

Management of Traumatic Lens Dislocation in Microspherophakia

Mikrosferofakide Travmatik Lens Dislokasyonun Tedavisi

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ABSTRACT

We present the case of a 19-years old boy with microspherophakia who reported blunt trauma on his right eye 10 days ago. The patient had been diagnosed with glaucoma 4 years ago and he had been using a combination of antiglaucoma eye drops. The best corrected visual acuity (BCVA) was 3.00 logMAR with a refractive error of -21.00 (-2.00x155) dioptri (D). On slit-lamb examination, the lens was dislocated towards to the anterior chamber, and in the anterior chamber vitreus was detected. Intraocular pressure (IOP) was 36 mmHg. We performed intracapsular lens extraction with implantation of a scleral fixation intraocular lens (IOL). At postoperative 1th month, the IOL was well centered with no anterior chamber reaction. Uncorrected visual acuity was 0.4 logMAR, BCVA was 0.2 logMAR with a refractive error of -1.50x55 D and IOP was 12 mmHg without antiglaucoma medication. In this case, we reported the management of traumatic lens dislocation in microspherophakia.

Key words: Intracapsular lens extraction, lens dislocation, microspherophakia, scleral fixation.

ÖZ

19 yaşında mikrosferofakili ve 10 gün önce sağ gözüne künt travma almış genç bir erkek olgu sunulmuştur. 4 yıl önce glokom tanısı almış ve kombine antiglokomatöz damla kullanmaktaydı. En iyi düzeltilmiş görme keskinliği -21.00 -2.00x155 dioptri (D) refraktif kusur ile 3.00 logMAR idi. Slit lamba muayenesinde, lens ön kamaraya doğru disloke idi ve ön kamarada vitreus saptandı. Göz içi basıncı (GİB) 36 mmHg idi. İntrakapsüler lens ekstraksiyonu ve skleral fiksasyonlu göz içi lens (GİL) implantasyonu uyguladık. Postoperatif 1.ayda, GİL santralize ve ön kamarada reaksiyon yoktu. Düzeltilmemiş görme keskinliği 0.4 logMAR, en iyi düzeltilmiş görme keskinliği -1.50x55 D refraktif kusur ile 0.2 logMAR ve GİB antiglokomatöz tedavi olmaksızın 12 mmHg idi. Bu olguda, biz mikrosferofakide travmatik lens dislokasyonunun tedavisini gösterdik.

Anahtar kelimeler: İntrakapsüler lens ekstraksiyonu, lens dislokasyonu, mikrosferofaki, skleral fiksasyon.

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INTRODUCTION

Microspherophakia is a lenticular abnormality resulting from nutritional deficiency due to defects in the tunica vasculosa lentis at 5–6 months of embryonic life.¹ This interrupts the development of secondary lens fibers as a result of which the existing zonules are weak and lack tension which directly contributes to the presence of a small spherical lens without cortico-nuclear demarcation in such cases.¹ These small spherical lenses frequently cause pupillar block with secondary ‘inverse’ angle-closure glaucoma.² Miotic agents cause aggravation of this situation while mydriatic agents help to relieve it, as in malignant glaucoma. Laser-iridotomy and trabeculectomy are other treatment options for patients with angle closure glaucoma secondary to microspherophakia.³ High lenticular myopia, such as -10.00 to -15.00 diopters (D) is a common condition accompanying to microspherophakia.⁴ The effect of trauma in microspherophakia is not well defined. In this case, we reported the course and treatment of an eye after trauma with microspherophakia.

CASE REPORT

A 19 year old boy appealed to our clinic with the complaint of low vision in his right eye for 10 days. He reported a trauma on his right eye caused by a fist 10 days ago. The patient had been diagnosed with glaucoma 4 years ago and he had been using a combination of eye drops timolol maleate 0.5% and brimonidine tartarate 0.15% twice a day, brinzolamide 1% twice a day and latanoprost 0.005% once a day. On examination, the best corrected visual acuity (BCVA) was 3.00 logMAR in the right eye with a refractive error of -21.00/-2.00x155 D and 0.4 logMAR in the left eye with a refractive error of -20.00/-1.50x140 D. Intraocular pressures (IOP) with Goldmann applanation tonometer were 36 mmHg in the right eye and 10 mmHg in the left eye. Central corneal thicknesses were 486 micrometer in the right eye and 488 mikrometer in the left eye.

