

Factors Determining the Postponement of Schedule Gyneaco-Obstetric Surgery at CHUMEFJE in Libreville (Gabon)

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Abstract

The study aimed to identify factors causing delays in scheduled gynaeco-obstetric surgeries at CHUMEFJE in Libreville from January 2019 to July 2020. Through a 16-month observational survey, it was found that out of 346 scheduled procedures, 128 (36.4%) were postponed. Organizational issues in the operating theatre were responsible for 80.3% of these delays, with 95.3% being preventable. To enhance efficiency, improvements in operating theatre organization are recommended.

Keywords

Scheduled Gynaeco, Obstetric Surgery, Postponement, Determining Factors

1. Introduction

The operating theatre is an essential part of a hospital's technical facilities, due to its highly technical nature, the financial investment it represents, the importance of the human resources it mobilizes, and the safety issues. It is considered as a full department [1] [2] [3]. The intensity of the work and the diversity of the procedures performed in the operating theatre require rigorous organisation and a complementary approach from the various players. The aim of this multidisciplinary approach is to provide harmonious patient care, which implies the need for good coordination of the care provided (stretcher transport, anaesthesia, surgery, recovery, resuscitation, etc.) and optimisation of operating times.

Numerous regulations, international good practice recommendations and guidelines have been drawn up concerning the organisation of the operating

theatre [2] [3]. This organisation of the various activities is based on the operating theatre programme: this is a provisional schedule of surgical procedures to be carried out over a given period, allocating resources (human and material) and setting the order in which they are to be performed [3] [4] [5] [6]. However, its implementation poses a daily problem: the malfunctions observed are the cause of postponements of scheduled surgical procedures [4] [5] [6] [7]. The postponement of scheduled surgery is surgery that is included in the official programme, but is not performed at the scheduled time or on the scheduled day [8] [9] [10] [11] [12]. It is a major cause of misuse of operating theatre time, staff inertia and psychological discomfort for the patient [13] [14] [15]. The reported rates of postponement of surgical procedures worldwide vary widely depending on the hospital situation, from 1.8% to 44.2% [16] [17] [18] [19].

Although the causes of postponement are many and varied, they are identical from one surgical hospital to another [20] [21]. Three determining factors for postponement can be distinguished: the patient, the organisation and a medical reason [20], linked to causes that may be avoidable or unavoidable [4] [5] [10].

Gabon has five major public civil and military hospitals in Libreville, including the Teaching Hospital of Mother and Child of Jeanne Ebori Foundation (CHUMEFJE). This hospital also faces the same situation of postponing surgical interventions. But the real reasons have never been determined.

This is the context of our study, which sets out to determine the factors involved in postponing scheduled gynaeco-obstetric surgery in the operating theatre department of Teaching Hospital of Mother and Child of Jeanne Ebori Foundation.

2. Patients and Method

We conducted an observational, cross-sectional, descriptive study. From January 2019 to July 2020 (sixteen months), excluding the active period of the first wave of the covid 19 pandemic (March to June 2020). The study took place at the CHUMEFJE, which is the referral hospital for mother and child health in Libreville. The CHUMEFJE has two departments, made of mother department and child department. It has two operating theatres, the main one includes an airlock, a post-interventional care room (SSPI) or recovery room for immediate post-operative monitoring of patients, three multi-purpose operating theatres (one of which is dedicated to ambulatory endoscopic procedures, and changing rooms). The secondary unit is exclusively for obstetrics emergencies and it's located next to the delivery unit. That area has an airlock with a surgical washbasin and an operating theatre. The operating theatre department is run by a medical coordinator, three senior nurses and all the medical and paramedical staff assigned to it. The study population consisted of all patients enrolled in the gynaeco-obstetrical surgical programme during the study period and whose surgery was postponed during the study period were included. Patients not enrolled in the surgical programme and those admitted to the operating theatre as emergencies were not included in our study. The size was given according to Schwartz's

formula. Thus, for an expected postponement prevalence of 30%, the number of patients expected in the sample for this study with a confidence interval of 95% and a risk α of 5% was 323. Every Friday, from 12 noon onwards, a multidisciplinary team meets to validate the operating programme. This team is made up of the head of the operating theatre, the obstetrician-gynaecologist surgeons, the intensive care anaesthetists, the resident doctors and the operating theatre majors. During the meeting, all the patient files are presented. Each file contains the following information: date, identity, age, surgical indication, type of operation, surgeon, assistant, intensive care anaesthetist, senior intensive care anaesthetist, operating theatre number and start time. Patients are scheduled according to the availability of the gynaecological-obstetric surgeon, from Monday to Friday, from eight o'clock in the morning to three o'clock in the afternoon.

