

Cancellation Causes of Elective Surgical Procedures in a Major Pediatric Surgery Department

Salsabil Mohamed Sabounji^{1*}, Mbaye Fall², Cheikh Seye³,
Mouhamadou Mansour Diene¹, Gabriel Ngom¹

¹Pediatric Surgery Department, Albert Royer Children's Hospital, Dakar, Senegal

²Pediatric Surgery Department, Aristide Le Dantec Hospital, Dakar, Senegal

³Pediatric Surgery Department, Heinrich Lubke Hospital, Diourbel, Senegal

Email: *smsabounji@gmail.com, mbayefall0803@gmail.com, seyect@yahoo.fr, mmdiene@yahoo.fr, gngom2004@yahoo.fr

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Abstract

Introduction: Cancellation of surgical operation is a surgical operation registered in the official schedule the day before or added to the list after and not carried out on the operating day. The purpose of this work was to determine the causes of cancellation of elective surgical operations in a major pediatric surgery department in Senegal. **Patients and methods:** It was a prospective and descriptive study of 278 patients scheduled during a period of 13 weeks. The study took place between April 3rd, 2017, and January 31st, 2018. Mean age was 2.9 years with extremes of 3 days and 15 years. The age group of 29 days to 30 months was the most represented (62.2%). Sex ratio was 1.41. Causes of cancellation were categorized into administrative and organizational causes, patient-related causes and staff-related causes. **Results:** Cancellation rate was 29.4%. Patient-related causes were most common (51.2%). Upper Respiratory tract infection (URTI) was commonest reason within this category (57.5%). Organizational causes (28.1%) came second and were mainly represented by the unavailability of the operating room (60.8%) related to breakdowns of anesthesia equipment. Finally, staff-related causes (20.7%) were due for most to the unavailability of the anesthesiologist (12 cases/17). **Conclusion:** Majority of causes that led to cancellation of elective surgical operations in our Pediatric surgery department are related to intercurrent illnesses affecting the patient, in particular URTI.

Keywords

Cancellation, Elective Surgery, URTI, Pediatric Surgery, Surgical Procedures

1. Introduction

A cancellation of a surgical procedure is a surgical procedure that is included in the official program the day before or added to the list after and not performed on the day of surgery [1]. The cancellation of a surgical procedure at the last moment is a source of inconvenience for the patient, disruption of the surgical program, and may result from a dysfunction in the organization [2]. Late cancellation of scheduled surgeries is a major cause of inefficiency in the management of operating room occupancy and waste of hospital resources [3]. It has been compared to an adverse event that needs to be monitored regularly in the hospital because of its implications on health systems and patients [3]. Last-minute cancellation is a waste of time for the surgeon and any other staff who might be meeting for an agreed-upon program. It is, in fact, potentially stressful and demanding to patients' parents and their employers in terms of loss of work days and disruption of activities of everyday life, which could be emotionally very distressing to patients [4]. We have found that there is an extensive literature on the subject in the West, with low cancellation rates [1] [2] [3] [4]. On the other hand, in Africa, few studies have been carried out, none of which, to our knowledge, have been done in Senegal [5]. It is to compensate for this insufficiency that we conducted this study, the aim of which was to identify the different cancellation causes of the elective surgical procedures in a level 3 pediatric surgery departments with a high level of attendance over a period of 13 weeks.

2. Patients and Methods

This was a prospective and descriptive cross-sectional study of a series of 278 scheduled patients over a period of 13 weeks. The study took place between April 3rd, 2017, and January 31st, 2018. Any elective surgical operation that was scheduled on the final theatre list and that was not performed on that day was considered cancelled and was included in the study. All patients scheduled for emergency surgery were excluded. Predesigned questionnaire was used for data collection. No special consent from patients for this study was necessary. Data were analyzed using Excel 2019. Frequencies and percentages were reported to describe categorical variables. Means were used to summarize continuous variables. We studied the cancellation rate and the different causes of cancellation of elective surgical procedures. The causes of cancellation were divided into 3 headings: administrative and organizational causes, patient-related causes, and medical staff-related causes.

3. Results

The mean age of children who were subject to cancellation was 2.9 years with extremes of 3 days and 15 years. Patients were distributed as follows: Neonates: 4 patients (4.9%); infants: 51 patients (62.2%) and children older than 30 months: 27 patients (32.9%). The population was composed of 48 boys and 34 girls, with

a sex ratio of 1.41. A pre-anesthetic visit was requested for all patients, with a completion rate of 98.8%. Sixteen patients (19.7%) received general anesthesia by facial mask, 47 patients (58%) had general anesthesia with orotracheal intubation, and 18 children (22.3%) had general anesthesia associated with locoregional anesthesia.

Out of 278 scheduled procedures, 82 procedures were cancelled, *i.e.* a cancellation rate of 29.4%. The majority of causes were patient-related (51.2%) with a predominance of acute intercurrent diseases for which upper respiratory tract infections were the most frequent (57.5%) (**Table 1**).

Organizational causes (28.1%) ranked second and were mainly represented by the unavailability of the operating room (60.8%) related to breakdowns of anesthesia equipment (**Table 2**).

