Intraocular Eyelash Removal Through A Vitreal Tunnel Created By Using 23-Gauge Vitrectomy

*23 Gauge Vitrektomi ile Vitreal Tünel Açılarak Göz İçi Kirpik Çıkarılması**

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ABSTRACT

To define a new rapid, effective and safe technique for the removal of intraocular foreign bodies by creating a tunnel within the vitreous body. An 18-year-old male having scleral penetrating trauma with a dart arrow was evaluated. Case applied to clinic with an 8/10 uncorrected visual acuity and 8 mmHg intraocular pressure. There were conjunctival hyperemia, scleral wound and mild corneal edema. Crystalline lens was clear. The retina was attached. After primary suturation, an eyelash was observed on the nasal pars plana in fundus examination at postoperative day 1. The patient underwent complementary surgery for the removal of intraocular foreign body. A thin vitreous tunnel was created within vitreous body from the temporal sclerotomy to the nasal site. Cilium was taken out by the help a 23-gauge forceps through temporal sclerotomy site. Laser photocoagulation was performed to the retinal area corresponding to the eyelash. Uncorrected visual acuity was 10/10 and intraocular pressure was 17 mmHg at the first postoperative day and at the last visit at 6 months. Retina was reattached, and the crystalline lens was clear. Vitreous tunnel method may be a rapid and safe alternative method for the removal of intraocular foreign body in selected cases. Most of the vitreous body remains intact and the crystalline lens is preserved. Shortened operation time also minimizes the risk of light toxicity to the macula.

Key Words: PPV, Intraocular foreign body, eyelash.

ÖZ

Bu çalışmada; göz içi yabancı cisim çıkarılmasında, vitreus içinde tünel oluşturarak hızlı, etkin ve güvenli yeni bir teknik tanımlamayı amaçladık. Bir dart oku ile sklera penetrasyonu kazası geçiren 18 yaşındaki erkek hasta değerlendirildi. Olgunun başvuru sırasında düzeltilmemiş görme keskinliği 8/10 ve göz içi basıncı 8 mmHg idi. Olguda konjonktival hiperemi, skleral yara ve hafif kornea ödemi vardı. Hastanın merceği saydam izlendi. Retina yatıştırıldı. Primer sütürasyon sonrasında, postoperatif 1. günde fundus muayenesinde nasal pars planada kirpik varlığı gözlendi. Hastaya göz içi yabancı cisim çıkarılması için tamamlayıcı cerrahi yapıldı. Vitreus içinde ince bir tünel, temporal sklerotomi alanından nasal alana doğru oluşturuldu. Cilium 23-gauge forseps yardımıyla sklerotomi alanından çıkarıldı. Kirpiğin retinada bulunduğu bölgeye lazer fotokoagülasyon yapıldı. Birinci gün ve 6. ay postoperatif dönemde düzeltilmemiş görme keskinliği 10/10 ve göz içi basıncı 17 mmHg idi. Retina yatışık ve kristal mercek saydamdı. Vitreus tünel yöntemi seçilmiş olgularda göz içi yabancı cisim çıkarılması için hızlı ve güvenli bir alternatif yöntem olabilir. Vitreusun çoğu serbest kalır ve kristal haldeki mercek korunur. Kısaltılmış çerrahi süresi de makulaya ışık toksisite riskini en aza indirir.

Anahtar Kelimeler: PPV, göz içi yabancı cisim, kirpik.

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INTRODUCTION

Ocular trauma is the leading cause of blindness in children and young adults, and a significant cause of blindness in older individuals.[1-4] Eye injuries with intraocular foreign bodies (IOFBs) may result in severe visual loss depending on a number of factors including causes of injury, type and location of the IOFB, and the occurrence of post-operative complications. A number of preoperative, intraoperative, and postoperative factors may affect the functional and anatomic outcomes of IOFB injuries.[3-4] Among the intraocular foreign bodies secondary to trauma, the presence of intraocular cilia (eyelashes) following penetrating injury or surgical intervention is rarely seen. Lerche first reported it in 1835.5 Intraocular cilia have been found in the anterior and posterior chambers, embedded in the iris, within the vitreous cavity and within the lens.[6-8] So far, there has been only one case reported on the cilia embedded in the retina.[9] The cilium may remain in the eye for a long period without causing any complication.[9] Globe may response in quite different ways to the intraocular eyelashes. Eyelash may both remain with no reaction or may also cause inflammation or infection in the early and late period.[10-11] Pars plana vitrectomy is performed at the time of IOFB removal in most cases. The advent of modern vitrectomy techniques and the use of intraocular forceps and intraocular magnets, have greatly improved the surgical control of the removal of IOFBs.[12-16] In this case report, we reported a patient who presented with an intravitreal eyelash, which was removed via a vitreous tunnel technique that newly introduced.

