

Review Article

Functional Outcomes of Cataract Surgery Using the Phaco-A Technique at the Regional Center of Labé

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Introduction

Cataract is defined as opacification of all or part of the crystalline lens, leading to a reduction in visual acuity. It remains the leading cause of blindness worldwide, particularly in low-income countries where it represents a major public health challenge [1,2]. According to the World Health Organization (WHO), Sub-Saharan Africa faces the most alarming situation, with 1–1.2% of the population affected by visual impairment - approximately five times the proportion estimated in industrialized countries [3].

The treatment of cataract is surgical and consists of lens extraction followed by implantation of an intraocular lens (IOL) [4]. However, cataract surgical coverage remains insufficient compared with high-income settings, with approximately 3,000 procedures per million inhabitants in Europe versus around 200 per million in Africa [5].

In Cameroon, cataract accounts for about 50% of avoidable causes of blindness, making its management a priority within the national program for blindness prevention [6]. In Senegal, approximately 13,000 to 14,000 cataract surgeries are performed annually, while an estimated 11,000 additional cases require surgery and often progress to blindness each year [5]. In Guinea (2020), a study conducted in an ophthalmology clinic reported 400 operated eyes in 399 patients, corresponding to a hospital frequency of 84% [7]. At the Regional Ophthalmology Center (CRO) of Labé, 810 cataract operations were performed during 2023 (monitoring data).

Given that cataract surgery is frequently performed in our setting, this study was undertaken to assess the functional outcomes of cataract surgery at the Regional Ophthalmology Center of Labé.

Methods

This was a retrospective descriptive study with a one-year review period, from January 1 to December 31, 2023. The study population included all patients who underwent cataract surgery during the study period at the CRO of Labé.

The study population comprised patients operated for age-related cataract at the Regional Ophthalmology Center of Labé. Inclusion criteria were all patients operated for age-related cataract during the defined period who underwent one of the following surgical techniques:

- **Intracapsular cataract extraction (ICCE):** removal of the entire crystalline lens in toto

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- **Extracapsular cataract extraction (ECCE):** removal of the lens nucleus while leaving the posterior capsule intact
- **Phaco A:** tunneled extracapsular lens extraction (manual small-incision technique)

All medical records meeting the inclusion criteria were exhaustively reviewed, and the total number of eligible cases determined the sample size. Variables included both qualitative and quantitative data. Data were collected using a structured standardized data collection form. Information was extracted from medical records, operative reports, and postoperative follow-up charts.

Results

Surgical volume and rate

A total of **1,560 surgical records** were reviewed. Among these, 274 eyes did not meet the inclusion criteria, resulting in a final sample size of 1,286 eyes.

Table I: Distribution of eyes according to preoperative visual acuity (n = 1286)

Preoperative visual acuity	Number	%
Light perception (LP)	705	54.82
Hand motion (HM)	412	32.04
Counting fingers (CF)	169	13.14
Total	1286	100

Table II: Distribution of eyes according to intraoperative complications (n = 1286)

Intraoperative complications	Number	%
None	1259	97.90
Zonular dehiscence	2	0.15
Endothelial tear	5	0.39
Posterior capsular rupture	27	2.10
Vitreous prolapse/loss	27	2.10

Table III: Distribution of eyes according to postoperative complications on Day 4 (D4) (n = 1286)

Postoperative complications at D4	Number	%
None	1200	93.31
Corneal edema	50	3.89
Serous chemosis	8	0.62
Residual lens material	10	0.78
Eyelid edema	4	0.31
Hyphema	4	0.31
Proptosis	2	0.15
IOL dislocation	2	0.15

Table IV: Distribution of eyes according to postoperative complications at Day 30 (D30) and Day 60 (D60)

Postoperative complications	D30 n (%)	D60 n (%)
None	1054 (81.96)	1171 (91.05)
Chronic corneal edema	1 (0.07)	1 (0.07)
Vitreous strand in the anterior chamber	27 (2.10)	27 (2.10)
Iris pigment deposits on the IOL	30 (2.33)	30 (2.33)
Residual lens material	7 (0.54)	3 (0.23)
Mild IOL decentration	16 (1.24)	23 (1.78)
Iridolenticular synchiae	13 (1.01)	17 (1.32)
Fibrin deposits on the pupil	25 (1.94)	25 (1.94)
Macular edema	11 (0.85)	15 (1.16)

Table V: Distribution of eyes according to functional outcomes at Day 60 (D60)

Functional outcome	Distance VA	Uncorrected VA (UCVA)	Best-corrected VA (BCVA)
Good	10/10 – 3/10	76.04%	85.07%
Borderline	2/10 – 1/10	18.27%	7.85%
Poor	< 1/10	5.67%	7.09%

Table VI: Distribution of eyes according to causes of poor outcomes at D60

Causes of poor outcomes	Number	%
Patient selection factors	91	7.07
Surgical factors	51	3.96
Sequelae/ocular comorbidities	53	4.12
Refractive errors	269	20.91

Discussion

Cataract is the leading cause of preventable blindness worldwide, especially in low-income countries where access to surgery remains limited [8]. In

Sub-Saharan Africa, it constitutes a major public health issue and accounts for a substantial proportion of visual impairment [8,9].

The lack of complementary treatment resources (notably **Nd:YAG laser capsulotomy**), the absence of long-term follow-up beyond Day 60, and the retrospective design of the study represent the main limitations of this work.

Preoperatively, most patients presented with severely reduced visual acuity, predominantly limited to **light perception (54.82%)**. This reflects delayed presentation, commonly reported in Sub-Saharan Africa, often related to socioeconomic, cultural, and geographic barriers [6,10].

The **Phacoalternative (Phaco A)** technique was almost exclusively used in this series (99.53%), confirming its increasing adoption in resource-limited settings due to its effectiveness, relatively affordable cost, and favorable functional outcomes [3,7]. The low rate of intraoperative complications—mainly posterior capsular rupture and vitreous loss (2.10% each)—is comparable to rates reported in other African series, suggesting good mastery of the technique [3,4].

Postoperative visual outcomes improved progressively. By Day 60, the majority of eyes achieved **good visual acuity with or without correction**, meeting WHO-defined success criteria [8,11]. These outcomes are consistent with findings reported by Miray et al. in Madagascar and Dohvoma et al. in Cameroon [6,9].

Regarding postoperative complications, early events were dominated by **corneal edema (3.89%)**, a commonly described and generally transient complication [4,7]. **Secondary capsular fibrosis (posterior capsular opacification)** was the main late complication at Day 60, likely exacerbated by the unavailability of Nd:YAG laser capsulotomy in our context [4,11].

Poor functional outcomes were mainly attributed to **residual refractive error**, highlighting the importance of accurate biometry, appropriate optical correction, and strict postoperative follow-up. Poor functional outcomes were primarily related to refractive errors (20.91%), emphasizing the role of precise ocular biometry, adequate spectacle correction, and rigorous postoperative monitoring [7,10,11].

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