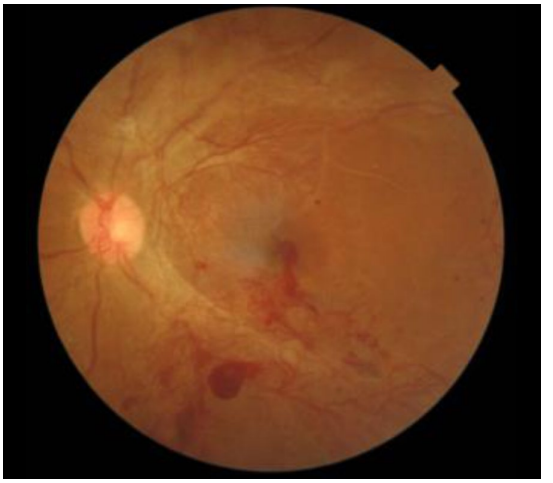
Managing Severe Diabetic Retinopathy, Part 1: Tractional Retinal Detachment

Diabetic retinopathy (DR) is the leading cause of vision loss among working-age Americans. Early detection of DR is critical to prevent progression to more advanced stages of disease, particularly tractional retinal detachment (TRD). However, significant health care disparities have led to the development of severe disease in populations with fewer health resources. What strategies can ophthalmologists use in managing these cases? And how do they talk with patients who have end-stage disease?

In this two-part roundtable, Lisa S. Schocket, MD, at the University of Maryland in Baltimore leads a discussion with Maria H. Berrocal, MD, from San Juan, Puerto Rico; Sharon D. Solomon, MD, at the Wilmer Eye Institute; and John T. Thompson, MD, at Retina Specialists in Baltimore. This month, Part 1 covers surgery for challenging cases of TRD; Part 2 continues in next month's issue. *(This discussion has been edited for length and clarity.)*



TRD. *Discussion of tractional retinal detachment associated with proliferative diabetic retinopathy can be a difficult but necessary conversation to have with patients who have this end-stage disease, according to the experts.*

Managing Expectations

Dr. Schocket: *Many patients with severe TRDs are sent as tertiary referrals and given the expectation that vision can be restored. How do you manage these expectations—without contradicting the referring clinician?*

Dr. Solomon: In such a scenario, I often use some of the imaging I obtained as part of the patient's evaluation to share my understanding of his retinal condition. If the patient is able to see the images himself, or if he brought a family member or friend, I will show them the widefield color photographs to demonstrate the extent of the TRD, which might involve the macula and explain that this is the critical center of vision.

If I've obtained widefield fluorescein angiography, I'll try to show that the circulation to the retina is compromised and that the impaired circulation can limit visual recovery, despite the potential for successful anatomic repair of the retina. This helps the patient to understand that the prognosis for visual rehabilitation is guarded, partly because of the chronicity of the detachment. This way, instead of contradicting the initial clinician, I am trying to increase the patient's understanding of the severity of his condition and how that affects visual recovery.

Dr. Thompson: I think it's very important for us as tertiary referral doctors to not create false hope, but you also don't want to paint too pessimistic a picture. If the patient has been followed by their primary ophthalmologist or optometrist for a while, the patient may blame the doctor for not referring them sooner. I think it's important not to get caught up in that blame game but to explain to the patient that damage from diabetes can sometimes occur without symptoms and very rapidly. You need to be respectful of the referring provider.

I always ask patients what their HbA1c is; many of them have numbers that are off the charts. They may say, "Oh, my A1c is 12." I think that puts some responsibility back on the patient because, truthfully, if their diabetes is well controlled, these severe TRDs are few and far between.

Dr. Berrocal: I do everything that you both have said, and I put it in very simple terms. I just say, "Listen, this is a mechanical problem. Your retina is lift-

ROUNDTABLE HOSTED BY **LISA S. SCHOCKET, MD,** WITH **MARIA H. BERROCAL, MD, SHARON D. SOLOMON, MD,** AND **JOHN T. THOMPSON, MD.**

ed away from where it should be. That makes it lose circulation, so it loses the oxygen and the food supply it needs, and it starts dying at the cellular level. In surgery, we can anatomically put it back where it was, but we cannot undo all the damage that occurred from years of poor control—from ischemia, from fluctuation of blood sugars. After we put the retina back in place, we will know what vision you have, but we cannot reverse all the cellular death that has occurred."

