

A Modified Surgical Technique for Implantation of Scleral-Fixated Lens in Aphakia Via 23 Gauge Trocar System

Skleral Fiksasyonlu Göz içi Lensin Afakik Olgularda Yerleştirilmesinde 23Gauge Trokar Sistemi ile Modifiye Edilmiş Cerrahi Bir Teknik

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Case Report

Olgu Sunumu

ABSTRACT

Herein we describe a modified surgical technique that can be used to facilitate posterior chamber intraocular lens (IOL) implantation via 23 Gauge (G) trocar system in cases with compromised capsular support. A 65 year-old-man with aphakia in the right eye had undergone scleral fixated IOL implantation. The IOL implantation was performed by using a 23 G trocar and forceps instead of conventional methodology. A regular 9/0 polypropylene suture with free-ends was passed through the 23 G trocar and fixated to the haptic holes of the IOL. Then the IOL was implanted into the ciliary sulcus region via the previously prepared scleral tunnel. The method appears to be presumably effective, practical and timesaving for surgeons, but needed further investigations.

Key Words: Aphakia, lens implantation, scleral-fixated lens, trocar.

ÖZ

Arka kapsül desteğinin olmadığı afakik olgularda 23 Gauge (G) trokar sisteminin kullanıldığı modifiye cerrahi bir tekniği bu yazıda sunmaktayız. Altmışbeş yaşında sağ gözü afak olan hastaya skleral fiksasyonlu göz içi lensi yerleştirildi. Bu işlem esnasında 23 G trokarlar ve forseps klasik yöntemin yerine kullanıldı. Sıklıkla kullanılan 9/0 polen sütün serbest uçlarından, 23 G trokarlardan geçirildikten sonra göz içi lensinin haptik deliklerine bağlandı. Bu metod gerçekten cerrahlar için zaman kazandıran pratik bir etkin metod olarak gözükmekle birlikte, ileri araştırmalar gerekmektedir.

Anahtar Kelimeler: Afaki, lens implantasyonu, skleral fiksasyonlu lens, trokar.

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INTRODUCTION

Optical rehabilitation of aphakia include unilateral aphakic spectacle, contact lens, epikeratophakia, an anterior chamber intraocular lens (IOL) implant, an iris-fixated IOL implant, or a scleral fixated posterior chamber IOL implant.^{1,2} Historically, rigid lenses with specially designed holes on the haptics were used, and they were anchored with 10/0 polypropylene (prolene) sutures. Recently, foldable IOLs have also been used with equally good results.³ We describe a modified technique in which, an implantation method for scleral fixated IOL is used as an alternative to conventional techniques.

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CASE REPORT

A 65-year-old man with aphakia had scleral fixated IOL implantation in his right eye. A superior conjunctival limbal incision was made extending approximately 120° for a scleral tunnel. Two small conjunctival incisions were also created at the nasal and temporal regions approximately 1.5 mm away from limbus. 23 gauge (G) trocars (MedOne Surgical, SARASOTA, FL, USA) were inserted through the sclera approximately 1.5 mm from limbus before being entered into the anterior chamber (Figure 1). After anterior vitrectomy, the anterior chamber and retropupillary space were filled with an ophthalmic viscosurgical device (OVD) in order to protect the endothelium, push the vitreous back, move the iris forward and expand the posterior chamber. A double-armed, 9/0 polypropylene suture on an Ethicon needle (CIF-4, 13 mm tapercut) was divided into two pieces. The free-end of the 9/0 polypropylene suture was grasped with the 23 G vitrectomy forceps and passed through the scleral port into the eye and then guided by the forceps to the outside of the eye to fasten to the haptic IOL (Figure 2). The same procedure was repeated at the opposite meridian.

After the sutures were replaced, the IOL was inserted slowly into the sulcus through the scleral tunnel by firmly and simultaneously pulling the threads out of the globe to prevent the suture from wrapping around the IOL (Figure 3). The scleral tunnel wound was closed with a 10-0 nylon suture. After the tension of the suture and the IOL position were adjusted, the knots were buried according to the method described by Baykara et al as follows.⁴ The needle is shortly passed through the sclera, free-end with needle and the other end are tied using classic tying method. For burial procedure, free-stranded needle passed through the previous loop and passed again in same direction to make a secondary loop over the first one. Then, the free end is passed through the recent-

ly formed loop at last and the needle is inserted in the sclera at the point closest to the performed knot and advanced in a lamellar fashion.

This technique was used in the event a secondary IOL was needed and did not have sufficient capsular support. Postoperatively, IOL centralization was good and visual acuity improved to 80/200 as preoperatively corrected. No complications, including suture protrusion, were noted in the follow up.

DISCUSSION

One surgical management option for capsular support deficiency is the scleral fixation IOL method. The McCannel suture technique was used to fix the haptic IOL onto the peripheral iris.⁵ Suturing the IOL through the pars plana was first reported by Girard⁶ and improved by Teichmann,⁷ but it did not become as popular as the ciliary sulcus fixation technique. An early series of ciliary sulcus fixated sutured IOLs used the ab interno technique⁸⁻⁹ in which a long suture needle is inserted through the superior corneascleral incision to penetrate the ciliary sulcus from the inside out. A disadvantage of the ab interno technique is that during penetration, with the needle tip obscured by the iris, the direction of needle and the penetrating site are sometimes difficult to control.

