

## Anesthetic Practices at the Main Level II Military Hospital of Guinea-Bissau

Denis Barboza<sup>1\*</sup>, Simone Odile Ntab<sup>2</sup>, Mbaye Diaw<sup>3</sup>, Mamadou Mour Traoré<sup>3</sup>, Papa Alassane Leye<sup>4</sup>, Elh Adj Boubacar Ba<sup>3</sup>, Ibrahima Gaye<sup>4</sup> and Elisabeth Diouf<sup>4</sup>

<sup>1</sup>Department of Anaesthesiology and resuscitation, Peace Hospital, Health Sciences Faculty, University Assane Seck, Ziguinchor, Senegal

<sup>2</sup>Obstetrics and Gynecology Clinic, Aristide Le Dantec Hospital, Faculty of Medicine, Cheikh Anta Diop University, Dakar, Sénégal

<sup>3</sup>Department of Anaesthesiology and resuscitation, Fann Hospital, Faculty of Medicine, Cheikh Anta Diop University, Dakar, Sénégal

<sup>4</sup>Department of Anaesthesiology and resuscitation, Aristide Le Dantec Hospital, Faculty of Medicine, Cheikh Anta Diop University, Dakar, Sénégal

\*Corresponding author: Denis Barboza, Department of Anaesthesiology and resuscitation, Peace Hospital, Health Sciences Faculty, University Assane Seck Ziguinchor, Senegal, Tel: 00221776418331; E-mail: [denisbarboza7@gmail.com](mailto:denisbarboza7@gmail.com)

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### Abstract

Anesthesia is at high risk in developing countries. Guinea Bissau is one of the countries where health is facing many difficulties. It has been an unstable country for more than two decades in political terms impacting several areas, including health. Three military forces namely Nigeria, Burkina Faso, and Senegal are deployed for peacekeeping. The main task of the Senegalese force is to deploy the Level II military hospital. The main objective of this study is to analyze anesthetic practice at the Bissau Main Level II Military Hospital. It is a descriptive, transversal and analytical study conducted over a period from January 2016 to December 2016. The constants, the number of anesthetists and their qualification, the qualification of the surgeon, the existing means of surveillance, the incidents and accidents, and the duration of hospitalization were evaluated. We collected 941 patients who received anesthesia. The majority is young with 87.8% under 40 years old and predominantly 85.54% female. In our study urgent surgery was the most representative with 796 patients or 84.6%. The main surgical activity was gynecology and obstetrics, which accounted for 81.7% of cases. Anesthesia consultation was performed in 15.6% of cases. Anesthesia was performed by paramedical staff in 67.48% of cases. Among the 213 patients under general anesthesia, 182 patients underwent anesthesia with orotracheal intubation. Intraoperative hemodynamic complications are most common with arterial hypotension which was predominant in 70.76%. Three deaths were recorded, representing a mortality rate of 0.32%. The practice of anesthesia in Guinea-Bissau is a real public health problem. Support from ECOWAS countries would be useful to raise the health level.

**Keywords:** Anesthetic practice; Guinea; Bissau; ECOWAS; Military

### Introduction

Anesthesia is at risk in developing countries [1] and more particularly in sub-Saharan Africa that remains outside the advances experienced by anesthesia resuscitation. The perioperative mortality rate is high and related to numerous shortages including lack of qualified workers and obsolescence of equipment. In the context of health development and the lack of medical information, it seemed useful to us to analyze the practice of anesthesia in Guinea Bissau. The main objective of this work was to evaluate the practice of anesthesia at the Military Hospital of Guinea-Bissau and to make proposals for its improvement.

### Materials and Methods

Our study took place at the Bissau Main Military Hospital, which is a Level II public health institution that began its care services on May 27, 2012. Guinea Bissau, a country bordering Senegal, is one of the sub-Saharan Africa where health is facing many difficulties. It is a politically unstable country, which led to a financial impact. It is the scene of several coups and this has drastically impacted its economy. In addition, the 1998 war resulted in the destruction of medical facilities and the migration of qualified health personnel to other more politically stable countries. Thus, after the 2012 coups d'état, an ECOWAS military force composed of Nigeria, Burkina Faso, and Senegal was deployed for a peacekeeping mission. The main task of the Senegalese force is to deploy the Level II military hospital in collaboration with the staff of the latter, particularly the surgical team. It was built by China through the Sino-Bissau-Guinean cooperation. The staff is in training thanks to the presence of Chinese and Cuban medical team in Bissau. It is the second most surgically referenced hospital in the country. This was a descriptive, cross-sectional and analytical study conducted from January 1 to December 31, 2016. All patients who had surgery in the operating room under anesthesia during the study period were included. Patients whose records are unusable were excluded from the study. The data were collected using anesthesia registers. The studied parameters were: epidemiological, surgical interventions and perioperative management. We used the Epi Data 3.1 software.

### Results

Nine hundred and forty-one (941) patients had undergone surgery at Bissau Main Military Hospital, an average of 2.57 procedures per

day. During our study, 147 patients had a pre-anesthetic consultation or 15.6% of all interventions. The consultations were made by the hospitals graduated doctor in anesthesia. Females were the most represented at 85.54% with a sex ratio of 0.17. The average age of operated patients was  $29.19 \pm 11.709$  years (Figure 1).