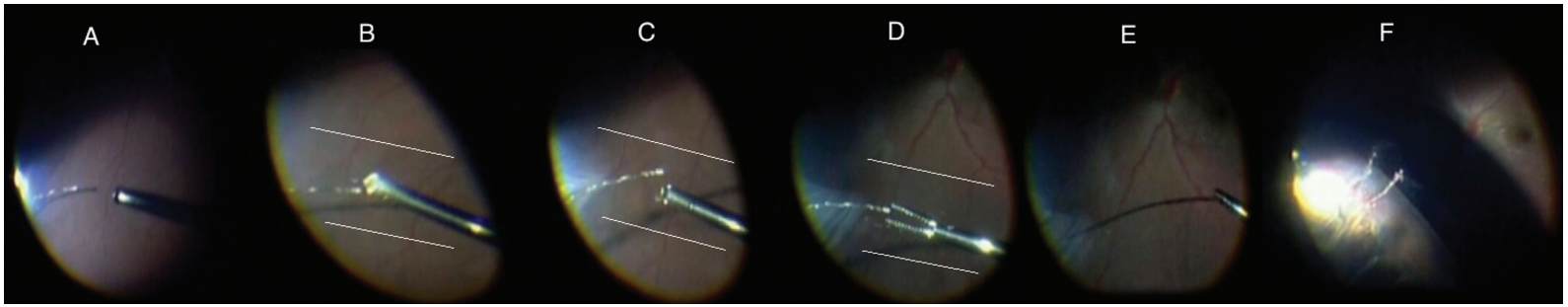
CASE REPORT

Eighteen year old male patient with dart arrow injury to right eye by scleral penetration with nasal entry. He had applied to emergency department with 16/20 uncorrected vision, 8 mmHg intraocular pressure, biomicroscopical examination revealed approximately 3 mm puncture wound at 1.00 o'clock 4-5 mm away from the limbus, with clear crystalline lens and fundus examination and intact retina. In posttraumatic period the case was evaluated as simple scleral trauma and operated at the same day. Vitreous prolapse was found in the scleral penetration field. The prolapsed vitreous was cut with the vitrectomy probe. Primary wound suturation was performed with 7/0 vicryl. The conjunctival wound was sutured with 8/0 vicryl. Postoperative topical [0.5% moxifloxacin (Vigamox©, Alcon Co. Inc. Canada)] therapy was prescripted as 5 times daily. However at the postoperative 1st day control of the patient the fundus examination revealed an embedded eyelash on the upper nasal pars plana region. There appeared to a fibrin reaction around the eyelash.

Surgical Method: At the second day, the case was underwent secondary intervention after detailed examination. Three 23 g trocar system was inserted to the 3.5 mm distance from the limbus with general anesthesia. Infusion cannula was inserted to the sub-temporal field and other trocars were fitted to the upper temporal and upper nasal field.

A tunnel was performed to the vitreous from the upper temporal trocar port to the upper nasal pars plana region (Figure a). At the speed of 2500 cut and 400 mmHg vacuum was used during the vitrectomy. It has been reached to the root of eyelash and completely cleaned the surrounding vitreous (Figure b,c). Dye material was not used during the vitrectomy, because inflammation caused condensation in the vitreous, and caused to differentiation between the vitreous and IOFB. Vitrectomy probe manipulations were performed to check for any vitreous traction in the tunnel between the upper temporal trocar and eyelash. The eyelash root was reached by a 23 G forceps jaws, and taken out from the upper temporal trocar (Figure d,e).

Iatrogenic vitreous traction was considered in every stage of the procedure. Vitreous material, which was seen around to incision field, was cleaned by indentation to the scleral penetration area (Figure f,g). One hour dial, 3 row of laser photocoagulation was performed to the ora serrata adjacent to the wound entry (Figure h). Trocar system was removed without suturing. Postoperatively topical antibiotic (Vigamox 5x1), steroids (dexamethasone 5x1) were used for 15 days. At the end of 6 months of follow up, uncorrected visual acuity was 20/20, intraocular pressure was 16mmHg and biomicroscopical examination was normal. Fundus examination reveals photocoagulation scars on the upper nasal region of the retina, and retina was intact.



