

Ocular Surgical Pathologies in Children Aged 0 to 15 Years in the Bartimée Ophthalmological Clinic in Conakry, Guinea

Maxime Dantouma Sovogui^{1,2}, Christophe Zoumanigui², M'mah Aminata Bangoura³, Mössö Sevogui², Kokou Vonor⁴

¹Faculty of Health Sciences and Techniques, University of Conakry, Conakry, Guinea

²Bartimée Ophthalmological Clinic, Conakry, Guinea

³Pediatrics Department of the Donka National Hospital, Conakry, Guinea

⁴KARA Regional Hospital Center in Togo, Kara, Togo

Email: maximesovo79@gmail.com

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Abstract

Context: Childhood eye health is a real public health problem in our context, the consequences of which go beyond vision, affecting education, social participation and future economic productivity. The aim was to study the frequency of ocular surgical pathologies in children aged 0 to 15 years. **Patients and Methodius:** This study covered a 4 years period from January 1, 2016 to December 31, 2020. It was a retrospective study of a descriptive and analytical nature. It concerned all children aged 0 to 15 who had undergone surgery for ocular pathology during the study period and who were included in the operating room register. **Results:** Out of 4974 patients of all ages operated for ocular surgical pathology, 124 were children aged 0 to 15 years or 2.49%. The 9 - 12 age group was the most represented with 29.03%; the mean age was 7.3 years \pm 4.6 with extremes of 3 months and 15 years. A male predominance was observed at 62.90%. Pathologies of the lens, cataract and eyelids, traumatic edema represented the most frequent eye conditions in our patients with respectively 51 cases or 41.13% in the right eye (OD), 54 cases or 53.55% in the left eye (OG) and 14 cases or 11.29% in OD and OG followed by endemic limboconjunctivitis of the tropics (LCET), 10 cases or 3.23%, in OD and hemorrhage under conjunctival 13 cases or 10.48% in OG. Cataract surgery with the Technique Manuel Small Incision Cataract Surgery + Implantation in the posterior chamber (MSICS + ICP) was the most used in 74% of cases. General anesthesia was the most widely used anesthetic method in 100% of cases. The clinical course was favorable at 45.97%. **Conclusion:** We note a relatively low hospital frequency of ocular surgical pathologies in children, with a male predominance. The early consultation period and the im-

provement of the technical platform could improve their management.

Keywords

Surgeries, Conakry, Children, Guinea, Eyepieces

1. Introduction

Eye health in children is a real public health problem in developing countries, the consequences of which go far beyond vision, affecting education, social participation and economic productivity future [1]. Worldwide, more than 90 million children suffer from ocular pathologies [2], of which 1.4 million and 22 million have moderate to severe visual impairment [3]. Surgical ophthalmology includes all surgical procedures aimed at repairing ocular tissues and/or improving visual function [4]. In children, the prognosis depends on the precocity of the diagnosis at the risk of lasting or even definitive consequences. The procedure can be performed on an outpatient basis under general anesthesia for comfort [5]. Several studies carried out around the world in children aged 0 to 15 show that at the top of the list of surgical eye conditions appear traumatic cataracts: At the Brazzaville University Hospital in Congo in 2011, the main causes of blindness were traumatic cataracts, *i.e.*, 36.47% and post-traumatic corneal opacities 25.88% [6]. In Burkina Faso at the CHU Yalgado Ouédraogo, the prevalence of blindness was 4.36%, with a sex ratio of 1.70. The most incriminated cause was traumatic cataract, *i.e.*, 30.65% [7]. In Mali Bamako in the CHU IOTA, traumatic cataract surgery represented 1.4% of all operated cataracts [8]. The aim of this work was to study the frequency of ocular surgical pathologies in children aged 0 to 15 years in the Bartimée Ophthalmological Clinic in Conakry, Guinea.