Urgent surgery was the most represented with 796 patients or 84.6%. Among the interventions, gynecological obstetric surgery ranked first at 81.7%, with a predominance of at lower segment cesarean intervention at 88, 35% (Table 1).

Visceral surgery (165 patients) was dominated by parietal surgery with 44.84% followed by digestive surgery with 43.03%. Orthopedic activity accounted for 0.8% of all interventions. Of the 941 anesthesia performed, six were performed in the presence of the resuscitative anesthetist and 31.88% by the hospital doctor. The nurses in anesthesia performed 67.48% of the procedures. All patients operated during the study period received monitoring with cardioscope, pulse oximeter, and automatic blood pressure monitor. There was no capnographnor device for measuring neuromuscular transmission in the operating room. Seven hundred and twenty-eight (728) procedures were performed under LRA alone (77.36%) and the rest under general anesthesia (22.64%). Of the 213 patients undergoing general anesthesia, 14.08% had general anesthesia with mask alone and 85.45% had anesthesia with orotracheal intubation. Ketamine was the most used hypnotic at induction in 54.46% of patients. Suxamethonium was used in 98.35% of patients. Maintenance of anesthesia was done with Ketamine in 41.23% of the interventions followed by propofol in 33.17% (Table 2). Fentanyl was the only opioid analgesic used intraoperatively.

Hemodynamic complications were more frequent and present in 6.9% of our patients during the intraoperative period. Among the hemodynamic intraoperative complications, arterial hypotension was predominant in 70.76% of patients. All patients operated under general anesthesia were extubated on the operating table. Loco-regional anesthesia was performed in 728 patients. Spinal anesthesia was the most common. Only one patient had an epidural associated with general anesthesia. Spinal anesthesia needles (25 gauges) were multiple uses after sterilization. The local anesthetics used were Bupivacaine hyperbaric and isobar in combination with a morphine fentanyl at the dose of 25µg or 50µg. Analgesics used were paracetamol injection in 100% of patients combined with Nefopam in 0.64% and NSAID in 7.12%. Tramadol was unavailable. One patient had received an epidural catheter for postoperative analgesia with 0.125% bupivacaine. Patients were admitted to SSPI in 100% of cases

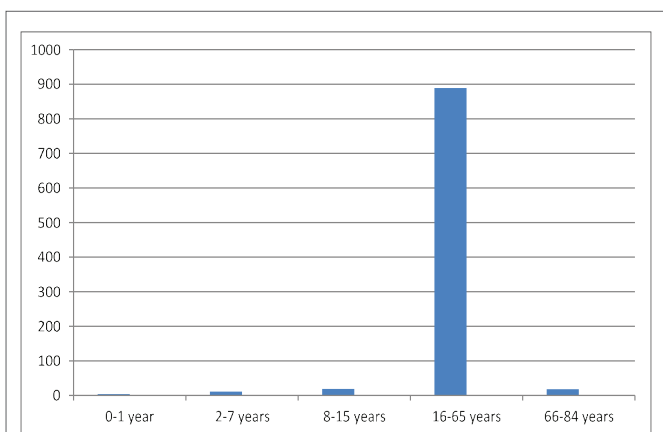


Figure 1: Repartition according to age group.

Table 1 : Repartition according to type of gynecological obstetric surgery intervention.

Intervention type	Number	Percentage
Caesarean	641	83,35
Myomectomy	43	5,59
Extra-uterinepregnancy	37	4,81
Uterine rupture	12	1,56
Kystectomie	25	3,25
Others (suture failure, postpartum hemorrhage, uterine perforation, retained placenta)	11	1,44

Table 2: Repartition according to anesthetics products.

Hypnotics products	Number	Percentage (%)
Ketamine	116	54,46
Thiopental	62	29,11
Propofol	35	16,43

because there is no resuscitation. The mobilization was carried out as quickly as possible after the intervention in all our patients. The drug prevention of thromboembolic disease based on an injection of 4000 IU of enoxaparin sodium per day was not made because the product was unavailable. The evolution was favorable at 99.68%. Three patients died intraoperatively. The deaths occurred during two uterine breaks and one peritonitis.

## Discussion

The operating room of the Bissau Military Hospital does not meet the currently accepted standards. There is no oxygen plant. This situation poses an insecurity problem for the operating room staff with the risk of explosion but also for the patient because of the risk of oxygen breakdown during controlled mode ventilation. The post-interventional surveillance room served as a pre-operative room. There is no monitoring equipment. All the equipment found there in case of compulsory supervision of certain patients came from the block thus rendering this room not in conformity with international standards [2]. The operating room is well placed beside the surgical and gynecological services, which optimize the management of patients. We encountered an inhomogeneous population in services but also pathologies of other specialties. For the sake of precision, it would be more advantageous to adjust the services according to the particularity of the age group treated but also the specialties. At the Main Military Hospital, there is no anesthetist-resuscitator specialist doctor since it opened in 2012 but there is a qualified hospital doctor. He was trained by Cubans. The doctor's training took place over a period of six months at the end of which he obtains a hospital diploma. Anesthetist nurses, six in number, were also trained at Simao Mendes Hospital for one year. Standards accepted in Western countries were an operating room anesthesiologist operating daily and for 20 surgical beds [2]. In addition, we noticed a lack of information collected on the anesthesia sheets. We noticed a lack of systematization in the search for a difficult intubation history, ASA and Mallampati classifications, airway patency. The difficulties encountered and the measures taken during certain routine procedures such as external laryngeal maneuvers, multiple attempts at intubation, use of a mandrel defining intubation as difficult were not noted by the anesthesia teams.