Making Decisions About Surgery

Dr. Schocket: *I recently had a patient referred to me from several hours away. She had no light perception vision in one eye and light perception in the other. She had severe ischemia and bilateral TRDs, and she told me that all she wanted was to be able to keep seeing the light. She was afraid of the constant darkness, and it honestly broke my heart, but I had to tell her that I didn't feel that surgery would help her.*

How do you tell a patient that surgery is not going to help and that it may even make things worse?

Dr. Solomon: In this scenario I think it's important to give patients realistic expectations about how severe their disease is and how limited their visual prognosis may be. In an eye with chronic detachment and signs of ischemia, I think there is high risk that the eye might not tolerate what it would perceive as trauma. I describe the situation to patients in that way—that the risk of our going in to try to repair tissue that's damaged, starved for oxygen, is likely not to heal well and become functional again, as Dr. Berrocal nicely summarized in lay terms.

You need to be very patient in explaining that going in to do surgery could actually upset the delicate balance that they currently have and that if this patient's goal is to maintain light for as long as possible, surgery could bring an abrupt end to that, given the severity of the disease. I also assess for signs of pre-phthisis. In an eye that's had chronic TRD, you may see that the eye is almost entering phthisis. It's important to listen to the patient's concerns but also to be very honest and straightforward about how severe and precarious the clinical scenario is.

Dr. Thompson: I think that the key point is to not make a bad situation worse. One of the worst things you can do is to take a severe TRD and turn it into a tractional-rhegmatogenous detachment because some of these eyes have a TRD around the postequatorial retina but the peripheral retina is still attached. Maybe if they're lucky, they've had some panretinal photocoagulation (PRP) in the periphery that will help keep the retina attached. But a surgical misadventure can take this sort of eye and turn it into a total retinal detachment with rubeosis.

In some situations, if a patient who has never had PRP comes with a postequatorial TRD, I might recommend performing some PRP, very slowly, maybe only 200 spots at a time, just to try to prevent extension of the detachment into the more peripheral retina. It's a judgment call, and I think that many years of experience are needed to determine when to intervene with either vitrectomy or PRP and when to leave it alone. Still, I think there are some decisions that can help to maintain the patient's light perception in one eye if that is what she values.

Dr. Berrocal: I see a lot of patients who have a TRD but the fovea is not detached; these eyes can stay stable for a very long time. I just saw someone like that today: a one-eyed patient with a ring detachment along the arcades, and the fovea is still attached. I did just what Dr. Thompson mentioned: I treated her with PRP to stabilize it, and if you do it slowly you won't cause a crunch phenomenon, which creates more traction.

In some patients, I can see that their vision won't improve after surgery because all the blood vessels are white—there's essentially no circulation. If those patients want surgery, I tell them, "If you were my mother or brother, I wouldn't recommend surgery because I don't think I can help you, and I think I could make you worse. And you have to understand that I make a living from doing surgeries, so I'm making this recommendation with a clear conscience." When I explain it that way they really understand.

For some patients, though, I recommend surgery even if the case is difficult and prognosis is unclear because I think they need it, for example, if the macula is detached. I let them know that it's a very hard case and that I may need to do several surgeries, but they have to trust that I'm going to do my best. When you have that conversation, they know what to expect, and they get the feeling that you're on their side. In all cases, whether you do surgery or not, you have to earn the patient's trust.

