SURGICAL SUSPENSION RATE: ASSISTANCE QUALITY INDICATOR

Taxa de suspensão cirúrgica: indicador de qualidade da assistência

Tasa de suspensión quirúrgica: indicador de calidad de asistencia

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ABSTRACT: Introduction: There are countless reasons for surgical suspensions, which must be known to give greater organicity and quality to management and care processes. **Objectives:** To identify the rate of suspension of elective surgeries in a public hospital in the State of Rio de Janeiro and to analyze the main causes of suspension, stratifying the findings by surgical clinics. **Method:** Quantitative, descriptive, retrospective study that used 7,931 forms of surgical suspension from January 2015 to December 2017. 28 forms were excluded which did not present the reason for the suspension, analyzing 7,903. The analysis was performed using descriptive statistics and calculation of the surgical suspension rate. **Results:** The hospital's surgical suspension rate was 18.5% in 2015, 20.5% in 2016 and 16.8% in 2017. The unfavorable clinical condition of the patient for the surgery was the most evident reason in the clinics General Surgery, Urology and Gynecology in the analyzed period. **Conclusion:** There are several consequences of surgical suspension, both for the patient and for the institution. The adoption of measures to reduce these rates implies an improvement in the management and organization of the health service.

Keywords: Elective surgical procedures. Organization and administration. Quality indicators, health care. Surgery department, hospital. Perioperative care.

RESUMO: Introdução: Inúmeros são os motivos das suspensões cirúrgicas, que importam ser conhecidos para dar maior organicidade e qualidade aos processos gerenciais e assistenciais. **Objetivos:** Identificar a taxa de suspensão de cirurgias eletivas de hospital público do Estado do Rio de Janeiro e analisar as principais causas de suspensão, estratificando os achados pelas clínicas cirúrgicas. **Método:** Estudo quantitativo, descritivo, retrospectivo, que utilizou 7.931 formulários de suspensão cirúrgica de janeiro de 2015 a dezembro de 2017. Excluíram-se 28 formulários que não apresentavam o motivo da suspensão, analisando-se 7.903. Realizou-se a análise por meio de estatística descritiva e cálculo da taxa de suspensão cirúrgica. **Resultados:** A taxa de suspensão cirúrgica do hospital foi de 18,5% em 2015, 20,5% em 2016 e 16,8% em 2017. A condição clínica do paciente desfavorável para a realização da cirurgia foi o motivo mais evidente nas clínicas de Cirurgia Geral, Urologia e Ginecologia no período analisado. **Conclusão:** Vários são os reflexos da suspensão cirúrgica, tanto para o paciente quanto para a instituição. A adoção de medidas para a redução dessas taxas implica melhora da gestão e da organização do serviço de saúde.

Palavras-chave: Procedimentos cirúrgicos eletivos. Organização e administração. Indicadores de qualidade em assistência à saúde. Centro cirúrgico hospitalar. Assistência perioperatória.

RESUMEN: Introducción: existen innumerables razones para las suspensiones quirúrgicas, cuyas causas deben ser conocidas para dar mayor organicidad y calidad a los procesos de gestión y atención. **Objetivos:** identificar la tasa de suspensión de cirugías electivas en un hospital público en el estado de Río de Janeiro y analizar las principales causas de suspensión, estratificando los hallazgos de las clínicas quirúrgicas. **Método:** estudio cuantitativo, descriptivo,

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Received: 06/27/2019 – Approved: 03/25/2020
DOI: 10.5327/Z1414-4425202000020002

retrospectivo, utilizando 7,931 formas de suspensión quirúrgica desde enero de 2015 hasta diciembre de 2017. Se excluyeron 28 formas que no presentaron el motivo de la suspensión, analizando 7,903. El análisis se realizó utilizando estadísticas descriptivas y el cálculo de la tasa de suspensión quirúrgica. **Resultados:** la tasa de suspensión quirúrgica del hospital fue del 18,5% en 2015, del 20,5% en 2016 y del 16,8% en 2017. La condición clínica desfavorable del paciente para la cirugía fue la razón más evidente en las clínicas Cirugía general, urología y ginecología en el período analizado. **Conclusión:** la suspensión quirúrgica tiene varias consecuencias, tanto para el paciente como para la institución. La adopción de medidas para reducir estas tasas implica una mejora en la gestión y organización del servicio de salud.