On slit-lamp examination, the anterior chamber was shallow in both eyes. The lens was dislocated towards to the anterior chamber and was only being hold by superior zonules in the right eye.

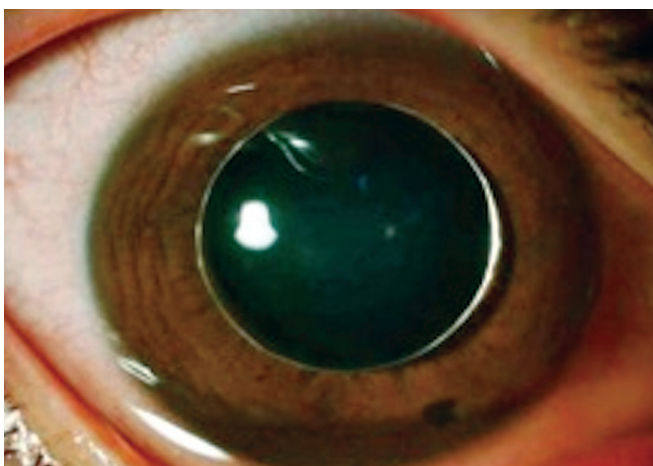


Figure 1: Slit-lamp photography of the traumatized microspherophakic right eye.

Anterior segment reaction with tyndall 4+, vitreous in the anterior chamber, microspherophakia and zonuler weakness were coexisting in the right eye (Figure 1, 2). Axial length of the eyes were determined by ultrasonographic A-scan biometry and the values were 22.95 mm in the right eye and 22.88 mm in the left eye. The cornea was clear and the lens was transparent in both eyes. The cup/disc ratio was noticed as 0.9 (severe glaucomatous damage) on indirect ophthalmoscopic examination of the posterior segment in both eyes. We prescribed the patient topical prednisolone acetate 1% per hour, cyclopentolate 1.0% 3 times a day and kept on his antiglaucomatous treatment as same. On the next day, visual acuity was 3.00 logMAR and the IOP was 19 mmHg on right eye.

Surgical Technique: Under general anesthesia, after antisepsis of skin with 10% povidone iodine and ocular surface with topical 5% povidone iodine, two fornix-based conjunctival peritomies were made from 2 to 4 o'clock and from 8 to 10 o'clock, respectively. Corneal side ports were created in the clear cornea with a 20-gauge MVR blade, one at the superior temporal and the other at the superior nasal position, 120 degrees between them. The clear corneal incision was created at the superior quadrant with a 3.2 mm blade and enlarged to 5.5 mm as follows. Intracapsular lens extraction was made. Anterior chamber was filled with viscoelastic (2.3% sodium hyaluronate, Healon 5, AMO Inc., Sweden) after anterior vitrectomy. 10/0 polypropylene suture (Prolene, W1713, Ethicon, Dilbeek, Belgium) had been passed through the holes and fixated on the intraocular lens haptics (Alcon CZ70BD, Alcon Laboratories International, Fort Worth, TX). Haptics were fixated to the sclera by using the Z-suture technique which was reported by Szurman et al.,⁵ The corneal incision was closed with interrupted 10/0 nylon suture (U7000 Ethilon; Ethicon).

On the first postoperative day, the IOL was well centered with minimal anterior chamber reaction (Figure 3). Topical prednisolone acetate 1% and ciprofloxacin hydrochloride 0.3% 4 times a day were prescribed to the patient. BCVA was 2.00 logMAR and the IOP was 10 mm Hg without glaucoma therapy.

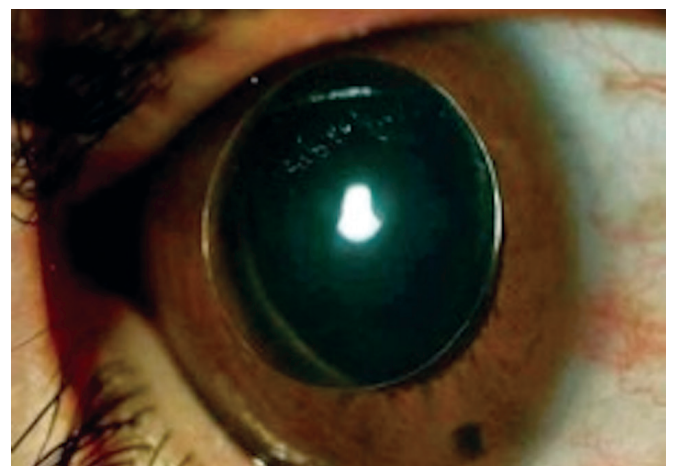


Figure 2: Slit-lamp photography of the traumatized microspherophakic right eye. Shallow anterior chamber and dislocated lens towards the anterior chamber.

