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Research Article

Cataract Surgery Visual Outcomes in Adults, Conakry Ophthalmic Center, Guinea

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Abstract

Background: Cataract remains the foremost etiology of global blindness, constituting a substantial proportion of all cases and exerting a profound impact on diverse populations across the world. In low-resource settings such as Guinea, where access to advanced surgical care is limited, cataract surgery outcomes are often understudied and there is a significant lack of data. Visual rehabilitation through timely and effective surgery is critical to reducing preventable blindness in these regions.

Objectives: This study aimed to evaluate the outcomes of cataract surgery performed by experienced ophthalmologists at Conakry Ophthalmic Center, Guinea and to analyze postoperative complications and visual outcomes according to World Health Organization (WHO) criteria.

Methods: A prospective longitudinal study was conducted on 81 consecutive patients undergoing cataract surgery. The primary outcome was postoperative visual acuity, evaluated in accordance with established standards for cataract surgery. Intraoperative, early and late complications were systematically recorded throughout the study.

Results: The mean age of patients was 61.6 ± 13.4 years (range: 24-98). Intraoperative complications included capsular rupture in 6.17% (5/81) of cases, while early postoperative complications were dominated by descemet's membrane folds observed in 33.33% (27/81) of patients. On the first postoperative day, visual outcomes were good in 66% (54/81), moderate in 18.5% (15/81) and poor in 14.8% (12/81) of cases; by day 30, 95% (77/81) of patients had achieved good vision (BCVA ≥6/18).

Conclusion: While 95% of patients achieved good vision (BCVA ≥6/18) by day 30 following cataract surgery at Conakry Ophthalmic Center, suboptimal initial outcomes (14.8%) and early complications such as Descemet's membrane folds (33.3%) underscore the need for enhanced preoperative assessment and standardized postoperative care.

Keywords: Phacoemulsification; Cataract; Blindness; Visual Outcomes; Guinea

Introduction

Cataract is the leading cause of blindness worldwide and a major contributor to visual impairment, particularly in low- and middle-income countries where access to surgical care is limited. Its prevalence increases with age and about 90% of cataract-related blindness occurs in these regions, highlighting a significant global health challenge [1]. Phacoemulsification, now the standard technique for cataract extraction, offers advantages such as smaller incisions, faster recovery and improved surgical outcomes [2]. This study was motivated by the recent introduction of phacoemulsification in our region and the lack of local data on its impact, aiming to assess visual outcomes and inform cataract management in this context.

The aim of our study was to evaluate visual outcomes following cataract surgery at the Conakry Ophthalmic Center, Guinea and to identify factors associated with postoperative visual acuity in a resource-limited West African population.

Patients and Methods

This study included adults aged 20 years and older who underwent cataract surgery between March and August 2024 at the Conakry Ophthalmic Center, a tertiary eye care facility in Conakry, Guinea.

Of 110 eligible eyes, 90 patients (90 eyes) were included, while 9 participants were excluded due to loss to follow-up. Patients with pediatric cataracts or ocular comorbidities, such as corneal opacity or scar, glaucoma, uveitis, posterior synechiae, pseudoexfoliation syndrome, moderate or severe non-proliferative diabetic retinopathy, proliferative diabetic retinopathy, macular edema, history of ocular trauma, age-related macular degeneration or prior ocular surgery (corneal, glaucoma or vitreoretinal procedures) were excluded.

Preoperative data collected included refraction, visual acuity and target refraction and all intraoperative as well as early and late postoperative complications were systematically recorded. Visual outcomes were assessed according to World Health Organization (WHO) criteria for postoperative visual acuity (3): a good outcome was defined as Best-Corrected Visual Acuity (BCVA) of 6/18 or better, borderline as BCVA less than 6/18 but equal to or better than 6/60 and poor as BCVA less than 6/60. These standardized criteria allowed for objective evaluation of surgical efficacy and facilitated comparison with international benchmarks.

Results:

The majority of participants were male (43 patients, 53%). As shown in Table 1, nearly half of the patients (49.3%) were in the 60-70-year age group, followed by 24.6% in the 50-60-year group and 18.5% in the 70-80-year group. Only 7.4% of patients were outside these age ranges.

