OLGU SUNUMU CASE REPORT

DOI: 10.5336/ophthal.2021-81634

Intraocular Lens Implantation with "Flattened Flanged Scleral Fixation Technique" in a 16-month-old Baby

16 Aylık Bebekte "Flattened Flanged Skleral Fiksasyon Tekniği" ile Göz İçi Lens İmplantasyonu

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ABSTRACT A 16-month-old male patient, who had a trauma in his left eye three months ago, was brought to our hospital. It was observed that the patient was aphakic on the left eye. It was decided to perform scleral fixation on the patient's eye with the "flattened flanged intrascleral intraocular lens fixation technique" described in adults previously. No other complications such as post-operative intraocular lens decentration, tilt, intraocular pressure increase, choroidal effusion, cystoid macular edema, and retinal detachment were observed. The operation time was 20 minutes. The Yamane technique provides significant advantages over other suture-free techniques. However, as the sclera is more flexible in children, the flange state of the haptics in the sclera is not sufficient for complete stabilization. The flattened flanged haptics provides stronger stability also.

Keywords: Aphakia; amblyopia; intraocular lens implantation

ÖZET İki ay önce sol gözünden travma geçiren 16 aylık erkek hasta hastanemize getirildi. Hastanın sol gözde afakik olduğu görüldü. Daha önce erişkinlerde tarif ettiğimiz "flattened flanged intraskleral göz içi lens fiksasyonu tekniği" ile hastaya skleral fiksasyon uygulandı. Postoperatif göz içi lens desantralizasyonu, tilt, göz içi basınç artışı, koroid efüzyonu, kistoid makula ödemi ve retina dekolmanı gibi hiçbir bir komplikasyon izlenmedi. Ameliyat süresi, 20 dk idi. Yamane tekniği, dikişsiz diğer tekniklere göre önemli avantajlar sağlar. Ancak çocuklarda sklera daha esnek olduğu için skleradaki haptiklerin topuz durumu, tam stabilizasyon için yeterli değildir. Topuzlaştırılmış haptiklerin yassılaştırılması ile daha güçlü stabilite elde edilir.

Anahtar Kelimeler: Afaki; ambliyopi; göz içi lens implantasyonu

Management of unilateral aphakia, especially in children, is quite challenging for the ophthalmologist. Today, the most preferred method to correct aphakia is the IOL implantation into the capsular bag.[1] However, this is not possible in cases like traumatized eyes in which capsular support is insufficient.[2] In these cases, the IOL can be implanted in the anterior chamber or fixed to the iris or sclera.[3,4] Many complications have been reported due to anterior chamber lenses, such as corneal endothelial loss, corneal decompensation, glaucoma, uveitis, peripheral anterior synechiae, pupillary ectopia, and iris sphincter erosion. Thus, iris-claw lenses, iris sutured IOLs, and scleral-fixated posterior chamber IOLs, which can be sutureless or use suture or glue, are surgical options.[5-7]

In this case report, we aimed to account for the surgery we performed with the "flattened flanged intrascleral IOL fixation technique" described previously to our 16-month-old patient who was aphakic due to trauma.[8] To our knowledge, our patient has been one of the youngest patients in the literature who has undergone scleral fixation surgery up to now.

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Peer review under responsibility of Turkiye Klinikleri Journal of Ophthalmology.

Received: 25 Jan 2021 ***Received in revised form:*** 12 Apr 2021 ***Accepted:*** 13 Apr 2021 ***Available online:*** 14 Apr 2021

CASE REPORT

A 16-month-old male patient, who had a trauma in his left eye three months ago, was brought to our hospital. The glass was broken in the hand of the patient three months ago before his admission and the broken glass pieces got into his left eye. Subsequently, the corneal perforation was repaired in another center. While there was light and object tracking in the right eye of the patient, it was not observed in the left eye. Digitally measured intraocular pressure (IOP) was normotonic in his right eye and hypotonic in his left eye. In the examination performed under general anesthesia, leucoma and corneal sutures were observed in the vertical corneal perforation line, starting from the lower limbus to the upper limbus, approaching 2.5 mm in the left eye. It was observed that the iris was completely attached to the incision site. A complete pupil structure was not observed due to this anterior synechiae. The anterior chamber was viewed as shallow. The optic axis was considered to be completely closed in the patient (Figure 1). Biomicroscobic and dilated fundus examination was normal on the right eye. In the B-mode ultrasonography, the retina was attached on the left eye.

