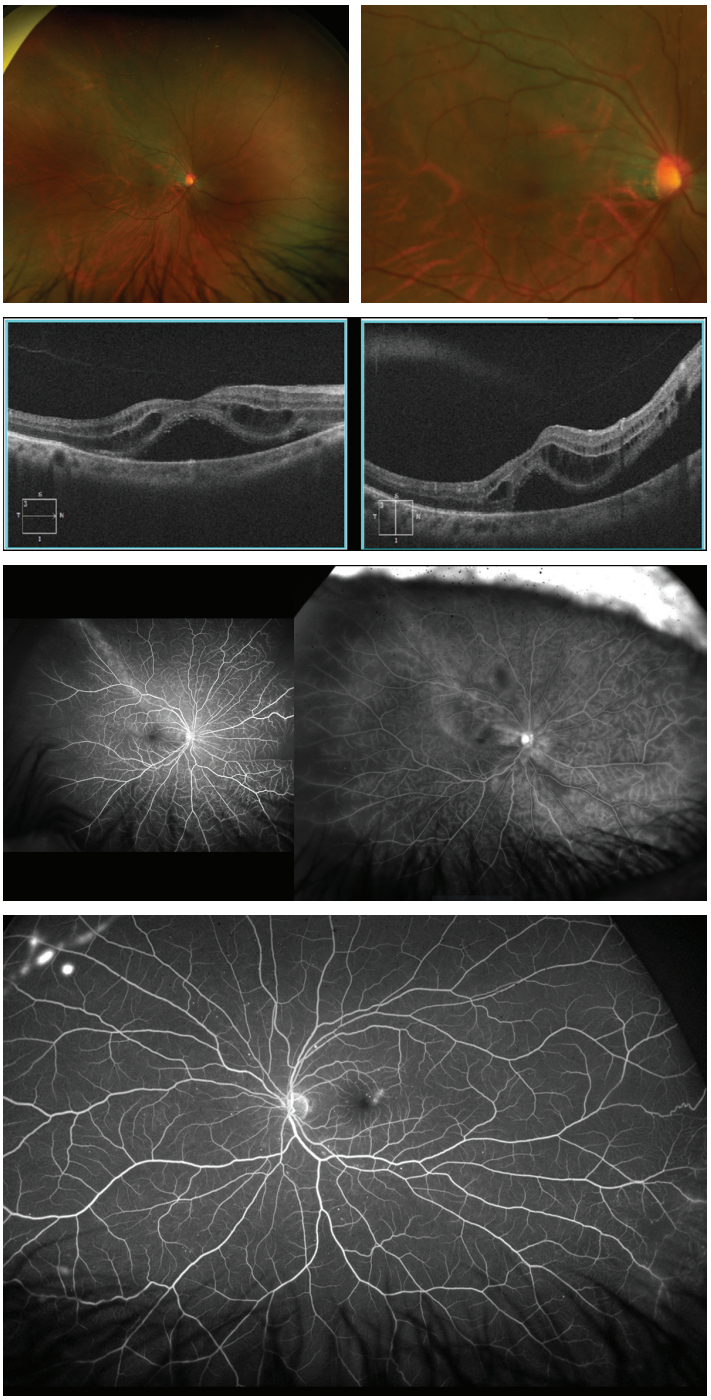
Dr. Yonekawa: It would be months for me, and I'd want the eye to be very quiet. CME is also very common, and some patients can't get off drops. If they can't, then I don't think they are ready for more surgery. Many times, it ends up being a year later.

Dr. Kuriyan: I agree. I want them to have zero activity of inflammation for at least 3 months after I stop all the drops. I also recommend a long taper. After they're finished with the taper, and I am convinced everything is quiet, it ends up being close to a year later.