Palabras clave: Procedimientos quirúrgicos electivos. Organización y administración. Indicadores de calidad de la atención de salud. Servicio de cirugía en hospital. Atención perioperativa.

INTRODUCTION

The performance of an elective surgical procedure is not a trivial act. It requires the incorporation of different care and managerial technologies related to the structure, processes and desired results for the institution and the client[1].

Operational and tactical plans must contain the definition of operating rooms, medical staff (surgeons and anesthetists), nursing staff (surgical instrumentation and circulating room) and transportation service; availability of specific resources and equipment; logistical actions with support resources, such as laboratory, pharmacy, supplies, hemotherapy, clothes and cleaning service for the entire perioperative period[1].

According to the characteristics of the pathology, the temporal need for the intervention and the clinical evolution of the patient, the surgeries can be classified as elective, when a certain date is programmed, in accordance with the patient and the doctor; in urgent cases, if it is possible to maintain a waiting time for patient preparation; and emergency, as they are immediate interventions given the critical conditions, with the risk of death for the patient[2].

The surgical procedure is a time that involves several unknowns for patients. Emotions and feelings of fear of anesthesia arise, fear of death or disability, fear of feeling pain and uncertainty of the prognosis. In many cases, prolonged fasting, the removal of underwear and dental prostheses already causes patient discomfort[1].

Elective surgery suspensions have been a concern of health professionals, in view of the direct implication in ineffective results for patients, family and the institution. In addition, in the daily routine of exhaustive and agitated shifts, health professionals may not notice the anxiety, distress and suffering of patients when receiving the news of the surgical procedure cancellation[1-3].

Information about the suspension of the surgery can occur by telephone call to the patient, at home, in the hospital bed or inside the Surgical Center (SC). These last two moments can be considered to have the greatest impact, due to the vulnerability in which the patient finds himself, outside of their home, often alone and under institutional routines and rules[1].

Studies indicate that the practice of surgical suspension is frequent, both by surgeons and anesthesiologists. In a study carried out with the latter, the suspension of surgeries was related to two main aspects: governmental and administrative, represented by "insufficient or incorrect transfer of funds from the State to public institutions"[3] and the mismanagement of these entities, and personal ones, characterized by internal problems at clinics, such as scheduling a high number of procedures[3].

In general, the monitoring of these suspensions occurs through the institutions' own daily and printed record, but the numbers for the discussion of data and implementation of new conducts are not statistically presented, aiming at improving the service provided to the population and the institution/patient relationship[4].

Based on these considerations, the object of this study is the rate of surgical suspension of a public hospital in the State of Rio de Janeiro.

This investigation is justified by the situational diagnosis of the rates and reasons for surgical suspension, which can guide new practices for the organization of the service, with improvement in the clinical evaluation of patients, decreased hospitalization time or unnecessary hospitalizations, reduction of institutional costs, reduction of the psychological impact to patients and family members regarding the failure to perform the surgical procedure, as well as mitigating socioeconomic changes by withdrawing from work activity and changes in lifestyle changes.

OBJECTIVES

- Identify the rate of suspension of elective surgeries in a public hospital in the State of Rio de Janeiro;
- Analyze the main causes of suspension, stratifying the findings by surgical clinics.

METHOD

This is a retrospective study, with a quantitative approach, performed in the operating room of a public hospital in the State of Rio de Janeiro, a reference in medium and high complexity care in oncology, hemodialysis, dentistry and adult and pediatric intensive care.

Currently, surgical procedures are performed in the following specialties: general surgery, proctology, urology, gynecology, vascular surgery, dentistry, ophthalmology, gastroenterology and pediatrics.

The SC has seven Operating Rooms (OR), four of which are used for elective procedures from 7 am to 7 pm, from Monday to Friday, one is exclusively for ophthalmic surgery, one for dental procedures in patients with special needs and one for urgent and emergency procedures. During the night, as well as on holidays and weekends, it attends urgent and emergency situations. For data collection, 7,931 forms from surgical suspension completed by the medical team were analyzed, with a time frame from January 2015 to December 2017.

This is justified by the fact that the ophthalmology clinic stopped performing surgical procedures at this institution in 2018.

The information is related to the patient's information (date, proposed surgery, clinic, surgical and anesthetic team), the reason for the suspension of the scheduled surgery and additional information in a field designated for this. Data were collected in March 2018.

