

Anesthetic Activities of Scheduled Surgery at CHU Gabriel Touré

Mangané Moustapha^{1*}, Almeimoune Abdoul Hamidou¹, Diop Thierno Madane¹,
Soumaré Alfousseini, Koita Siriman³, Sanogo Dramane¹, Gamby Amadou¹, Siadaly Babaya¹,
Dembelé Aladjy Seydou², Diango Djibo Mahamane¹

¹Department of Anesthesiology and ICU, Hôpital Gabriel Touré, Bamako, Mali

²Department of Anesthesiology, Hôpital IOTA, Bamako, Mali

³Department of Anesthesiology and ICU, Hôpital Mère-Enfant, Bamako, Mali

Email: *mbayemangane@gmail.com

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Abstract

Concept: We opted for this study because the hospital unit Gabriel Touré was renovated with 7 surgical specialties. Our study was the very last study before the advent of coronavirus disease 2019 (COVID 19). **Goal:** Evaluate the anesthetic activities of the planned surgery at the University Hospital Center CHU Gabriel Touré. **Method and Material:** This was a descriptive prospective study carried out in the cold operating theater of the CHU Gabriel Touré from January to December 2018. It focused on all patients operated on for regulated surgery and who had benefited from anesthesia. Our data was entered and analyzed on SPSS 25 software. Word processing performed on Microsoft WORD[®] 2016 and graphics on Microsoft EXCEL[®] 2016. **Results:** During the study period 1700 patients were operated on in the operating room for scheduled surgery. The age range of 0 to 5 years accounted for (14.8%). The average age was 6.64 years; male predominance (52.6%) of operated patients with a sex ratio of 1.1. A history of general anesthesia was found in 62.1%. The classification of the American Anesthesia Society (ASA) ASA1 class represented 92.7%. Tonsillitis was the most common operative diagnosis (9.5%). Hernia cures and eventrations were the most common surgical technique (11.8%). General anesthesia was achieved in 65.3% of patients. Hypotension was the most common adverse event in the operating room, 44.5%. The intraoperative mortality was 0.11%. **Conclusion:** Our study covered the entire population anesthetized. It provided an update on the practice of anesthesia in the intensive care unit anesthesia. General anesthesia was the most used technique; a predominance of cardiovascular adverse events, occurring more often in induction and mainly favorable outcome with mortality intraoperative 0.11%. A growing presence of MAR and DES who had per-

formed more than 30% of anesthesia.

Keywords

Anesthetic Activities, CHU Gabriel Touré, Bamako

1. Introduction

The anesthesia allows the operation to proceed smoothly with pain relief, patient immobility and neurovegetative protection [1]. Nowadays, in well-off countries, it allows the efficient care of fragile patients for increasingly heavy interventions. Developing countries, and more particularly those of sub-Saharan Africa remain outside these advances, with a very high perioperative mortality, in connection with multiple shortages including the lack of qualified personnel, the obsolescence of equipment and the frequent shortage of essential drugs [2] [3] [4]. However, it must be recognized that a great deal of effort has been made in Mali to follow in the footsteps of progress in the field of anesthesia. Several studies have been carried out on the evaluation of the quality of anesthetic care at the CHU Gabriel Touré [5]; as well as the reports of anesthetic activities [6] at the Pasteur Bamako clinic. In order to improve the quality of the activities and to have recent statistical data of the activity provided by the cold operating room of the CHU Gabriel Touré, the present work was initiated. It could represent a frame of reference making it possible to periodically gauge the evolution of the practice of anesthesia over time. Our objective was to evaluate the anesthetic activities of the planned surgery at CHU Gabriel Touré.

2. Methodology

This work is a descriptive prospective study carried out in the cold operating room of the CHU Gabriel Touré from January to December 2018. It focused on all the patients operated on in the operating room for controlled surgery and having benefited from anesthesia. Any patient taken in the operating room for emergency surgery was excluded from the study. Planned surgery was performed Monday through Thursday in the cold operating room. The weekly cold room operating program is established every Thursday. We used as support the patient's medical file and the investigation sheet carried out in the operating room department. The parameters studied were socio-demographic data, history, preoperative diagnosis, type of surgery, data from the pre-anesthetic consultation, the most used anesthetic products, incidents and accidents and times of occurrence, surveillance in the SSPI and post-operative complications. Our data was entered and analyzed on SPSS 25 software. Word processing was performed on Microsoft WORD® 2016 and graphics on Microsoft EXCEL® 2016.

3. Results

During the study period 1700 patients were taken to the operating room for

scheduled surgery and who received anesthesia. The age range of 0 to 5 years was the most represented with 14.8% (n = 252) (Figure 1). The mean age was 6.64 years ranging from 07 days to 82 years and a standard deviation of 4.12; male predominance 52.6% (n = 894) a sex ratio of 1.1 of the operated patients with a sex ratio of 1.1.