At the end of the programme, all the patients are informed by telephone of the date and time of their admission to hospital and the date of the operation. The day before the operation, patients are seen in the gynaeco-obstetric emergency department around 12 pm at the latest to receive a prescription for the equipment required for surgery and to check the recommendations of the pre-anaesthetic consultation (prescription of blood bags, blood test). Patients are then transferred to the hospital ward by the stretcher-bearer, with their complete files. Pre-operative preparation takes place in their beds. This includes compliance with the preoperative fasting requirement of at least eight hours before the operation, sometimes combined with intestinal emptying for certain patients; conditioning two hours before the operation (this consists of a pubic shave in the case of gynaecological operations in the pelvic region, removal of nail varnish if present, bathing, urinary catheterisation and insertion of a good-calibre venous line); dressing in a camisole, a callot, overshoes and a bib. Patients are taken to the operating theatre one hour before admission in a wheelchair by the stretcher-bearer accompanied by the department nurse with their complete files and consumables. They are admitted to the operating theatre via the airlock. The operating theatre team checks the patient's identity, medical file, pre-anaesthetic consultation, packaging, pathology, type of operation scheduled, scheduled time of operation, and the teams of state-qualified operating theatre nurses (IBODE), anaesthetists and gynaecological-obstetric surgeons. Once the patient file has been validated at the airlock, fifteen minutes before the start of the operation each patient is taken to the operating theatre by the stretcher-bearer.

In the operating theatre, the patient is cared for by a surgical team consisting of the anaesthetist, two senior anaesthesia and intensive care technicians (TSAR), two IBODEs, the gynaecological-obstetric surgeon and his assistants. At the end of the operation, the patient is taken to the post-interventional care room by the stretcher-bearer. The length of stay in this room depends on the patient's condition. Only the intensive care anaesthetist and the gynaecological-obstetric surgeon gave authorisation for the patient to be transferred to the hospital ward. The operating theatre was open from 7 am for all scheduled gynaecological and obstetric operations. However, it was open 24 hours a day for urgent operations. We

defined the delay in hours.

During the study period, each operating day, during his supervision, the medical co-ordinator noted the actual start of the scheduled operations. In the event of a postponement, he or she checked off the following details on the operating schedule sheet and noted them in pen: the times when the patient was admitted to the theatre, when the operation began and ended; when the patient left the theatre; when cleaning of the theatre began and ended; when the next patient entered the theatre; and the reason for the postponement. When the patient was discharged, the operating instruments were collected for cleaning and sterilisation. The surface technician was responsible for cleaning the operating theatre. This could last from thirty minutes to an hour, depending on the type of operation. The fortuitous discovery of an infectious or other pathology led to sterilisation of the operating room for about six hours.

Data were collected prospectively, using the individual data collection form, and the following variables were collected: socio-demographic profile of patients, indications for surgery, types of surgery, time of admission to the operating theatre, official time of start of surgery, exact time of start of surgery, reason for postponement, time of end of surgery, time of start and end of room cleaning, time of entry of next patient into operating theatre. The data were entered and analysed using EPI INFO software version 7.2.2.6.

The investigator undertook that this study would be carried out in accordance with good clinical practice (I.C.H. version 4 of 1 May 1996) in accordance with the Declaration of Helsinki (October 2008). This survey was carried out with the agreement, supervision and control of the medical coordinator of the operating theatre department, representing the senior management of the CHUMEFJE. Documents relating to this study were archived and protected in accordance with current good clinical practice.