2. Patients and Methods

This was a retrospective, descriptive and analytical study. This study covered a period of 4 years from January 1, 2016 to December 31, 2020 at the Bartimée eye clinic in Conakry, Guinea. It covered the records of all children aged 0 to 15 operated on and followed up postoperatively during the study period. Were excluded from this study, all children whose records were incomplete and those who followed postoperatively whose procedure was not performed at the Bartimée clinic. The variables studied were epidemiological, clinical, paraclinical, therapeutic and evolutionary. Data collection was done from a questionnaire on an individual survey sheet. We used as data sources the hospitalization register and the medical files of the patients. Data were processed and analyzed using Epi-info version 7.4.0 software. Zotero software version 5.0.96.2 was used for the bibliographic references. A person's chi-square test was used to compare proportions. The α significance level used was 0.05 and p had to be less than α for there to be a statistically significant relationship between the variables studied.

3. Results

During our study period, 4974 patients of all ages were operated on for ocular surgical pathology, among whom we collected 124 children aged 0 to 15, *i.e.*, a frequency of 2.49%.

3.1. Preoperative Results

According to **Table 1**, the mean age was 7.3 years \pm 4.6 with extremes of 3 months and 15 years. The age group from 0 to 5 years old was the most represented with a male predominance. More than half of the patients were educated and came from the special zone of Conakry.

Table 2 summarizes the clinical variables and shows that: the most frequent reason for consultation was the decline in visual acuity. The consultation time was greater than 72 hours in more than half of the cases. Ametropia was the most frequent antecedent. Prior medical treatment was the most represented.

According to **Table 3**, visual acuity (VA) without a correction between PL (Perception of light) and 1/10 was the most represented. Corrected visual acuity (CVA) was not achieved in more than 2/3 of the patients.

According to **Figure 1**, the images performed were mode B ultrasound for more than half of the cases, biometry and computed tomography in small proportions.

3.2. Post Operative Results

According to **Table 4**, the type of anesthesia used in the theater was general

Table 1. Sociodemographic variables.

Variables	Effective	Percentage
Age en years		
0 - 5	52	41.94
6 - 11	39	31.45
≥ 12	33	26.61
Sex		
Masculin	78	62.90
Féminin	46	37.10
Schooling		
Schooled	64	51.61
Preschool age	44	35.48
Unschooling	16	12.91
Origin		
Conakry	98	79.03
Interior of the country	26	20.97

Mean age: 7.3 years \pm 4.6; Extremes: 3 months and 15 years; sex ratio: 1.70.

Table 2. Clinical variables.

Variables	Effective	Percentage
Reason for consultation		
Decline in visual acuity	53	42.74
Eye trauma	44	35.48
Leukocoria	27	21.77
tearing	21	16.94
Pruritus	18	14.52
eye pain	18	14.52
Eye redness	14	11.29
Headaches	10	8.06
Tingling	5	4.03
Photophobia	5	4.03
Ptosis	4	3.23
Others	2	1.61
Consultation period		
<24 hours	29	33.33
24 - 48 hours	8	9.20
>72 hours	50	57.47
Unspecified	37	29.84
Background		
Medical		
Diabetes	1	0.81
sickle cell disease	1	0.81
Ophthalmological		
Ametropia	45	36.29
Eye trauma	44	35.48
Limbo Conjunctivitis Endemic to the Tropics	22	17.74
Hyalite	1	0.81
Surgical		
Pseudophakia	4	3.23
Previous treatment		
Medical	95	76.61
Traditional	16	12.90
Without previous treatment	13	10.49

Table 3. Distance visual acuity without and with preoperative correction.

Acuity without correction	Right eye		Left eye	
	Effective	Percentage	Effective	Percentage
Can't see the light	6	4.84	5	4.03
[See the light—1/10]	89	71.77	78	62.90
[1-2/10]	4	3.23	5	4.03
≥3/10	25	20.16	36	29.03
Visual acuity with correction				
<1/10	1	0.81	0	0.00
≥3/10	2	1.61	4	3.23
Not improved	13	10.43	17	13.71
Not done	108	87.10	103	83.06

Table 4. Pathologies and surgical indications.