Patient history: Arterial hypertension (HTA) in 45.7% (n = 78) (Table 1); 77% (n = 1309) had never been operated on and 93.6% (n = 1592) (Table 1) had never received a transfusion. In our study 62.1% (n = 238) (Table 1) of patients had a history of general anesthesia. The majority of our patients were smokers 87.7% (n = 78). The pre-anesthetic consultations (CPA) were mainly carried out by resuscitator anesthetist (MAR) (96.6%) (n = 1643). The ASA1 class represented 92.7% (n = 1576) (Table 2) of cases.

General surgery was the surgical specialty performing the most procedures with 23.1% (n = 393) (Table 3). Tonsillitis was the most common operative diagnosis at 9.5% (n = 161) (Table 4). Hernia cures and eventrations were the most common surgical technique 11.8% (n = 200) (Table 5).

General anesthesia (GA) was achieved in 65.3% (n = 1110) (Table 6) of patients. Ketamine, the combination Celocurine + Norcuron, Isoflurane were the most used in GA induction, respectively 67.6% (n = 790); 68.8% (n = 757) and 92.4% (n = 1079). Fentanyl was used the most for analgesia in our patients 100% (n = 1700). Our patients received the combination Bupivacaine 0.5% + Morphine by ALR induction 96.6% (n = 536) cases. The IADEs performed 69.9% (n = 1188) of the anesthetics.

Hypotension was the most common adverse event occurring in the operating room 44.5% (n = 196) (Table 7). Adverse effects occurred during induction 55.1% (n = 242) of cases (Table 8). The intraoperative mortality was 0.11% (n = 2). Most of the operated patients went through a Post-intervention surveillance

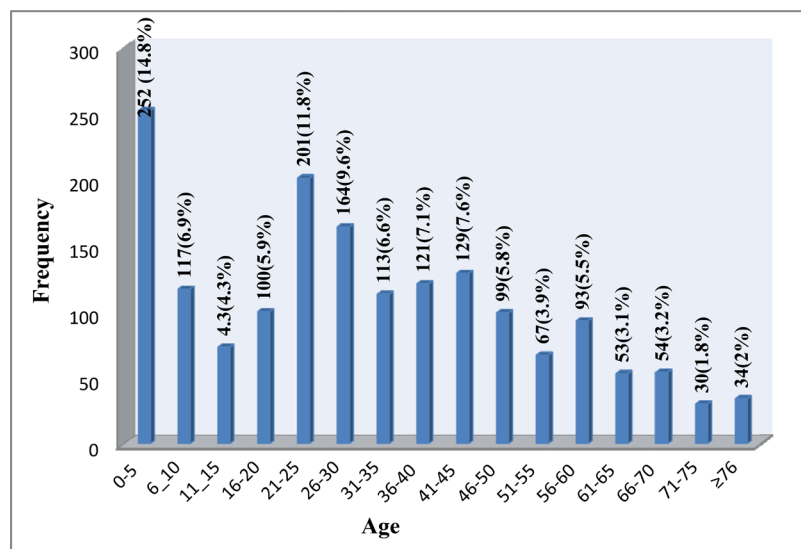


Figure 1. Distribution of patients according to age; the age range of 0 to 5 years was the most represented with 14.8% (252).

Table 1. Distribution of patients according to history.

	History	Number	Percentage
Medical	HTA	78	45.7
	Diabetes	13	7.6
	Stroke	1	0.1
	Obesity/Overload	5	3.0
	Epilepsy	3	1.8
	Allergy	28	16.4
	Asthma	21	12.3
	COPD	2	1.2
	Hypertension + Diabetes	14	8.2
	Sickle cell disease	4	2.3
Surgical	HIV	1	0.1
	Already operated	391	23.0
Anesthetics	Never operated	1309	77.0
	General anaesthesia	238	62.1
Transfusionists	Spinal anesthesia	120	31.3
	Epidural anesthesia	13	3.4
	Local anesthesia	12	3.2
	Already transfused	108	6.4
Obstetricians	Never transfused	1592	93.6
	Primiparous	57	11.3
	2 nd to 5 th Gesture	263	52.0
	Multipare	186	36.7

CVA: Cerebral Vascular Accident; COPD: Chronic Obstructive Pulmonary Disease; HIV: Human Immunodeficiency Virus; SA: Spinal anesthesia; EA: Epidural anesthesia; LA: Local anesthesia.

Table 2. Distribution of patients according to ASA class.

ASA Classification	Frequency	Percentage
ASA 1	1576	92.7
ASA 2	109	6.4
ASA 3	14	0.8
ASA 4	1	0.1
Total	1700	100.0

ASA: American Anesthesia Society.

Table 3. Distribution of patients according to the department of origin.

