ISSN: 3065-3630
Case Report

Journal of Clinical Nursing & Reports

Preventable Surgical Error and Visual Recovery: Case Report of Wrong Intraocular Lens Implantation During Cataract Extraction with Goniotomy

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Submitted: 18 December 2025 **Accepted:** 26 December 2025 **Published:** 31 December 2025

DOI: https://doi.org/10.63620/MKJCNR.2025.1049

Citation: *Laroche, D., Okafor, J., & Abouhasswa, L. (2025). Preventable Surgical Error and Visual Recovery: Case Report of Wrong Intraocular Lens Implantation During Cataract Extraction with Goniotomy. J of Clin Nur Rep, 4(6), 01-04.*

Abstract

Cataract surgery combined with goniotomy is a commonly performed surgery in patients with coexisting cataracts and glaucoma [1]. Through cataract extraction with Minimally Invasive Glaucoma Surgery (MIGS), patients can get a dual benefit of increasing their visual acuity while also lowering their intraocular pressure (IOP). As rates of blindness from glaucoma are declining with increasing cataract surgery and MIGS due diligence needs to be maintained to prevent complications. However, while rare, the implantation of an incorrect intraocular lens (IOL) during these combined procedures is a potential complication that can cause clinical consequences for both visual and glaucoma-related outcomes [2]. This case involves incorrect IOL placement during cataract extraction with concurrent goniotomy. We will highlight key contributing factors, clinical consequences, and strategies for prevention of implanting the wrong IOL. Errors in this case was caused from misidentification of the patient, error in updating IOL in the room during a schedule change and a break in protocol that led to a lack of communication among the surgical team. Strategies to prevent this from happening are discussed.

Keywords: Wrong Intraocular Lens Implantation, Cataract Surgery, Goniotomy, Glaucoma, Intraocular Lens Exchange, Surgical Error, Patient Safety

Introduction

Errors involving incorrect intraocular lens (IOL) implantation do occur but remain rare relative to the large number of cataract surgeries performed. Reports from national incident databases and studies show that such events are primarily caused by biometry errors, wrong lens selection, or transcription mistakes [3]. For example, a UK analysis identified 164 wrong IOL events over seven years, while another review reported 178 cases in four years, indicating ongoing challenges despite safety protocols like surgical checklists [4]. Large cohort studies estimate the overall incidence of IOL exchange, which includes cases due to wrong lens placement, at about 2 per 1,000 surgeries, highlighting the continued need for vigilance to minimize these errors [5].

Case Report

A 75-year-old Hispanic Spanish-speaking woman with a history of advanced primary open- angle glaucoma in both eyes and moderate senile nuclear cataracts with narrowing angles presented for a four-month follow-up, complaining of cloudy vision despite spectacle correction. Her medications included nightly Latanoprost and Dorzolamide–Timolol twice daily in both eyes. Examination revealed best-corrected visual acuities of 20/40 in the right eye and 20/20 in the left eye, IOPs of 12 and 13 mmHg respectively (with prior Tmax 35 mmHg), and glaucomatous optic nerves with a cup-to-disc ratio of 0.8 and diffuse retinal nerve fiber layer loss. Visual field testing showed severe loss in both eyes (VFI 27% OD, 13% OS). Due to visually significant cataract and advanced glaucoma, the patient elected to undergo cataract extraction combined with goniotomy in the right eye to improve vision and reduce dependence on glaucoma medications.

On the day of surgery, a scheduling change in patent schedule

led to the wrong intraocular lens (21.5 D instead of 26 D) being implanted after the time-out procedure was not properly performed. The initial nurse (less than 6 months experience) brought an intraocular lens into the room for the regularly scheduled patient. The regularly scheduled patient was not ready as of yet so the next patient was approved to proceed. The nurse did not update the lens for the new patient; the lens was not presented during the time out. The surgeon did not catch this error before the procedure. The error was picked up after the procedure The error was recognized the same day. An apology was issued to the patient and family and the patient immediately consented to a corrective IOL exchange. During the exchange, a haptic broke during a twist out technique removal, necessitating enlargement of the wound and placement with removal of the lens and the placement of 10-0 nylon sutures before closing.

Three days postoperatively, the patient presented with pain with foreign body sensation, tearing, conjunctival hyperemia, marked corneal edema, and superior punctate keratopathy. Vision was hand motion in the right eye and 20/30 in the left, with IOPs of 12 and 13 mmHg. She was treated with Prednisolone QID, Ofloxacin QID, Ketorolac TID, and Muro 128 TID for corneal edema, along with continuation of glaucoma medications. There was no hypopyon. One week later, the eye was comfortable but still edematous, and the IOP rose to 20 mmHg. Dorzolamide–Timolol was added to the right eye, and Prednisolone was increased to every two hours. By the second week, vision improved to counting fingers in the right eye, corneal edema was reducing, and IOPs were 13 mmHg OD and 17 mmHg OS. Ofloxacin was discontinued while other medications were maintained.

