



Retropupillary Iris Claw Intraocular Lens Implantation in Patient with Late Intraocular Lens Dislocation – A Case Report

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ABSTRACT

Introduction: Late intraocular lens dislocation is an uncommon complication of cataract surgery but still a serious condition. Surgical approaches to improve better vision is by repositioning the existing intraocular lens (IOL) or replacing with a new IOL by fixing it either to anterior chamber (ACIOL), to the scleral wall, or to the iris (iris claw). **Case:** A 53-year-old woman with blurry vision in the past 2 years with history of phacoemulsification cataract surgery on both eyes in 2008. The examination showed the patient's left eye had 20/400 vision with a posterior dislocated IOL in the anterior vitreous cavity within the pupillary area. Considering the possibility of subclinical damage from previous cataract surgery, the low Endothelial Cell Density and approximately 15% ruptured ciliary zonule, retropupillary iris claw was chosen as the surgical approach. The visual acuity improved to 20/40 at follow up one week later, and improved to 20/30 after one month, iris claw intraocular lens (ICIOL) was intact with no complications. **Discussion:** Late IOL dislocation is a rare but increasingly recognized late complication of cataract surgery, primarily resulting from progressive zonular weakness, with aging likely contributing in this patient. Successful management was achieved by exchanging the dislocated IOL with a retropupillary iris claw IOL, providing good visual recovery without major early postoperative complications. **Conclusion:** Replacing new IOL using retropupillary iris claw procedure as a less invasive and safe procedure can improve visual acuity with minimal complication.

Keywords: Case report, cataract, intraocular lens dislocation, retropupillary iris claw.

ABSTRAK

Pendahuluan: Dislokasi lensa intraokular fase lanjut merupakan komplikasi yang jarang terjadi setelah operasi katarak, namun tetap menjadi kondisi serius. Penatalaksanaan dengan bedah untuk meningkatkan penglihatan dapat dilakukan dengan reposisi IOL (lensa intraokular) yang ada atau menggantinya dengan IOL baru melalui fiksasi pada bilik mata depan (*anterior chamber IOL/ACIOL*), dinding sklera, atau iris (*iris claw*). **Kasus:** Perempuan berusia 53 tahun dengan penglihatan kabur sejak 2 tahun terakhir dan memiliki riwayat operasi katarak fakoemulsifikasi pada kedua mata pada tahun 2008. Pemeriksaan menunjukkan tajam penglihatan mata kiri 20/400 dengan IOL terdislokasi posterior ke rongga vitreus anterior dalam area pupil. Dengan mempertimbangkan kemungkinan kerusakan subklinis akibat operasi katarak sebelumnya, nilai Endothelial Cell Density yang rendah, serta ruptur sekitar 15% pada zonula siliaris, dipilih teknik *retropupillary iris claw*. Satu minggu pasca-operasi, tajam penglihatan meningkat menjadi 20/40 dan membaik lebih lanjut menjadi 20/30 setelah satu bulan. ICIOL tetap stabil tanpa komplikasi. **Pembahasan:** Dislokasi lensa intraokular (IOL) laten merupakan komplikasi jangka panjang yang jarang terjadi namun semakin sering dikenali dari operasi katarak, yang terutama disebabkan oleh melemahnya zonula secara progresif, dengan faktor penuaan kemungkinan berperan pada pasien ini. Penanganan yang berhasil dicapai dengan mengganti IOL yang mengalami dislokasi dengan *retropupillary iris claw IOL*, sehingga memberikan pemulihan penglihatan yang baik tanpa komplikasi pasca-operasi awal yang serius. **Simpulan:** Penggantian IOL menggunakan teknik *retropupillary iris claw* merupakan prosedur minimal invasif, aman, dan efektif, yang dapat memberikan perbaikan tajam penglihatan dengan risiko komplikasi rendah. **Elsye Jasicha Ly, Alif Reza Faizal. Implantasi Lensa Intraokular Retropupillary Iris Claw pada Pasien dengan Dislokasi Lensa Intraokular Fase Lanjut – Laporan Kasus.**

Kata Kunci: Laporan kasus, katarak, dislokasi lensa intraokular, *retropupillary iris claw*.