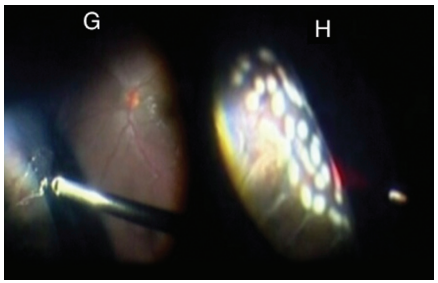


Figure a-h: *Demonstration of the removal of intraocular cilia from driven tunnel within the vitreous body by using 23-gauge vitrectomy instruments. Tunnel formation (a), reaching the cilium root and cleaning the surrounding vitreous (b,c), the eyelash removal via 23 G forceps jaws (d,e), cleaning eyelash bed (f,g). laser photocoagulation of ora serrate (h).*

DISCUSSION

Intraocular eyelash after penetrating injury is not a frequently seen ocular trauma type. L. Gopal and his colleagues presented a study between September 1978 and November 1998, it showed that 11 (0.4%) cases over 2.718 patients with intraocular foreign body had intraocular eyelash.[17] In another study conducted by Duke Elder, this rate was lower.[5] In the literature, the majority of injuries with intraocular eyelashes composed of globe penetration with metallic intraocular foreign bodies. Blinking reflex during the trauma causes eyelash entrance with foreign object into the globe. In our case, the eyelash entered to the intraocular space by the penetration of a dart arrow.

The reactions of the intraocular tissues to the eyelash generally cannot be predictable. Remaining in consideration for a long time without causing a reaction as well as cases of inflammation or infection may also be reported.[5,11] Several studies reported cases of iridocyclitis, granulomatous inflammation, cyst formation, abscess formation, and sympathetic ophthalmic syndrome, related to the intraocular eyelashes.[17]

Foreign body related inflammatory response depends on whether or not the colonization of pathogenic bacteria. In some cases, acute inflammatory reactions and endophthalmitis have been reported.[18] L.Gopal and friends reported varying degrees of inflammation in the 5 cases and 1 case with retinal detachment over 11 cases.[17] The high risk of complications led us to remove eyelash in this patient. In the literature, in some intraocular eyelash cases were followed up until the complication has been developed as well as in some series early taking off the eyelash by pars plana vitrectomy was performed before the complication has been developed.[19-20]

The IOFBs can be taken off by pars plana vitrectomy. However, in the patients undergoing PPV surgery, the risk of the complications such as cataract formation or iatrogenic ruptures are increasing due to the retraction during the peripheral vitreous removal. Despite the advances in the techniques and instrumentations used in vitreoretinal surgery, cataract remains the most frequent complication of pars plana vitrectomy.[21-22]

Cataract formation mechanisms after post PPV, is still not clear. Some of the factors predisposing the cataract formation are patient's age, pre-existing nuclear sclerosis, toxic effects of operating microscope light, intraoperative protein oxidation of the lens, silicone oil or the use of intravitreal gas, mechanical trauma and prolonged exposure time period of the irrigation solution.[21-23] The young age of our case and to protect the possible complications of pars plana vitrectomy; 23 G three-port system was used for the extraction of eyelash by creating tunnel in the vitreous. No complications were seen during the follow-up period, however in older ages the possible complications related to both PPV and the technique may cause uneventful results.

In IOFB injuries, scleral penetration and vitreous prolapse not only affect to the area of injury, also cause tractions particularly at the region of corresponds to the opposite side of the pars plana. This traction may leads to the risk of retinal rupture development and vitreous detachment at the vitreous basis, besides the lack of 360 degrees laser photocoagulation is another risk of retinal detachment of our surgery. The epiretinal membrane and cystoid macular edema developments are other two long-term complications. For this reason our surgery is appropriate for selected cases that may be followed up closely.

CONCLUSION

Tunnel creation in the vitreous body was considerably short technique compare to classical PPV. Most of vitreous body was preserved. The complications such as cataract and iatrogenic retinal tear were not seen. Shortened surgical time period was made the minimal light toxicity during the surgery. In young appropriate minimally traumatic selected cases, tunnel creation in the vitreous technique may be a fast and reliable method for the intraocular foreign body removal.

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