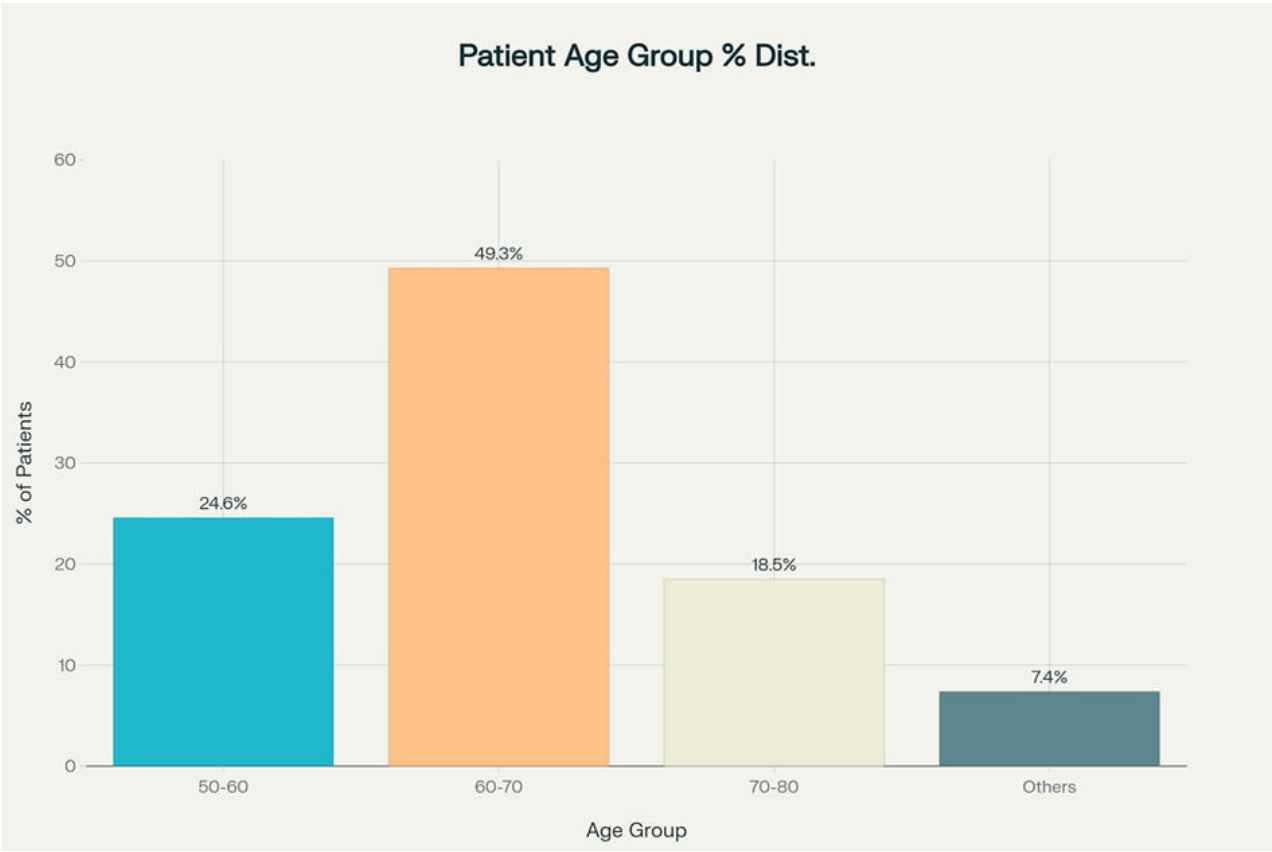

Table 1: Distribution of patients by age group (%).

Decreased visual acuity was the most frequent presenting complaint, reported by 98% of our patients. Among those who underwent surgery, 64 patients (79%) were diagnosed with immature cataracts and 17 (21%) had mature cataracts (Fig. 1).