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INTRODUCTION

Cataract surgery, as the most common eye surgery, is becoming a faster and safer procedure with improvements in intraocular lenses (IOLs) and surgical tools. Most cataract surgeries have successfully repaired patients' vision and improved the quality of life.¹ However, there are still chances for early and late post-operative complications.² Early complications include shallow anterior chamber, iris prolapse, uveitis, endophthalmitis, and toxic anterior segment syndrome. Late complications consist of astigmatism, posterior capsule opacification, posterior vitreous detachment, rhegmatogenous retinal detachment, and lens dislocation.^{3,4}

Late intraocular lens dislocation is an uncommon late complication of cataract surgery that occurs after three months.⁵ Some cases were diagnosed within 6 to 9 years after the procedure.⁶ Progressive capsular contraction and zonular dehiscence are believed to be the cause of late IOL dislocation.⁷

A predisposing factor is pseudoexfoliation syndrome (PEX), which is related to weak zonulae and contraction of the anterior capsule.^{6,8} The zonules also become more fragile with age and may be subject to subclinical damage during previous cataract surgery.^{6,9} Other predisposing factors such as trauma, history of vitreoretinal surgery, high axial length, uveitis, and retinitis pigmentosa are found in approximately 90% of IOL dislocation cases.⁷

Late IOL dislocation is a cataract surgery complication with an incidence rate between 0.2% and 2.8%.^{5,7} Despite the fact that it is a rare condition, late IOL dislocation is still a serious condition and needs to be repaired with surgical approaches to improve vision: repositioning the existing IOL or replacing the IOL with a new IOL by fixating it either to the anterior chamber (ACIOL) or to the scleral wall or to the iris (iris claw).⁶ Iris claw was initially introduced as a fixation onto the anterior surface of the iris (peripupillary), but many cases reported retropupillary placement as a better option for maintaining the anterior chamber (COA) depth and reducing corneal endothelial cell loss.¹⁰

CASE

A 53-year-old woman from Labuan Bajo, West Manggarai, East Nusa Tenggara, Indonesia, complained of blurry vision in the past 2 years. No pain reported. The patient had phacoemulsification cataract surgery on both eyes in 2008 during a mass cataract surgery event. Vision improved following surgery but worsened after 14 years. The patient has no history of chronic disease or traumatic eye injury.

Eye examination showed aphakia in the right eye and a dislocated IOL lens in the left eye. The patient underwent an Iris Claw to implant an IOL in the right eye in December 2024. The right eye vision has improved from 1/60 to 20/40.

Examination of the left eye found 20/400 vision with normal intraocular pressure (IOP), normal palpebrae and conjunctivae, clear cornea, clear and deep anterior chamber, dark brown round iris with diameter 3mm, pupil was reactive and intraocular (**Figure 1**). Posteriorly dislocated IOL was found in the anterior vitreous cavity within the pupillary area. More than 15% of the patient's ciliary zonula had ruptured and caused the dislocation. Biometric examination showed 20.5 diopters for the IOL lens power.

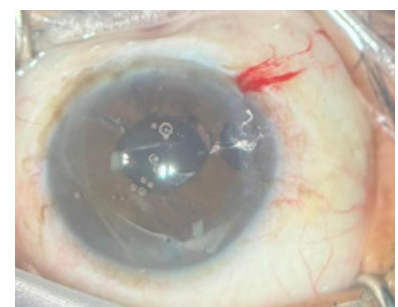
The patient was then scheduled for a retropupillary iris claw implantation; 0.5% tropicamide eye drops were used preoperatively to dilate the pupil. A corneal incision was made using a keratome around 6 mm to open access into the COA, and the anterior vitrectomy was made to approach the posterior chamber. Then the dislocated IOL was extracted with forceps from the posterior chamber. The vitreous humor leakage in the anterior chamber was later removed by vitrector. The new iris claw IOL (ICIOL) with power 20.50 D, 8.50 mm length, and 5 mm optical zone width was inserted using forceps and enclavated with a blunt Sinskey hook onto the iris to fixate the IOL haptics in the retropupillary position. After the ICIOL was fixated in the center, levofloxacin 1 mg was injected intracameral, and a suture was made with 10.0 Vicryl (**Figure 2**). Two drops of levofloxacin 5 mg/mL eye drops were given.

Day one post-surgery, the patient still

complained of blurry vision, with corneal edema, reactive pupils, and a fixated IOL with visual acuity 20/200. One week post-surgery, slit lamp examination showed slight corneal edema, and the visual acuity had improved to 20/40. The patient was prescribed levofloxacin eye drops, prednisone eye drops, and oral methylprednisolone 4 mg twice a day for 7 days. At one month post-surgery, the vision had improved to 20/30, ICIOL was intact with no complications, and the pupil remained round.



*Photo Documentation by Elsy Jasicha Ly.
Figure 1. Peri-operative shows the posterior dislocated IOL.



*Photo Documentation by Elsy Jasicha Ly.
Figure 2. Post-operative shows implanted new ICIOL retropupillary.

DISCUSSION

Late IOL is a rare but serious cataract surgery complication.⁸ The cumulative risk of IOL dislocation was 0.1%–1.7% after 5–25 years post-cataract surgery.¹¹ With improvements in cataract surgery techniques such as phacoemulsification, the pseudophakic population has been rising in recent years.¹² Consequently, the chance of IOL dislocation is also rising and will be more common in the future.¹⁰

Late IOL dislocation is due to zonular dehiscence that occurs progressively after cataract surgery. Pseudoexfoliation



(PEX) is believed to be the most common cause, followed by high myopia, previous vitreoretinal surgery including cataract surgery, trauma, aging, connective tissue disorder, retinitis pigmentosa, uveitis, and diabetes mellitus.¹³ This case didn't have signs of PEX, uveitis, or retinitis pigmentosa; her ophthalmology history is limited because the patient lives in a rural area without ophthalmic medical facilitation. Risk factors in this patient were aging and the possibility of subclinical damage to the zonulas during previous cataract surgery.

