Original Article

Waiting Time for Short-Stay Surgery in a Paediatric Surgery Department

Mahamoud Omid Ali Ada[1], Hellé Moustapha[1], Oumarou Habou[2], Habibou Abarchi[1]

[1]Department of Pediatric Surgery, Faculty of Health Sciences, Abdou Moumouni University of Niamey, Niamey, [2]Department of Pediatric Surgery, Faculty of Health Sciences, National Hospital of Zinder, University of Zinder, Zinder, Niger

Abstract

Aim: The aim of this study was to assess the waiting time (WT) for a short-stay surgery and determine its possible determinant factors. **Patients and Methods:** This was a retrospective study conducted in the Department of Paediatric Surgery at the National Hospital of Lamordé of Niamey, Niger. It included patients aged 0–15 years who benefitted from a short-stay surgery (24–48 h of hospitalisation) during a period of 19 months (1st January 2017 - 31st July 2018). Patient, diagnosis and surgical treatment data were gathered. WT was the time elapsed between the indication of a surgical operation and its realisation. The Kruskal–Wallis test was used with a threshold statistical significance of < 0.05. **Results:** Short-stay surgery constituted 25.4% of all operating activities ($n = 271$). Inguinal or inguinoscrotal hernia was the most frequent pathology at 31.38% ($n = 85$). The mean WT was of 116.6 days (range: 4–491 days) and the median was 114 days. WT was greater than or equal to 3 months for 63.9% of the patients ($n = 173$). Based on pathology, the mean WT varied between 57.5 days (ovarian hernia) and 163.6 days (5.8 months) for epigastric hernia. A significantly longer WT was observed with the presence of a comorbidity ($P = 0.0352$) but was not associated with patient residence ($P = 0.0951$). **Conclusion:** A long WT for a short-stay surgery should be improved upon by different interventions with respect to the supply and demand of care and the setting of priorities.

Keywords: Paediatric surgery, short-stay surgery, waiting time

Introduction

Waiting time (WT) for surgery is the time period between the decision to perform surgery by the surgeon and family and the receipt of surgical procedure.[1]

Short-stay surgery corresponds to surgical operations that include hospitalisation for 24–72 h.[2] Extended WT for an elective surgery is a frequent and major problem in many healthcare systems.[3-6] It occurs with an increase in demand, an insufficient supply of care or when the institution is not well organised. The consequences are as follows: the reduction of the therapeutic benefit of the surgery, distress and economic difficulties for patients and deterioration of the population's and the decision-makers' trust in the healthcare system.[4,7,8] Some programmes have been developed with the aim of diminishing the WT for surgical interventions, especially for children and younger patients.[6,9] The purpose of our study was to assess the characteristics of WT for short-stay surgeries in our department.

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Patients and Methods

Context and short-stay surgery procedure

The National Hospital of Lamordé of Niamey, which shelters one of the two paediatric surgery departments, is a reference hospital (level 3 in the sanitary pyramid). The paediatric surgery department includes 36 beds and one dedicated operating room where three paediatric surgeons practice. Short-stay surgeries are organised and integrated into other operating activities. Therefore, there is no designated space, staff or operating programme exclusively dedicated to this kind of surgery. Only patients with an American Society of Anaesthesiologists class lower or equal to 2 with no pathologies that can increase the risk of anaesthetic complications benefit from this kind of surgery.

Address for correspondence: Dr. Mahamoud Omid Ali Ada, BP 10394, Department of Pediatric Surgery, Faculty of Health Sciences, Abdou Moumouni University of Niamey, Niamey, Niger. E-mail: mahamoudomid@gmail.com

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The pre-operative procedure, the possible complications and the possibility to extend the hospitalisation or to re-hospitalise the child if complications arise during or after post-operative monitoring were explained to the parents. The consent of the parents was obtained, and the principle of pre-operative fasting was explained. Patients were hospitalised the day before the intervention. Surgical interventions were performed under general anaesthesia. The minimum post-operative monitoring time was 6 h.

Methodology

This was a retrospective and descriptive study conducted in the Paediatric Surgery Department of the National Hospital of Lamordé of Niamey, Niger, with a duration of 19 months (1st January 2017 - 31st July 2018). All patients aged 0–15 years who benefited from a short-stay surgery during the period of the study were included.

