Introduction: Late in-the-bag intraocular lens (IOL) dislocation is a serious complication of cataract surgery.

Patient and clinical findings: A 70-year-old woman with a history of left eye cataract surgery presented with progressively decreasing vision that had worsened over the past 6 months. In the left eye, the uncorrected distance visual acuity (UDVA) was counting fingers at 5 m, the corrected distance visual acuity (CDVA) was 20/25 (+12.25 /C0 1.25 × 180), and the intraocular pressure was normal. An anterior segment examination revealed severe inferior dislocation of the IOL-capsular bag complex.

Diagnosis, intervention, and outcomes: The patient was diagnosed with late in-the-bag IOL dislocation and underwent explantation of the entire capsular bag with implantation of a sulcus-sutured IOL using a new scleral fixation technique that included fixation of a foldable acrylic IOL with polytetrafluoroethylene suture. The postoperative outcome was good; the UDVA was 20/70, and the CDVA was 20/25, and there were no postoperative complications such as infection, suture erosion, iritis, uveitis, vitreous hemorrhage, or retinal detachment.

Conclusions: Late in-the-bag IOL dislocation was safely managed with IOL–capsular bag complex explantation and scleral fixation of a foldable posterior chamber IOL. This transfixion technique can be used for scleral fixation in patients with late in-the-bag IOL dislocation.

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Late in-the-bag intraocular lens (IOL) dislocation is a serious complication of cataract surgery; it usually occurs several years postoperatively. Pseudoexfoliation has been identified as an important risk factor for zonular weakness and spontaneous in-the-bag IOL dislocation.

Depending on the clinical situation, type of IOL, and surgeon’s preference, patients with IOL dislocation may undergo explantation or repositioning for visual recovery. Explantation of the entire capsular bag with implantation of a sulcus-sutured IOL or an anterior chamber IOL is often needed. Various surgical techniques for scleral fixation of foldable posterior-chamber intraocular lenses (PC IOLs) have been described over the years. Many of them involve the use polypropylene sutures of varying thickness, although techniques involving the use polytetrafluoroethylene sutures have also been described. All the techniques involving the use of sutures have been specially developed for foldable IOLs, such as the hydrophilic acrylic Akreos IOL (Bausch & Lomb) that has 4 eyelets that allow IOL fixation at four points. Techniques for scleral fixation that do not involve the use of sutures have also been described. The fibrin glue-assisted sutureless foldable PC IOL scleral fixation, and flanged intrascleral foldable PC IOL fixation techniques have been developed for 3-piece foldable IOLs and cannot be used for 1-piece IOLs.

We report the case of a patient with late in-the-bag IOL dislocation who underwent explantation of the entire IOL–capsular bag complex and implantation of a sulcus-sutured foldable PC IOL using a recently developed scleral fixation technique that is suitable for use with all types of acrylic foldable PC IOLs.

Patient Consent Statement

Informed consent for the surgery was obtained from the patient after a complete explanation of the procedure.

CASE REPORT

A 70-year-old woman presented to the clinic with progressively decreasing vision that had worsened over the past 6 months. Ten years ago, she had undergone left eye cataract surgery at another center. In the left eye, the uncorrected distance visual acuity was counting fingers at 5 m, the corrected distance visual acuity was 20/25 (+12.25 −1.25 × 180), and the intraocular pressure was normal. An anterior
Segment examination revealed severe inferior dislocation of the IOL–capsular bag complex, and only the superior edge of the IOL was visible under mydriasis (Figure 1). Posterior segment examination results were unremarkable.

The entire IOL–capsular complex was extracted, followed by scleral fixation of a hydrophobic, acrylic, foldable, 3-piece IOL (Sensar AR40) using the transfixion technique. The foldable PC IOL was prepared under a surgical microscope preoperatively. Using a caliper, 4 marks were made on the IOL optic (2 on either side, 2.5 mm apart) at 1.0 mm from the haptic base for the transfixions (Figure 2, A). A needle with a Gore-Tex CV-8 suture (expanded polytetrafluoroethylene) was passed through the first transfixion point from the anterior to the posterior face of the IOL (Figures 2, B and C), after which it was passed in front of the haptic (Figure 2, D) and through the second transfixion point from the posterior to the anterior face of the IOL (Figure 2, E). The same technique was repeated on the opposite side of the IOL (Figure 2, F).

Two conjunctival peritomies were created at 180 degrees from each other on the nasal and temporal sides. Four sclerotomy sites were marked (2 each on the nasal and temporal sides, 4.0 mm apart) at 2.0 mm from the limbus. A 4.0 mm, vertical, partial-thickness scleral groove was then created between the sclerotomy sites using a 15 degrees blade. A 20-gauge microvitreoretinal blade was used to perform sclerotomies at the 4 premarked sites. Two 1.2-mm paracentesis incisions were made in the peripheral clear cornea with a 15-degree lance tip to facilitate bimanual irrigation/aspiration, bimanual anterior vitrectomy (if required), and injection of an ophthalmic viscosurgical device.

