

Rhegmatogenous/Tractional Retinal Detachment and Vitreous Hemorrhage Associated With Branch Retinal Vein Occlusion in a Taiwanese Patient

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ABSTRACT

Purpose: The aim of this study was to present a case of branch retinal vein occlusion (BRVO) complicated with rhegmatogenous retinal detachment (RRD), tractional retinal detachment (TRD), and vitreous hemorrhage (VH), and its outcome after treatment with pars plana vitrectomy (PPV). **Methods:** A 65-year-old female patient presented to ophthalmic clinic with sudden loss of vision in her left eye. She had a history of diabetes and hypertension and suffered from BRVO in 2014, with macular edema treated by intravitreal injection of bevacizumab in 2014 and 2015. Visual acuities were 0.9 in the right eye and counting finger at 40 cm in the left eye. Anterior segment examination and intraocular pressure were normal; there was no fundus view due to dense VH in the left eye. **Results:** PPV with perfluoropropane (C3F8) tamponade was arranged. The operation revealed a flap tear sized 1 disc diameter with tractional fibrovascular proliferation and localized retinal detachment about 4–5 disc diameters at the 1 o'clock position of superotemporal retinal vessels adjacent to macula. There was no evidence of diabetic retinopathy. Focal scattered laser photocoagulation was performed surrounding the area of retinal detachment and the retinal break, creating chorioretinal adhesions. Upper anterior retinal cryotherapy and aflibercept injection were performed to decrease the severity of retinal ischemia. However, 1 month later during follow-up, he suffered from blurry vision again. B-scan confirmed recurrent VH. Optical coherence tomography revealed epiretinal membrane with sustained macular edema and post-photocoagulation scarring at upper temporal region and around the break. The hemorrhage cleared 2 months later spontaneously and visual acuity improved to 0.1 in the affected eye. 9 months after the operation, the patient's vision maintained on 0.1 with no progression of retinal detachment or development of further complications. **Conclusion:** BRVO complicated with RRD/TRD rarely occurred and could be treated by vitrectomy.

Key words: Branch retinal vein occlusion, pars plana vitrectomy, rhegmatogenous retinal detachment, tractional retinal detachment, vitreous hemorrhage

INTRODUCTION

Branch retinal vein occlusion (BRVO) with an incidence of 0.5–1.2 per 100 is the most common RVOs, which are a second lead retinal vascular disorder after diabetes

retinopathy. However, rhegmatogenous retinal detachment (RRD) occurs less commonly compared to other complications. We presented a case of BRVO complicated with RRD, tractional retinal detachment, and vitreous hemorrhage (VH) and discussed its outcome after treated with pars plana vitrectomy (PPV).

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CASE REPORT

A 65-year-old female patient presented to ophthalmic clinic with sudden loss of vision in her left eye. She had a history of diabetes and hypertension and suffered from BRVO in 2014, with macular edema treated by intravitreal injection of bevacizumab in 2014 and 2015. Visual acuities were 0.9 in the right eye and counting finger at 40 cm in the left eye. Anterior segment examination and intraocular pressure were normal; there was no fundus view due to dense VH in the left eye. PPV with perfluoropropane (C_3F_8) tamponade was arranged. The operation revealed a flap tear sized 1 disc diameter with tractional fibrovascular proliferation and localized retinal detachment about 4–5 disc diameters at the 1 O'clock position of superotemporal retinal vessels adjacent to macula [Figure 1]. There was no evidence of diabetic retinopathy. Focal scattered laser photocoagulation was performed surrounding the area of retinal detachment and the retinal break, creating chorioretinal adhesions. Upper anterior retinal cryotherapy and aflibercept injection were performed to decrease the severity of retinal ischemia.

However, 1 month later during follow-up, he suffered from blurry vision again. B-scan confirmed recurrent VH. Optical coherence tomography revealed epiretinal membrane with sustained macular edema and post-photocoagulation scarring at upper temporal region and around the break [Figure 2]. The hemorrhage cleared 2 months later spontaneously and visual acuity improved to 0.1 in the affected eye. 9 months after the operation, the patient's vision maintained on 0.1 with no progression of retinal detachment or development of further complications.

DISCUSSION

Incidence of RRD followed by BRVO

BRVO may be associated with a number of complications including macular edema, epiretinal membrane, and retinal neovascularization which might further contribute to VH, retinal breaks, and retinal detachment. RRDs are a rare complication of BRVO. They typically form following posterior retinal breaks caused by fibrovascular proliferation and traction.