ROUND 3 | CASE 7: CME AND POSSIBLE CHRONIC RHEGMATOGENOUS RETINAL DETACHMENT

Dr. Srivastava: Our next case is a 43-year-old woman who presents for evaluation of CME and inflammation. She has a 5-year history of glaucoma, diabetes, and hypertension. Six months ago she developed new inflammation OD and started on topical steroids. Her intraocular pressure (IOP) has been elevated in the 40s since and it's now down to the 30s. She was scheduled for glaucoma surgery, but it was noted on her OCT that she had macular edema and she was told she had retinal vasculitis. She then comes to us and her VA is 20/70 OD, with pigmented cell in the vitreous, and 20/20 OS. Her IOP is 30 and 20 mm Hg, respectively. Figure 15 shows her retinal images, OCT, and FA.

Dr. Kuriyan: This could be a super chronic rhegmatogenous retinal detachment, but I'm not convinced. I'm not seeing any corrugation lines over here. Is the nerve hot?



Courtesy of Sunil K. Srivastava, MD

Figure 15. Baseline images of a 43-year-old woman.

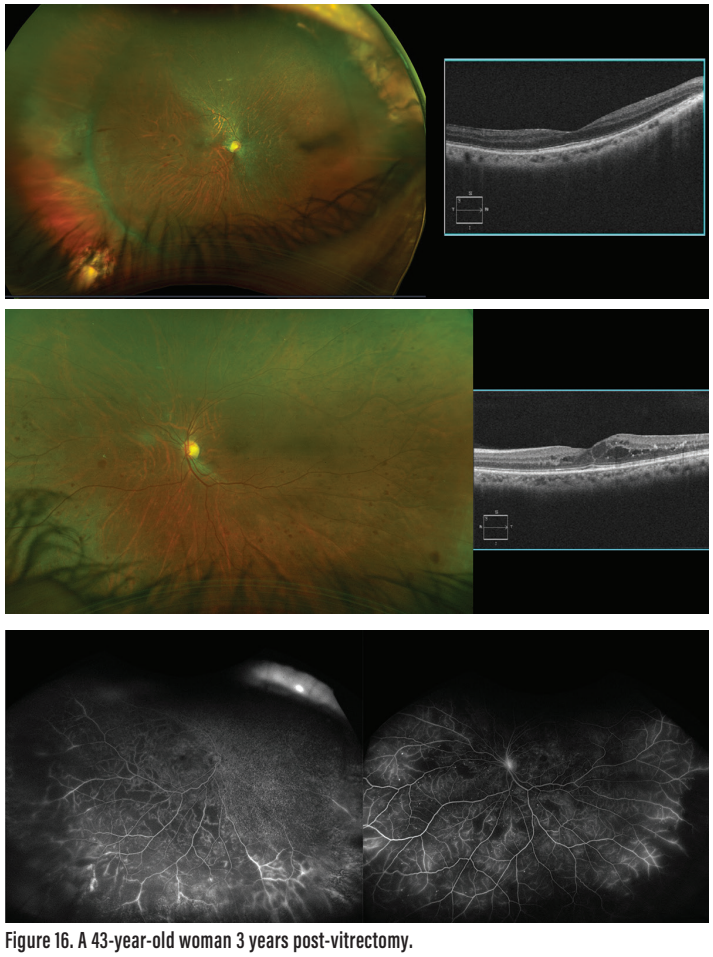
Dr. Srivastava: The nerve lights up a little, but it's not hot.

Dr. Kuriyan: I'm not convinced that this is true vasculitis. I'm more leaning toward a chronic retinal detachment. I'd love to perform a depressed exam to look for a tear or a hole. If no tear or hole is identified, I would get a B-scan to make sure there's no other underlying pathology. Central serous chorioretinopathy

(CSR) is certainly on the differential, and we did see a leaking area in the other eye, but I'm not seeing the findings I would normally expect on the FA or OCT.

Dr. Jumper: This looks like Schwartz-Matsuo syndrome in which you've got someone with a low-lying detachment. You need to find the break and treat it. Oftentimes with a buckle, you can cure their glaucoma and the detached retina.

