

# A Rare Association of Vitreous Base Avulsion, Bruch's Membrane Rupture and Retinal Detachment Following Blunt Ocular Trauma

## Künt Göz Travmasını Takiben Gelişen Vitreus Bazı Avülsiyonu, Bruch Membranı Yırtığı ve Retina Dekolmanının Nadir Birlikteliği

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### ABSTRACT

A 16-year-old male presented with decreased visual acuity that developed immediately after a stick blow to his right eye. His visual acuity was 20/63 in the right eye and 20/20 in the left, and the intraocular pressures were 37 mmHg and 14 mmHg in the right and left eyes. Fundus examination showed a traumatic rupture in Bruch's membrane which passed close to the fovea and a vitreous base avulsion at the inferior quadrant. Ten days following the first examination, a small retinal break and localized retinal detachment was observed. The patient underwent pars plana vitrectomy, endolaser photocoagulation, and gas injection. Visual acuity improved to 20/25 and the retina remained attached at the last visit. This report from this extraordinary case shows the importance of close follow-up and prompt surgical intervention to obtain desirable final visual acuity.

**Key Words:** Trauma, vitreous base avulsion, Bruch's membrane rupture, retinal detachment.

### ÖZ

On altı yaşında erkek hasta sağ gözüne sopa çarpmasından sonra gelişen görme azlığıyla başvurdu. Görme keskinliği sağ gözde 20/63 ve solda 20/20; göz içi basıncı sağ ve sol gözde 37 mmHg ve 14 mmHg idi. Fundus muayenesinde foveaya yakın yerleşimli bir Bruch membranı yırtığı ile alt kadranda vitreus bazı avülsiyonu mevcuttu. İlk muayeneden on gün sonra küçük bir retina yırtığı ve sınırlı bir retina dekolmanı saptandı. Hastaya pars plana vitrektomi, endolazer fotokoagülasyon ve gaz enjeksiyonu uygulandı. Son muayenede görme keskinliği 20/25 düzeyine çıktı ve retina rekolme idi. Burada yakın takip ve erken cerrahi müdahalenin böyle sıradışı bir olgudaki öneminin sunulması amaçlanmıştır.

**Anahtar Kelimeler:** Travma, vitreus bazı avülsiyonu, Bruch membranı yırtığı, retina dekolmanı.

### INTRODUCTION

Blunt eye traumas may have a variety of manifestations at the posterior segment due to the mechanical deformation and/or energy delivery to the ocular structures.<sup>1</sup> Vitreous base avulsion is a rare condition that usually follows ocular trauma<sup>2</sup> and child abuse.<sup>3</sup> We present an interesting case of a patient who suffered from vitreous base avulsion, Bruch's membrane rupture, and retinal detachment following blunt-ocular trauma.

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## CASE REPORT

A 16-year-old male patient with decreased visual acuity after a blunt ocular trauma from a stick blow to his right eye was referred to our clinic. On examination the visual acuity was 20/63 in the right eye, and 20/20 in the left.

His intraocular pressures were 37 mmHg and 14 mmHg in the right and left eyes respectively. Ocular movements were free and full in both eyes. The pupils were normal and reactive.

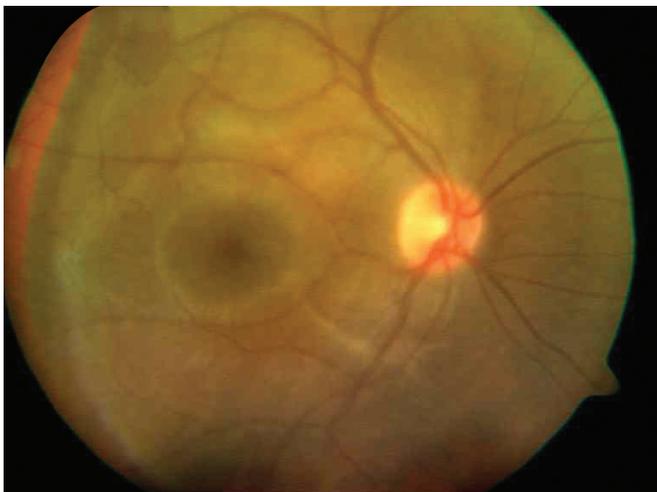
A slit-lamp examination revealed moderate cells in the anterior chamber and tobacco dust in the anterior vitreous. Dilated fundus examination showed a rupture in Bruch's membrane extending to the foveal border located below the optic nerve head (Figure 1).

