

Scleral Fixation of Sinking Bag-IOL Complex: A New Surgical Technique

Jagat Ram*, Rishiraj Singh, Varshitha Hemanth, Parul Chawla Gupta, Rohit Gupta and Simar Rajan Singh

Post Graduate Institute of Medical Education and Research, Chandigarh, India

*Corresponding author: Jagat Ram, Advanced Eye Centre, Post Graduate Institute of Medical Education and Research, Sector 12, Chandigarh 160012, India, Tel: 919876081419; E-mail: drjagatram@gmail.com

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Abstract

Treatment options for symptomatic subluxated or dislocated IOLs include observation; and repositioning, removal, or exchange of the IOL. We describe a surgical technique of trans-scleral suture fixation for subluxated bag-IOL complex. A 29 year old male; known case of bilateral recurrent tubercular panuveitis underwent left eye phacoemulsification with three piece hydrophobic acrylic IOL implantation a decade ago. He presented with decreased vision and monocular diplopia since one week. A diagnosis of subluxated bag-IOL complex was made. A 9-0 polypropylene suture was passed beneath the opposite scleral flaps and was taken out through superior stab incision. After exteriorizing both the haptics, they were sutured with prolene. Bag-IOL complex was centered and was fixated trans-sclerally under the scleral flaps. The bag-IOL complex remained stable and well centered 12 months following trans-scleral suture fixation with good visual outcome. This technique can be used in any case of postoperative bag-IOL complex subluxation or dislocation to achieve stabilization.

Keywords Scleral fixation; Sinking bag-IOL complex; Subluxated IOL; 9-0 Polypropylene

Introduction

Incidence of subluxation/dislocation of posterior chamber IOL after complicated cataract surgery ranges from 0.2-3.0% [1]. Although malpositioning of the intraocular lens (IOL) is rare in the modern cataract surgery era, but several predisposing conditions like pseudoexfoliation [1,2], uveitis [3,4], trauma [5] or anterior capsular phimosis can lead to either subluxation or dislocation of bag-IOL complex [6]. In contrast to IOL dislocation, bag dislocation occurs as a result of progressive zonular dehiscence even after years of uneventful surgery. Surgical management of subluxated bag-IOL complex is essential in symptomatic patients. Several techniques have been described for the repositioning of the bag-IOL complex [4]. We are describing a modified technique for repositioning of the complex.

Case Presentation

A 29 year young male was under regular follow-up in our tertiary care referral hospital, situated in Northern India, for over a decade for bilateral recurrent tubercular panuveitis and developed progressive visually significant bilateral posterior subcapsular cataract.

The left eye had phacoemulsification with three piece hydrophobic IOL implantation in the capsular bag a decade ago and in the right eye had a similar procedure two months later. Postoperatively, the best corrected visual acuity (BCVA) was 20/20 in both the eyes. Anterior chamber inflammation after phacoemulsification was persistent yet manageable with topical steroids. Minimal posterior segment inflammation was seen and scleral depression was performed on rare occasions; with diligence.

In the left eye pars-plana vitrectomy was performed for the vitreous hemorrhage two years after cataract surgery and Nd-YAG laser capsulotomy was done for posterior capsular opacification thereafter.

Now patient presented with complaints of decreased vision, glare, and monocular diplopia in the left eye since the past one week. On examination, right eye had well centered PCIOL with minimal inflammation, while in the left eye, though anterior chamber inflammation was controlled, but an inferiorly subluxated bag-IOL complex (Sun-set complex) was seen. Visual acuity dropped to 6/60 and IOP was 14 mmHg with presence of pseudo-phacodonesis.

Surgical procedure for fixation and centration of left eye decentered bag-IOL complex was carried out under peribulbar anesthesia. Adequate pupillary dilatation was achieved with the placement of four iris hooks. Bag-IOL complex was subluxated inferonasally with anterior capsular phimosis. Localized conjunctival peritomy was performed at 2 and 8 o'clock with the fornix based flap; limited wet field cautery was done to achieve hemostasis.

Partial-thickness triangular limbus-based scleral flap (3.0 mm × 3.0 mm) was made at the peritomy site. Superior haptic was mobilized with Osher Y-hook and brought in the field of view.

The needle of a 9-0 polypropylene (Prolene) suture with straight 16.0 mm STC-6 needle (Ethicon Inc.) was introduced into the eye under the scleral flap 1.5 mm posterior to the limbus, and was retrieved with the help of 26 gauge needles under the opposite scleral flap (Figure 1). Two limbal stab incisions were made for haptic externalization and the loop of 9-0 polypropylene was retrieved from the superior stab incision. Loop was cut into two ends to fix the haptics. Superior haptic was exteriorised; secured with one end of 9-0 prolene suture and repositioned back in the posterior chamber. (Figure 2) Other end of the 9-0 prolene suture and inferior haptic was exteriorized from the other stab incision. Inferior haptic was secured and repositioned similarly (Figure 3). The bag-IOL complex was pulled back centrally in the pupillary area and the suture was fixed intrasclerally/trans-sclerally with 3 square knots (Figures 4 and 5). Sclera flaps were sutured with 10-0 nylon. Conjunctival flaps were closed using bipolar wet field cautery. The corneal incisions were hydrated.