Cohesive ophthalmic viscosurgical devices were used to maintain globe integrity during surgery. A micrograsper was introduced through one of the scleral openings, and it was used to lift the IOL–capsular bag complex into the anterior chamber and place it above the iris plane (Figures 3, A and B). Significant capsular fibrosis and a soaking ring were noted. A 3.5 mm limbal corneal incision was created superiorly with a blade. The IOL was then trisected using IOL cutting microscissors, and 2 of the pieces were removed from the eye (Figure 3, C). The Soemmerring’s ring was also removed, and an anterior vitrectomy was performed. Then, one end of a polytetrafluoroethylene suture without a needle was placed in the anterior chamber through the main wound (Figure 3, D); it was retrieved and externalized through the inferior scleral opening with micrograspers using the handshake technique. The other end of the suture was similarly retrieved and externalized through the scleral opening on the opposite side. The IOL was then folded along its long axis using forceps and introduced into the posterior chamber through the corneal wound (Figure 3, E). The exposed polytetrafluoroethylene suture was placed within the surgically created vertical scleral groove. The suture knots were buried within the scleral openings (Figure 3, F). The 2 sets of sutures on the nasal and temporal sides were then tightened, adjusted for optimum IOL centration, and tied; the excess sutures were cut (Figure 3, G). The corrected distance visual acuity was 20/25 (+0.50 – 1.25 × 180 degrees). There were no postoperative complications, such as infection, suture erosion, iritis, uveitis, vitreous hemorrhage, or retinal detachment. A well-centered IOL with no tilt was observed on

![Figure 1](image1.png)  
**Figure 1.** Anterior segment photograph showing severe inferior dislocation of the IOL–capsular bag complex.

![Figure 2](image2.png)  
**Figure 2.** Diagram of the IOL transfixion technique. A: For the transfixions, 4 marks are made on the IOL optic (2 on either side, 2.5 mm apart) at 1.0 mm from the haptic base. B and C: The needle of the polytetrafluoroethylene suture is passed through the first transfixion point from the anterior to the posterior face of the IOL. D: The suture is then passed in front of the haptic. E: The needle is passed through the second transfixion point from the posterior to the anterior face of the IOL. F: The same technique is repeated on the opposite side of the IOL.
ultrasound biomicroscopy at the 6-month follow-up (Figure 4).

DISCUSSION

Late in-the-bag IOL dislocation is challenging to treat. It has been associated with predisposing factors; Lorente et al. found that 68.88% of patients with late in-the-bag IOL dislocation had an associated condition.1,2,11 Pseudoexfoliation was the most common associated condition, accounting for 66.66% of cases. In this case, we were unable to identify any associated condition.

There are many treatment options for in-the-bag IOL dislocation.1,11 Surgery is always recommended, irrespective of the size of the dislocation.11 A randomized clinical trial12 on the surgical options for late in-the-bag IOL dislocation revealed that both IOL repositioning with scleral suturing and IOL exchange with a retropupillary iris-claw IOL provided similar visual outcomes. In this case, repositioning and scleral suturing of the IOL–capsular bag complex would have been very difficult because of capsular fibrosis and contraction. Late dislocation usually occurs several years after cataract surgery, and it generally results from slowly progressing zonular dehiscence and capsular bag contraction.1,11 We obtained good postoperative results by explanting the IOL and performing scleral fixation using a previously reported technique, which included transfixion of a foldable acrylic IOL with polytetrafluoroethylene sutures.10 IOL transfixion was first described by Parker and Price in 2003.13 They sutured a silicone PC IOL to the iris by passing a 9-0 polypropylene suture through its optic. Canabrava recently described a piercing technique for scleral fixation that involves passing a 6-0 polypropylene suture through 2 holes created using an IOL punch in the optic zone on each side of the foldable IOL.14 However, he does not recommend using this technique because the IOL is fixed at only 2 points, and the fixation axis subsequently tilts in the opposite direction. Assia and Wong recommend direct suturing through the haptic or optic of practically any foldable IOL, including hydrophilic and hydrophobic IOLs with a 1-piece or 3-piece design.15 Other techniques for scleral fixation use 6-0 polypropylene (Canabrava 4-flanged technique) and polytetrafluoroethylene sutures.6,7 Although these techniques are only used for implanting foldable IOLs with 4 loops, such as the hydrophilic acrylic Akreos IOL (Bausch & Lomb), they enable stable scleral fixation at 4 points. The main disadvantage of flanged techniques is the possibility of bacterial infection because the flange might serve as a point of entry into the eye for microorganisms.15

We developed the transfixion technique because it is often difficult for us to obtain foldable PC IOLs with 4 eyelets at our institution. Our technique has various advantages. It can be applied with any acrylic PC IOL, regardless of whether it is a 3-piece, 1-piece, or haptic IOL.10 It includes stable 4-point fixation, thereby avoiding the IOL tilt often seen with 2-point fixation. Furthermore, the 4-point IOL fixation and minor adjustments to the
polytetrafluoroethylene sutures on the temporal and nasal sides aid in centration.

At the 18-month follow-up, our patient showed no sign of suture degradation or optic opacification or tears at the transfixion points. The disadvantage of the transfixion technique is that, in some countries, Gore-Tex suture is not available or has not been approved because the manufacturer warns against its intraocular use.

Late in-the-bag IOL dislocation can be safely managed with IOL–capsular complex explantation and scleral fixation of a foldable posterior chamber IOL. The transfixion technique can be used for scleral fixation in patients with late in-the-bag IOL dislocation. Further studies with larger samples and longer follow-up periods are necessary to better assess the overall safety of this technique and the resulting IOL integrity, stability, and tilt.

Acknowledgments

Editage (www.editage.com), edited the English language.

WHAT WAS KNOWN

- Late in-the-bag IOL dislocation is a serious complication of cataract surgery.
- It mainly occurs in patients with associated factors such as pseudoexfoliation.

WHAT THIS PAPER ADDS

- Late in-the-bag IOL dislocation can be safely managed with IOL–capsular bag complex explantation and scleral fixation of a foldable posterior chamber IOL.
- The transfixion technique can be used for scleral fixation in these patients.

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