

Bilateral Corneal Decompensation Caused by Iridoschisis

İridoskizise Bağlı İki Taraflı Kornea Dekompansasyonu

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ABSTRACT Iridoschisis is an uncommon and typically bilateral condition, in which iris stroma splitted into two layers. The etiology is not fully understood. It is seen primarily due to iris atrophy caused by aging, secondary to surgical complications and trauma. The free floating anterior fibers may cause corneal problems. We describe the case of a 75-year-old female with bilateral iridoschisis who presented to our department with vision loss. A slit-lamp examination showed bilateral asymmetric corneal edema caused by iridocorneal touch and a left dense nuclear cataract. The intraocular pressures were normal, and there was no history of trauma or heritable ocular diseases. In both eyes, the iris fibers were excised using an anterior vitreocutter. Phacoemulsification was also performed in the left eye. During follow-up, significant improvement in corneal edema and visual acuity were noticed in both eyes.

Keywords: Iridoschisis; corneal edema; phacoemulsification

ÖZET İridoskizis nadir görülen, iris stromasının ikiye ayrıldığı tipik olarak bilateral bir durumdur. Etiyolojisi tam olarak aydınlatılmamıştır. Primer olarak, yaşla birlikte iris atrofisine bağlı, sekonder olarak cerrahi komplikasyon ve travmaya bağlı olarak görülebilmektedir. Ön kamarada yüzen iris fibrilleri, korneal problemlere sebep olabilmektedir. İki taraflı iridoskizisi olan 75 yaşındaki bayan hasta görme azlığı şikayeti ile başvurdu. Muayenede, iridokorneal temasa bağlı bilateral asimetric kornea ödemi ve sol yoğun nükleer katarakt tesbit edildi. Göz içi basınçları her iki gözde normaldi ve travma ve/veya kalıtsal hastalık öyküsü yoktu. İris uzantıları her iki gözde ön vitrektörle alındı ve sol göze katarakt cerrahisi yapıldı. Takiplerde, kornea ödemi her iki gözde açıldı ve görme bir miktar arttı.

Anahtar Kelimeler: İridoskizis; korneal ödem; katarakt cerrahisi

Iridoschisis is a rare, idiopathic condition characterized by separation of the anterior iris stroma. Separation generally involves the inferior part of the iris.¹ About two-thirds of reported iridoschisis cases have open- or closed-angled glaucoma.² Corneal problems secondary to iridoschisis are unusual, cases of localized bullous keratopathy associated with iridoschisis have been reported.³⁻⁶ Herein, we report a patient who developed bilateral corneal decompensation caused by iridoschisis. We aimed to show the use of a vitreocutter to eliminate floating iris fibers and phacoemulsification technique in this case report.

CASE REPORT

A 75-year-old female presented with pain in her right eye and gradual loss of vision in both eyes. The best corrected visual acuity was 10/200 in the right eye and 20/200 in the left eye. A slit-lamp examination of the right eye showed iridoschisis from 2 to 7 o'clock and severe edema affecting the inferior half of the cornea. Although the view was poor, a cataract also appeared to be present. In the left eye, minimal edema of the inferior part of the cornea, a nuclear cataract with (+++++) severity, and iridoschisis from 5 to 8 o'clock were observed. In the right eye, the free

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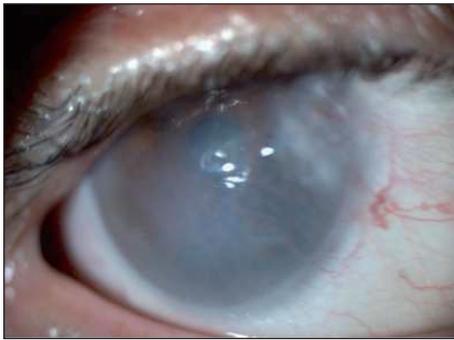


FIGURE 1: Preoperative image of the right eye.

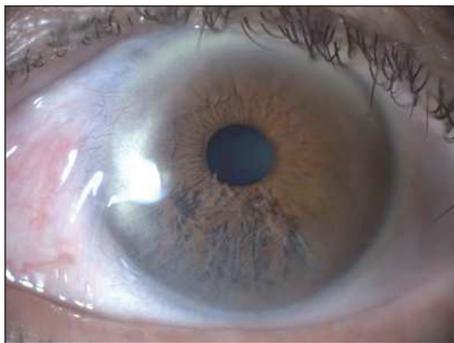


FIGURE 2: Preoperative image of the left eye.

ends of the iris fibers were in contact with the corneal endothelium, whereas, they traumatized the corneal endothelium only during eye movement in the left eye. The intraocular pressures were normal in both eyes (Figure 1, Figure 2).