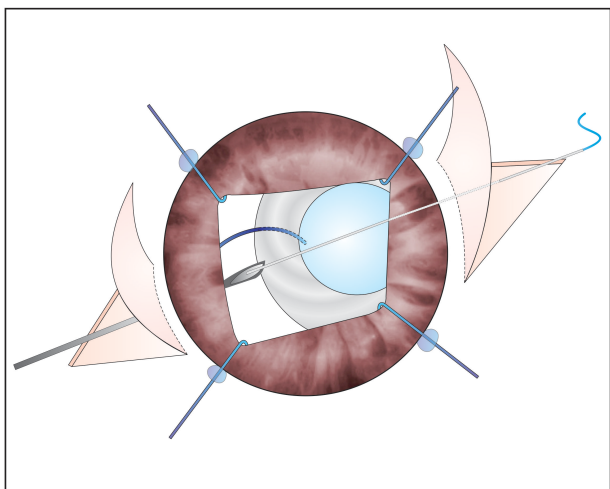


Figure 1: Straight needle of 9-0 polypropylene suture was passed beneath the scleral flap and was retrieved with the help of long 26 gauge needle beneath the opposite sclera flap.

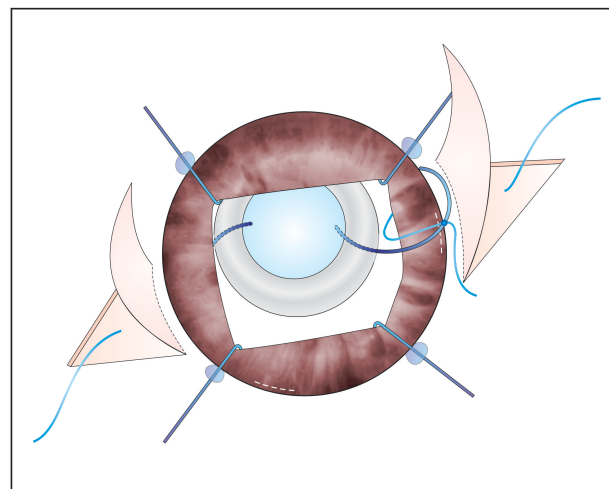


Figure 3: Second cut end of 9-0 prolene suture was taken out through paracentesis (dashed lines). Second haptic was exteriorized and secured with prolene suture.

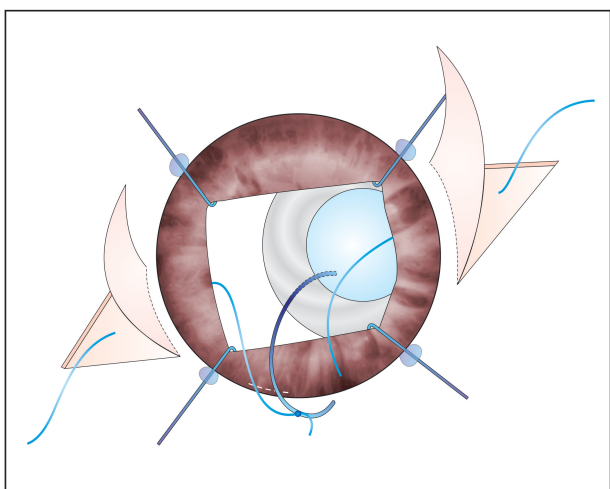


Figure 2: Loop of 9-0 prolene suture was cut and one end was taken out through paracentesis (dashed lines). Superior haptic was exteriorized and secured with prolene suture.

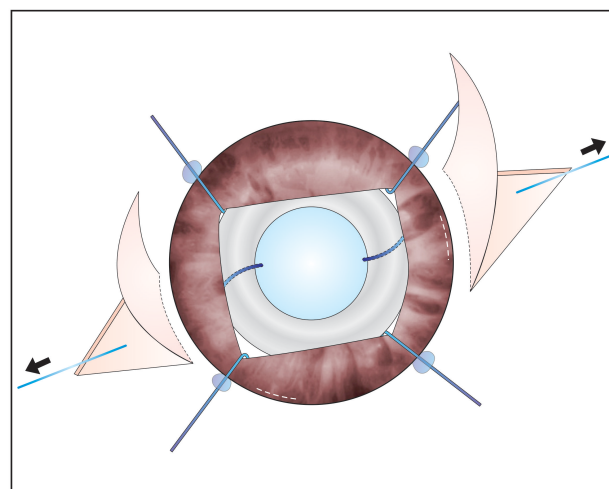


Figure 4: Well centered bag-IOL complex after pulling both ends of 9-0 prolene suture.