Three weeks postoperatively, vision was counting fingers at four feet with stable findings in the left eye. One corneal suture was removed to reduce astigmatism, and Ofloxacin was restarted prophylactically. By the fourth postoperative week, vision improved to 20/100- in the right eye and 20/40 in the left, with further reduction in astigmatism and corneal edema; a second suture was removed to reduce corneal astigmatism, and IOPs were 9 mmHg OD and 12 mmHg OS. Muro 128 was discontinued, and steroid and NSAID drops were tapered. At five weeks, the patient reported good vision and no pain. Uncorrected acuity improved to 20/70- OD (20/30 with refraction of –2.25D) and 20/40 OS, near acuity to 20/30, and IOPs were 11 mmHg OD and 14 mmHg OS. Corneal edema had nearly resolved with trace punctate keratopathy remaining, and the PCIOL was well-positioned. She continued Dorzolamide–Timolol BID in both eyes, Latanoprost nightly in the left eye, and tapered Prednisolone and Ketorolac to once daily in the right eye.

Discussion

This case highlights the critical importance of rigorous intraocular lens (IOL) verification and a thorough surgical time-out process conducted while the patient is present, alongside skilled surgical management, particularly in glaucoma patients undergoing cataract surgery with combined procedures and refractive challenges. In patients with complex comorbidities such as moderate glaucoma, visually significant cataract, narrow angles, and severe visual field loss, meticulous preoperative planning, intraoperative vigilance, and error mitigation are essential to optimize outcomes and minimize harm. Errors involving incorrect IOL implantation, although rare relative to the high volume of cataract surgeries performed, do occur and are primarily attributed to biometry inaccuracies, incorrect lens selection, or transcription mistakes.

A general risk factor is the plethora of multiple intraocular lenses of varying models and powers. (Figure 1). This environment increases the risk of selection errors, particularly during last-minute schedule changes, staff handoffs, or when less-experienced personnel are involved. From a nursing and perioperative systems perspective, this represents a latent safety hazard, where the physical organization of supplies can directly contribute to preventable surgical errors. Nursing staff play a critical role in mitigating this risk through standardized organization, clear labeling, and confirmation processes that ensure only the correct lens is present in the room at the time of surgery.

Figure 1: Operating room work area containing multiple intraocular lenses of varying powers and models.

A key complication in this case was the failure of proper lens verification and time-out protocol, a universally recognized safety step to confirm patient identity, procedure details, and critical elements such as the correct lens power. The breakdown of this process resulted in a significant refractive error, necessitating prompt corrective action. Preventing wrong lens placement requires repeating lens selection steps, double-checking biometry with team members, and verbally confirming the planned IOL

model and power during the time-out, especially under conditions of last-minute schedule changes or language barriers [6]. Figure 2 illustrates the recommended approach to lens confirmation. This process allows nursing staff, surgeons, and surgical technicians to jointly confirm the correct lens model and power with the patient in the prior and prior to sterile draping of the eye reducing reliance on memory or assumptions during periods of workflow disruption.

Figure 2: Intraoperative intraocular lens (IOL) verification performed by the surgical team with the patient present in the operating room

Surgical Management

The surgical management of incorrect IOL placement involves technically demanding lens explantation procedures, such as the twist out technique, which helps reduce capsular damage by rotating and disengaging the IOL within the capsular bag; however, complications like haptic breakage require wound enlargement and microsurgical interventions [7-10]. Advanced surgical tools, including the Alcon B cartridge for lens insertion and the Cady bent shaft capsule separator for gentle lens removal, facilitate controlled surgeries minimizing trauma to the capsular bag and corneal endothelium.

Following lens exchange, the patient experienced known postoperative risks including corneal edema, punctate keratopathy, and transient intraocular pressure spikes, particularly common in eyes with prior glaucoma surgery and corneal manipulation [11]. Management includes aggressive topical steroids, hyperosmotic agents, and vigilant monitoring and adjustment of glaucoma therapies to prevent further optic nerve damage. Suture management is also essential to balance wound healing and astigmatism against infection risk, often mitigated by prophylactic antibiotics. Cases of refractive surprise demand not only skilled technical management but also transparent ethical communication with patients, offering solutions like IOL exchange, piggyback lenses, or refractive surgery to restore visual function [12]. Mastery of removal and insertion techniques with specialized tools is vital for optimal surgical outcomes.

Conclusion

This case also highlights the broader impact of the ongoing surgical nursing shortage in the U.S. in 2025, which adversely affects surgical care quality by causing delays, cancellations, and increased risk for errors due to understaffed, fatigued teams [13, 14]. This shortage strains the ability to provide optimal perioperative care and emphasizes the need for systemic solutions to recruit and retain skilled surgical nursing professionals to sustain safe and efficient surgical care. Patients affected by wrong IOL placement face risks of blurred vision, additional surgeries, and potential litigation, underlining the critical necessity of preventative measures to reduce such never events [15]. Prevention relies on rigorous preoperative biometry verification by multiple team members, standardized time-out procedures, effective documentation, team communication, error reporting, and multidisciplinary reviews to foster a culture of safety in the operating room.

Ultimately, adherence to intraoperative time-out protocols and meticulous lens verification are indispensable for patient safety in cataract and glaucoma surgeries. When errors do occur, proficiency in advanced IOL exchange techniques ensures opportunities for optimal recovery. This case serves as a reminder to maintain diligence, avoid complacency, and consistently reinforce rigorous preprocedural protocols while the patient is present to safeguard against preventable lens implantation errors and improve surgical outcomes.

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