The peripheral retinal examination with a wide-field indirect contact lens disclosed vitreous base avulsion extending from 5 to 8 o'clock position with no evidence of retinal tear or retinal detachment (Figure 2).

The patient was treated with anti-glaucomatous eye drops to decrease intraocular pressure and followed closely for possible ocular complications. Ten days after the first examination, there were few inflammatory cells in the anterior chamber.

Intraocular pressure was 20 mmHg. Dilated fundus examination revealed a localized shallow retinal detachment at the superior nasal quadrant with a barely visible small retinal tear at 1 o'clock position of the peripheral retina.

The patient underwent 23 gauge pars plana vitrectomy, endolaser photocoagulation, and air-fluid-gas exchange. Six weeks after the surgery, the retina was fully reattached and no other complications were identified. The visual acuity improved to 20/25.



**Figure 1:** Bruch's membrane rupture below the optic nerve head.

## DISCUSSION

This case demonstrates many of the sequelae of blunt ocular trauma, including vitreous base avulsion, Bruch's membrane rupture, retinal tear, and retinal detachment.

Blunt trauma can damage the retina in many ways, ranging from simple retinal edema to retinal detachment.<sup>4</sup> One commonly held theory is that blunt trauma causes a decrease in antero-posterior diameter of the globe and a simultaneous expansion at the equatorial plane.

Usually this impact is primarily absorbed by the lens-iris diaphragm and the vitreous base, but sometimes damage can occur as a result of stress on the retina at significant areas of vitreous attachment.

Vitreoretinal adhesions, especially at the vitreous base, are much stronger in the younger population than in adults. Therefore, vitreous base avulsion requires notable trauma to create dehiscence at this most firmly attached area between vitreous and retina. If the trauma is so severe, multiple lesions, involving different structures of the globe, can occur, as in our patient. One of the sequelae of a blunt trauma is traumatic Bruch's membrane rupture resulting from the tensile strength of Bruch's membrane and rapid deformation of the globe. In the posterior segment, Bruch's membrane rupture can be devastating for visual acuity if it occurs in the macula.

Retinal lesions usually occur at the time of the impact; however, the time span for retinal detachments can range from the immediate post-traumatic period to 40 years following trauma.<sup>4</sup>

Acute glaucoma without hemorrhage may appear following blunt ocular trauma because of the presence of inflammatory cells and pigment in the anterior chamber, which causes blockage in the trabecular meshwork.



**Figure 2:** Vitreous base avulsion at the inferior quadrant with a wide field indirect contact lens.

This condition is treated with topical anti-inflammatory and anti-glaucoma agents, and usually subsides within 1-2 weeks.<sup>5</sup> In our patient, elevated intraocular pressure was well-controlled by topical anti-glaucoma medications without additional therapy. Vitrectomy combined with gas tamponade provided successful anatomic and functional results for traumatic retinal detachment in this patient. Although a scleral buckling procedure was a safe and effective option for treating for traumatic rhegmatogenous retinal detachment,<sup>6</sup> the presence of a barely visible peripheral retinal break limited the surgical method selection in this patient.

We have reported the surgical management of a case of delayed retinal detachment with vitreous base avulsion resulting from ocular contusion. This case clearly shows that an examination at the time of injury is not sufficient to detect complications secondary to ocular traumas. In our patient, desirable final visual acuity was achieved with close follow-up and a prompt surgical intervention.

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