Staff-related causes came last with 21.7% of cases. They were due to the unavailability of the anaesthetist in 12 cases and the surgeon in 5 cases.

4. Discussion

One third of the surgical procedures are cancelled. The rate seems high but remains within the range of 8% to 40% found in the literature (**Table 3**).

Table 1. Distribution of intercurrent diseases.

Intercurrent diseases	Number	Percentage
Upper respiratory tract infections (URTI)	19	57.5
Blood flow disorder	5	15.1
Dermatological lesions	2	6.1
Urinary tract infections	2	6.1
Bronchial congestion	2	6.1
Heart rhythm disorders	2	6.1
Acute febrile gastroenteritis	1	3
Total	33	100

Table 2. Distribution of administrative and organizational causes

Causes	Number	Percentage
Unavailability of the OR (Breakdown)	14	60.8
Lack of intensive care beds	3	13
Program overload	2	8.7
Lack of materials	1	4.3
Error in notifying the patient	1	4.3
Unprepared patient	1	4.3
Change of operative indication	1	4.3
Total	23	100

Table 3. Cancellation rates and authors.

Authors	Number	Percentage
Mboutol [6] Brazzaville 2014	396	15.6
Turunen [5] Finland 2018	107	9.5
Cho [7] South Korea 2018	60.333	8
Our study	278	29.4

Table 4. Distribution of cases by responsibility and authors.

Causes Authors	Organizational	Patient-related
Cho [7] South Korea 2018	6.4%	93.6%
Turunen [5] Finland 2018	56.1	34.2
Mesmar [8] Jordany 2010	30.4%	31.4%
Our Study	28.1%	51.2%

In our study, patient-related causes came first, followed by organizational causes and then staff-related causes. The position of each of these causes varies from one study to another. While in our study, Cho's [7] and Turunen's [5] studies patient-related causes predominated, in Mesmar's [8] organizational causes came first (Table 4).

Regarding patient-related causes, intercurrent diseases represent more than 75% of these causes and more than one third of the cancellation causes in our series. This rate is close to that of the Tunisian series of Bousselmi which is 47.6% [9]. URTI predominate with a frequency representing more than half of the intercurrent diseases, *i.e.* 20.7% of the causes of cancellation in the series. This predominance is found in both Mboutol's study [6] in Brazzaville and Turunen's [5] in Finland, where URTIs represent 22.6% and 23.1% respectively. The other patient-related causes are, in decreasing order of frequency: absence of the patient on the day of the operation, failure to observe the pre-operative fasting period and financial insolvency. All these causes together represent only 21.5% of the cases in our series. Regarding the absence of the patient on the day of the operation, it should be noted that our rate is comparable to that of Al Talalwah [10] in Saudi Arabia but much lower than that of Mesmar [8] in Jordan (23%). For some authors, patient absence may be related to lack of information or financial difficulties [11]. The frequency of non-observance of the pre-operative fasting period is similar to that reported in the literature [6] [8] [10]. In our series, organizational causes were the second most common reason for cancellation of surgical procedures. The organizational causes are dominated in our study by the unavailability of the operating room. This unavailability of the operating room is linked to repeated breakdowns of anesthesia and resuscitation equipment, in particular anesthesia respirators, but also to the discontinuity of the supply of biomedical gases and electrical power. The supply of all types of equipment de-

depends on the hospitals' financial resources and the financial support of the state [12]. In developing countries such as ours, these different financial resources are often lacking, which explains the dysfunctions encountered. The absence of intensive care beds is the second most common organizational cause of cancellation of surgical procedures in our study. In our series, the frequency of absence of beds in the causes of cancellation is comparable to that of the literature [6] [7] [13]. Staff-related causes come in last in our work. Our study reveals a rate of 20.7% which is quite high compared to other series: 1.3% in Korea [7], 4.3% in Saudi Arabia [10], 9.7% in Finland [5], 10.3% in Ethiopia [13] and 14.6% in Congo Brazzaville [6]. The unavailability of the anesthesiologist is more frequent than that of the surgeon. This unavailability is essentially linked to academic activities for the surgeon. For anesthetists, it is due to the mood swings of the health unions, as almost all operating room staff are civil service employees, whereas surgeons are often academics. The unavailability of the anaesthetist is a real problem, which is common to all surgical services and more generally to hospital services in Africa [11].

5. Limitation of the Study

The study has some limitations to be acknowledged. Although the study period was 10 months, data collection took place over only 13 weeks. This was due to a long period of inactivity in the operating room related to a hardware failure. Some collected data was missing such as the causes related to the unavailability of the surgeon and the anesthetist; and the surgeon/anesthetist's experience. This could affect the time taken for a particular surgery/anesthesia. Less experienced surgeons and trainees often take more than the expected time. A further study including these deficiencies would be necessary to reevaluate the causes and cancellation rate of elective surgical procedures in our department.

6. Conclusion

Surgical elective procedures are associated with a high proportion of cancelled procedures in Dakar. The majority of the causes leading to cancellation of elective surgical procedures are related to intercurrent diseases affecting the patient, in particular URTI.

