



Research Article

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## Outpatient surgery in Benin during COVID-19 pandemic

René Ayaovi Gayito Adagba<sup>1</sup>, Jordane Boboe<sup>1</sup>, Salim Salim Ahmed<sup>2</sup>, Maurice Badjagou<sup>1</sup>, Aloys-Gibson Tetinou Fouelefack<sup>2</sup>, Stephan Claudel Njo-Nonsi<sup>2</sup>, Stephan Parfait Tekam<sup>3</sup>, Raoul Martin Chabi<sup>1</sup>, Bassam Boina<sup>1</sup>, Ali Balogoun<sup>1</sup>, Ulrich Aka<sup>1</sup>, Moise Muhindo Valimungighe<sup>2</sup>, Jude D. Amegble<sup>1,2</sup>, Isaac Olivier De Montaguere<sup>1</sup>, Damigou Mawuli Sambiani<sup>1</sup>, Abdoulaye Karembé<sup>1</sup>, Freddy Houéhanou Rodrigue Gnangnon<sup>2</sup>

<sup>1</sup> Hôpital de Zone Saint Jean de Dieu de Tanguiéta, Tanguiéta, Benin

<sup>2</sup> Centre National Hospitalier Universitaire Hubert Koutoukou MAGA (CNHU - HKM), Cotonou, Benin

<sup>3</sup> Centre Hospitalier Universitaire Sylvanus Olympio, Lomé, Togo

### Abstract

**Background:** The emergence of COVID-19 in 2019 altered certain practices in the medical world. In Tanguiéta, in the north of Benin, it was one of the reasons for initiating outpatient surgery, a common practice elsewhere. However, the keys to its success have been outlined for several years, with significant benefits in the context of a pandemic. **Objective:** To evaluate the feasibility of outpatient surgery at the Tanguiéta Zone Hospital. **Materials and Methods:** This is a prospective, analytical, and descriptive study conducted at the Tanguiéta Zone Hospital over seven months. The study population consists of all patients admitted to the hospital who required surgical intervention and tested negative for Covid-19. A satisfaction questionnaire was administered during all postoperative consultations, evaluating pain management, home comfort compared to traditional hospitalization, potential difficulties related to same-day discharge, and the overall care process. **Results:** During our study, 74 patients were recruited and underwent outpatient surgery. The average age of the patients was 43.69 years, with extremes ranging from 18 to 65 years. The average hospitalization duration was 7.25 hours, with extremes ranging from 4 to 12 hours. The satisfaction rate was 95.94%, with strong patient adherence to day surgery. **Conclusion:** This study confirms our hypothesis that ambulatory surgery is feasible in Benin, with as many advantages or positive outcomes as in Western countries without an increased risk. Without equating it to accelerated surgery, well-organized ambulatory surgery can potentially, even in a low-income country, be associated with low hemorrhagic risk and easily controllable postoperative pain.

**Keywords:** COVID-19, Ambulatory Surgery, Tanguiéta.

### INTRODUCTION

While outpatient surgery was already becoming a common practice in some African countries <sup>[1]</sup>, there is still no well-structured outpatient surgery service in Benin to date. Yet, the keys to its success have been outlined for several years <sup>[2]</sup>, highlighting significant benefits, especially in a pandemic <sup>[3]</sup>. These benefits, however, depend on adhering to the conditions for its implementation. The framework and indications for this practice have been extensively discussed in recommendations by scientific societies <sup>[4]</sup>.

Given the significant surgical activity at the Tanguiéta Zone Hospital, the limited medical personnel available to manage it, the modest economic capacities of both the hospital and the population, and the limited hospitalization capacities of the various surgical departments, in the context of the COVID-19 pandemic, we decided to initiate this study to evaluate the feasibility of outpatient surgery at the Tanguiéta Zone Hospital.

This research hypothesizes that outpatient surgery is feasible in Benin, offering advantages during the COVID-19 pandemic comparable to those in Western countries, with a similar level of risk.

