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**EDITOR'S VOICE**

**ABSTRACT**

*Background:*

Clinical and surgical aspects of patients with rhegmatogenous retinal detachment (RRD) associated with branch retinal vein occlusion (BRVO) were evaluated.

*Methods:*

We reviewed the patients' charts who had retinal detachment surgery between January 1993 and June 2002. Six patients with unilateral RRD and BRVO were identified. The mean time interval between the initial detection of BRVO and the retinal surgery was 7.4 ± 10.8 months.

*Result:*

The mean follow-up was 18.8±15.7 months. Retinal breaks were observed in five of six eyes and all detected retinal breaks were posterior breaks. Four eyes had a single break and no retinal break could be detected in one patient. Two patients underwent only scleral buckling surgery and the remaining four eyes underwent pars plana vitrectomy with scleral buckling surgery. Anatomic success was achieved in four of six eyes (66.7%).

*Conclusion:*

RRD may happen very early or late in the course of BRVO. Vitrectomy techniques may be required as most breaks occur posteriorly and a significant tractional component may coexist.

*Keywords:*

branch retinal vein occlusion, pars plana vitrectomy, scleral buckling surgery, retinal detachment, retinal tear.

# Guest Lecture: Rhegmatogenous Retinal Detachment Associated With Branch Retinal Vein Occlusion

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## Background

Rhegmatogenous retinal detachment (RRD) and tractional retinal detachment are infrequent but serious complications of branch retinal vein occlusion (BRVO).<sup>1</sup> Rhegmatogenous retinal detachment has occurred in 2 to 3 % of patients with BRVO.<sup>2,3</sup> Two different types of retinal breaks have been described in BRVO,<sup>4-6</sup> i.e., retinal holes without vitreous traction and retinal tears with vitreous traction. Treatment of RRD associated with BRVO could be laser photocoagulation, scleral buckling surgery and/ or pars plana vitrectomy.<sup>7-9</sup> In this report, we described the clinical characteristics and surgical outcomes of patients with RRD associated with BRVO.

## Methods

We reviewed the records of patients who underwent vitreoretinal surgery at Ophthalmology Department Dokuz Eylül University, and identified six patients with RRD associated with BRVO, between January 1993 and June 2002. There were one woman and five men. Mean age was 57.4±11.6 years (range from 41 to 71 year old). Each patient underwent a complete ophthalmologic examination. The BRVO diagnosis was made on the basis of ophthalmoscopic appearance (superficial and/ or deep retinal hemorrhages, congestion and tortuosity of the venous vessels, presence of exudates, ghost vessels and retinal neovascularization). The demographic data and clinical findings were demonstrated in Table 1.

Patient number	Type of break	Location of break	Vitreous hemorrhage	Type of retinal neo-vascularization	Previous sector laser photocoagulation
1	Horseshoe	Posterior to equator	-	NVE <sup>1</sup>	+
2	Linear	Posterior to equator	+	NVE	+
3	Two holes, one pear shaped tear	Posterior to equator	-	-	-
4	Horseshoe	Equatorial	-	-	-
5	Unidentified	-	+	-	-
6	Horseshoe, macular hole	Posterior to equator	+	NVE	+

<sup>1</sup>NVE=neovascularization elsewhere

**Table 1:** The demographic data and clinical characteristics of the patients.

## Results

Preoperative and postoperative visual acuities, surgical procedures, and follow-up period were shown in Table 2. The mean follow-up was 18.8±15.7 months (range from 6 to 48 months). The mean time interval between the initial detection of BRVO and vitreoretinal surgery was 7.4±10.8 months (range from 4 days to 25 months).

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Patient number	Preoperative visual acuity	Time interval between BRVO <sup>1</sup> and detachment	Type of surgery	Postoperative visual acuity	Follow-up (months)
1	LP <sup>2</sup>	17 months	Encircling band+ PPV <sup>3</sup>	NLP <sup>4</sup>	20
2	0.2	1 month	Encircling band+ radial sponge	LP	12
3	LP	1 month	Encircling band+ radial sponge	HM <sup>5</sup>	21
4	HM	4 days	Encircling band+ PPV+ silicone-oil+ endolaser	CF <sup>6</sup> at 3 meters	6
5	LP	2 weeks	Encircling band+ rubber+ PPV+ silicone-oil+ endolaser	CF at 3 meters	6
6	LP	25 months	Encircling band+ PPV+ silicone-oil	CF at 2 meters	48