In total, 28 forms were excluded from the study, for which no reason was indicated or justified by the responsible team, 7,903 forms were included in the survey.

The reasons for surgical suspension are divided into three fields, which include factors related to the patient, the hospital structure and the health team, coded as follows:

- Regarding the patient: lack of clinical conditions, lack of adequate fasting, improvement of the clinical condition without surgical indication, use of medication, absence, death and refusal of the individual;
- Regarding the structure: incomplete or unfilled medical documentation, lack of material/ instruments in the OR, lack of external material/ instruments, lack of blood/blood products, lack of Intensive Care Unit (ICU) vacancy, or vacancy in the ward (Inpatient Unit - IU), absence of building maintenance and overbooking;
- Regarding the team: incomplete exams, out-of-date exams, lack of anesthesiologists, lack of surgical staff, lack of external staff and lack of nursing staff.

Concerning data tabulation, the Microsoft Excel® 2010 program was used and the analysis was carried out using descriptive statistics, obtaining the absolute (N) and relative (%) frequencies, as well as the surgical suspension rate by clinic. Data were grouped by surgical clinics and reasons for suspension.

The relative frequency (%) was calculated using Equation 1:

$$N / \text{sample size} \times 100 \quad (1)$$

In which:
N = the total of a given reason for suspension;
sample size = total surgical cancellations for the year studied.

The rate of surgical suspension is represented by the formula in Equation 2[5]:

$$\text{suspension rate} = \text{number of surgeries suspended} / \text{number of scheduled surgeries X } 100 \quad (2)$$

This research was approved by the Research Ethics Committee of the institution, under the Presentation Certificate for Ethical Appreciation (CAAE) number: 82301818.0.0000.8066. Data collection started after approval, in compliance with ethical principles, as stipulated in Resolution No. 466/2012, of the National Health Council[6].

The Informed Consent Form was waived due to the research method adopted. It is noteworthy that the anonymity of patients, professionals of the health team and the hospital was maintained.

RESULTS

In 2015, the surgical suspension rate in the referred hospital was 18.5% (n = 455), showing an increase to 20.5% in 2016 (n = 595) and reduction in 2017 to 16.8% (n=430).

Regarding the causes of surgical suspension stratified by clinic, Chart 1 presents the values found in the years 2015 to 2017.

Among the causes that presented the highest absolute frequencies (N), motivating the suspensions in the analyzed period, the following were identified: lack of clinical conditions of the patient (category "related to the patient"), followed by overbooking (category "related to the structure").

In the context of the health institution studied, overbooking is understood as scheduling a number of surgeries in addition to the operational capacity during the sector's operating period, that is, from 7 am to 7 pm, from Monday to Friday.

Surgical suspensions related to the category "related to the patient"

In the years analyzed, the reason "lack of clinical conditions of the patient" was the most evident, representing 30.3% of suspensions (138 occurrences) in 2015, 27.2% (162 occurrences) in 2016 and 37.6% (162 occurrences) in 2017.

In 2015, general surgery presented 33 cancellations due to "lack of clinical conditions for the patient", becoming the clinic with the most cancellations for that reason.

In 2016 and 2017, urology registered 52 and 56 cancellations, respectively, due to "lack of clinical conditions of the patient", presenting itself as the clinic with the most cancellations for this reason in these two years.

The second most evident reason was "patient absence", which represented 14.5% of surgical suspensions (66 occurrences) in 2015, 15.7% (94 occurrences) in 2016 and 25.1% (108 occurrences) in 2017.

Surgical suspensions referring to the category "related to the structure"

The reason "overbooking" appeared as the most evident in the category "related to the structure", with frequencies of 16.9% (77 occurrences) in 2015, 17.4% (102 occurrences) in 2016 and 10.4% (45 occurrences) in 2017, considering all the specialties analyzed in the period.

In 2015 and 2017, urology showed a higher relative frequency of the "overbooking" reason in relation to all the others, registering 35 and 22 occurrences, respectively. In 2016, the clinic that obtained the most suspensions for this reason was general surgery, registering 43 suspensions.

Cancellations due to "lack of SC material/instruments" represented the second reason for cancellation in 2015 (6.1%) and 2017 (3.9%). In 2016, the reason "lack of external material/ instruments" was the second most evident, corresponding to 8% of suspensions, considering all the analyzed clinics.