### MATERIALS AND METHODS

This is a prospective, analytical, and descriptive study conducted at the Tanguiéta Zone Hospital over 7 months, from November 8, 2021, to June 8, 2022. The study population consists of all patients admitted to the hospital who required surgical intervention and tested negative for COVID-19. The inclusion criteria were any patient who :

- Was over 15 years old and under 65 years old,
- Was waiting for a short, scheduled surgery known to have straightforward outcomes,

**\*Corresponding author:**  
**Dr. Aloys-Gibson Tetinou Fouelefack**  
Centre National Hospitalier  
Universitaire Hubert Koutoukou  
MAGA (CNHU - HKM),  
Cotonou, Benin  
Email:  
tetinougibson@gmail.com

- Was in good health without significant medical history or with a mild medical condition (patients classified as ASA 1 and 2),
- Could ensure the presence of a caregiver for home assistance post-operatively,
- Resided less than an hour's drive from the hospital.

Non-inclusion criteria were:

- Being admitted in an emergency,
- A surgical intervention prone to serious complications,
- A patient with multiple comorbidities,
- A pediatric patient (age under 15 years) or an elderly person (age over 65 years),
- An ASA score greater than or equal to 3.

Exclusion criteria were anything that could increase the risk of adverse events during the procedure:

- An intervention lasting more than 90 minutes,
- The occurrence of an incident during the intervention,
- The absence of a companion at the time of discharge,
- The persistence of anesthetic effects after 7 PM,
- The occurrence of a serious complication in the immediate postoperative period.

Patient identification is conducted by the surgeon and the anesthesiologist during the consultation, based on the type of intervention. The principle of outpatient surgery is explained to the patient, who then gives consent or refusal. The day after the surgical consultation or on the day of the intervention, the patient is reviewed by the anesthesiologist to confirm their eligibility for day surgery.

The day before the intervention, the patient is contacted by the surgeon to reiterate pre-operative instructions, remind them of the admission time to the hospital, remind them to take two showers (one the day before and the other on the morning of the day of the intervention), as well as the pre-operative fasting. The surgeon also adjusts the patient's medical treatment if necessary based on the anesthesiologist's instructions and reiterates the principles of outpatient surgery (admission on the morning of the intervention day and discharge on the evening of the intervention).

On the day of the intervention, the patient is welcomed into the ward where their identity and the presence of the caregiver are verified. The patient is then taken to their bed for preparation. The anesthesiologist confirms the patient's identity, conducts the pre-anesthetic visit, and then takes the patient to the operating room.

Immediately post-operatively, the patient undergoes monitoring of the general condition, vital functions, and pain level. If possible, a light snack is provided according to the patient's preference. The patient's discharge is contingent upon the absence of complaints, the desire to return home, and the joint agreement of the surgeon and anesthesiologist. Upon discharge, the patient receives the hospitalization report, the operative report, the medical prescription, a sick leave if necessary, the appointment for post-operative follow-up, and the phone number to call in case of need.

- The next day, the surgeon contacts the patient to inquire about their well-being.
- All patients were seen again on the 7th, 15th, and then the 30th day post-operatively in an outpatient consultation. A satisfaction questionnaire is administered to all post-operative consultations. Patient satisfaction with the overall care provided in the outpatient setting is assessed based on the following 4 criteria :
  - ✓ Pain management
  - ✓ Comfort at home compared to traditional hospitalization
  - ✓ Any difficulties related to returning home on the same day

#### ✓ Evaluation of the care pathway

The personal satisfaction level of each patient is obtained by summing the scores given to each of the 4 previously mentioned criteria. Each criterion is scored out of 3 (excellent = 3, good = 2, poor = 1), with a maximum possible overall score of 12 and a minimum possible score of 4. From the scores out of 12 given by each patient, a satisfaction index (Is) was calculated as follows:

$$I_s = \frac{\sum \text{of scores given}}{(12 \times n)}$$

(n = Number of patients collected in the study)

Data was collected through a questionnaire administered post-operatively, the day after the intervention, at the first post-operative consultation on the 7th day, and during follow-up until the 30th postoperative day.