The Patient With Vision in One Eye

Dr. Schocket: *How do you counsel the patient who lost vision in one eye after surgery and now needs treatment in the remaining seeing eye?*

Dr. Berrocal: These cases are hard because they've had a bad experience with surgery in the first eye. For example, in the other eye, the macula is not detached but threatened. In such cases, if they need more time to decide or they're not really ready for surgery, I give them an Amsler grid and tell them to follow it, and as soon as the scotoma starts getting nearer to the fovea, we can intervene. I have found that to be very helpful, and even if I know that surgery will eventually be needed, the patient has some time to get used to it and has some sense of control.

In other patients—such as those with a very dense vitreous hemorrhage or those who are developing a tractional-rhegmatogenous detachment that you think will extend—I tell them that if we don't do anything, they will probably lose vision like the other eye, but if we try something they have a fairly good chance (and I give them a percentage that I think is reasonable) that we can keep them seeing for as long as possible. Diabetic eye disease cases are all different, not only pathologically but also because of the status of the patient's systemic condition, and you need to think outside the box with every patient.

Dr. Solomon: I think it's critical for patients to really understand the importance of controlling their systemic

disease. I've had patients whose HbA1c is upward of 17%, and they've been like that for years. It's important to emphasize to the patient that it wasn't the surgical intervention or the treatment that caused the loss of vision but rather the systemic disease—although it might have been affected by a delay of surgical intervention or anti-VEGF therapy or laser. For the best results in the fellow eye, it's imperative to have earlier intervention, together with better control of the systemic disease.

Dr. Thompson: Adding to that important point, in many cases, the first eye was more advanced when the patient had the surgery that failed. So, I explain that we need to treat the other eye, the good eye, before the condition gets any worse, and I think patients can understand that early treatment has a higher success rate than later treatment.

Tips for Relieving Traction

Dr. Schocket: *When performing surgery, do you feel it necessary to relieve all traction or just traction in the macula?*

Dr. Berrocal: If a patient has a combined tractional and rhegmatogenous detachment, then it is necessary to remove all the traction and fibrovascular tissue. In cases with only a TRD, the goal is relieving the traction in the posterior pole. In very complex cases of TRD that have fibrous tissue covering the posterior pole and arcades, it is important to not only relieve anteroposterior traction but also centripetal traction along the arcades, as this traction can progress.

I remove all the attachments of the posterior hyaloid to the fibrous tissue membranes; usually they're along the arcades. Next, I remove whatever fibrous tissue is over the area of the fovea and then I do some relaxing cuts in the circumferential fibrous tissue, if present, so there's no more contraction. I published a series of about 10 cases[1] that I had treated with this method, and they all stabilized. I use this technique in cases where I think the risk of creating a break is really high.

I use the smallest gauge instrumentation possible. I think the advantages of using 27 gauge (G) in these cases is huge because you can get the cutter between tissue planes to make the relaxing cuts, and you can try to shave some tissue from vessels in a much more controlled fashion.

I don't always pretreat with anti-VEGF injections. I only do so if the membranes are very vascular and, in those cases, I do it just one or two days before because many of these patients are so unstable medically that they may not get clearance for surgery, and you might not see them for a month. If you must delay the procedure, they may come back in a much worse situation from a rebound anti-VEGF effect.

Dr. Thompson: I think Dr. Berrocal deserves a lot of credit for promoting this concept that you don't have to remove all of the traction. There was a belief 20 years ago that if you don't remove all of the traction, bad things will happen. Surgical judgment plays a major role here, but the goal is to not create a retinal break with your intervention. If a break occurs, the whole scenario changes. Often, I don't make that decision until I'm actually dissecting membranes: sometimes they lift easily, but at other times they are absolutely plastered to the retina, and you realize there's no way to remove them without creating a retinal break.

Now if there's already a tractional-rhegmatogenous detachment I'm a little less concerned about creating an additional break because they already have a break, and I'm not sure that two breaks are worse than one. Trying to avoid a break in the first place is critical, and Dr. Berrocal has been a strong advocate for leaving some traction. The widefield fundus photos don't look quite as pretty, but the eye sees, and you've avoided a rhegmatogenous detachment.