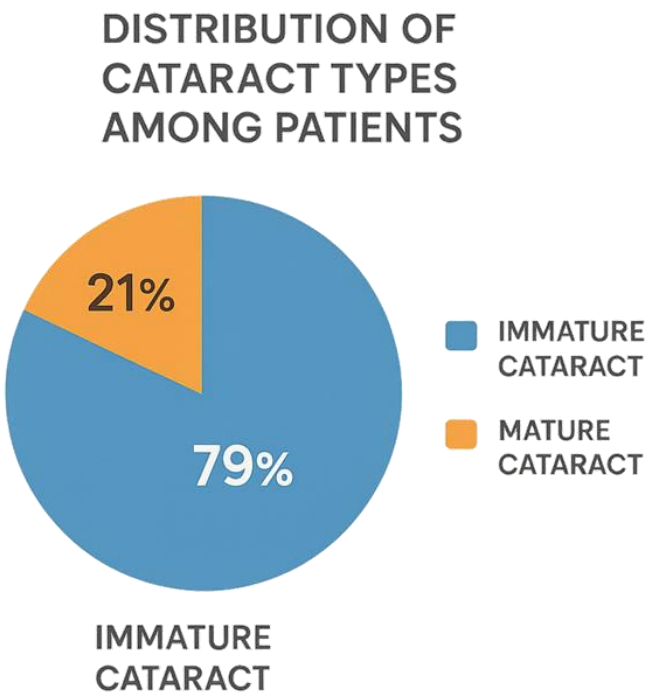

Figure 1: Distribution of cataract types.

Preoperative visual acuity measurements showed that 67.9% of patients (55/81) fell below the 3/10 threshold, consistent with moderate-to-severe impairment. Phacoemulsification, the globally preferred method for its safety and efficacy, was uniformly employed, with foldable intraocular lenses implanted in all cases.

However, intraoperative complications, such as capsular rupture, were observed in 5 patients (6.17%). Early postoperative complications were dominated by Descemet's membrane folds, which were observed in 27 patients (33.33%). On the first postoperative day, 54 patients (66%) achieved a good visual outcome, while 15 (18.5%) had moderate and 12 (14.8%) had poor visual results (Fig. 2).

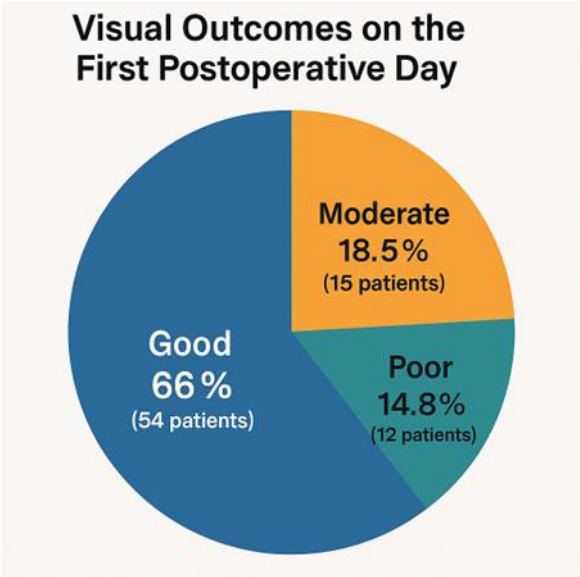

Figure 2: Distribution of visual outcomes on the first postoperative day.

At the one-month postoperative follow-up, a substantial improvement in visual outcomes was observed. Seventy-seven patients (95% of the cohort) achieved good vision, defined as a Best-Corrected Visual Acuity (BCVA) of 6/18 or better. Moderate and poor visual outcomes were each documented in 2 patients (2.5% each). These outcomes among the latter groups were attributable to late postoperative complications, which remained relatively infrequent: Irvine-Gass syndrome (cystoid macular edema) and chronic corneal edema each occurred in 2.46% (n=2) of the patient population.

Discussion

The mean patient age was 61.6 ± 13.4 years (range: 24-98 years). This age distribution is consistent with findings from several studies on cataract surgery, in which reported mean ages generally range from 59 to 71 years and similar age ranges have been observed in larger cohorts [4,5].

Decreased visual acuity was the most common presenting complaint, reported by 98% of patients. This finding aligns with the literature, where progressive vision loss is consistently identified as the principal symptom of cataract [6,7]. Preoperatively, 77.9% of patients (n=55) had visual acuity below 3/10, a rate comparable to findings in other population-based studies where a significant proportion of cataract patients present with substantial vision loss prior to surgery [7,8].