The variables studied included: age, distance from home to hospital, duration of the intervention, duration of immediate post-operative hospitalization, duration of hospitalization at the second readmission, Postoperative Visual Analog Scale (VAS) (the day after the intervention), gender, medical history, diagnosis, type of anaesthesia, antibiotic prophylaxis, perioperative incident, waking mode, incident during awakening, antibiotic therapy, reason for readmission.

The study was submitted to the Local Ethics Committee of Saint Jean de Dieu Hospital and commenced after approval. Informed consent from patients was obtained prior to any interviews, ensuring their understanding of the study's objective and the importance of their participation.

#### Statistical Analysis

For data processing, data entry was performed using an online data entry tool, Kobocollect. Data analysis was conducted using SPSS Statistics 26 software. The characteristics of quantitative variables were expressed as means with their precision error (standard deviation), minimum, and maximum. Qualitative variables were analyzed independently and presented in distribution tables showing frequencies (n) and proportions in the population (%). The Chi-square test and Fisher's exact test, at a 5% threshold, were used to study the association and independence relationships between qualitative variables. The error threshold was set at 5%, and results were declared statistically significant for p-values below this threshold. Results were reorganized and presented in tables and graphs created in Microsoft Excel 2019.

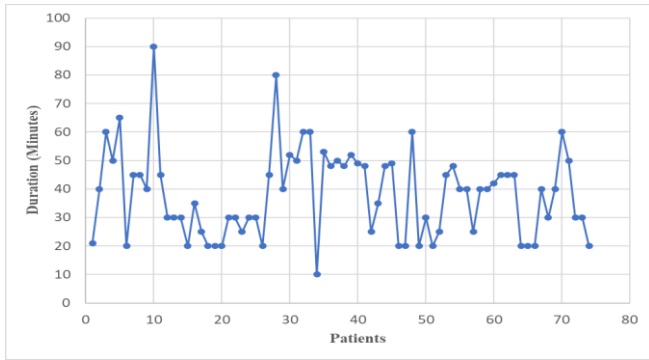
#### RESULTS

During our study, 74 patients were recruited and underwent outpatient surgery. The average age of the patients was 43.69 years with a range from 18 to 65 years. The sex ratio favored males with a ratio of 3.6. The majority of patients were married, accounting for 78.37%.

Nearly half of our patients, 46%, had never received any formal education, while 54% had at least a primary level of education. No significant medical history or known allergies were identified or reported by the patients included in our study. A wide variety of procedures were performed on our patients. These procedures were distributed across four main specialities : general surgery accounted for 66.22%, urology for 22.97%, traumatology for 9.46%, and Otorhinolaryngology and Head and Neck Surgery for 1.35%.

Outpatient interventions in general surgery in our series were dominated by hernia repairs (46%). Spinal anaesthesia was administered in 64.9% of cases, while in 35.1% of cases, general anaesthesia with endotracheal intubation was used. The average duration of the procedures was 38.21 minutes, ranging from 10 to 90

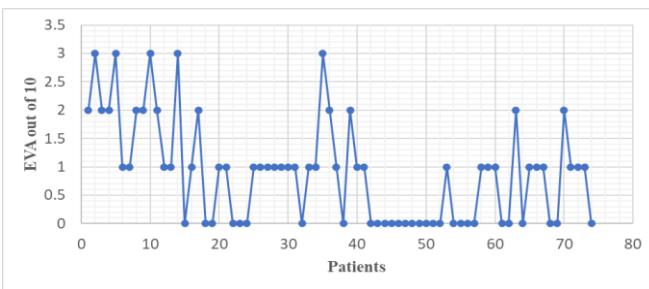
minutes. Among the last 40 patients, the duration did not exceed 60 minutes (Figure 1).