Dr. Yonekawa: I probably wouldn't do a uveitis workup. I'm going to bring out my scleral depressor and do that first. The fluorescein changes, nonperfusion, and vascular leakage looks like a chronic detachment. On the OCT, the hyaloid is attached so there's no liquid vitreous sloshing in and out of the break. That's why it's low-lying. This is how chronic detachments go in young patients.



Courtesy of Sunil K. Srivastava, MD

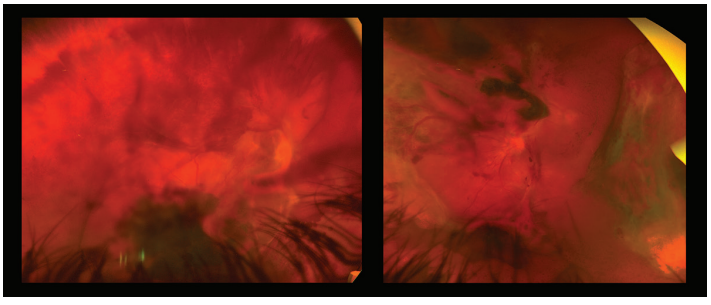
Figure 16. A 43-year-old woman 3 years post-vitrectomy.

Dr. Srivastava: I performed a depressed exam, and superior nasal dialysis was seen. Prior to the IOP spike, she had blunt trauma to the eye. What frustrated me about this case is she had been seen by several people and no one performed a depressed exam. I performed a buccal vitrectomy and made the diagnosis of Schwartz-Matsuo syndrome. Would anyone ever just treat it with a primary vitrectomy? What would you do for a surgical fix of a dialysis of the chronic attachment?

Dr. Yonekawa: I always perform a primary buckle in anyone with a hyaloid down, especially in an eye with a dialysis. They respond extremely well to scleral buckles.

Dr. Srivastava: Figure 16 shows what she looks like 3 years later. The retina is attached OD. However, you can see the diabetic changes that are progressing OS. The FA in the left eye looks similar to the fluorescein in the right eye. It's diabetic retinopathy (DR). This was early DR you were seeing a nonperfused eye. The left eye is now very, very similar.

Dr. Srivastava: It is amazing how often DR can give you changes that are missed on fluorescein. Because we don't look, we don't see them early on. This nonperfusion look is common in DR. We just don't get fluoresceins in mild or moderate NPDR where there's a fair amount of ischemia in some of these patients. There's another good teaching point for all of us.



Courtesy of Sunil K. Srivastava, MD

Figure 17. Baseline images at presentation of a 28-year-old woman.

ROUND 3 | CASE 8: TYPE 1 DIABETIC WITH VITREOUS HEMORRHAGE AND TRACTIONAL DETACHMENT

Dr. Srivastava: Our last case is a common clinical scenario. This is a 28-year-old woman with type 1 diabetes whose VA is 20/400 OU (Figure 17). She hasn't been taking care of herself, but she's trying to watch her blood sugar. She has poor vision in both eyes with a significant amount of vitreous hemorrhage and tractional detachment. What is your plan here?

Dr. Jumper: I first want to make sure she is healthy enough to go to the OR. There's a a small amount of psychology to this in that this patient hasn't taken care of herself; she is in this situation for a reason. She is somewhat functioning. You can make it a lot worse before it gets better even in the best of circumstances. I will work with the patient to decide which eye to operate on first. This decision factors in which eye she thinks is seeing better and which eye I think has the best potential for recovering vision. I don't recommend administering anti-VEGF therapy right before surgery because the chance that she will make it into the OR the day she is

scheduled is not 100%, and I worry that the injection will lead to a "crunch" before she makes it to the OR.