Pathologies	Indication for surgery	Effective	Percentage
Cataract	Small incision cataract surgery	74	59.68
Glaucoma	Trabeculectomy	13	10.48
eye wound	Eye wound repair	10	8.06
Limboconjunctivitis Endemic to the Tropics	Periectomy	5	4.03
Molluscum	Excision	5	4.03
Secondary cataract	Capsulotomy	3	2.42
Dacryocystitis	Evacuation and lacrimal sounding	2	1.61
Foreign bodies	Foreign body removal	2	1.61
Cysts	Kystectomie	2	1.61
Pupillary seclusion	Sphinterectomy	1	0.81
Décollement de rétine	Strapping by indentation	1	0.81

anesthesia in 100% of cases by intravenous induction with ketamine and Diprivan 10 mg. The left eye was operated on more, conservative surgery was the most performed, including cataract surgery with small incision, which was the most performed.

According to **Table 5**, functionally, distance visual acuity without correction measured at D25 showed visual acuity greater than or equal to 3/10th in nearly half of the cases. The evolution was also favorable in nearly half of the cases.

Compared to the evolution according to sex, we found a significant link with male sex since the calculated $\chi^2 = 4.69 >$ theoretical $\chi^2 = 3.84$; ddl = 1 *i.e.* $p < \alpha$.

Concerning the evolution according to age, a significant link was also found with calculated $\chi^2 = 16.45 >$ theoretical $\chi^2 = 3.84$; $ddl = 1$ *i.e.* $p < \alpha$. We did not find any significant link between evolution and origin: calculated $\chi^2 = 0.024 <$ theoretical $\chi^2 = 3.84$; $dof = 1$; $p > \alpha$. (See **Table 6**).

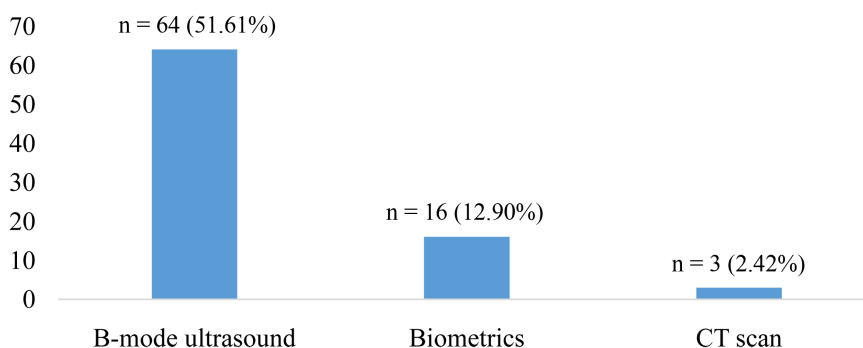


Figure 1. Image variables.

Table 5. Distribution of patients according to evolution at D25 postoperative.

Evolution		Effective	Percentage
Favorable	Healing without anatomical and functional sequelae	40	32.26
	Healing with anatomical sequelae and Visual Acuity $\geq 3/10$	17	13.71
Unfavorable	Anatomical sequelae and Visual Acuity $< 3/10$	55	44.35
	No light perception	6	4.84
	Anatomical and functional loss	6	4.84
Total		124	100

Table 6. Evolution according to socio-demographic variables.

	Favorable development	Unfavorable development	P-value
Ag			
Preschool	31	13	0.0000
School	26	54	
Sexe			
Male	37	39	0.0375
Feminine	20	28	
Origin			
Conakry	45	53	0.5
Interior of the country	12	14	