3. Results

During the study period, 1875 gynaeco-obstetric surgical procedures were performed. Among them 346 (18.4%) were scheduled and 1529 (81.6%) were performed on an emergency. About the scheduled operations, 128 (36.9%) were postponed. The average age of the patients was 40 (range 20 - 85) and 54 (42.2%) were in the (30 - 39) age group (**Table 1**). There were 101 (78.9%) indications for gynaecological surgery and 27 (21.1%) indications for obstetric surgery. Uterine myomas and their complications accounted for 41 (32%) surgical indications (**Table 1**). The surgical procedures were varied and included 85 (66.4%) laparotomy procedures, 23 (17.9%) laparoscopic procedures, 10 (7.9%) breast surgery procedures and 9 (7%) hysteroscopy procedures. A total of 78 (60.9%) procedures had a delay of one hour, and 19 (14.8%) had a delay of five hours or more (**Table 2**).

During the study period, 107 (83.6%) operations were postponed because of the organization of the operating theatre, 15 (11.7%) because of the patient and 6 (4.7%) for medical reasons (**Table 2**).

Table 1. Distribution of patients according to clinical and therapeutic characteristics.

Paramètres	N = 128	
	n	%
• Age group		
20 - 29	10	7.8
30 - 39	54	42.2
40 - 49	33	25.8
≥50	31	24.7
• Surgical indications		
✓ Gynaecological	101	78.9
Uterine myomas and their complications	41	32
Tubal infertility	20	15.6
Breast cancer	14	11
Cervical cancer	18	14
Ovarian cysts	04	03.1
Vulvar cancer	03	02.3
Suppuration	01	0.8
✓ Obstetrics	27	21.9
Shrunken pelvis	16	12.5
Twin pregnancy on scar uterus	03	02.3
Pregnancy + praecia obstacle	02	01.6
Pregnancy after IVF	02	01.6
Seat on scar uterus	01	0.8
Pre-eclampsia	01	0.8
Macrosomia	01	0.8
• Surgical procedures		
✓ Laparotomy	85	66.4
Hysterectomy	31	24.2
Caesarean section	27	21.1
Myomectomy	20	15.6
Cystectomy	07	05.5
✓ Laparoscopy	23	17.9
Diagnosis	15	11.7
Tubal plasty	08	06.2
✓ Breast surgery	10	7.8
Mastectomy	06	04.7
Lumpectomy	04	03.1
✓ Hysteroscopy	9	7
Diagnosis	06	04.7
Operative	03	02.3

Table 2. Patient distribution depending on the deadline and the reason for postponement.

Paramètres	N = 128	
	n	%
• Delay period		
1 h	78	60.9
2 h	28	21.7
3 h	3	02.3
≥4 h	19	14.8
• Reason for postponement		
✓ Organization	107	83.5
Operating theatre unavailable	52	40.6
Anaesthetist unavailable	23	18
Senior surgeon unavailable	15	11.7
Staff unavailable	12	09.3
File incomplete	05	03.9
✓ Patiente	15	11.7
Failure to respect the entry date	09	07
Lack of money	04	03.1
Reluctance to intervene	02	01.6
✓ Medical reasons	6	4.68
Inoperable clinical stage	04	03.1
Appearance of a symptom incompatible with surgery	02	01.6
• Types of causes		
✓ Avoidable	122	95.3
Operating theatre unavailable	52	40.6
Anesthetis (MAR, TSAR) unavailableble	23	18
Senior surgeon unavailable	15	11.7
Staff unavailable	12	09.3
Entry date not respected	09	07
File incomplete	05	03.9
Lack of money	04	03.1
Reluctance to intervene	02	01.6
✓ Inevitable	6	4.6
Inoperable clinical stage	04	03.1
Appearance of a symptom incompatible with surgery	02	01.6

These different causes were divided into two types: 122 (95.3%) avoidable causes and 6 (4.7%) unavoidable causes responsible for postponing operations (**Table 2**).

Among the causes related to the organization, we noted the unavailability of the operating theatre, due to a previous operation in progress in 86 (80.3%) cases, a cleaning delay in 17 (15.8%) cases and the unavailability of equipment in 4 (3.7%) cases (**Table 2**).

