

CLINICAL OUTCOMES OF CATARACT SURGERY IN PATIENTS WITH COEXISTING OCULAR PATHOLOGIES

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Annotation. *The management of cataracts in patients with pre-existing ocular diseases presents a significant clinical challenge, as concurrent pathologies may influence surgical outcomes, postoperative recovery, and long-term visual prognosis. This study analyzes the clinical outcomes of cataract surgery in patients with coexisting ocular pathologies such as glaucoma, diabetic retinopathy, age-related macular degeneration, and corneal dystrophies. A total of 220 patients underwent phacoemulsification with intraocular lens (IOL) implantation, with outcomes assessed through visual acuity improvement, intraocular pressure (IOP) control, and retinal morphology stability. Results demonstrated that while significant visual gains were achieved in most cases, postoperative complications were more frequent in patients with severe diabetic or glaucomatous changes. Early identification of comorbid ocular conditions, tailored surgical strategies, and postoperative management were found essential in achieving favorable outcomes.*

The findings emphasize the importance of multidisciplinary assessment and individualized treatment planning in cataract surgery for complex ocular cases.

Keywords: *cataract surgery, ocular comorbidities, visual acuity, phacoemulsification, intraocular lens, diabetic retinopathy, glaucoma, retinal outcomes, postoperative complications, ophthalmic management.*

Introduction Cataract surgery remains the most frequently performed ophthalmic operation worldwide, providing significant improvements in visual function and quality of life.

However, in patients with coexisting ocular pathologies, the prognosis may be influenced by pre-existing structural or functional damage. Common comorbidities such as glaucoma, diabetic retinopathy (DR), age-related macular degeneration (AMD), uveitis, and corneal disorders alter the intraocular environment and can complicate surgical outcomes. The interplay between cataract-induced visual impairment and the progression of these concurrent diseases requires careful preoperative evaluation, risk stratification, and postoperative management.

Although phacoemulsification with IOL implantation is considered safe and effective, patients with underlying ocular conditions often demonstrate less predictable visual recovery due to retinal or optic nerve dysfunction. Therefore, the aim of this study is to assess clinical outcomes of cataract surgery in patients with such coexisting ocular pathologies, identify prognostic factors influencing visual improvement, and determine strategies to minimize complications and optimize functional recovery.

Materials and Methods This prospective clinical study was conducted at the Department of Ophthalmology, Samarkand State Medical University. A total of 220 patients (312 eyes) aged 48–83 years who underwent cataract extraction by phacoemulsification were included.

All patients were divided into groups based on comorbid ocular pathology: Group 1 (n=90) had diabetic retinopathy, Group 2 (n=60) had primary open-angle glaucoma, Group 3 (n=40) had AMD, Group 4 (n=32) had corneal dystrophy or scarring. A control group (n=90) included patients with isolated cataracts and no additional ocular pathology. Preoperative evaluation included best-corrected visual acuity (BCVA), slit-lamp examination, tonometry, fundus photography, OCT imaging, and visual field testing where applicable. All surgeries were performed using the same standardized phacoemulsification technique with posterior chamber IOL implantation. Postoperative evaluations were conducted at 1 week, 1 month, 3 months, and 6 months. The main parameters assessed were postoperative BCVA, IOP changes, corneal endothelial cell count, and the occurrence of intra- and postoperative complications. Statistical analysis was performed using SPSS v.26.0, with $p < 0.05$ considered statistically significant.

Results At baseline, mean preoperative BCVA was 0.18 ± 0.12 in patients with coexisting ocular pathologies and 0.25 ± 0.11 in controls. At 6 months postoperatively, mean BCVA improved to 0.68 ± 0.19 in the pathology group and 0.91 ± 0.08 in controls ($p < 0.001$). Among subgroups, patients with diabetic retinopathy achieved an average improvement of 0.42 logMAR, while those with glaucoma improved by 0.38 logMAR. The AMD group showed a more modest improvement of 0.25 logMAR due to macular structural limitations. Postoperative IOP decreased by an average of 2.5 mmHg in glaucoma patients with controlled pressure preoperatively, but transient spikes were noted in 15% of cases. Corneal endothelial loss averaged 9.4%, with no statistically significant difference between groups. Posterior capsular opacification occurred in 8.6% of cases, while cystoid macular edema was observed in 6.3% of diabetic eyes. There were no cases of endophthalmitis or IOL dislocation. Overall patient satisfaction scores were high, and 87% reported improvement in daily activities.

Discussion The results indicate that cataract surgery provides substantial functional improvement even in patients with coexisting ocular diseases, though outcomes are influenced by the type and severity of the comorbidity. Diabetic retinopathy and glaucoma emerged as major determinants of postoperative visual potential due to their progressive impact on retinal and optic nerve integrity. The limited recovery in AMD patients aligns with previous studies demonstrating that macular photoreceptor degeneration limits post-surgical visual gain.

Adequate preoperative control of intraocular pressure, strict glycemic regulation, and precise biometric calculation for IOL implantation are essential in optimizing results.

Phacoemulsification itself appears safe when proper surgical planning is followed, though postoperative inflammation and macular edema remain significant challenges in diabetic eyes.

Comprehensive management, including adjunctive use of anti-VEGF therapy in DR and continuous IOP monitoring in glaucoma, ensures long-term stabilization. The findings reinforce the importance of patient counseling regarding realistic expectations based on pre-existing conditions. Collaboration between cataract surgeons, retina specialists, and glaucoma experts enhances postoperative outcomes, particularly in complex cases.

Conclusion Cataract surgery in patients with coexisting ocular pathologies results in meaningful visual improvement, although the final outcomes depend on the control and stage of accompanying diseases. Preoperative evaluation, including retinal and optic nerve imaging, facilitates individualized risk assessment and surgical planning.

The use of advanced phacoemulsification techniques, combined with meticulous postoperative monitoring, reduces the incidence of complications and promotes favorable visual recovery. Regular follow-up and multidisciplinary care are essential for maintaining ocular health and preventing disease progression. Tailored therapeutic approaches and early intervention remain crucial for achieving optimal clinical results in complex ophthalmic patients.

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