<sup>1</sup>BRVO=branch retinal vein occlusion; <sup>2</sup>LP=light perception; <sup>3</sup>PPV=pars plana vitrectomy; <sup>4</sup>NLP=no light perception; <sup>5</sup>HP=hand movement; <sup>6</sup>CF=counting finger

**Table 2:** Surgical techniques.

The superotemporal vein was occluded in all eyes. We performed sector argon laser photocoagulation prior to RRD for severe retinal ischemia in three of six eyes. Six months after the initial scatter laser treatment, we noted a retinal tear, and proliferative vitreoretinopathy in the first patient. The last patient was lost to follow-up for 25 months. He returned back to our clinic with a macular hole and RRD.

Complications, surgical outcome and further surgeries were summarized in Table 3. Retinal reattachment rate was 66.7% by the time of final examination.

## Discussion

Branch retinal vein occlusion can be complicated with exudative, tractional or rhegmatogenous retinal detachment.<sup>10,11</sup> Several theories about RRD associated with BRVO were suggested. Zauberman<sup>10</sup> reported four cases of retinal hole formation, three of which progressed to RRD in association with BRVO. The retinal breaks were all peripheral and associated with snail-track degeneration, peripheral microcyst degeneration and one was horseshoe tear. The author proposed that venous occlusion might cause or aggravate peripheral microcystoid degeneration along with atrophic retinal degenerations which resulted in retinal cyst formation, subsequent breakdown of the cyst wall with hole formation and detachment.

Gutman and Zegarra<sup>2</sup> described the natural course of temporal branch vein occlusion in 40 patients. One patient developed a RRD with two operculated tears in an area adjacent to preretinal neovascularization. In another study, same authors noted that ischemic and atrophic changes in the distribution of a vein occlusion might have rendered the attached retina susceptible to vitreoretinal traction.<sup>3</sup> Joondeph and Goldberg<sup>5</sup> reported two cases with a tuft of neovascular tissue adherent to the posterior hyaloid face in whom RRD followed BRVO.

Some authors believe that laser treatment can possibly alter the vitreous structure and induce vitreous contraction and subsequent retinal break formation.<sup>12</sup> In our study group, three of six eyes received prior sector laser photocoagulation.

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Patient number	Operatory complication	Retinal status at the end of surgery	Retinal status at the follow- up	Types of other performed surgery
1	Perfluorodecalin passed underneath the retina through the retinal tear	Not able to reattach the retina	Detached retina	-
2	-	Reattached retina	White cataract eight months after the surgery (Ultrasonographically retina was flat)	Became unconscious, due to respiratory depression after retrobulbar anesthesia and denied cataract surgery
3	-	Reattached retina	Inferior retinal detachment, subretinal fibrosis, with a new retinal tear 1 and ½ years after the surgery	Denied further vitreoretinal surgery
4	-	Reattached retina	Attached retina	-
5	-	Reattached retina	Attached retina	-
6	-	Reattached retina	White cataract eight months after the surgery	Phacoemulsification and intraocular lens implantation (first surgery) Silicone-oil removal 2 and ½ years after initial surgery (second surgery)

**Table 3:** Surgical outcome of the patients.

Some surgeons have successfully treated RRD after BRVO with scleral buckling surgery.<sup>3,7,10,13,14</sup> The difficulty of buckling in eyes with posterior tears and possibility of combined tractional and rhegmatogenous detachment seem to limit the success of scleral buckling surgery in such eyes.

Ikuno *et al*<sup>5</sup> studied 25 eyes that underwent vitrectomy for RRD after BRVO. Preretinal neovascularization was present in nine of 25 eyes, and severe vitreous hemorrhage was noted in six eyes. Eight eyes (32%) experienced a recurrent detachment and 22 retinas (88%) were attached in final examination. Factors significantly associated with a poorer visual outcome were presence of retinal tears (versus retinal holes), preoperative macular detachment and recurrent retinal detachment after initial vitrectomy.

We previously recommended close monitoring of eyes with BRVO as retinal break formation with or without RRD may occur in a considerable number of eyes.<sup>16</sup> In light of the present study, we noted that RRD may occur in early or late stages of occlusion process and RRD may develop after sector laser photocoagulation. We also believe that when RRD is detected scleral buckling may be successfully performed only in selected number of eyes whereas vitrectomy techniques are generally indicated as most of the breaks occur posteriorly and tractional component is present.

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