A strong association between BRVO with VH and posterior tractional retinal breaks was reported by Joondeph *et al.* Of the 24 BRVO patients with VH and neovascularization, six (21.4%) were found to have posterior tractional retinal breaks adjacent to avulsed neovascular tissue. They reviewed 358 cases with BRVO and reported 1.6% incidence of posterior tractional breaks leading to RRD in 0.6% of patients.^[1] Kir *et al.* reviewed 230 eyes of 214 patients with BRVO. There were retinal breaks found in 3% of the case series, and RRD in 1.5% of these patients with BRVO.

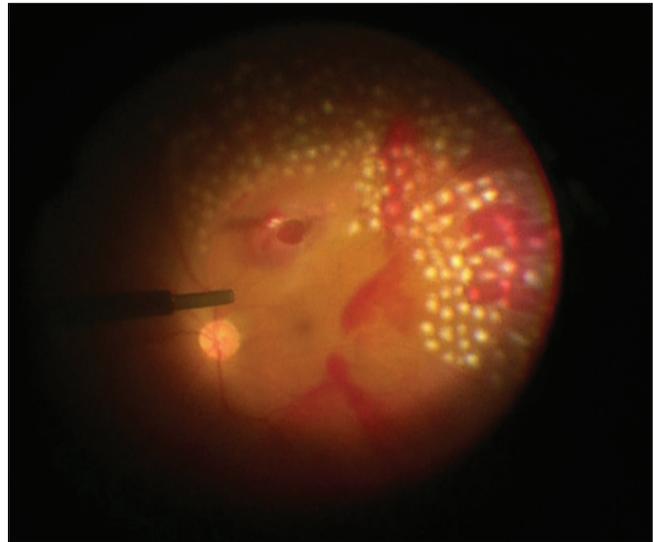


Figure 1: A flap tear sized 1 disc diameter with tractional fibrovascular proliferation and localized retinal detachment about 4–5 disc diameters at the 1 O'clock position of superotemporal retinal vessels adjacent to macula

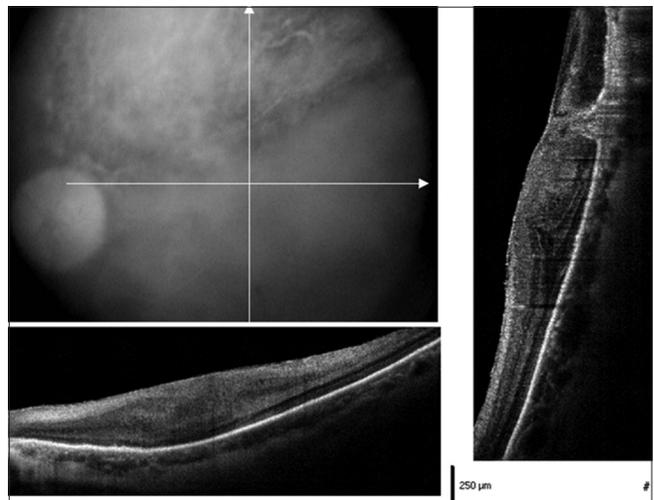


Figure 2: Epiretinal membrane with sustained macular edema and post-photocoagulation scarring at upper temporal region and around the break on the optical coherence tomography

Outcome of PPV for RRD and VH

Ikuno *et al.*^[3] reported on a series of 25 eyes that underwent PPV for RRD associated with BRVO. Preoperatively, visual acuity was better than 20/200 in 9 eyes (36%); postoperatively, 20 eyes (80%) achieved a visual acuity of 20/200 or better. Visual acuity improved by two or more lines in 18 eyes (72%), worsened by two or more lines in three eyes (12%), and remained unchanged in four eyes (16%) postoperatively. Relatively, there is more research on the prognosis after treatment of VH with PPV. For example, in a series of 34 eyes that underwent PPV for nonclearing VH associated with BRVO,^[4] vision improved by at least 2

lines in 30 eyes (88%), with a median postoperative visual acuity of 20/60. When it comes to cases including RRD and VH, it can be proven that the visual prognosis was much better in cases with VH only than in those with proliferative membrane and retinal detachment ($P = 0.0023$) in another case series reviewing 114 patients with BRVO.^[5]

Causes of poor visual prognosis

The most common cause of vision loss in patients with BRVO is VH caused by retinal neovascularization and persistent macular edema. To prevent the decrease of vision in patients with BRVO, prevention of neovascularization and management of macular edema are considered to be the final problems.

CONCLUSIONS

Early vitrectomy before the development of fibrovascular proliferation and retinal detachment in BRVO patients seems to be essential for patients to attain better visual acuity. Therefore, for patients newly diagnosed with VH in eyes with old BRVO, the examiner should be more alert and closely monitor the situation which may lead to RRD.

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