IOL dislocation by site is classified by: (1) Prolapse into the anterior chamber, (2) Pseudophakodonesis, (3) Posterior dislocation in the anterior vitreous cavity within the pupillary area, (4) Trap-door-like dislocation (dangling in the peripheral vitreous cavity), and (5) Being dropped onto the retina.¹⁴ The sites of dislocation determine the surgical approach. The dislocation site of this patient was in the anterior vitreous cavity within the pupillary area, as illustrated in **Figure 3**.

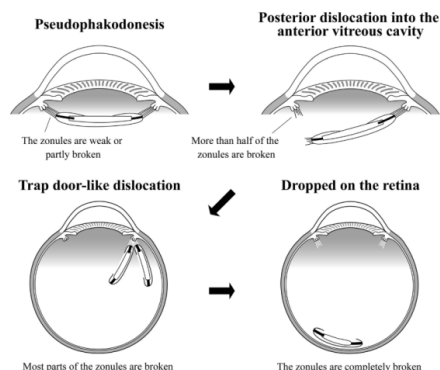


Figure 3. Type of IOL dislocation based on the sites of dislocation.¹⁴

Various surgical approaches are available to fix the posterior dislocated IOL due to a weak zonule. The IOL can be repositioned or removed and replaced with a new IOL

into either the anterior or posterior chamber using scleral fixation or iris fixation (iris claw).^{15,16} There is no significant difference in outcomes between repositioning by scleral suturing or retropupillary fixation of an iris-claw IOL.⁶ Both methods had a low incidence of serious perioperative and postoperative complications.^{6,17} Despite not significantly different results in vision, scleral sutured fixation is more invasive and reported to risk complications such as ciliary and choroidal body hemorrhage, vitreous prolapse, retinal detachment, IOL dislocation, uveitis, and cystoid macular edema.¹⁸

The IOL is placed retropupillary instead of anterior fixation to minimize the risk of secondary glaucoma, endothelial cell loss, bullous keratopathy, and uveitis.¹⁹ Endothelial Cell Density (ECD) was not measured due to the limitation of the facility. According to Vaiciulienė, *et al.*, (2021), the average ECD reached ~2,500 cells/mm² in adulthood and, at a normal rate, will decrease 0.6% per year, four times higher in patients with a history of cataract surgery (2.5% per year).²⁰ With that calculation, we assumed the left ECD in the patient was less than 1,500 cells/mm². If an anterior fixated IOL is chosen as the surgical approach, it will later damage the endothelial cells, and considering our patient is still 53 and has a long life expectancy, there will be a chance for ECD decrease by aging. We believed retropupillary iris claw was the better surgical approach based on that consideration.^{18,21} This patient had a sufficient iris to support the implantation of ICIOL; the pupil was regular in shape and size and had no contraindication of iris claw such as aniridia, diffuse iris atrophy, rubeosis iridis, profound iridodonesis (which may cause trembling vision), and active uveitis.²²

In this case, the dislocated IOL was extracted through anterior vitrectomy because the IOL was still approachable from the anterior.

Pars plana vitrectomy is sometimes needed to remove the IOL.¹⁴ The dislocated IOL was replaced with a new ICIOL enclavated right into the posterior side of the iris with the optic centered in the pupil. The enclavation process should be done gently with less pressure to prevent ovalization of the pupil.²²

Corneal edema in the first week post-surgery possibly occurred because of the long limbus incision and anterior segment surgical procedure. Corneal edema caused slow progression of visual acuity correction. After routine oral and topical steroid drops for one month, no further signs of corneal edema were observed; visual acuity improved from 20/400 to 20/30 and was expected to improve further.

There was no main complication in the first month post-surgery. The reported complications of retropupillary iris claw include pupil ovalization, elevated IOP, endothelial cell loss, cystoid macular edema, redislocation of IOL, and even retinal detachment.^{21–23} Extended follow-up is still needed.

CONCLUSION

Late IOL dislocation is a rare and serious complication of cataract surgery caused by progressive zonular insufficiency. Selection of the optimal surgical approach should be individualized based on the location of the dislocated IOL, the integrity of the remaining ocular structures, patient-specific risk factors, and the potential benefits and complications associated with each fixation technique. In this case, IOL exchange with a retropupillary ICIOL resulted in good visual recovery without significant early postoperative complications. Continued long-term follow-up is needed to detect and manage potential late postoperative complications.

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