



# Anterior Lens Capsule Rupture and Traumatic Cataract Due to Blunt Ocular Trauma

## Künt Göz Travmasına Bağlı Lens Ön Kapsül Rüptürü ve Travmatik Katarakt

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### Summary

A 16-year-old female was struck in the right eye with a plastic toy. Two days after the trauma, she was admitted to the eye clinic with complaining of reduced vision. Best-corrected visual acuity (BCVA) was hand motion in the right eye. Slit-lamp biomicroscopy showed a lightly swollen traumatic cataract with rupture of the anterior lens capsule, and mild inflammation was seen in the anterior chamber. The intraocular pressure was 16 mmHg. Ultrasonography of the posterior segment of the eye was normal. The surgery was performed using simcoe cannula through a clear corneal incision followed by implantation of a foldable, acrylic, posterior chamber intraocular lens (IOL). One month postoperatively, BCVA in the right eye was 20/20. Blunt ocular trauma may rarely lead to anterior capsular rupture and traumatic cataract in the young. Although this complication is rare, ophthalmic examination and surgery have to be performed meticulously. (*Turk J Ophthalmol* 2013; 43: 477-8)

**Key Words:** Anterior lens capsule rupture, blunt ocular trauma, cataract

### Özet

Sağ gözüne plastik bir oyuncak çarpan 16 yaşında kadın travmadan iki gün sonra görme kaybı şikayeti ile göz kliniğine başvurdu. En iyi düzeltilmiş görme keskinliği (EİDGK) sağ gözde el hareketi idi. Biyomikroskopik muayenesinde lens ön kapsül rüptürü ile birlikte hafif şişmiş travmatik katarakt ve ön kamarada hafif bir inflamasyon mevcuttu. Göz içi basıncı 16 mmHg idi. Gözün arka segment ultrasonografisi normaldi. Şeffaf korneal insizyondan simcoe kanül kullanılmasını takiben katlanabilir, akrilik, arka kamara göz içi lens (GİL) implantasyonu ameliyatı yapıldı. Ameliyattan bir ay sonra sağ gözünde EİDGK 20/20 idi. Künt göz travması gençlerde nadiren ön kapsül rüptürü ve travmatik katarakta yol açabilir. Bu komplikasyon nadir olmakla birlikte göz muayene ve cerrahisi titizlikle yapılmalıdır. (*Turk J Ophthalmol* 2013; 43: 477-8)

**Anahtar Kelimeler:** Lens ön kapsül rüptürü, künt göz travması, katarakt

### Introduction

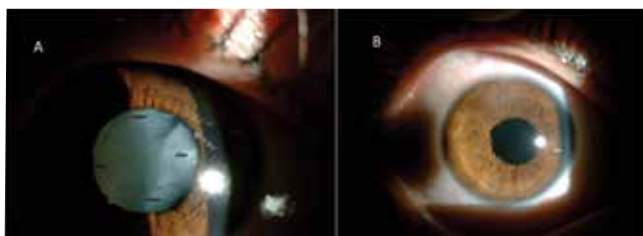
Anterior or posterior lens capsule rupture is more frequent in penetrating eye injuries. However, blunt trauma may rarely cause anterior lens capsule rupture.<sup>1,2</sup> There are few reports associated with blunt ocular trauma causing isolated anterior lens capsule rupture.<sup>3-6</sup> Herein, we present a case of anterior lens capsule rupture after a blunt eye trauma by a plastic toy which rapidly resulted in cataract.

### Case Report

A 16-year-old female was struck in the right eye with a plastic toy. Two days after the trauma she was admitted to the

eye clinic with complaining of reduced vision. Best-corrected visual acuity (BCVA) was hand motion in the right eye. Slit-lamp biomicroscopy showed a lightly swollen traumatic cataract with a wide rupture of the anterior lens capsule, and mild inflammation (+1 cell) was seen in the anterior chamber (Figure 1A). The intraocular pressure was 16 mmHg. Ultrasonography of the posterior segment of the eye was normal.

The patient underwent cataract surgery which was performed using simcoe cannula through a clear corneal incision followed by implantation of a foldable, acrylic, posterior chamber intraocular lens (IOL). The corneal incision was closed with 10-0 nylon suture. There was no complication during the surgery and postoperative period. One month postoperatively, the BCVA in



**Figure 1.** Slit-lamp photograph of the case. (A) Slit-lamp biomicroscopy before surgery, arrows showing rupture of the anterior lens capsule. (B) Slit-lamp biomicroscopy after surgery. Note the iris damage corresponding to the lens capsule rupture (arrow)

the right eye was 20/20. At slit-lamp biomicroscopy, the IOL was well-centered and in the bag position (Figure 1B).

## Discussion

Blunt ocular trauma of the eye can cause many complications including traumatic hyphema, iris damage, angle recession, lens dislocation, lens opacity, anterior and posterior capsule rupture.<sup>3,7-10</sup> However, there are few reports about rupture of the anterior lens capsule due to blunt ocular trauma in the literature.<sup>3,4,8</sup>

On the other hand, rupture of the posterior lens capsule because of blunt ocular trauma is often seen. Campanella et al.<sup>11</sup> reported two patients having traumatic cataract accompanying rupture of the posterior lens capsule. Also, two reports of cases of rupture of the posterior lens capsule have been published.<sup>10,12</sup> All of these patients had blunt trauma to the eyeball.

A hypothesis that explains the rupture of the posterior capsule because of blunt ocular trauma is based on Wiegert's ligament that attaches the anterior cortical vitreous to the posterior lens capsule. This connection is more prominent at the midperipheral zone of the lens capsule in the young than the old and weakens with the rest of the life. According to the hypothesis, rapid compression and decompression effect to the eyeball may cause a rupture in the middle zone of the posterior lens capsule. The patients with the capsule rupture due to blunt ocular trauma are especially in the young age group and this may likely support the hypothesis.<sup>11</sup>

Banitt et al.<sup>3</sup> proposed a theory that explains the rupture of the anterior lens capsule due to blunt ocular trauma. Direct suppression effect towards the cornea may provide a rapid focal collapse over the lens (coup injury) or a quick rebound of the vitreous directed from posterior to anterior causes fluid-mechanical forces that may lead to a rupture of the anterior capsule (contrecoup injury).

Sugimoto et al.<sup>8</sup> reported 2 cases with anterior lens capsule rupture. They were 59 and 72 years old, respectively and both were related to collapsing of the vitreous and reduced zonular

stability due to the age of the patients. This might reduce the possibility of posterior lens capsule rupture and facilitates the lens luxation to posterior or the lens shifting to the anterior chamber, simultaneously. In general, during cataract surgery, increased intraocular pressure because of swelling of lens material of intumescent cataract or high vitreous pressure leads to ruptures in the anterior lens capsule. Anterior shifting of the lens can cause tension over the anterior lens capsule and this strength pulling the anterior capsule ahead tangentially leads to rupture of the anterior lens capsule.

In the current case, the rupture of the anterior capsule is likely related to the theory proposed by Banitt et al.<sup>3</sup> We think that the tear of the anterior capsule was likely related to the coup injury, and the rebound of fluid-mechanical forces (contrecoup injury) is probably responsible for the enlargement of the capsule tear. It is suggested that either coup or contrecoup injury has a role in the present case. Additionally, the lens hydration may contribute to more enlargement of the capsule tear.

Consequently, blunt ocular trauma may rarely lead to anterior capsular rupture and traumatic cataract in the young. Coup injury, contrecoup injury, and the zonular structure contribute to the course. Although this complication is rare, ophthalmic examination and surgery have to be performed meticulously.

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