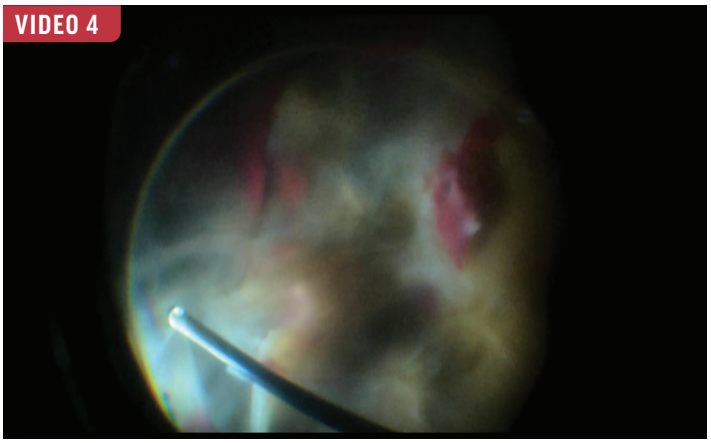
Dr. Yonekawa: I'm not in a rush to take the patient to the OR. The first visit is about establishing a relationship and getting to know her. I'll indicate that we may be able to improve her clinical situation if she sticks with our plan. On that first visit, I'm going to put PRP to make sure we stabilize some of the retina. But surgery is definitely part of the equation in the better-seeing eye. These eyes are at very high risk for crunch. These young type 1 diabetic patients tend to be vascularly active with hot fronds. It's different from older patients, where everything is more ischemic. I'd be very careful with anti-VEGF though. I'd only talk about surgery after the patient comes back to me after the PRP. We'll do the preoperative injection a few days before, go in carefully, and try to do as little as possible if the macula is not affected. In this case, much of the vision loss is likely from the vitreous hemorrhage. I'd clear the hemorrhage first and if the TRD is not involving the macula, leave it alone. If it's involving the macula, we'll dissect the traction.

Dr. Kuriyan: I'm still not a 100% certain there's a TRD underneath here. I'd want to get an OCT. I'd like to do a B-scan to get a better idea of what's happening underneath all this blood in those areas of fibrosis. If there's a vitreous hemorrhage, I think administering serial anti-VEGF is reasonable option. I agree that we should try to get the PRP where you can. You certainly want to advise them about crunch. I'd also make sure there are no health barriers to surgery. I am a big believer in preoperative anti-VEGF, but I agree with the concerns of doing this if the patient doesn't show up. When I perform surgery, I will start with the bad eye because that's my test eye. I'll learn a lot from that surgery, including how their vitreous is behaving. If there was something really precipitously happening like a TRD that's progressively getting worse quickly, then I would potentially take the good eye. But, in general, I like trying to get the bad eye as good as possible because I always have the option to go in quickly with the good eye down the line.

Dr. Srivastava: My first step is very similar to what you suggested. I have since changed my approach. I used to not do the bevacizumab, I'd administer one right before surgery. Usually I talk to every doctor who's involved with the patient's care and make sure the patient is cleared for surgery before I initiate anything. Once their blood pressure is under control, I've started administering serial anti-VEGFs. I'll administer one, and see how they do before committing to surgery.

Let's look at the surgical video (Video 4). There was a TRD, but it was nasal. Thankfully, it's just over the nerve and it's slightly over the macula. You'll see the tissue is fibrotic. My fellow Leanne Clevinger, MD, is doing an excellent job of getting this stuff off and trimming this material. You can see the macula looks very good here. The video also shows the segmentation (Video 4). How aggressive are you? Do you take everything off?

VIDEO 4



Courtesy of Sunil K. Srivastava, MD

Surgical video of a 28-year-old woman.
Note: To view the video, log in to your Evolve account and go to https://evolvemeded.com/course/2335-supp or scan the QR code on page 3.

Dr. Jumper: In this situation, I take all of that fibrotic material off for two reasons. First, in order to get more laser in. Second, to be sure I'm not missing a tear in the retina underneath that could become a detachment. You need to make sure all that hyaloid has been removed. It can be difficult to identify and later contraction of remaining hyaloid can cause recurrent traction.