Data on several variables were collected: age, sex, residence of the patients, treated pathology or pathologies and comorbidity (anaemia and infection). The WT was the number of days that had elapsed between when the indication of a surgical intervention was considered feasible and the moment of its realisation. The Kruskal–Wallis test was used to compare the mean WT according to different variables with a threshold for statistical significance as < 0.05. The number of patients who undergo emergency surgery for a complication of their current pathology (hernial strangulation, testicular trauma and testicular torsion for cryptorchidism), during the waiting period, was evaluated.

Results

A total of 271 patients underwent short-stay surgery and constituted 25.4% of the operating activities (n = 1065). Elective surgeries and surgical interventions performed in emergency represented 38.1% (n = 406) and 36.5% (n = 388) of the department surgical activity, respectively.

The mean age was 3.5 years (range: 1 month to 14 years). Infants (patients aged 1–24 months) represented 43.5% of the sample (n = 118). They were predominantly males 84.5% (n = 229). The majority of the patients 239 (88.2%) lived in Niamey. The others 32 (11.8%) lived in different regions of the country.

Inguinal or inguinoscrotal hernia was the most frequent pathology at 31.38% (n = 85) [Table 1]. Fourteen patients (5.1%) presented a comorbidity: 13 cases of anaemia and 1 case of respiratory infection. Comorbidities, requiring a treatment, added a mean of 11.21 days to the WT for surgery (range: 7–15 days).

Every month, a mean 14.2 interventions were performed (range: 6–24) in 168 days of the operating programme. Cure for inguinoscrotal hernia and umbilical hernia were the most frequent surgical interventions performed at 31.2% (n = 97) and 26.4% (n = 82), respectively.

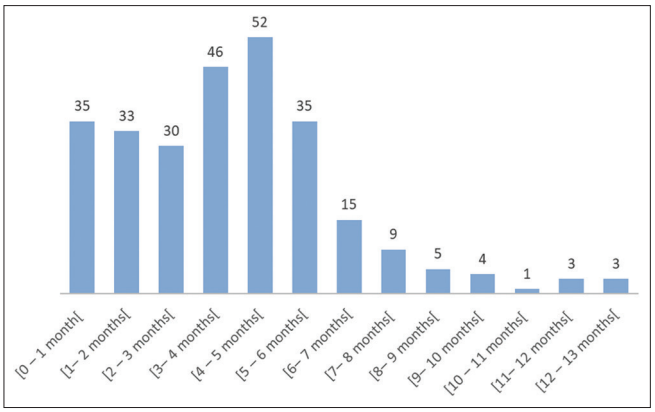

Figure 1: Distribution of patients according to WT expressed in month

Table 1: Distribution of patients according to diagnosis and waiting time mean of diagnosis

Pathology	Number	Percentage	Mean WT (range)
Inguinal/ inguinoscrotal hernia*	85	31.38	122.9 (14- 280)
Umbilical hernia*	76	28.05	115.1 (5- 378)
Hydrocele	48	17.71	103.9 (21- 355)
Cryptorchidism*	39	14.4	111.2 (15- 252)
Epigastric hernia	17	6.26	163.6 (88- 349)
Ovarian hernia*	5	1.84	57.5 (12- 130)
Labia minora synechia	1	0.36	104
Total	271	100	116.6 (4- 491)

*Associated with a unilateral hydrocele, unilateral cryptorchidism, epigastric hernia or an umbilical hernia for some patients. WT: Waiting time

The mean WT was 116.6 days (range: 4–491 days) and the median was 114 days. A greater or equal to 3 months of WT was noted for most patients (63.9%, n = 173) [Figure 1].

The difference between the mean WT for patients with comorbidity (160.5 days) and for the patients without (114.2 days) was statistically significant (P = 0.0352).

According to the patient's residence, the difference between the mean WT of patients was not statistically significant (P = 0.0951). The mean WT for patients living in the hospital's region was 118.3 days and 103.5 days for patientws living in other regions.

Based on pathology, the mean WT mean varied between 57.5 days (ovarian hernia) and 163.6 days (5.8 months) for epigastric hernia [Table 1].

One patient underwent an emergency surgery for a strangulated umbilical hernia. She had been waiting for a cure of her umbilical hernia for 1 month.