After getting informed consent, in the initial treatment, the free ends of the iris fibers in the right eye were first removed using anterior vitreocutter. After entering the anterior chamber using a 19 G knife, carbacol 0.01% (Miostat®) was injected to constrict the pupil. For stabilization of the anterior chamber, an ophthalmic viscosurgical device (OVD) was used, and the chamber was filled with sodium hyaluronate 3%-sodium chondroitin sulfate 4% (Dis-covisc®). The iris fibers were then excised using a 20-gauge anterior vitreocutter (Infiniti®, Alcon Laboratories, Inc., Fort Worth, Tex., USA) at a maximum cutting speed of 800 per minute and cut-I/A setting. After this process, the OVD was removed from the anterior chamber, and the incision was sealed by hydration of the wound. There were no postoperative complications.

One week after the operation on the right eye, phacoemulsification and removal of the iris fibers using an anterior vitreocutter were performed in the left eye. A standard quick-chop technique was used with the Infiniti® Vision System (Alcon Laboratories, Inc., Fort Worth, Tex., USA) and a single piece intraocular lens was then placed in the capsular bag. The floating iris fibers from 5 to 8 o'clock were excised using a 20-gauge anterior vitreocutter (Infiniti®, Alcon Laboratories, Inc., Fort Worth, Tex., USA) at a maximum cutting speed of 800 per minute and cut-I/A setting. There were no postoperative complications. One week after the surgery, the uncorrected visual acuity was 20/20 in the left eye, and the anterior chamber was clear.

Three months after the surgery, the best corrected visual acuity was 0.2 in the right eye and 1.0 in the left eye with Snellen chart. A slit-lamp examination revealed decreased corneal edema in both eyes and a deep and relaxed anterior chamber in the left eye. In both eyes, the intraocular pressures and fundus examinations were normal (Figure 3, Figure 4).



FIGURE 3: Postoperative image of the right eye.

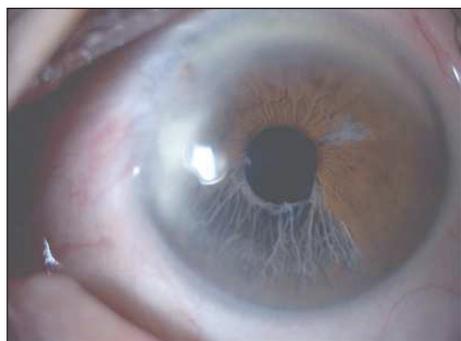


FIGURE 4: Postoperative image of the left eye.

DISCUSSION

Schmitt was the first to report iris splitting in 1922, and iridoschisis was first described by Loewenstein and Foster in 1945.^{7,8} The etiology of iridoschisis is unclear. The disease is associated with interstitial keratitis, keratokonus, lens subluxation, bullous keratopathy and angle-closure glaucoma in most cases.^{2-6,9-12} Weseley et al. was the first to report a case of corneal changes due to iridoschisis.³ Although iridoschisis is an uncommon cause of total corneal decompensation, a few cases of bullous keratopathy have been reported.²⁻⁶ In terms of treatment for corneal problems; medical therapy, amniotic membrane transplantation, penetrating keratoplasty (PK), Descemet membrane endothelial keratoplasty, and PK with cataract extraction have been performed.^{2-6,13}

In cases of iridoschisis with no lens problems, only the iris fibers need to be excised. But those with both cataract and iridoschisis, cataract surgery needs special consideration. We performed phacoemulsification with low parameters like 300 mm Hg vacuum, 60 cm bottle height and 20 cc/mmHg aspiration flow rate. Previous studies suggested using an OVD during phacoemulsification to avoid iris trauma.^{14,15} Others performed phacoemulsification using a Malyugin ring to stabilize the stromal fibers.¹⁶ Three authors have described techniques to eliminate the anterior floating iris fibers. Ghanem et al. described a technique for cutting the affected iris fibers with a vitreocutter during phacoemulsification.¹⁷ Others proposed trimming floating iris fibers using Vannas scissors or using microcautery to shrink the fibers back to the iris surface.^{18,19}

In the present case, we used the method described by Ghanem et al. for cutting the floating iris fibers from 2 to 7 o'clock in the right eye and from 5 to 8 o'clock in the left eye.¹¹ But, unlike them we prefer maximum cut rate of present anterior vitrectomy probe provided by our hospital and minimum aspiration flow rate to avoid inadvertent aspiration of iris fibers.

In conclusion, iridoschisis is an idiopathic condition that may cause vision loss by corneal decompensation due to endothelial trauma, and it may lead to the development of glaucoma. By removing the iris fibers, with or without cataract extraction with low phacoemulsification parameters, these sight-threatening complications can be avoided.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Mehmet Baykara; **Design:** Mehmet Baykara; **Control/Supervision:** Berna Akova Budak; **Data Collection and/or Processing:** Berna Akova Budak; **Analysis and/or Interpretation:** Huri Sabur; **Literature Review:** Huri Sabur.

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