4. Discussions

In this study, the hospital frequency of ocular surgical pathologies is 2.49 with a mean age of 7.3 years \pm 4.6; extremes of 3 months and 15 years and a sex ratio of 1.70. Conservative surgery was the most practiced, including cataract surgery with a small incision in more than half of the cases. The evolution was favorable with visual acuity without correction on D25 postoperative \geq 3/10. There were statistically significant links between evolution age and sex, but there was no significant link with provenance. This result in relation to frequency is lower than that of Assavèdo CRA *et al.* [9] who found a frequency of 14%. This relatively low rate could be explained by the fact that ocular surgical pathologies are strongly linked to age. With respect to age (**Table 1**), our result is similar to that of Soumahoro M *et al.* [10] in the Ivory Coast who found an average age of 7.8 years. Our results could be explained by the fact that this age is marked by the discovery of its environment and its exploitation, hence the occurrence of playground accidents, domestic accidents or sometimes accidents occurring in the playground. In relation to gender (**Table 1**), this male predominance is also observed in the study by Mayouego Kouamsur J *et al.* [11] in Ile-de-France in an ophthalmological emergency department which found a sex ratio of 1.6. G Koki [12] in northern Cameroon finds 55% of the male gender in his study on limbo conjunctivitis endemic to the tropics. This predominance could be explained by the turbulence of the masculine gender, by the practice of sometimes dangerous games. However, it could be verified in the context of trauma. With regard to origin and schooling (**Table 1**), our results could be explained by choice of the study site, which is the urban area of Conakry, where most children are in school. Decreased visual acuity was the most frequent reason followed by ocular trauma (**Table 2**). This data agrees with that of Mayouego Kouamsur J *et al.* [11] who found that close to the pathologies were ocular traumas. This could be explained by the occurrence of gaming and domestic accidents. The consultation time greater than 72 hours was the most observed, with an average consultation time of 1.2 days (**Table 2**). Salek H *et al.* [13] found that 45.54% of children had surgery within 48 to 72 hours of admission; the average treatment time was 4.5 days with extremes ranging from one day to four weeks. This delay of more than 72 hours of consultation observed in our study could be explained by weak economic power, ignorance, negligence, self-medication and consultations with traditional healers. The high frequency of ophthalmological history such as ametropia and ocular trauma (**Table 2**) could be due to the high proportion of males in our study. Preoperative visual acuity without correction, between PL and 1/10 was poor according to WHO criteria: AV less than 1/10 (**Table 3**). The results in relation to visual acuity without correction and with correction are explained by the fact that many ocular pathologies are responsible for a decrease in visual acuity, which can lead to a functional ocular handicap. The realization of imaging in our study could be explained by the need for preoperative assessment and apprehension of the visual prognosis before the surgical procedure (**Figure 1**). Regarding the types of pathologies encountered (**Table 4**), our results are dif-

ferent from those of Amedome KM *et al.* [14]; which could be explained by the frequency of ocular traumas occurring linked to the high proportion of the male gender. The type of anesthesia used in the block was general anesthesia in 100% of cases due to the age of our study population. The left eye was the most operated (Table 4), we have not found a scientific explanation for this predominance. Conservative surgical treatment was mainly represented by the MSICS+ICP technique (Table 4), which is different from that of France where phacoemulsification is in the first position with a frequency of more than 700,000 operations per year [15]. This could be explained by the technical platform, phacoemulsification not being within our reach. According to WHO recommendations and guidelines, functional results are classified as good when postoperative visual acuity without correction is greater than or equal to 3/10 in at least 80% of cases [16]. Our visual results without correction are different from those of the WHO guidelines because at D25, without correction, we noted that almost half had visual acuity $\geq 3/10$ (Table 5). This result corroborates that of Salek H *et al.* [13] who reported that the final best corrected visual acuity was less than 1/10 in 19.25%. This rate of unfavorable evolution is explained by the delay in the management of patients due to their passage to non-specialized centers, the self-medication is undertaken before admission to the clinic and by the acts of traditional healers. The statistically significant link found between evolutions and gender (Table 6), could be explained by the severity of ocular lesions induced by trauma in males, which is most often severe. In relation to age, at birth the eye will continue to mature until the age of 7 years and it is during this period that it is necessary to correct any refractive anomalies for visual development them as harmonious as possible [3]. This is confirmed in our study because there is a statistically significant link between the evolution and preschool age (Table 6). This could be explained by the high proportion of history of ametropia. On the other hand, with regard to the evolution according to the origin, we did not find a significant link.

5. Conclusion

At the end of our study, we find a relatively low hospital frequency of ocular surgical pathologies in children, with a male predominance but it deserves special attention because of the potential risk of blindness. The MSICS+ICP technique was the most used with a favorable evolution. However, the early consultation time, the improvement of the technical platform of the Bartimée ophthalmological clinic, the acquisition of Phacoemulsifiers is prospects which, however, could improve these results.

Conflicts of Interest

The authors declare no conflict of interest in relation to this work.

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