**Figure 1:** Illustration of the duration of intervention based on the number of patients

Antibiotic prophylaxis with ampicillin was used for all patients according to the department's protocol. No intraoperative incidents were recorded during the surgical procedure performed on the 74 patients. All patients woke up without any incidents, and the first meal was taken on the day of the intervention, with good tolerance in 100% of the patients. The average hospitalization duration was 7.25 hours, ranging from 4 to 12 hours. All our patients (100%) went home on the day of the intervention. No readmissions were recorded in our series. During the postoperative follow-up, no patient presented with a surgical site infection within the first thirty days.

Regarding patient satisfaction, 78% rated their pain at discharge between 0 and 1; 15% rated it at 2/10, and 7% rated it at 3/10. In a bivariate analysis, the maximum pain reported (3/10) was significantly noted among the first patients of the study (Figure 2).



**Figure 2:** Visual Analog Scale for each patient

Sixty patients (81%) felt that pain management was excellent. However, 19% expressed a desire for improved pain management, although none considered it to be poor. Regarding comfort at home, 89.2% of patients felt they were much more comfortable staying at home than being hospitalized for several days. Concerning the same criterion, 13.5% of patients found returning home the same day to be somewhat inconvenient but did not consider it to be bad. Nearly all of our patients favorably appreciated the outpatient care process we offered during the Covid-19 pandemic. Table 1 illustrates the number of patients based on satisfaction criteria and ratings during their care. Given the various ratings, the satisfaction index was 95.94%, with strong patient adherence to day surgery.

**Table 1:** Illustration of the number of patients based on satisfaction criteria and ratings (n = 74)

Satisfaction Criteria	Excellent	Good	Poor
Pain management	60	14	0
Difficulties related to returning home	66	8	0
Comfort at home	64	10	0
Appreciation of the care process	74	0	0

## DISCUSSION

The implementation of the study is justified by the study framework, which is a referral hospital in Northern Benin serving multiple populations with significant attendance. During the pandemic, the psychosis leading some patients to prefer staying at home, coupled with the healthcare workers' desire to maintain care without risking the uncontrolled spread of Covid-19, prompted the search for solutions to limit patients' hospital stays. Hence, the implementation of ambulatory surgery.

The limitations of this study lie in the relatively small sample size, the monocentric nature of the sample, and the heterogeneity of intervention types. All of this is justified by the pandemic context that warranted the study [5,6].

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The selection of our selection criteria is supported by the principle of *primum non nocere* (first, not harm), hence the limitation of the duration of the intervention justifying the choice of hernias or cholecystectomies as interventions easily feasible in ambulatory settings in the literature. As for age limitations, we chose the two extremes. There should be no anesthetic risk with very young children, and concerning the elderly, who often have chronic conditions, caution was necessary. Additionally, in our context of limited resources, we do not always have an Anesthesiologist on duty. However, a study on limiting factors in breast surgery expressed reservations regarding the age of patients. According to this study, the main limiting factor for ambulatory care was age  $\geq 70$  years [7]. Marital status was an important parameter of interest in our study. Indeed, the need for a companion at the hospital and home care assistance made married individuals more likely to be recruited because it almost guaranteed the existence of at least one caregiver at home. This justifies the significant proportion of married patients in our study. However, single and widowed individuals are still eligible for ambulatory surgery [8].

In our context, where the feasibility of ambulatory surgery is being evaluated for the first time and where ambulatory surgery is feared, the patient's understanding of the care process must be well appreciated. In this sense, the level of education greatly facilitated our understanding of the patients' perfect comprehension of the information provided. This is a crucial notion to consider in the context of ambulatory surgery.

In urology, interventions previously considered very burdensome, such as prostatic adenomectomy, prostatectomy, and nephrectomy by laparoscopy [9] or management of penile fractures, have been performed on an outpatient basis according to some authors in the literature [1]. Adapted to our expertise and the organization put in place, no anesthetic risk or readmissions were recorded in our study despite the heterogeneity of cases operated. This is explained by the demanding selection of eligible patients. According to the French Society of Anesthesia and Resuscitation (SFAR), this selection must take into account not only medical, surgical, psychosocial, and environmental criteria but also the characteristics of predictable postoperative outcomes [10]. However, it must also, in advance, allow for the exclusive recruitment of short-duration interventions [5].