Dr. Yonekawa: I do whatever I can to flatten the macula. If the traction and the segmentation is easy, I'll go for it. But I'm not going to struggle over a nasal TRD. I don't go after nasal TRDs that aggressively. I will if it's easy but, otherwise, I will focus on the primary goal, which is to reattach the macula.

Dr. Srivastava: I removed the lens in this patient. She had a PSC. Do you perform combos in these or do you stage them?

Dr. Kuriyan: If I think the lens will impede my view, then I would perform a combo. Otherwise, I don't necessarily perform a combo. It's always hard to tell what your tamponade is going to be, but I tend to leave oil in a phakic patient. If it looks like I can do everything I need to do through the lens, I'll keep the patient phakic. We talked about using preoperative anti-VEGF to decrease bleeding. This would also allow me to perform surgery at a lower IOP, which leads to better outcomes. The worst situation is when you have a perfect TRD case and the retina looks like it flattened nicely. But you get in there and there seems to be more ischemia postoperatively than what you noted preoperatively. Like Dr. Yonekawa, my primary endpoint is to clear off the macula, but if anything comes easily, I'll go for it.

Dr. Srivastava: Postoperative month 3, her VA is 20/30 and she is doing well. We're continuing with anti-VEGF in the other eye. As we discussed, getting her health under control made a real difference. We're all good at what we do but, ultimately, perfusion and ischemia are what drive the surgical outcome. ■

KOL KNOCKOUT™ RETINA EDITION: EXPERT OPINIONS ON 8 CHALLENGING CASES

Release Date: May 2024
Expiration Date: June 2025

INSTRUCTIONS FOR CREDIT

To receive credit, you must complete the attached **Pretest/Posttest/Activity Evaluation/Satisfaction Measures Form** and mail or fax to Evolve Medical Education LLC, 353 West Lancaster Avenue, Second Floor, Wayne, PA 19087; Fax: (215) 933-3950. To answer these questions online and receive real-time results, please go to https://evolvemeded.com/course/2235-supp. If you experience problems with the online test, email us at info@evolvemeded.com. *NOTE: Certificates are issued electronically.*

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*Evolve does not share email addresses with third parties.

DEMOGRAPHIC INFORMATION

Profession
___ MD/DO
___ OD
___ NP
___ Nurse/APN
___ PA
___ Other

Years in Practice
___ >20
___ 11-20
___ 6-10
___ 1-5
___ <1

Patients Seen Per Week (with the disease targeted in this educational activity)
___ 0
___ 1-15
___ 16-30
___ 31-50
____ >50

Region
___ Midwest
___ Northeast
___ Northwest
___ Southeast
___ Southwest

LEARNING OBJECTIVES

Did the program meet the following educational objectives?	**Agree**	**Neutral**	**Disagree**
Appraise medical and surgical management approaches for common retinal diseases and their sequelae	_____	_____	_____
Diagnose vitreoretinal pathology by performing thorough clinical exams and using advanced imaging modalities	_____	_____	_____
Discuss how fluidics, intraocular tamponades, cutting rates, and gauge of surgery can impact surgical outcomes	_____	_____	_____

POSTTEST QUESTIONS

Please complete at the conclusion of the program.

1. Based on this activity, please rate your confidence in your ability to effectively diagnose and manage patients with retinal disease (based on a scale of 1 to 5, with 1 being not at all confident and 5 being extremely confident).

a. 1
b. 2
c. 3
d. 4
e. 5

2. A 43-year-old woman with methicillin-susceptible *Staphylococcus aureus* (MSSA) endocarditis presents with blurry vision in her right eye for 2 weeks. On exam, you note numerous chorioretinal lesions with no vitritis. The patient is currently on IV antibiotics. What is the next best step in management?

a. Stop her IV antibiotics and give intravitreal antiviral treatment
b. Continue IV antibiotics and supplement with intravitreal antibiotics
c. Continue IV antibiotics and observe closely for worsening
d. Continue IV antibiotics and start IV antifungal treatment