Conflicts of Interest

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

References

- [1] Lacqua, M.J. and Evans, J.T. (1994) Cancelled Elective Surgery: An Evaluation. *The American Surgeon*, **60**, 809-811.
- [2] Bousselmi, J., Kilani, A., Rafrafi, A., Barguaoui, A., Jaoua, H. and BenFadhel, K. (2014) Reasons for Deprogramming at the Operating Room. Preliminary Results. *La*

- Tunisie Medicale*, **92**, 186.
http://latunisiemedicale.com/article-medicale-tunisie_2497_fr
- [3] Schofield, W.N., Rubin, G.L., Piza, M., Lai, Y.Y., Sindhusake, D., Fearnside, M.R., et al. (2005) Cancellation of Operations on the Day of Intended Surgery at a Major Australian Referral Hospital. *Medical Journal of Australia*, **182**, 612-615.
<https://doi.org/10.5694/j.1326-5377.2005.tb06846.x>
- [4] Tait, A.R., Voepel-Lewis, T., Munro, H.M., Gutstein, H.B. and Reynolds, P.I. (1997) Cancellation of Pediatric Outpatient Surgery: Economic and Emotional Implications for Patients and Their Families. *Journal of Clinical Anesthesia*, **9**, 213-219.
[https://doi.org/10.1016/S0952-8180\(97\)00032-9](https://doi.org/10.1016/S0952-8180(97)00032-9)
- [5] Turunen, E., Miettinen, M., Setälä, L. and Vehviläinen-Julkunen, K. Elective (2019) Surgery Cancellations during the Time between Scheduling and Operation. *Journal of PeriAnesthesia Nursing*, **34**, 97-107. <https://doi.org/10.1016/j.jopan.2017.09.014>
- [6] Mboutol-Mandavo, C., Okiemy-Niendet, C., Otiobanda, G.F., Moyen-Engobo, M.E. and Mieret, J.C. (2014) Causes de report d'intervention chirurgicale en chirurgie pédiatrique au CHU de Brazzaville. *Revue Africaine de Chirurgie et Spécialités*, **8**, 33-38.
- [7] Cho, H.S., Lee, Y.S., Lee, S.G., Kim, J.M. and Kim, T.H. (2019) Reasons for Surgery Cancellation in a General Hospital: A 10-Year Study. *International Journal of Environmental Research and Public Health*, **16**, Article No. 7.
<https://doi.org/10.3390/ijerph16010007>
- [8] Mesmar, M., Shatnawi, N.J., Faori, I. and Khader, Y.S. (2011) Reasons for Cancellation of Elective Operations at a Major Teaching Referral Hospital in Jordan. *Eastern Mediterranean Health Journal*, **17**, 651-655. <https://doi.org/10.26719/2011.17.8.651>
- [9] Bousselmi, J., Kilani, A., Rafrafi, A., Barguaoui, A., Jaoua, H. and Benfadhel, K. (2014) Motifs de Déprogrammation au bloc opératoire (Résultats préliminaires). *Tunisie Medicale*, **92**, 186.
- [10] Al Talalwah, N., Mciltrot, K. and Al Ghamdi, A. (2019) Elective Surgical Cancellations in a Tertiary Hospital in the Middle East: Quality Improvement Process. *Journal of PeriAnesthesia Nursing* **34**, 310-321. <https://doi.org/10.1016/j.jopan.2018.05.016>
- [11] Chalya, P.L., Gilyoma, J.M., Mabula, J.B., Simbila, S., Ngayomela, I.H., Chandika, A.B., et al. (2011) Incidence, Causes and Pattern of Cancellation of Elective Surgical Operations in a University Teaching Hospital in the Lake Zone, Tanzania. *African Health Sciences*, **11**, 438-443.
- [12] Toure, C.T. and Dieng, M. (2002) Urgences en milieu tropical: état des lieux. L'exemple des urgences chirurgicales au Sénégal. *Medecine Tropicale*, **62**, 237-241.
[https://www.jle.com/fr/MedSanteTrop/2002/62.3/237-241%20CONF%20Urgences%20en%20milieu%20tropical%20C3%A9tat%20des%20lieux%20L'E2%80%99exemple%20des%20urgences%20chirurgicales%20au%20S%C3%A9n%C3%A9gal%20\(Toure\).pdf](https://www.jle.com/fr/MedSanteTrop/2002/62.3/237-241%20CONF%20Urgences%20en%20milieu%20tropical%20C3%A9tat%20des%20lieux%20L'E2%80%99exemple%20des%20urgences%20chirurgicales%20au%20S%C3%A9n%C3%A9gal%20(Toure).pdf)
- [13] Desta, M., Manaye, A., Tefera, A., et al. (2018) Incidence and Causes of Cancellations of Elective Operation on the Intended Day of Surgery at a Tertiary Referral Academic Medical Center in Ethiopia. *Patient Safety in Surgery*, **12**, Article No. 25.
<https://doi.org/10.1186/s13037-018-0171-3>