Under general anesthesia and sterile conditions, a 1.2 mm side port incision was made from the temporal quadrant and the upper quadrant, and viscoelastic material was injected into the anterior chamber. The incision in the temporal quadrant was enlarged with a 2.8 mm keratome. The eye was fixed with a spatula placed through the side port made at 5 o'clock. The adherence of the iris along the vertical corneal perforation line was separated from the cornea with the help of a spatula and micro-scissors, and it was observed that the pupillary space was formed (Figure 2). The patient was found to be aphakic, the remaining capsule residues were removed and anterior vitrectomy was performed with a 23 Gauge (G) vitrectomy system. (Figure 3).

It was decided to perform scleral fixation on the patient's eye with the "flattened flanged intrascleral IOL fixation technique"[8] described previously. For the sclerotomy site, the initial marking was made using a tissue marker 2 mm away from the limbus. The second marking was made parallel to the first marked point, 2 mm away from the first marking and limbus. These two markings were repeated diametrically on the opposite side so that both haptic ports were symmetrical (Figure 4). Using a 27 G needle, it was entered through the marked area and advanced 2 mm intrasclerally parallel to the limbus utilizing premarked dots. Afterwards, it was turned radially into the eye and entered the anterior chamber. The 26 diopters (D) three-piece hydrophobic acrylic IOL was injected into the anterior chamber, while the leading haptic was pushed into the needle by guiding the tip of the 27 G needle (Figure 5). The first haptic needle was pulled out through the scleral tunnel. The tip of the haptic became flanged with the help of cautery and immediately was flattened with the help of the needle holder before it cooled. For the second hap-

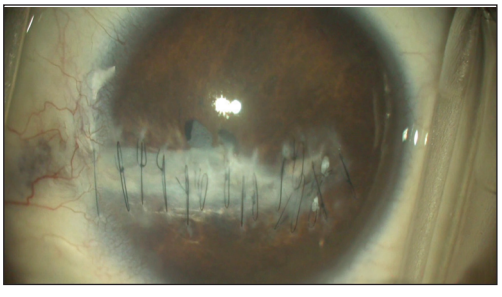

FIGURE 1: Pre-operative anterior segment view of the patient.

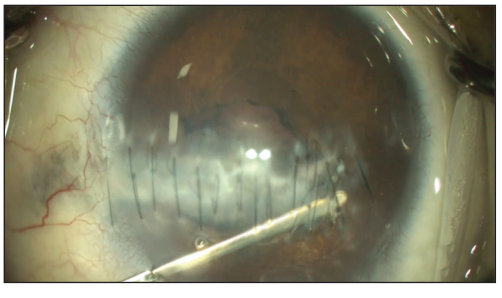

FIGURE 2: The pupillary space was formed.

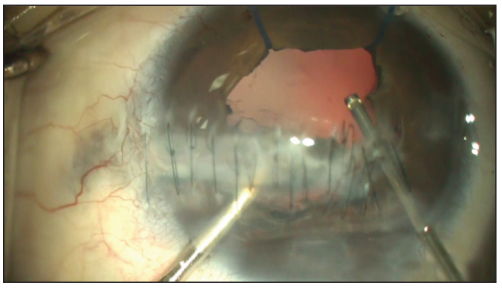

FIGURE 3: Anterior vitrectomy was performed.

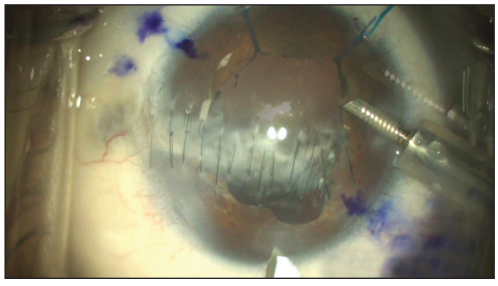

FIGURE 4: Markings were made for the scleral tunnels.

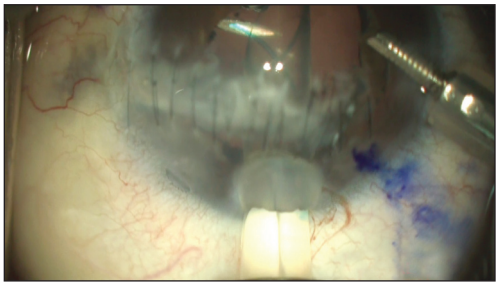

FIGURE 5: The leading haptic was pushed into the needle.