In 1991, Lewis reported an additional ab externo technique that had the advantage of buried knots under the triangular flap and precise placement of scleral-fixated sutures. During the procedure the surgeon's view is less obscured. The procedure is widely used and similar to our technique in some parts. One disadvantage of this technique was the time required to create flaps, particularly under the most vasculized area of the conjunctiva. To improve this, Lewis reported sulcus fixation without flaps.¹⁰

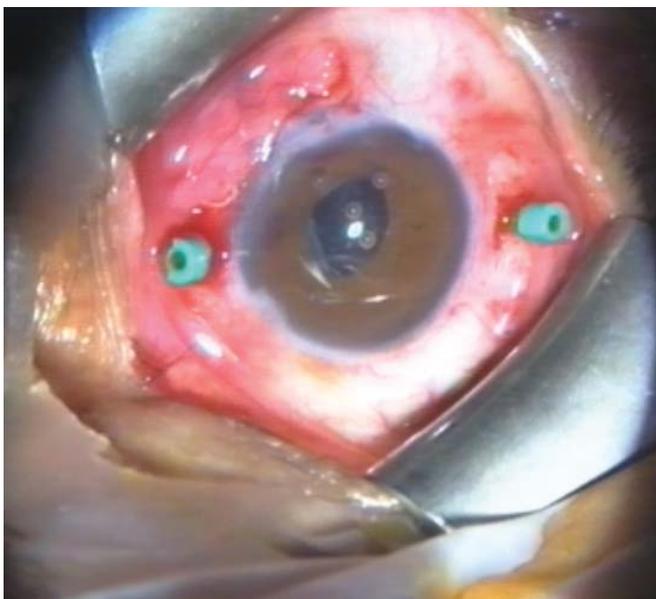


Figure 1: 23 G trocars were inserted through the sclera at 4 and 9:30 o'clock.

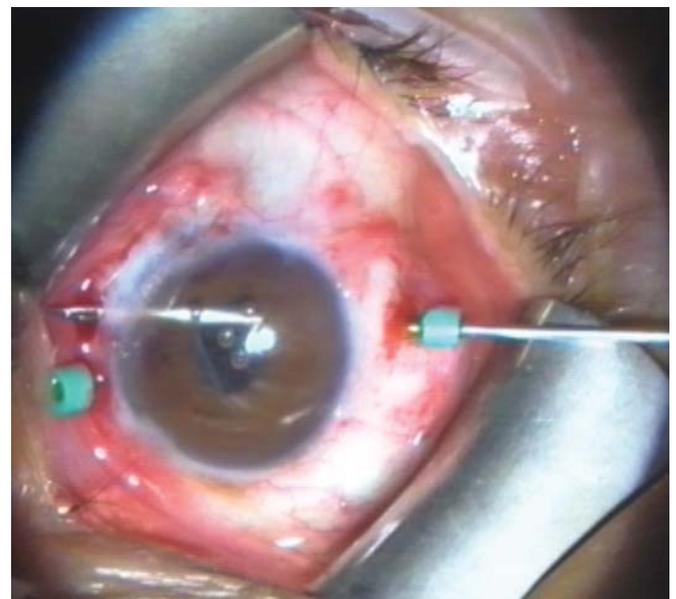


Figure 2: The free end-suture is passed through 23 trocar with the help of a 23 G forceps and taken out to tie through the lens haptic.

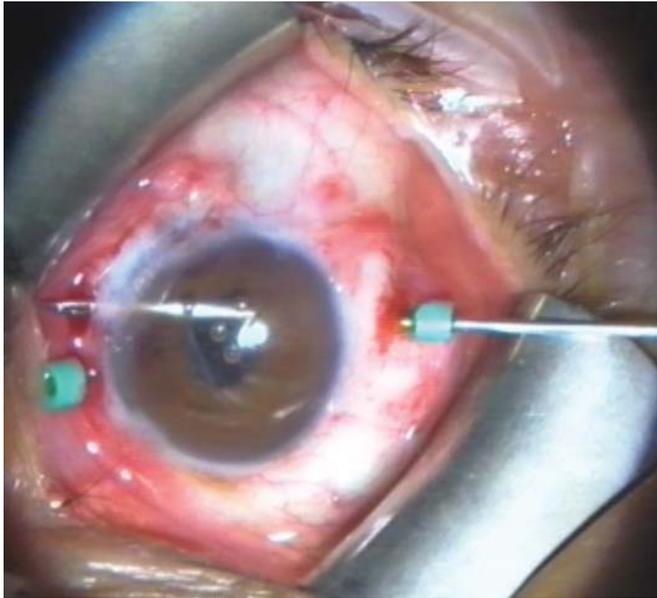


Figure 3: The IOL was inserted slowly into the sulcus through the scleral tunnel by firmly and simultaneously pulling the threads out of the globe to prevent the suture from wrapping around the IOL.

Our technique has advantages over other fixation methods. It needs only one suture material with a double-armed regular needle, no needle guide is necessary and there is no need for scleral flap preparation. In addition, this technique provides vitreoretinal surgeons with a good option to perform SFIOL fixation immediately following 23 G or 25 G posterior segment surgery or for cataract surgeons a chance to perform anterior and/or posterior vitrectomies when needed. We consider that placing the 23 G trocars (or 25 G trocars may be preferred) at 3 and 9 o'clock will be more suitable for this type of manipulation and using reusable trocars and forceps will facilitate cost-effective surgery.

Placing one of the trocars at 9.30 using disposable trocars and forceps was a limitation in our method. It is known that under the cover of the conjunctiva and tenon, a well-buried suture (the technique mentioned above) is less dangerous and causes no suture-related complications. Consequently, the method indeed seems to be presumably effective, practical and timesaving for surgeons, but needed further investigations.

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