We had 76 (59%) postponements of operations related to the obstetrician-gynaecologist surgeon, 29 (23%) related to the technician (IBODE) and 23 (18%) caused by the anaesthetist (**Table 2**).

4. Discussion

During the study period, 346 surgical procedures were recorded. The occurrence of the COVID-19 pandemic interrupted the scheduling and performance of gynaeco-obstetric surgery for four months at the CHUMEFJE, from March to June 2020. This interruption led to a reduction of the sample of our study population.

Postponement of surgery is a recurrent problem in major hospitals worldwide [22]-[30]. Our study reported a postponement frequency of 36.9%. This is higher than similar studies in Nigeria (5.5% and 9.1%) [4] [5], Uganda (28.8%) [9] and Iran (1.8%) [14]. However, it is less common than in Cameroon (42%) [11], Malawi (44.2%) [12] and South Africa (44.5%) [13]. In our context, this frequency is linked to the permanent demand on the operating theatre department, which has repercussions on its operating system. The frequency of postponements is an indicator of the efficiency of the operating theatre service and of patient satisfaction [22] [23] [24]: a high frequency of postponements reflects the inefficiency of the operating theatre system and patient dissatisfaction [25] [26] [28]. The frequency of postponement was highest in the 30 - 39 age group (42.2%). In Ethiopia, Desta M *et al.* [10] found a higher frequency in the 21 - 30 age group (43.3%). In Türkiye, Aysun Yildiz Altun MD *et al.* [17] found a higher frequency in the 40 - 49 age group (40.5%). In our series, the 30 to 39 age group is the period of genital activity during which gynaeco-obstetrical pathologies requiring surgical management predominate. The frequency of gynaecological surgical indications reported in our series was 78.9%. This is lower than in Niger (82.1%) [8] and higher than in Morocco (65.8%) [30]. These indications were dominated by uterine myomas and their complications (32%), followed by infertility of tubal origin (15.6%). This result is similar to that presented by Desta M *et al.* in Ethiopia [10], with a predominance of myomatous pathology (31.9%), followed by complications of upper genital infections (15.2%): hydrosalpinx, tubo-ovarian abscess. Gynaecological and obstetric consultations at the Teaching Hospital Mother and Child of Jeanne Ebori Foundation are marked by a considerable trend towards complicated gynaecological pathology requiring surgical management. We note that more than half (66.4%) of the procedures were performed by laparotomy.

This finding is in line with those of Lamine and Inoussa Bazanfare Niger

(66.2%) [8]; Prin M *et al.* in Malawi (66.6%) [12]. On the other hand, laparoscopic procedures were more common in China (67.3%) [23] and Iran (67%) [24] than in our context (17.9%). Laparotomy is the main surgical approach to gynaeco-obstetric pathologies in our setting. This observation is linked to the fact that laparotomy is well known and mastered by surgeons in Africa. On the other hand, laparoscopy appears to be a new technique. Laparoscopic columns are expensive to purchase and maintain [12]. They represent a heavy burden for hospitals. Furthermore, the few laparoscopic columns available throughout Africa are under-utilised: practitioners are not interested in learning and mastering this technique [8] [30].

The delay in starting the operation was one hour (60.9%). This is longer than the quarter of an hour reported in China (5%) [23] and half an hour reported in Morocco (35%) [30]. In our series, the delay in the start of the first operation generally led to a delay in subsequent operations. The long inter-procedure time is due to various causes: delays in cleaning, time taken to dry the rooms after cleaning, delays in preparing the patient, delays in stretcher transport, team fatigue, lack of punctuality on the part of the operators, the end of simultaneous procedures leading to the unavailability of the stretcher-bearers who have to transfer the patients or the surface technicians who carry out the cleaning. This late start to the operation has a negative impact on the patient, the staff and the operating theatre [1] [7] [15].

The postponement of scheduled gynaeco-obstetric surgery has been linked to three main causes: organisation, the patient and a medical reason. These three causes have been found to varying degrees by other authors (Table 3).