Surgical specialty	Frequency	Percentage
Gyneco-obstetrics	197	11.6
Neurosurgery	124	7.3
General surgery	393	23.1
Trauma	199	11.7
otolaryngology	316	18.6
Urology	246	14.5
Pediatric surgery	225	13.2
Total	1700	100.0

ORL: Otorhinolaryngology.

Table 4. Distribution of patients according to operative diagnosis.

Operative diagnosis	Frequency	Percent
Upper limb fracture	38	2.2
Goitre	70	4.1
Bladder lithiasis	125	7.4
Hydrocephalus	23	1.4
Digestive tumor	74	4.4
Otitis	50	2.9
Burn	31	1.8
Cryptorchidism	24	1.4
Breast tumor	61	3.6
Anal fistula	31	1.8
Lower limb fracture	124	7.3
Vertebral fracture	55	3.2
Osteomyelitis	14	0.8
Prolapse	46	2.7
Scarred uterus	21	1.2
Cyst	87	5.1
Papilloma	23	1.4
Ostomy	70	4.1
Brain tumor	17	1.0
Kidney tumor	37	2.2
Hirschsprung disease	20	1.2
Prostate adenoma	90	5.3
Brain embarrassment fracture	2	0.1
Spina bifida	13	0.8
Collar neo	28	1.6
Postoperative eventration	26	1.5
Genital tumor	17	1.0
Pseudarthrosis	27	1.6
Scarring bridle	18	1.1
Anorectal malformation	15	0.9
Bladder exstrophy	3	0.2
Hemorrhoidal Diseases	12	0.7
Hernia	134	7.9
Dysphonia	27	1.6
Tonsillitis	161	9.5
Uterine myoma	8,6	5
Total	1700	100.0

Table 5. Distribution of patients according to the surgical technique.

Surgical technique	Frequency	Percent
Tonsillectomy	162	9.5
Resection	143	8.4
Coeliosurgery	23	1.4
Brushing	35	2.1
Mastectomy	56	3.3
Uterine myomectomy	54	3.2
Prosthesis	18	1.1
Nodulectomy	8	0.5
Osteosynthesis	89	5.2
Thyroidectomy	69	4.1
Adenectomy	91	5.4
Urethroplasty	54	3.2
Cesarean	22	1.3
Laryngoscopy	27	1.6
Fistulectomy	29	1.7
Restoration of digestive continuity	70	4.1
Tympanoplasty	43	2.5
Orchidopexy	18	1.1
Sequestromia	14	0.8
Colo-anal lowering	19	1.1
Lifting embarrassment	2	0.2
Material removal	34	2.0
Laminectomy + internal fixation	33	1.9
Ventriculoperitoneal shunt	28	1.7
Gastrectomy	30	1.8
Biopsy	14	0.8
Release	20	1.2
Anoplasty	15	0.9
Hemorrhoidectomy	11	0.6
Panendoscopy	27	1.6
Nephrolithotomy	42	2.5
External fixator	9	0.5
Nephrectomy	22	1.3
Screw plate	41	2.4
Autograft	32	1.9
Hysterectomy	96	5.7
Cure hernia, eventration	200	11.8
Total	1700	100.0

Table 6. Common anesthetic technique used.

Anesthetic technique	Frequency	Percentage
General anaesthesia	1110	65.3
Spinal anesthesia	568	33.4
Epidural anesthesia	5	0.3
Local anesthesia	17	1.0
Total	1700	100.0

Table 7. Main types of adverse events observed.

Adverse events AE	Frequency	Percentage
Hypotension	196	44.5
Bleeding	88	20
Cardiac arrest	3	0.7
Fail PL	37	8.4
Bradycardia	23	5.2
Hypotension + bleeding	93	21.1
Total	440	100.0

UE: Adverse Event; LP: lumbar puncture.

Table 8. Distribution of AEs according to time of onset.

Time of occurrence	Frequency	Percent
Induction	242	55.1
Incision	13	2.9
Maintenance	185	42.0
Total	440	100.0

room 70.6% (n = 1201).

4. Discussion

The difficulties encountered in our study were mainly due to the fact that the anesthetic files were not correctly completed intraoperatively.

We were limited by anesthesiologist's reluctance to report minor adverse events with spontaneously favorable outcome that occurred during anesthesia and incomplete anesthesia records.

In our study, anesthesiologists' reluctance to report minor adverse events during anesthesia comparable to that found by Hicham, K., *et al.* where the spontaneous development in 62% of patients who presented an adverse event and 38% were transferred to intensive care [7].

In our study we found a male predominance of 52.6% against 47.4% of women. Results were different from that of Diango, D. at the Gabriel Touré University Hospital in Bamako who had a sex ratio of 2.48 in favor of men [8].