Discussion

For some countries, the WT also includes the time period between the moment when the patient is referred to a surgeon by a general practitioner and when he/she is seen by the surgeon.[1,4]

A common intervention such as posthectomy for physiologic phimosis has not been included in our study. In our department, the procedure is performed on a specific day under local anaesthesia, and patients are not hospitalised for this intervention.

The same pathologies treated in our study are managed by a day surgery in other countries. Day surgery constitutes more than 50% of surgical activities in Nigeria and several countries of the Organisation for Economic Co-operation and Development (OECD).[4,10] Its development has been one of the solutions that proved effective in cutting down the surgical WT.[6] However, the WT for day surgery can be higher than that for inpatient surgery because it involves minor surgeries of a lower priority.[3]

The mean WT in our study was 3.88 months. Most patients had a WT greater than 3 months (63.9%). In several OECD's countries, a WT of 3–6 months for surgery is regarded as "excessive."[4] A prolonged WT occurs when the demand for care exceeds its supply. This is particularly noticed in healthcare systems with capacity constraints and the patient's participation in public health insurance.[7,9] Since 2006, in Niger, there is free access to care for children up to 5 years old. For some Nigerien public healthcare structures, there is also a lack of financial, human and material resources.[11] In our study, 85.9% of the patients were <5 years old, and there was only one operating room for all surgical activities. Concerning the organisational aspect, there is no formal waiting list for elective and short-stay surgeries in our department.

The presence of a comorbidity was associated with a significantly longer WT in our study. Patient residence, which indirectly represents the distance to the hospital, did not influence WT. Comorbidities and prematurity have been identified as determinant factors that extend the WT for inguinal hernia repair.[12] The patient's family income and distance to the hospital did not influence the WT.[12]

The mean WT in terms of the different treated pathologies was higher than the recommended operative delay in the literature [Table 2]. WT does not always correspond to the severity of treated pathologies.[1] In our study, certain pathologies (inguinoscrotal hernia and cryptorchidism) had a mean WT higher than that of other conditions considered less serious (hydrocele and umbilical hernia).

Table 2: Recommended operative delays for pathologies treated by short-stay surgery according to literature

Pathology	Recommended operative delay
Ovarian hernia	As early as possible after diagnosis[13] Same day as diagnosis or the following day[14]
Boy inguinal or inguinoscrotal hernia	From few days to 1 month[15]
Cryptorchidism	From 0 to 6 months (if age ≥6 months and <12 months)[16]
Umbilical hernia	In the next 12 months following diagnosis[1]
Epigastric hernia	At the time of diagnosis[17]

The WT mean for a boy inguinal hernia repair in our study was 122.9 days. This mean was 99 days and 27 days in a bicentric Canadian and American study while a Canadian study reported a median WT of 43 days.[5,12]

There are three types of interventions aimed at reducing the WT for elective procedures: expanding capacity, rationing and/or prioritising demand and restructuring the intake assessment/referral process.[7] A simple increase of the human and material resources does not improve the WT and waiting list.[12]

Establishing explicit guidelines for prioritising patients on a waiting list is one of the measures that can be implemented for the improvement of WT by acting on the demand of care.[4,7] The results of our study precisely highlight the need to implement such a measure in our service. Reducing the WT using this approach is a more economic measure than reducing WT by increasing the supply of care.[18]

Healthcare cost-associated burdens on the resources of countries are increasing rapidly, making the establishment of priorities a major concern for healthcare policies.[19] Several tools for patient prioritisation exist, such as the classification into several categories of priority and systems of clinical priority score.[4] Acceptable WTs have been determined for 574 diagnoses with a level of priority 1 (24 h) to a level of priority 6 (in 12 months) specifically for paediatric surgery.[1]

The study and the improvement of WT for a surgical operation include at least three fields of activity that need to be developed: gathering and sharing information on WT and waiting list,[20] the use of software and internet in evaluating and managing the WT and waiting list,[20] and increasing efforts to communicate with the caregivers, population and public authorities.[20,21]

Conclusion

In this study, the WT for a short-stay surgery was globally long. It did not correspond to the gravity of pathologies and was not conformed to the recommended operative delay. Increasing the capacity of care allows to reduce the WT. However, it must be preceded by the most accessible solutions to surgeons: the setting of priorities regarding the demand of care and the improvement of patient state.

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Conflicts of interest

There are no conflicts of interest.

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