3. A 70-year-old man presents for follow-up. He is currently happy with his vision. He has a history of macula-off retinal detachment after a repair with buckle vitrectomy. He has some inferior fibrosis noted on the buckle during exam. What is the next best step in management?

a. Pars plana vitrectomy with peel to remove fibrosis
b. Laser barricade over the buckle and area of fibrosis
c. Close observation
d. Intravitreal steroid injection

4. A 70-year-old man presents to your office for evaluation of cystoid macular edema (CME) post cataract extraction with IOL. He has had two bevacizumab injections and two posterior subtenon triamcinolone acetate injections for his CME so far, which have been of some benefit initially, but his CME has returned. He has had a negative uveitis workup thus far and is being maintained on valacyclovir and prednisone with no improvement in CME. On exam, you note a small hypopyon in the inferior angle. What is the next best step in management?

a. Consider tap/inject for chronic endophthalmitis management
b. Start IV steroids
c. Focal laser to areas of leakage in macula
d. Panretinal photocoagulation

5. You are removing an IOL in an eye with *Propionibacterium acnes* endophthalmitis. Which of the following is a TRUE statement about this removal?

a. You should remove the IOL alone
b. You should remove the IOL-bag complex
c. You should remove the IOL and place a new IOL in the bag
d. You should remove the IOL-bag complex and immediately place a secondary IOL

6. You are performing an internal limiting membrane (ILM) peel but find it to be challenging. Which of the following techniques may help peel the ILM?

a. Use perfluoro-n-octane for countertraction
b. Stain with indocyanine green
c. Stain with brilliant blue
d. All of the above

ACTIVITY EVALUATION

Your responses to the questions below will help us evaluate this activity. They will provide us with evidence that improvements were made in patient care as a result of this activity.

Rate your knowledge/skill level prior to participating in this course: 5 = High, 1 = Low____

Rate your knowledge/skill level after participating in this course: 5 = High, 1 = Low____

This activity improved my competence in managing patients with this disease/condition/symptom. _____ Yes _____No

Probability of changing practice behavior based on this activity: _____High _____ Low _____No change needed

If you plan to change your practice behavior, what type of changes do you plan to implement? (check all that apply)

Change in pharmaceutical therapy _____
Change in nonpharmaceutical therapy _____
Change in diagnostic testing _____
Choice of treatment/management approach _____
Change in current practice for referral _____
Change in differential diagnosis _____
My practice has been reinforced _____
I do not plan to implement any new changes in practice _____

Please identify any barriers to change (check all that apply):

_____ Cost
_____ Lack of consensus or professional guidelines
_____ Lack of administrative support
_____ Lack of experience
_____ Lack of time to assess/counsel patients
_____ Lack of opportunity (patients)
_____ Reimbursement/insurance issues
_____ Lack of resources (equipment)
_____ Patient compliance issues
_____ No barriers
_____ Other. Please specify: _____

The design of the program was effective for the content conveyed	___ Yes	___ No
The content supported the identified learning objectives	___ Yes	___ No
The content was free of commercial bias	___ Yes	___ No
The content was relative to your practice	___ Yes	___ No
The faculty was effective	___ Yes	___ No
You were satisfied overall with the activity	___ Yes	___ No
You would recommend this program to your colleagues	___ Yes	___ No

Please check the Core Competencies (as defined by the Accreditation Council for Graduate Medical Education) that were enhanced through your participation in this activity:

_____ Patient Care
_____ Practice-Based Learning and Improvement
_____ Professionalism
_____ Medical Knowledge
_____ Interpersonal and Communication Skills
_____ System-Based Practice

Additional comments:

_____

_____

This information will help evaluate this activity; may we contact you by email in 3 months to inquire if you have made changes to your practice based on this activity? If so, please provide your email address below.

_____

_____