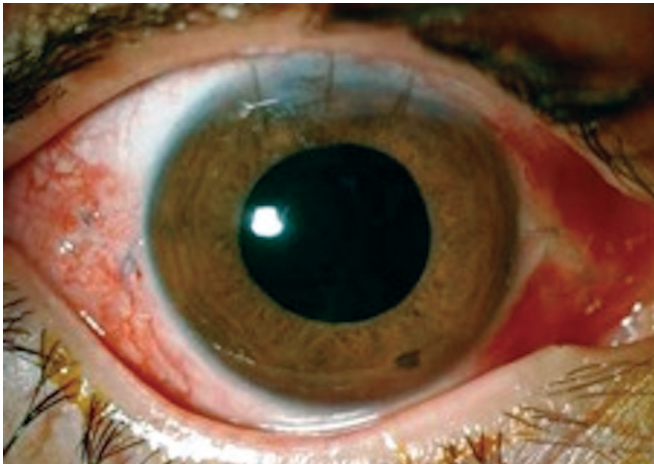


Figure 3: Slit-lamp photography on the first postoperative day.

Four weeks after the surgery uncorrected visual acuity was 0.4 logMAR, BCVA was 0.2 logMAR with a refractive error of -1.50x55 D and IOP was 12 mm Hg without antiglaucoma medication.

DISCUSSION

Lens injuries have been reported to occur in 7–50% of eyes after trauma.⁶ So that, examination of the crystalline lens is crucial on a traumatized eye. The position of the lens must be determined firstly. While a subluxated lens may be asymptomatic if minimally decentered, complete dislocation of the lens into the vitreous cavity always leads to immediately decreased vision, as the eye is functionally aphakic. If the lens cannot be visualized, extraocular displacement of the lens must also be kept in mind, especially in patients with a history of large incision surgery such as extracapsular cataract extraction, penetrating keratoplasty.⁷

There are few reports about lens injuries in microspherophakic eyes. In our patient, the lens was dislocated towards anterior chamber after blunt trauma. The triad of angle-closure glaucoma, shallow anterior chambers and myopia should alert the clinician to the possible diagnosis of spherophakia.¹ Myopia is mainly lenticular in origin, resulting from increased lenticular curvature and forward placement of the lens. The mean sagittal lenticular diameter in a young adult's eye is 3.7 ± 0.26 mm, and in spherophakic lenses it is 4.5 to 4.9 mm.² Axial myopia may also occur; however axial length is usually normal, changing from 21.4 to 27.1 mm.² In our patient, the axial length was normal (22.95 mm) and myopia (-21.00 D) was lenticular.

So, myopia was treated by lens extraction and IOL implantation. Tanriverdi et al.,⁸ reported successful result with scleral fixated IOL after lens extraction in a 15 year old case.

There are reports pointing out that glaucoma is more common if spherophakia is associated with Weill-Marchesani Syndrome.² Glaucoma in isolated and familial spherophakia is not well known.¹ Spherophakia causes angle-closure glaucoma with pupil block mechanism caused by dislocation of the lens into the anterior chamber or movement of the lens forwardly.² Chronic IOP elevation in spherophakia may occur by a variety of mechanisms. Unrelieved pupil block can lead to peripheral anterior synechias and irreversible trabecular damage.⁷ Surgical removal of the lens may be essential to control glaucoma; however, there is a high risk of complications, especially vitreous loss.² In our case, the IOP (30 to 40 mm Hg with topical antiglaucomatous therapy) was effectively controlled with lensectomy, anterior vitrectomy and scleral fixation IOL implantation.

This case demonstrates dislocation of lens and elevated IOP in microspherophakia after blunt trauma. We believe that lens extraction and IOL implantation is an effective treatment to control both glaucoma and high myopia in such cases.

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