These degrees of visual impairment may substantially impair activities of daily living and diminish quality of life, with particularly pronounced effects observed in older adults especially in our study population, which includes a significant proportion of elderly individuals [9]. These results highlight the advanced stage at which many patients access surgical intervention, often due to barriers in accessing ophthalmologic care [6]. Early diagnosis and improved access to cataract surgery are crucial for preventing vision loss and enhancing outcomes, especially in high-risk groups [10].

All patients underwent standard phacoemulsification with soft intraocular lens implantation. Intraoperative complications, such as capsular rupture, occurred in 6.17% of cases. Capsular rupture is a significant adverse event during phacoemulsification surgery because it compromises the integrity of the lens capsule, which serves as a crucial support structure for the intraocular lens implant.

This rate is consistent with the range reported in the literature, where Posterior Capsule Rupture (PCR) during phacoemulsification typically varies from approximately 2% to 10%, depending on factors such as surgeon experience, patient characteristics and case complexity [11,12]. Studies focusing on surgeries performed by trainees reported PCR rates around 3.25% to 15.5%, with higher rates in less experienced surgeons [13]. Overall, the observed 6.17% rate in our study falls within the expected spectrum documented in the literature, underscoring the importance of surgical expertise and careful intraoperative management to minimize this complication.

On the first postoperative day, 66% of patients (n = 54) achieved a good visual outcome, thereby conforming to the criteria defined by the World Health Organization (WHO) [3]. In contrast, moderate and poor visual outcomes were observed in 18.5% (n = 15) and 14.8% (n = 12) of patients, respectively; both proportions exceed the benchmarks established by the WHO. The increased prevalence of suboptimal visual outcomes in this study may be ascribed to the presence of significant descemet's membrane folds identified during the early postoperative period. At the one-month follow-up, visual assessment demonstrated that 77 patients (95% of the cohort) achieved good vision Best-Corrected Visual Acuity (BCVA) ≥6/18) meeting the World Health Organization's (WHO) target for successful cataract surgery outcomes.

Corneal edema was the main early postoperative complication, seen in 33.33% of patients. Although this rate appears high compared to most published series, it is important to emphasize that corneal edema is often a transient phenomenon that typically resolves within days to weeks after surgery [14]. The incidence and severity of edema are influenced by several factors, including the amount of ultrasound energy used during phacoemulsification, the duration of the surgical procedure and the pre-existing health of the corneal endothelium. Excessive ultrasound energy and prolonged surgery can cause mechanical and thermal stress to endothelial cells, leading to increased corneal swelling postoperatively. At the one-month postoperative follow-up, moderate and poor visual outcomes were each observed in 2 patients (2.5% each). These findings are likely explained by the occurrence of late postoperative complications, which were uncommon overall; specifically, Cystoid Macular Edema (CME) and chronic corneal edema each affected 2.5% of the cohort.

Notably, chronic corneal edema was rare and tended to improve over time as endothelial function recovered consistent with previous studies showing that early postoperative corneal edema is mostly transient and reversible rather than indicative of permanent endothelial damage [14-16]. Despite their low incidence, these late complications can have a lasting impact on visual outcomes and may necessitate prolonged medical treatment or, in rare cases, additional surgical intervention.

The incidence of CME after phacoemulsification in our series was 2.46%, which is consistent with published literature where clinical CME rates after phacoemulsification typically range from 0.1% to 2.35% [17,18]. Subclinical CME detected by OCT can be higher, up to 11-41%, but these cases are often asymptomatic [17]. Risk factors such as diabetes, epiretinal membrane and intraoperative complications can increase CME incidence [19]. Most clinical CME cases improve spontaneously within 3-12 months [20].

Conclusion

Cataract surgeries at Conakry Ophthalmic Center demonstrated significant improvement in visual outcomes by the 30th postoperative day, with 95% of patients achieving good vision. However, the high rate of poor initial visual outcomes (14.8%) and the frequent occurrence of early complications such as Descemet's membrane folds (33.33%) underscore the need for improved preoperative assessment, advanced surgical training for complex cases and the implementation of standardized postoperative care protocols. These findings emphasize the importance of targeted follow-up interventions to optimize visual recovery, particularly in resource-limited settings.

Conflict of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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