The majority of anesthetized patients were young, 87.80% younger than 40 years of age, as in most African studies in Senegal [3] and

Cameroon [4]. This predominance was related to the youthful structure of Africa's population and especially to politically unstable countries. The distribution of the different age groups shows that most of the study population is very young with 87.8% of patients under 50 years of age. This result is comparable to that found by Alain Kabey [5], where the majority of anesthetized patients were young (90.9% under 50 years old), as in the other countries of the sub-region [3,6]. Our study population is less old than those in the SFAR and SMAAR [7,8] surveys: patients over 60 represented 3.7% of our series, compared to 33% and 18%, respectively for SFAR and SMAAR. In our series, the female sex predominated. This percentage is much higher than that found in most of these in Senegal [3]. Many studies confirm a higher proportion of female patients than for their male peers. These observations are related to the importance of anesthetic activity in gynecology and obstetrics. It should also be noted that the country political instability is the basic factor of the financial crisis. Gynecological surgery was the most commonly performed surgery with 81.7%, followed by visceral one 17.5%. These proportions were found in several studies in Senegal [3] and in Cameroon, while the opposite was noted in studies made in Lubumbashi, Morocco [8] and Madagascar by Rasamoelina [9]. This predominance of obstetric activities is related to the accessibility of the hospital because it is at the entrance of the capital but also because the population is sexually active. Among the 941 anesthesia 77.36% of the anesthetic acts were performed under LRA and 22.64% under GA. This high percentage of LRA is found in works in Togo and Senegal, unlike in Morocco and Lubumbashi. Spinal anesthesia (77.36%) was the only technique performed and this is mainly related to interventions indications. The strong predominance of spinal anesthesia was explained by the fact that it is a safe technique during cesarean section, beneficial for postoperative analgesia, and its limited cost is suitable for countries with limited means [10,11]. The only product used as a local anesthetic for LRA is 0.5% bupivacaine associated with fentanyl 25 µg. The same product is used in many studies [12]. In general anesthesia, Ketamine was the most used narcoanalgesic for intravenous induction (54.46%) followed by thiopental (29.11%), similar to the results found in Togo. In addition to its availability and low cost, its adaptation to the conditions of use and specific clinical situations encountered in developing countries makes it the most important molecule, and sometimes the only hypnotic available in hospitals [13]. Isoflurane was the only inhalation agent used because the anesthesia machine only has isoflurane and sevoflurane. All patients anesthetized during the scheduled surgery had benefited from a pre-anesthetic consultation made by the graduate physician in anesthesia, which was not the case for those involved in emergency surgery. We find the same situation in most African studies [1,3,4,14]. This could be explained by a low activity of programmed surgery related to the lack of specialist. Paracetamol was the analgesic prescribed to all patients alone or in combination with other molecules. This molecule has shown efficacy in monotherapy for low to moderate pain intensity surgery or in combination with opioids or nonsteroidal anti-inflammatory drugs. It allows the morphine savings by reducing the EVA scores, whether at rest or mobilization. The incidents identified in our study were dominated by low blood pressure. These data were similar to those found in other African studies, such as in Senegal [3] and in Lubumbashi [5]. Indeed, the sympathetic block is very marked in the pregnant woman and Bupivacaine doses are not codified. This complication was treated in our series by a crystalloid filling and bolus administration of ephedrine. Overall mortality was 0.32% in our series. This percentage is lower than that found in some studies [3,5]. The main factors in question were: delayed care: patients who

consult late, sometimes living in remote localities, isolated and facing transport problems for medical evacuation; the financial crisis; early pregnancy and often not followed or poorly followed; the frequency of anemia in the female population; frequent breaks in blood products; the severity of the pathology (uterine rupture, eclampsia, peritonitis) but especially the absence of a resuscitation service.

## Conclusion

Anesthesia in Guinea-Bissau is lagging behind that of Western countries. It has improved since the commitment of ECOWAS forces coinciding with the opening of the Military Hospital and the setting up of a Level II Hospital under the responsibility of the Senegalese armed forces. The results show that anesthesia is performed in difficult conditions. Awareness and training of anesthesia teams in the complete and professional collection of anesthetic information should be applied to improve the quality of future care.

## Limits of Study

- Some complications are sometimes fatal related to the lack of adequate equipment.
- Incidents and accidents may decrease by a better staff training;
- Poor record-keeping.

ECOWAS help with regard to health may be a strength as set for this country.

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