Surgical suspensions referring to the category "related to the team"

Regarding the category "from the team", the reason "incomplete exams" represented 3, 3.3 and 3.7% in the years analyzed and, secondly, the reason "lack of external staff" presented, in

Table 1. Rate of surgical suspension per clinic in the period from 2015 to 2017.

Clinics	2015			2016			2017		
	SP (n)	PR (n)	SF (%)	SP (n)	PR (n)	SF (%)	SP (n)	PR (n)	SF (%)
General Surgery	109	624	17.4%	157	605	25.9%	98	533	18.3%
Proctology	6	50	12%	8	111	7.2%	13	125	10.4%
Urology	152	791	19.2%	195	876	22.2%	153	851	17.9%
Gynaecology	56	334	16.7%	95	437	21.7%	62	388	15.9%
Vascular surgery	34	147	23.1%	24	155	15.4%	19	141	13.4%
Odontology	33	144	22.9%	33	222	14.8%	41	260	15.7%
Opthalmology	20	91	21.9%	48	187	25.6%	8	20	40%
Gastroenterology	11	63	17.4%	18	93	19.3%	9	31	29%
Pediatrics	34	213	15.9%	17	211	8%	26	200	13%
Total	455	2.457	18.5%	595	2.897	20.5%	430	2.549	16.8%

SP: suspended; PR: scheduled; SF: suspension fee.

Chart 1. Reasons for suspension of elective surgeries, according to the type of surgical clinic and the year of occurrence in a public hospital.

Reasons	Year	GS	PR	UR	GY	VS	OD	OP	GE	PD	N	F (%)
Related to the patient												
Lack of patient's clinical condition	2015	33	3	32	22	8	18	6	4	12	138	30.3
	2016	38	1	52	30	6	9	13	6	7	162	27.2
	2017	36	6	56	26	3	15	2	4	14	162	37.6
Lack of adequate fasting	2015	2	0	1	0	0	0	0	2	2	7	1.5
	2016	1	0	2	2	0	1	0	0	1	7	1.1
	2017	1	0	1	0	2	2	0	0	1	7	1.6
Improvement of the clinical picture without surgical indication	2015	4	1	6	1	3	1	0	0	2	18	3.9
	2016	2	0	11	3	5	1	0	1	0	23	3.8
	2017	5	0	2	1	2	2	0	0	0	12	2.7
Patient on medication	2015	0	0	2	4	1	0	0	0	0	7	1.5
	2016	1	0	1	1	0	0	1	0	0	4	0.6
	2017	2	0	0	2	0	1	0	0	1	6	1.3
Absence of the patient	2015	13	2	10	4	7	13	9	0	8	66	14.5
	2016	12	3	29	9	5	19	11	1	5	94	15.7
	2017	16	2	52	6	0	19	1	5	7	108	25.1
Patient death	2015	0	0	0	0	0	0	0	0	0	0	0.0
	2016	1	0	0	0	0	0	0	0	0	1	0.1
	2017	0	0	0	0	0	0	0	0	0	0	0.0
Patient refusal	2015	1	0	1	0	2	0	0	0	1	5	1.0
	2016	2	0	5	0	1	1	1	2	0	12	2
	2017	1	0	2	1	0	0	1	0	0	5	1.1
Related to structure												
Incomplete or unfilled medical documentation	2015	3	0	1	2	1	0	0	2	0	9	1.9
	2016	8	0	9	4	1	0	7	5	1	35	5.8
	2017	1	0	0	2	0	1	1	0	0	5	1.1
Lack of SC material/ instrumental	2015	8	0	16	1	2	1	0	0	0	28	6.1
	2016	9	0	3	2	2	0	0	0	0	16	2.6
	2017	3	0	5	2	7	0	0	0	0	17	3.9
Lack of external material/instrumental	2015	3	0	13	0	4	0	0	0	0	20	4.3
	2016	9	0	27	8	2	0	2	0	0	48	8
	2017	0	0	4	1	2	0	0	0	0	7	1.6
Lack of blood/blood products	2015	2	0	15	5	0	0	0	0	5	27	5.9
	2016	3	0	2	6	0	0	0	1	1	13	2.1
	2017	3	2	0	4	0	0	0	0	3	12	2.7
Lack of ICU vacancy	2015	4	0	3	3	1	0	0	0	0	11	2.4
	2016	19	3	6	6	0	0	0	0	2	36	6
	2017	4	2	2	2	0	0	0	0	0	10	2.3
Lack of vacancy in the ward (hospitalization)	2015	0	0	0	0	0	0	0	0	0	0	0.0
	2016	0	0	0	0	0	0	0	0	0	0	0.0
	2017	0	1	0	0	0	0	0	0	0	1	0.2

Continue...