Dr. Solomon: I would add that the importance of getting the hyaloid off can't be overemphasized, so I use triamcinolone intraoperatively to make sure that I've removed as much of the hyaloid—and relieved as much of the hyaloid traction—as possible. I sometimes stain with brilliant blue or indocyanine green to get the internal limiting membrane off to help dissect membranes. I will use viscodissection with viscoelastic to help with membranes that are particularly taut and adherent to the retinal surface.

Anticoagulation: Continue or Hold for Surgery?

Dr. Schocket: *What are your thoughts on stopping anticoagulation therapy before surgery?*

Dr. Berrocal: I usually send a note to the patient's internist. I generally prefer to stop anticoagulants if possible because many of these patients can bleed a lot, especially those with poorly controlled hypertension. As soon as I see a patient bleeding excessively in the OR I look at the blood pressure because oftentimes it starts creeping up during the surgery, and it's hard to control that.

Dr. Thompson: I think it's not really essential to hold anticoagulation. If the patient has atrial fibrillation or significant medical issues, I haven't found it to be vastly different if they're off their anticoagulants. Many of them are on 81 mg of aspirin, which basically knocks out the platelets for several weeks. And so, practically speaking, we often have to operate on patients with some degree of anticoagulation. There are ways of dealing with bleeding membranes, such as setting the infusion pressure higher—though obviously you don't want to close off the central retinal artery.

I tend not to inject anti-VEGF preoperatively unless I'm very concerned about bleeding, and I rarely stop anticoagulants. —Dr. Solomon

Dr. Solomon: I don't stop anticoagulation for patients who have a significant medical indication, such as atrial fibrillation, a recent stroke, or a cardiothoracic event. Also, in my experience, many of these patients are so ischemic that the surgery ends up being relatively bloodless anyway. But if you see preoperatively that there is extensive florid neovascularization elsewhere in membranes, you can anticipate they will bleed as you dissect them. For those patients, I would consider stopping anticoagulation.

Going back to another point that Dr. Berrocal made earlier, I rarely admin-

ister anti-VEGF preoperatively because I've had situations, especially in the COVID era, when patients test positive and can't have their surgery; and there are also patients who just fail to show up for surgery. So, I tend not to inject anti-VEGF preoperatively unless I'm very concerned about bleeding, and I rarely stop anticoagulants prior to surgery.

Vitrectomy Tools

Dr. Thompson: Regarding vitrectomy gauge, I'm going to be something of an iconoclast here—I think there are advantages of using 20-G vitrectomy in some cases. I use 23 G for the majority of my cases because I don't like the flexibility of the 25- and 27-G equipment, but I will say there are some tools that are useful for 20 G such as viscodissectors. Also, if you need to use scissors a lot, I think the 20-G size works much better. I do agree, though, that some cases work beautifully with 25 or 27. We can get underneath the membranes and do a wonderful job of dissecting them; still, I sometimes come up against a brick wall with that instrumentation, and I convert to 20 G—and I'm usually glad I did.

Dr. Solomon: It was a sad day for me when we lost the MPC [membrane peeler cutter] scissors and the Constellation system at Wilmer because I loved doing dissections in diabetic cases with the MPC scissors. Now I generally do 23-G vitrectomy, but I will switch to a 25-G cutter for the dissection process.

Dr. Berrocal: I think that viscodissection is extremely useful when you have a floppy retina with fibrovascular tissue on top, and I do it in cases of combined tractional-rhegmatogenous detachment.

In the end, you should employ whatever gauge is useful. I haven't used 20 G in a long time, but I've had some cases, especially with trauma, where the hemorrhagic clots are so thick that 23-G instruments hardly do anything. It takes forever to eat those extremely thick clots, and 20 G would definitely be the way to go.

Dr. Schocket: I usually do a 25-G setup, but I keep a 23 port at my dominant hand. I love the MPC scissors, which has a 23-G tip, so you can put it in there, and you can put the 27-G vitrector in, too. So, you can use almost any gauge you want if you have a 23-G port. It gives you a lot of flexibility to try different instruments.

1 Berrocal MH, Acaba-Berrocal L. *Retina.* 2023;43(12):2144-2147.

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