On the first postoperative day BCVA was 6/9 (-1.0DS/-0.5DCx 65) and bag-IOL complex was well centered. This patient was followed up for over 24 months and the bag-IOL complex maintained its normal anatomical position. The bag-IOL complex stability was evaluated in terms of centration and tilting using slit lamp biomicroscopy. Patient maintained BCVA of 6/9 and an IOP of 12 mm Hg.

Discussion

Treatment options for symptomatic subluxated or dislocated IOLs include observation; repositioning, removal, or exchange of the IOL [3]. Repositioning of similar preexisting IOL has several advantages like avoiding a limbal incision for IOL removal, minimizing trauma to the corneal endothelium, limiting the postsurgical astigmatism and also providing optimum long-term visual and structural stability [4]. Exchanging the IOL with trans-scleral fixation involves the risk for vitreous prolapse and choroidal bleeding [5].

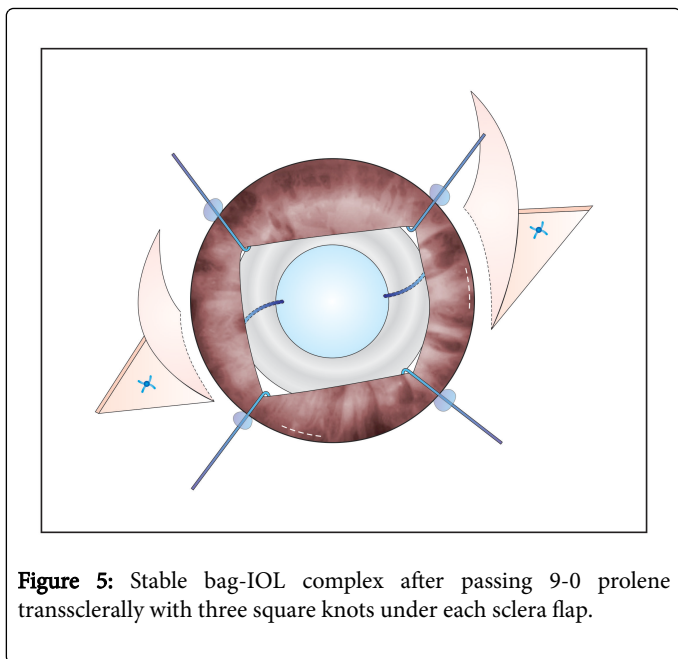


Figure 5: Stable bag-IOL complex after passing 9-0 prolene transsclerally with three square knots under each sclera flap.

Several predisposing factors have been described for the subluxation of the bag-IOL complex. In-the-bag intraocular lens (IOL) dislocation is an unusual complication of cataract surgery, being associated with pseudoexfoliation, previous vitreoretinal surgery, myopia and uveitis [7,8]. Other predisposing factors include trauma, retinitis pigmentosa, diabetes mellitus, atopic dermatitis, previous acute angle-closure glaucoma attack, and connective tissue disorders [9]. In our patient; along with uveitis, presence of anterior capsular phimosis and history of Nd-YAG capsulotomy and pars plana vitrectomy for vitreous hemorrhage were predisposing factors for the subluxation of bag-IOL complex. In uveitis, an altered blood-aqueous barrier may allow cytokines to stimulate epithelial cell proliferation and increase capsule contraction. In addition, inflammation of the ciliary body could destabilize the zonules at their insertion sites [10].

Angle-supported, or iris-supported IOLs, are not considered safe in this patient group and scleral-fixated posterior chamber IOLs are the favoured approach in our tertiary care referral center. Hence, this technique was employed to prevent corneal endothelial cell loss and minimize further inflammatory damage to the iris.

A similar technique was described by Oshika [11] for subluxated bag-IOL complex except that we modified this technique in two ways. First, we created a scleral flap because that avoids blind insertion of the needle in the sulcus area and decrease the chances of bleeding and second, we used a nesting needle; which helps in positioning the bag-IOL complex for easy visualization while piercing with prolene suture. This avoids slippage of the suture and easy placement of the needle. Other techniques described in literature for sclera fixation of IOLs are the Lewis technique [12], Kaluzny modification of scleral fixation of IOL [13] and the technique introduced by Seki et al. [14].

Our technique has several advantages over other techniques like fixing the bag-IOL complex to its anatomical position which is the most appropriate position with decreased chances of iris rubbing and postoperative inflammation. In this technique, haptic maneuvering is also minimal. The only movement that occurs is during IOL repositioning, when the knot is tied. We preserved the posterior chamber IOL in its anatomically correct position as the anterior chamber IOL causes corneal endothelial cell loss and inflammatory damage to the iris. Thus, we may encounter similar situations in near future since large number of complicated cataract surgeries are performed nowadays and our technique is useful for such cases.

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