

Peroperative Difficulties and Complications at the first experience of phaco-emulsification at the Bartimaeus Ophthalmological Clinic in Guinea

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ABSTRACT

Objective: Determine the Peroperative difficulties and complications of cataract surgery by phacoemulsification.

Methodology: This is a descriptive prospective study from 02 January to 31 May 2023. Included were cataract surgery patients by phacoemulsification during the study period. Not included were patients operated on by other techniques and those who did not consent to participate. Recruitment was comprehensive. Our variables were epidemiological, clinical and therapeutic. Epi info version 7.4.0 was used for analysis.

Results: A total of 162 patients including 124 cataracts among which 24 or 19.35% were operated by phaco-emulsification. Average age 58.08 ± 19.75 years, sex ratio 1.4. Housewives were more represented 39.5%. Preoperative visual acuity $<1/10$ dominates 66.7% in the right eye and 58.3% in the eye. Cataracts were mature and immature in 54.2% and 45.8%, respectively. The powers of the implants used ranged from + 19.0 D to + 25.0 D in 58.3% of cases. Ultrasound B showed a retina applied in 100%. Anesthesia was 100% inconsequential. The most encountered difficulties were related to the handling of the hand piece 8.3%. The most common intraoperative complications were implant expulsion from the anterior chamber 16.7% and posterior capsule rupture without vitreous output 12.5%.

Conclusion: Phacoemulsification is a reference technique for cataract surgery. The lack of control of the use of the device has given rise to some difficulties and intraoperative complications. Guinean ophthalmologists will have to make this technique the gold standard in cataract surgery.

Keywords

Phaco-emulsification, Peroperative difficulties-complications, Guinea.

Introduction

Phaco-emulsification is a surgical cataract technique, which nowadays has become the reference technique in the world and the gold standard in industrialized countries [1,2]. Its practice

remains exceptional in developing countries because of the high cost of the phaco-emulsification machine and the implants used [3]. It provides excellent functional and anatomical results, with reduced ocular morbidity [4]. In France in 2016, Creuzot-Garcher C, et al. [5] reported a decrease in acute postoperative endophthalmitis after cataract surgery by phacoemulsification with a higher risk during intraoperative rupture of the posterior capsule. In Benin in 2018, according to N Maneh, et al. [6] In their study,

the complications encountered were corneal edema (16.1%), discontinuous curvilinear capsulorhexis (0.9%), capsular rupture, (1.8%). In Mali Bamako in 2018, Mba Aki T, et al. [3].

In their phacoemulsification study, reported that visual acuity from afar without correction in postoperative was good ($\geq 3/10$) in 81.8% with capsular rupture as the most represented complication i.e. 3.0%. In Guinea Conakry in 2022, Lama PL, et al. [7]. In their study, reported good visual acuity without postoperative correction in 89%, with two (2) complications namely a case of zonular rupture with vitreous outcome intraoperatively and a case of endophthalmitis on the 6th postoperative day. The improvement of the technical platform by the acquisition of the phaco-emulsification machine at the Bartimaeus Clinic, the beginning of the practice of this technique motivated the identification of intraoperative difficulties and complications during the first experiment.

Methodology

Study Design

After training in cataract surgery by phaco-emulsification abroad, followed by the acquisition of the phaco-emulsification machine at the Bartimaeus Clinic, the beginning of the practice of this technique motivated the identification of intraoperative difficulties and complications during the first experiment. This is a descriptive prospective study lasting 5 months from 02 January to 31 May 2023. It took place in the Bartimaeus Ophthalmological Clinic which is a second-degree hospital specializing in ophthalmology. It is located in the Nongo district, sector I, commune of Ratoma, Conakry.

Study Participants

A total of 162 patients including 124 cataracts including 24 patients operated by phaco-emulsification at the Bartimaeus Clinic participated in the study. Included were cataract surgery patients by phacoemulsification during the study period. Not included were patients operated on by other techniques and those who did not consent to participate.

Sampling

We had carried out an exhaustive recruitment according to the selection criteria as and when we received patients who had cataract surgery by phaco-emulsification at the Bartimaeus Eye Clinic.

Data collection instrument

Questions related to socio-demographic characteristics and clinical variables were asked in local language or French through a questionnaire prepared for this purpose. The difficulties encountered were described as all the malfunctions related to the handling of the phaco-emulsification machine and the intraoperative complications defined as all the problems encountered in the patient on the operating table. The parameters studied were age, sex, occupation, preoperative visual acuity, type of cataract, fundus, powers of implants used, ultrasound in mode

B, anesthesia, intraoperative difficulties and complications.

Data analysis

The data was processed and analyzed by Epi-info software version 7.4.0, entered using Word and Excel software from the Office 2016 package. Zotero software version 5.0.96.2 was used for reference documents.

Ethical and regulatory aspects

The study protocol was approved by the scientific committee of the Faculty of Health Sciences and Technology of Gamal Abdel Nasser University in Conakry. We ensured the confidentiality of the data and the free and informed consent of the participants was obtained prior to inclusion.

Results

In this table below, it appears that difficulties related to the handling of the handpiece were the most frequent.

Table 1: Difficulties in using the phaco-emulsification machine.

Difficulties	Effective	Percentage
Phaco E handpiece: Missing and poorly secured tip	2	8.3
Inability to eject cassette	1	4.2
Weakness of ultrasound	1	4.2
Pedal inactivity	1	4.2
Fill test failed	1	4.2
Perfusion pressure measurement error	1	4.2

According to Table 2, the most common intraoperative complications were expulsion of implant out of the anterior chamber and rupture of the posterior capsule.

Table 2: Peroperative complications.

