DIABETIC VITREOUS HEMORRHAGE: INJECT OR OPERATE?

The latest DRCR Retina Network data suggest that patient selection is key to choosing the best treatment approach.

BY GEMMY CHEUNG, MBBS, FRCOPHTH, FAMS, MCI, AND DURGA S. BORKAR, MD, MMCI


Advances in our field, such as new therapeutics, smaller surgical tools, and updated techniques, have changed the way we approach myriad clinical scenarios, including vitreous hemorrhage. A relatively common complication, vitreous hemorrhage affects an estimated seven in 100,000 cases annually.[1] When it happens in a patient with proliferative diabetic retinopathy (PDR), retina specialists must decide whether they should start with an intravitreal injection of an anti-VEGF agent or head to the OR for vitrectomy. Here, two experts weigh in on this debate.

START WITH THERAPEUTICS

By Gemmy Cheung, MBBS, FRCOphth, FAMS, MCI

The Diabetic Retinopathy Clinical Research (DRCR) Retina Network's Protocol AB compared the effect of intravitreal 2 mg aflibercept (Eylea, Regeneron) versus vitrectomy with panretinal photocoagulation (PRP) for vitreous hemorrhage due to PDR.[2] The primary endpoint of the study was based on the area under the curve of BCVA up to week 24. The adjusted difference was five letters in favor of the vitrectomy arm but marginally missed statistical significance.

However, on closer examination, patients who underwent vitrectomy had better vision at postoperative week 4 compared with those receiving aflibercept (adjusted difference: 11.2 letters, $P = .003$). The mean BCVA was 35 letters at baseline in both arms and improved to 62 letters in the vitrectomy arm and 52 letters in the aflibercept arm. This difference in BCVA improvement at week 4 was most notable in the subgroup of patients with baseline VA worse than 20/800. By week 12, however, the difference in BCVA between the two arms was no longer significant. Similarly, visual acuity was comparable between the two arms for up to 2 years.[2]

Among patients in the initial aflibercept arm, about one in three eyes assigned to initial aflibercept required subsequent vitrectomy due to a lack of visual improvement or tractional retinal detachment (TRD). Similarly, one in three eyes assigned to vitrectomy required subsequent intravitreal aflibercept for the treatment of diabetic macular edema.[2]

Overall, these results suggest that both management options can improve vision effectively, but vitrectomy can achieve more rapid improvement. Other factors such as access to surgical expertise, cost, and patient needs should also be considered when selecting the most appropriate management. Patients should also be counselled regarding the possibility of requiring adjunct treatment.[2]

AT A GLANCE

- Protocol AB compared 2 mg aflibercept (Eylea, Regeneron) with vitrectomy with panretinal photocoagulation for diabetic vitreous hemorrhage.
- In Protocol AB, two-thirds of patients in the aflibercept treatment arm did equally well with medical management alone and were spared surgical intervention.
- Early vitrectomy for diabetic vitreous hemorrhage is safe and effective and can prevent associated complications when real-world patient factors are taken into consideration.

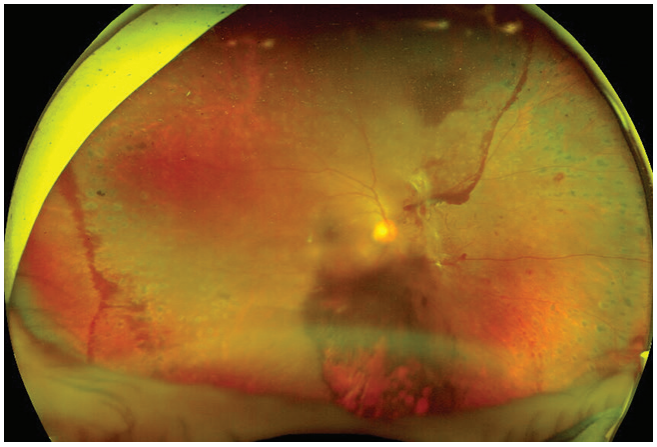


Figure 1. This patient presented with mild vitreous hemorrhage and good PRP coverage.

