

can detect some peripheral retinal breaks but does not replace careful ophthalmoscopy. It may be useful in patients not able to tolerate the exam.⁹⁹

Even if a vitreous hemorrhage is sufficiently dense to obscure the posterior pole, the peripheral retina frequently can be examined using indirect ophthalmoscopy and scleral depression. Patients who present with vitreous hemorrhage sufficient to obscure all retinal details and have a negative B-scan ultrasonographic evaluation should be followed closely. Often, patients are seen weekly until the vitreous hemorrhage resolves or until a thorough indirect ophthalmoscopic depressed peripheral exam can be done to rule out an underlying retinal tear. When a retinal tear is suspected, repeat ultrasonographic examination should be performed within 1 to 2 weeks of the initial evaluation. There is considerable variation in the reported sensitivity (44%–100%) of B-scan ultrasonography for detecting retinal tears in cases of PVD-associated fundus-obscuring vitreous hemorrhage.^{97, 100-102}

MANAGEMENT

Prevention

There are no effective methods of preventing the vitreous syneresis and liquefaction that lead to a PVD and possibly an RRD. If factors associated with an increased risk of RRD are discovered during a routine eye examination in an asymptomatic patient, a careful peripheral fundus examination is recommended. Patients at high risk should also be educated about the symptoms of PVD and RRD as well as about the value of periodic follow-up examinations.¹⁴ Patients with retinal or vitreous hemorrhage have an increased risk of multiple retinal tears.¹⁰³ A systematic review performed in 2012 found that there is no strong evidence to support or refute the use of 360-degree laser surgery intervention in the fellow eyes of patients with a unilateral giant retinal tear.¹⁰⁴ One study reported that in Stickler syndrome over an average of 6.1 years of follow-up, only 9% of eyes with prophylactic 360° laser had a retinal detachment versus 23% of eyes that did not have prophylactic laser.¹⁰⁵ In genetically verified Sticklers syndrome, 360 degree laser prophylaxis is now recommended.¹⁰⁵

Surgical Management

It is essential that clinical personnel be familiar with the symptoms of PVD and RRD and that they recognize the need for urgent ophthalmologic evaluation of symptomatic patients.¹⁴ Patients with symptoms of possible or suspected PVD or RRD and related disorders should be examined as soon as is feasible by an ophthalmologist skilled in binocular indirect ophthalmoscopy and supplementary techniques. Patients with retinal breaks or detachments should be treated by an ophthalmologist with experience in the management of these conditions. A Cochrane systematic review and subsequent updated review found low to very low certainty evidence indicating little or no difference between pars plana vitrectomy and scleral buckling in anatomical and visual acuity outcomes for repair of RRD.^{106, 107} (*106: I-, Insufficient quality; 107: I-, Insufficient quality*) A meta-analysis also found no significant differences in visual acuity and final reattachment rates between pars plana vitrectomy and scleral buckling.¹⁰⁸ (*III, Moderate quality*) One meta-analysis across 18 randomized controlled trials and 2,751 eyes found that scleral buckling had better early postoperative VA compared to pars plana vitrectomy, but there was no difference for primary reattachment, and combination surgery did not have significant differences compared to pars plana vitrectomy alone.¹⁰⁹ (*I-, Moderate quality*) A large, multicenter, retrospective cohort study compared scleral buckle and pars plana vitrectomy for moderately complex phakic primary RRDs and reported that both scleral buckle and combination pars plana vitrectomy with scleral buckle were superior to vitrectomy in achieving single-surgery anatomic success. For macula-on or split cases, sclera buckle had significantly better visual outcomes than pars plana vitrectomy or sclera buckling with pars plana vitrectomy even after controlling for cataract.¹¹⁰

Early vitrectomy (usually defined as within 7 days of presentation) for dense PVD-associated vitreous hemorrhage has been reported to have a low rate of complications and may be considered to reduce the risk of vision loss occurring secondary to macula-involving RRD.^{102, 111, 112} Prompt intervention is indicated if there is a tear seen on ultrasonography and the vitreous cavity precludes a view.