In Morocco (50.2%) [6] and Niger (53.5%) [7], organisational reasons were less important than in our cohort; whereas in Cameroon (24.2%) [11] and Türkiye (39.2%) [17], medical reasons were more important than in our context. The postponement of scheduled gynaeco-obstetric surgery was largely due to the organisation of the operating theatre service. This organisation was disrupted by:

- Unavailability of the operating theatre was responsible for 40.6% of postponements. Less significant trends were observed in Uganda (25%) [9] and Korea (1.7%) [19]. This was largely due to a previous operation still in progress, with 80.7% of postponements, a higher figure than those found in Niger (33.5%) [8] and Iran (4.5%) [24].

Table 3. Causes of postponement of scheduled surgery, according to the authors.

Authors	Country	Years	Reasons for postponement		
			organisation	patiente	Medical reason
Our study	Gabon	2020	83.6%	11.7%	4.7%
Rakia Arab Malam A.	Niger	2018	53.5%	41.5%	5%
K. G. Fossi	Cameroon	2018	42.4%	33.4%	24.2%
Cherif Asma	Morocco	2019	50.2%	25.6%	24.2%
Aysun Yildiz Altun	Türkiye	2019	19.5%	41.3%	39.2%

This unavailability is due to the permanent demand placed on the operating theatre department by emergency situations, the partial operationalisation of the operating theatre room specifically dedicated to obstetric surgical emergencies, and the insufficient number of operating theatres.

- Unavailability of anaesthetists busy with another operation, with 18% of postponements. This trend is higher than those found in Nigeria (13.4%) [5] and China (5.6%) [23]. The situation is linked to a shortage of qualified anaesthesia and intensive care staff (MAR, TSAR), who are often forced to straddle two operating theatres.
- Unavailability of the main surgeon for emergency surgery was associated with 11.7% of postponements. This result is higher than those found by Tan A L (4.5%) [21] and Lalla Mariem Barick (8.5%) [30]. This unavailability reflects a shortage of qualified staff (gynaecologist-obstetrician surgeon).
- The number of staff unavailable at the start of the operation was 11.2%, less than the 25% reported by Cherif Asma in Morocco [6]. In our series, more than half (59%) of postponements were caused by the gynaecological-obstetric surgeon. This frequency is higher than those found in Nigeria (40.3%) [4], Ethiopia (35.8%) [10] and Mexico (48.5%) [22]. Patient-related causes were less important (11.7%) than those identified in Nigeria (47.5%) [5] and more important than those found in Korea (3.3%) [19]. These causes were failure to respect the entry date (9.3%), lack of money (3.1%) and reluctance to undergo the operation (1.6%). In Niger [8], the causes were more considerable, and included lack of money (46.4%), failure to respect the date of entry (26.8%) and poor compliance with the preoperative fast (18.4%). In our context, these causes can be explained by Insufficient information or misunderstanding on the part of the patient about the terms of admission to hospital (date, time, conditions), communication difficulties (patient inaccessible by telephone), misunderstanding of the operative indication and the type of operation planned, fear and mistrust of the operation on the part of the patient, and low socio-economic status.

Causes related to a medical reason were less frequent (4.7%) than those found in Morocco (14%) [6] and Mexico (10.5%) [22]. The main medical reason in our context was an inoperable clinical stage (3.1%), detected by a preoperative assessment. In Ethiopia, Melaku Desta *et al.* [10] detected severe arterial hypertension preoperatively (8.3%), and the main reason identified was failure to carry out a rigorous assessment of patients scheduled for admission to the gynaeco-obstetric emergency department.

5. Conclusion

The frequency of postponement of scheduled gynaeco-obstetric surgery at the Teaching Hospital Mother and Child of Jeanne Ebori Foundation remains high. It is mainly linked to the organization. Most of the causes are avoidable. To reduce the frequency of postponements, we need to improve the organization of the operating theatre by:

- Revitalizing good governance within the hospital;
- Ensuring sufficient numbers of qualified medical and paramedical staff;
- Ensuring that medical staff know the operating theatre charter;
- Raising awareness among medical staff, both individually and collectively.

Conflicts of Interest

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

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