When managing diabetic vitreous hemorrhage in the clinic, a stepped approach could be considered. Patients can be assessed based on their response to an initial anti-VEGF injection. In a significant proportion of patients, vitrectomy may not be required with this approach. Other considerations may include patient demographics and the condition of the fellow eye. The average age of the participants in Protocol AB was 56 to 67 years of age. Generally, younger patients are at a higher risk of developing recurrent vitreous hemorrhage and TRD, as they have an attached posterior hyaloid. Thus, early vitrectomy may be a reasonable approach in younger patients. In Protocol AB, 42% to 55% of patients had received prior PRP. Patients who have not received PRP may have a higher risk of complications if managed with anti-VEGF injections alone without a fundus view. Prior PRP status is another consideration when deciding the best management option (Figure 1).[2]

THE CASE FOR EARLY VITRECTOMY

By Durga S. Borkar, MD, MMCi

Several studies have evaluated the best way to manage diabetic vitreous hemorrhage, including Protocol AB.[2] In this randomized controlled trial, the primary outcome of mean visual acuity score at 24 weeks was equivalent for both the aflibercept and early vitrectomy treatment arms.

To many, this may suggest that initial treatment for diabetic vitreous hemorrhage with intravitreal anti-VEGF therapy is equivalent to early vitrectomy. However, there are several other factors to consider. In the study, approximately one-third of patients in the aflibercept arm went on to need vitrectomy within 2 years. For many patients, particularly monocular patients, earlier surgical intervention may prevent future complications and provide quicker visual acuity improvement, which was also shown in the clinical trial.[2]

The results indicated that two-thirds of patients in the aflibercept treatment arm did equally well with medical management alone and were spared surgical intervention.[2] However, in the clinical trial setting, patients were followed regularly, and vitrectomy could be performed before further complications, such as a TRD, occurred. In fact, the follow-up rates in the clinical trial were greater than 90% in both treatment arms. Unfortunately, real-world studies of PDR suggest more than a quarter of patients are lost to follow-up for a period of time, and this is often associated with further vision-threatening complications, such as TRD and neovascular glaucoma, that can lead to irreversible vision loss (Figure 2).[3] Thus, when a patient with new-onset vitreous hemorrhage in the setting of PDR first presents, early vitrectomy may provide the most definitive treatment and minimize the risk of further complications, particularly if monthly follow-up for intravitreal anti-VEGF injections is not possible. With ongoing advances in vitreoretinal surgery, including smaller-gauge instrumentation, rates of complications have also gone down, making early surgery a more desirable option.[2]

However, there are several patient factors to take into consideration. For example, early vitrectomy may be the

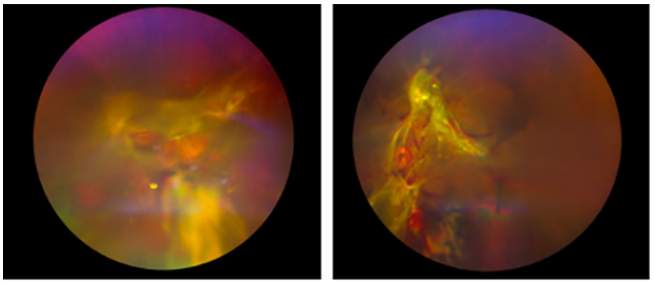
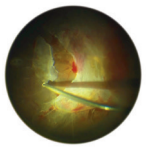


Figure 2. This patient, who initially presented with bilateral vitreous hemorrhage, had a lapse in follow-up care and returned with worsening vitreous hemorrhage, progressive fibrovascular proliferation, and traction.

ABOUT ONE IN THREE EYES ASSIGNED TO INITIAL AFLIBERCEPT REQUIRED SUBSEQUENT VITRECTOMY DUE TO A LACK OF VISUAL IMPROVEMENT OR TRACTIONAL RETINAL DETACHMENT.



best and most definitive treatment for patients with no prior treatment for their retinopathy and a delayed presentation. Reasons for delayed presentation could be multifactorial, but if the initial presentation to an ophthalmologist is for vitreous hemorrhage, this may suggest that, in some cases, there has not been screening at recommended intervals in the past. Additionally, monocular patients may not be able to wait for the delayed visual acuity improvement associated with medical management alone.

In some cases, patients may present with preexisting PRP, and medical management could be sufficient to prevent other vision-threatening complications.

Some patients with PDR may have associated end-organ complications of their diabetes that are being actively managed and, thus, are not good candidates for anesthesia and the OR. In these cases, medical management may be the best option. Aside from these situations, early vitrectomy for diabetic vitreous hemorrhage is safe and effective and can prevent associated complications, such as TRD, when real-world patient factors, such as the risk of becoming lost to follow-up, are taken into consideration. ■

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