Indeed, an operative duration exceeding 60 minutes is a predictive factor for prolonged hospitalization [5]. This assertion is confirmed by another study, which goes further, finding four main predictive factors for non-discharge: operative duration of more than an hour, high ASA class, advanced age, and high BMI [11]. No surgical site infections were found in our series over a 30-day follow-up period, confirming the advantage of ambulatory surgery in controlling or reducing nosocomial infections [12] but also the importance of antibiotic prophylaxis in ambulatory surgery in our setting [13]. The shortness of hospital stay also plays a predominant role in this process of combating surgical site infections in ambulatory surgery [13]. In our series, as in other studies, the duration of hospital stay rarely exceeds 12 hours. An average of 7.25 hours was found in our series ; and 6.2 hours in other series [14].

Pain is the main symptom found postoperatively in ambulatory care and constitutes a source of dissatisfaction or even failure of patient discharge [15]. However, another study notes that the level of comfort and pain does not appear to be a cause of hospital readmission [12]. According to Jacquet et al. [16], the notion of postoperative pain should indeed be relativized because, in their study, the evaluation of postoperative pain symptomatology was assessed based on two criteria: true pain, which is pain without triggering movement or with an estimated Visual Analog Scale (VAS)  $\geq 3$ , and postoperative discomfort defined by a VAS  $\leq 2$  or pain during sudden movements. Based on this, in our series, 7% of patients reported true pain estimated at 3/10, 54% reported simple discomfort, and 39% reported no pain. These are satisfactory results considering that the management of postoperative pain remains one of the main limitations of ambulatory surgery [17]. The efficient management of postoperative pain in our series would explain the overall satisfaction of our patients and their adherence to ambulatory care, confirming that mastering postoperative pain was a key factor in the success of ambulatory care [17]. The satisfaction rate found in our series justifies the discharge of all our patients on the day of the intervention, although several studies have reported discharge failure rates of over 20% [18]. However, this success observed in our study may also be somewhat attributed to Covid-19, a period when the fear of staying in hospitals was widely shared by all [19]. The economic impact of ambulatory surgery was not evaluated in our study, but it remains a reason cited to justify its development in several studies [20]. Indeed, the literature suggests that ambulatory surgery mobilizes fewer resources than conventional surgery in terms of direct hospital costs [21]. However, we can all agree that a rapid return home, facilitating patient rehabilitation, would automatically lead to reduced work stoppages and thus provide economic benefits to be evaluated [20,21].

Despite the acceptability of the procedure, difficulties were encountered in its implementation. The language barrier was at the forefront, making it difficult to understand the care pathway and requiring several explanations, sometimes in multiple languages. The second difficulty is related to the reluctance of the anesthesia team to easily accept the principle due to fear of making mistakes. Finally, the last difficulty is the fear of some patients returning home even when all conditions are met, sometimes requiring brief supportive psychotherapy for the patient and their companion. Hence, the need to take into account the environment in which we are and the psychosocial state of the patients [22].

## CONCLUSION

This study confirms our hypothesis that ambulatory surgery is feasible in Northern Benin, with as many advantages or positive outcomes as in high-resource countries without increased risk. Without confusing it with accelerated surgery, well-organized ambulatory surgery can potentially, even in a poor country, have low hemorrhagic risk and easily controllable postoperative pain with economic gains to be evaluated, provided that all material and human resources (reception, stay, operating room, and personnel) necessary for ambulatory care are brought together within a structure fully dedicated to ambulatory

care. This study motivates the realization of future research projects such as: (a) The long-term impact of ambulatory surgery outcomes in Northern Benin, (b) Evaluation of direct costs related to the practice of ambulatory surgery versus conventional surgery in Northern Benin, (c) Patients' experiences at the end of their ambulatory surgery journey in Northern Benin.

## Conflict of Interest

The authors declare no conflicts of interest.

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None declared.

## ORCID ID

René Ayaovi Gayito Adagba: <https://orcid.org/0000-0003-4361-3993>

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