The 0 to 5 years age group was the most represented in our study 14.8% this could be explained by the fact of the high activity of pediatric surgery and ENT service. The mean age was 6.64 years with extremes ranging from 07 days to 82 years and a standard deviation of 4.12. Results superior to that of Samake, B. at the Gabriel Touré University Hospital in Bamako who had a mean age of 2 years with the extremes ranging from 16 days to 12 years and a standard deviation of 2.93 [9].

Only 10% of our patients had a medical history contrary to that of Samake B at the Gabriel Touré University Hospital in Bamako where 66.4% of patients had no history [10]. They were observed in 21.77% of patients admitted to the operating room after consultation with anesthesia. At 79.22%, general anesthesia was the most common anesthetic history.

Class ASA I American Society of Anesthesia was observed in 92.7% of cases observation similar to that of Belkrezia [11].

General anesthesia was offered in 65.3% of patients versus 33.4% for loco regional anesthesia.

In our series, 69.9% (n = 1188) of the interventions were performed by IADE; 14.2% (n = 241) by MAR and 15.9% (n = 271) by DES (Special Study Diploma) contrary to the proportions found by Dembele, A.S. *et al.* Pasteur medical-surgical and intensive care clinic in Bamakowith 74.6% of anesthetics were performed by MAR and 25.4% by IADE [6].

General anesthesia accounted for 65.3% versus 34.7% ALR of anesthesia performed. Observations were similar to that of Samake, B., *et al.* at the Gabriel Touré University Hospital in Bamako [10]. This primacy of general anesthesia is a constant in both African [13] [14] [11] [15] and international literature [16].

The combination Bupivacaine 0.5% + Morphine 96.6% was the most used in RA; followed by the combination of Xylocaine 2% + Bupivacaine 0.5% + Morphine 1.3% for ODA; and Xylocaine 2% for local anesthesia.

During general anesthesia, the narcotic combination + curare was the most used protocol in the majority of cases. Overall, ketamine was the most widely used anesthetic agent with 66.7% followed by Celocurine + Norcuron 68.8%. Our observation was different from that of Konan Kouassi, J.E. who had used ketamine as the most widely used anesthesia agent (53%) and vecuronium had been used (100%) [17].

Fentanyl was the analgesic used in all of our patients during induction in the majority of patients. Same remark made by Essola, L., *et al.*, who used Fentanyl as an analgesic in all of their patients [18].

Visceral surgery was the most frequent in our study 23.1% of interventions. Proportions similar to that of Belkrezia [11]. This could be explained by the visceral surgery done at the CHU Gabriel Touré is a general surgical service; it therefore presents a wide variety of surgical indications, thus performing obstetric, otorhinolaryngology and urological surgery.

In our study, tonsillitis represented 9.5% of operative diagnoses, a result lower

than that of ABHE CM at Cocody University Hospital in Abidjan [19] where obstructed labor was the most represented operative diagnosis at 31.9% (n = 258).

The hernia cure, eventration was the surgical procedure the most represented in our study with 11.8% result lower than that of the study of N'diaye, P.I. [12] at the CHU A Le Dantec of Dakar which had found the cureinguinal hernia (60%) during his study.

Most of the anesthetics (55.3%), lasted for more than one hour. This observation is different from that of Dembele, A.S. who found 57.3% of patients had an intervention period of less than 60 minutes [6].

In our series, 25.8% of patients had experienced an adverse reaction during the surgery. Arterial hypotension predominated, it was found (44.5%) of cases. These events occurred more often during induction (55.1%) of cases. Filling was the most common solution. Proportions were higher than those found by Dembele, A.S. where 14.5% of patients had presented an adverse event during surgery.

Isolated arterial hypotension was predominant (6.8%). All of these patients developed it. Vasopressors have been used the most in the management of the hypotension, followed by filling fluids including macromolecules [6]. Our series observed only 3 cases of cardiac arrest.

The adverse events had a favorable outcome in the majority of cases. We recorded 0.11% of intraoperative deaths. This rate is close to that found by Tired and Col [20] in France 0.19%. On the other hand, Dembele, A.S., *et al.* at the Polyclinic Pasteur in Bamako [6], in their series the intraoperative mortality was 0.6%. This could be due to the fact that our study only looked at regulated surgery and the majority of the anesthesia population was relatively well doing ASA1 especially. And also heavy surgeries and poor prognosis were infrequent.

5. Conclusions

Our study covered the entire population anesthetized in the cold block at CHU Gabriel Touré from January to December 2018. It provided an update on the practice of anesthesia in the intensive care unit anesthesia.

General anesthesia was the most used technique; a predominance of cardiovascular adverse events, occurring more often in induction and mainly favorable outcome with mortality intraoperative 0.11%. A growing presence of MAR and DES who had performed more than 30% of anesthesia.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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