Complications	Effective	Percentage
Implant expulsion out of anterior chamber	4	16.7
Posterior capsule rupture without vitreous output	3	12.5
Posterior capsule rupture with vitreous	1	4.2
Rhexis difficile (Milky cataract)	1	4.2
Iris burn during the sculpture phase	1	4.2
Iris suction during the sculpture phase	1	4.2
Iris hernia	1	4.2
Myosis in the neighborhood phase	1	4.2
Subconjunctival hemorrhage	1	4.2
Difficulty fragmenting the kernel	1	4.2

According to Table 3, the majority of patients had acuity $<1/10$ in both eyes. The details at the back of the eye were mostly blurred followed by the normal fundus and the fundus inaccessible to both eyes.

Mode B ultrasound showed applied retina in all patients. All anesthesia was performed without incidence, it was local in 95.8% and general in 4.2% of cases.

Table 3: Visual acuity and fundus.

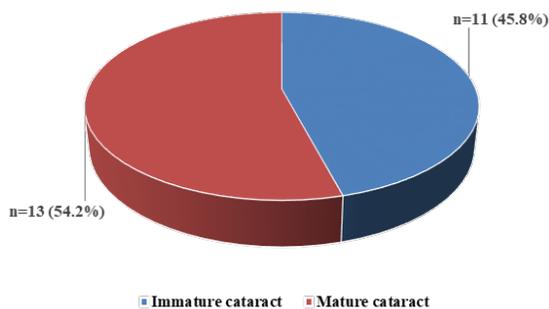
Variables	Effective	Percentage
Visual acuity - right eye		
<1/10	16	66.7
1/10-2/10	8	33.3
≥ 3/10	0	0
Visual acuity - left eye		
<1/10	14	58.3
1/10-2/10	7	29.2
≥3/10	3	12.5
Fundus – Right eye		
Fuzzy detail	11	45.8
Normal	6	25.0
Inaccessible	5	20.8
Exudates and Alteration of retinal pigment epithelium	1	4.1
Fundus - Left eye		
Fuzzy detail	9	37.5
Inaccessible	6	25.0
Normal	6	25.0
Papillary pallor	2	8.3
Alteration of the pigment epithelium	1	4.1

In this study as shown in Table 4 below, the powers of the implants used ranged from + 19.0 D to + 25.0 D in the majority of cases.

Table 4: Power of implants used.

Implant power	Effective	Percentage
+19,0 D - 25,0 D	14	58.3
+26,0 D – 30,0 D	7	29.2
> +30,0 D	3	12.5
Total	24	100

According to this figure, cataracts were immature in almost half of the cases.

**Figure 1:** Distribution based on the maturity of cataracts treated with phacoemulsification.

A total of 162 patients including 124 cataracts among which 24 or 19.35% were operated by phaco-emulsification. The age group over 60 was the most represented, the female sex was dominant with a predominance of housewives.

Table 5: Socio-demographic variables.

Variable (n=24)	Effective	Percentage
Age in years		
14 – 29	3	12.5
30 - 45	4	16.7
46 - 60	3	12.5
> 60	14	58.3
Sex		
Female	14	58.3
Male	10	41.7
Profession		
Housewife	9	37.5
Shopkeeper	7	29.1
Student/Pupill	2	8.3
Farmers	2	8.3
Officials	2	8.3
Workers	2	8.3

Average age 58.08 ± 19.75 years; Extremes 14 years and 85 years; sex ratio 1.4.

Discussions

In this study, it appears that difficulties related to the handling of the handpiece were the most frequent. The most common intraoperative complications were implant expulsion from the anterior chamber and posterior capsule rupture. This study has the advantage of being prospective, but the relatively high cost of surgery did not allow for a larger sample. Compared to the complications encountered, these results are different from those of N Maneh, et al. [6] who reported corneal edema, discontinuous curvilinear capsulorhexis, and capsular rupture, as the most common complications in 16.1%, 0.9%, and 1.8%, respectively. However, Mba Aki T, et al. [3] report in their study that capsular rupture was the most represented complication at 3.0%. The occurrence of these difficulties and complications could be explained by the fact that it was our first experience with the practice of phaco-emulsification. The majority of patients had acuity <1/10 and the details of the fundus were blurred mostly followed by the normal fundus and fundus inaccessible to both eyes. These results could be explained by the loss of transparency of the lens which is manifested by the decrease in visual acuity and sometimes by the inaccessibility to the fundus. Mode B ultrasound showed applied retina in all patients. All anesthesia was performed without incidence, it was local in almost all cases. In this study, the implants used were flexible implants in all cases with powers between + 19.0 D and + 25.0 D. N Maneh, et al. [6] In their studies report that the implants used were flexible in 59.9% and 62.5% were emmetropising. Cataracts were immature in almost half of the cases in this study. Mba Aki T, et al. [3] in Mali report that the cataracts in their series were highly evolved. These results could be explained by the late arrival of patients at the hospital due to their limited means as well as the lack of adequate health infrastructure and their poor geographical distribution. In this series 19.35% were operated by phaco-emulsification. The age group over 60 was the most represented, the female sex was dominant with a predominance of housewives. Mba Aki T, et al. [3] report

a frequency of 42.5% of phacoemulsification surgery, an average age of 67.6 ± 10.1 years and a predominance of women or 52.4%. N Maneh, et al. [6]. In their study report a frequency of 29.6%, an average age of 61 years ± 11.3 years with a sex ratio of 1.13.

Conclusion

Phacoemulsification is a reference technique for cataract surgery because of the low percentage risk of post-operative complications. However, the lack of control of the use of the Phaco E device in this study has caused some intraoperative difficulties and complications. Guinean ophthalmologists will have to make this technique the gold standard in cataract surgery.

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