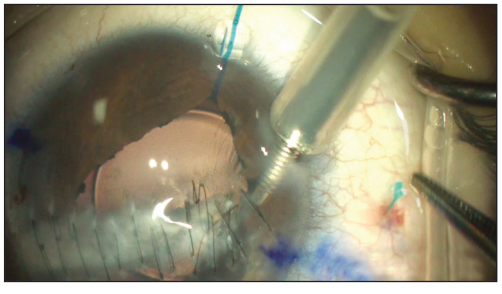

FIGURE 6: The flange was immediately flattened.

tics to be pushed into the 27 G needle in an easy manner, the 5 mm distal portion was straightened with the help of forceps. Afterwards, it was pushed into the anterior chamber and placed into the needle lumen with the help of forceps. The second haptic needle was pulled out. The flange was created by cauterizing the tip of the haptic and the flange was immediately flattened (Figure 6). The flattened portion of the haptics was pushed into the scleral tunnel and it was embedded in the tunnel.

Although the visual acuity could not be evaluated clearly due to the patient's age, his parents stated that the patient's visual behavior improved after the surgery. It was observed that the IOL was centralized in the post-operative 1st week, 1st month, and 3rd-month post-operatively. No other complications like post-operative IOL decentration, tilt, IOP increase, choroidal effusion, cystoid macular edema, and retinal detachment were observed.

A written informed consent was obtained from the patient's parents before the operation.

DISCUSSION

Various techniques have been described for IOL implantation in aphakic eyes without capsular support. Anterior chamber IOL implantation, which is one of these methods, is not recommended in children.[9] Complications such as chronic endothelial cell loss, spontaneous or traumatic iris disenclavation, and pupillary block seen in anterior fixated iris-claw lenses, have been serious limitations for this method.[10,11] Although it has been reported that endothelial cell loss is less in iris-claw lenses with retropupillary fixation, complications like IOL decentration, tilt, haptic disenclavation, and pupil ovalization have continued to be observed.[12] In addition, traumatic dislocation in these IOLs is an important limiting factor for this method, as children are prone to trauma.[13]

Given the life expectancy of children, prolene sutured scleral fixation IOLs carry the risk of late decentration and dislocation due to late suture breakage and fracture.[3,14] Therefore, sutureless or scleral fixation with glue techniques have been reported recently. In the study performed by Kumar et al. in 41 eyes, they created two scleral flaps, externalized the haptics with 20 G sclerotomies under the flap, and closed the flap with fibrin glue.[9] However, they reported that IOL decentration requiring secondary surgery was needed in two patients and optic capture was present in one patient.

The Yamane technique provides significant advantages over other suture-free techniques.[15] Given that it does not require conjunctival dissection or the creation of scleral flaps, this makes this method less complicated, less traumatic, and faster. It has been reported that the use of 30 G needles for externalization of haptics together with the flanged ends of the haptics provided post-operative IOL stability and reduced post-operative complications, such as leakage, hypotonia, and haptic exposure.[7,15] However, there

are negative aspects, such as the difficulty of catching the second haptics at the injector tip during surgery, slippery ground due to the flange structure, less stability of the IOL haptic, and IOL dislocation.

In our "flattened, flanged intrascleral IOL fixation" technique,[8] which we previously described in adult patients, unlike the Yamane technique, the second haptic is pushed into the anterior chamber after straightened with the help of the micropensets, and the engagement of the second haptic by the needle is very easy. This approach reduces the time loss due to difficulties in engaging the second haptic and thus shortens the duration of the surgery. Secondly, the flattening process we have made provides much more pronounced IOL stability, and also seriously prevents IOL tilt.

Scleral elasticity in children, especially thin sclera, and low scleral rigidity in patients with Marfan syndrome are important factors for this surgery.[7] Therefore, the fact that just flanged haptics are not sufficient for the stability of the IOL, and the flattened process should also be performed. Thus, more stable IOLs can be obtained by preventing haptic slippage.

In short, our technique, which we previously described in adults, can also be adapted to pediatric eyes and can provide good visual outcomes, minimal complications, and stable IOL fixation.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

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

This study is entirely author's own work and no other author contribution.

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