Chart 1. Continuation.

Reasons	Year	GS	PR	UR	GY	VS	OD	OP	GE	PD	N	F (%)
Absence of building maintenance	2015	0	0	0	0	0	0	0	0	0	0	0.0
	2016	0	0	0	0	0	0	0	0	0	0	0.0
	2017	0	0	0	0	0	0	1	0	0	1	0.2
Overbooking	2015	31	0	35	9	2	0	0	0	0	77	16.9
	2016	43	0	39	16	2	1	0	1	0	102	17.1
	2017	16	0	22	5	2	0	0	0	0	45	10.4
Related to the team											N	F (%)
Incomplete exams	2015	4	0	3	1	3	0	2	1	0	14	3
	2016	9	0	6	3	0	1	0	1	0	20	3.3
	2017	7	0	2	3	1	1	2	0	0	16	3.7
Expired exams	2015	0	0	1	0	0	0	0	0	0	1	0.2
	2016	0	1	1	1	0	0	0	0	0	3	0.5
	2017	0	0	0	1	0	0	0	0	0	1	0.2
Lack of anesthetist	2015	0	0	1	0	0	0	3	0	0	4	0.8
	2016	0	0	0	1	0	0	0	0	0	1	0.1
	2017	0	0	5	0	0	0	0	0	0	5	1.1
Lack of surgical team	2015	1	0	4	3	0	0	0	2	0	10	2.1
	2016	0	0	0	2	0	0	13	0	0	15	2.5
	2017	4	0	0	5	0	0	0	0	0	9	2
Lack of external team	2015	0	0	8	0	0	0	0	0	4	12	2.6
	2016	0	0	0	1	0	0	0	0	0	1	0.1
	2017	0	0	0	1	0	0	0	0	0	1	0.2
Lack of nursing team	2015	0	0	0	1	0	0	0	0	0	1	0.2
	2016	0	0	2	0	0	0	0	0	0	2	0.3
	2017	0	0	0	0	0	0	0	0	0	0	0.0

GS: general surgery, PR: proctology, UR: urology, GY: gynecology, VS: vascular surgery, OD: odontology, OP: ophthalmology, GE: gastroenterology, PD: pediatrics; N: absolute frequency; F: relative frequency; CC: operating room; CTI: intensive care center.

2015, the 2.6% frequency. In 2016 and 2017, the reason "lack of surgical staff" was the second most evident, registering 2.5 and 2% of suspensions, respectively.

DISCUSSION

The cancellation of a surgery increases the operating and financial costs of the institution, reducing the efficiency of the service offered, and is a reality in health institutions. Its repercussions are relevant and result in negative physical, emotional and socioeconomic effects to the patient and his family[7].

Regarding the surgical suspension rate, the studied hospital had rates of 18.5, 20.5 and 16.8% in the years 2015, 2016 and 2017, respectively. There is a decline, but these rates are considered high compared to another study, which found a rate of 13.3% [7].

The patient's unfavorable clinical condition for performing the surgery was the most evident reason in all the years studied, which can also be observed in other studies that addressed the theme[8-10]. Colombian researchers identified that 52% of patients had their surgeries suspended due to unfavorable clinical conditions[10].

The suspension of surgery should be avoided, since the patient is anxious to have his health needs met[1]. Some measures

taken by the health institution are directly related to certain situations. This is the case of patients who present without clinical conditions even after the preoperative evaluation and preparation, and each service unit is responsible for establishing specific measures to reduce the rate of surgery suspension[9,10].

The preoperative visit, whether performed by a nurse or an anesthesiologist, can identify the patient's clinical and psychological conditions that lead to the suspension of surgery, consisting of an early intervention that would avoid this problem[11].

A Brazilian study points out that the expectation of an institution is deposited in the anesthesia clinic to reduce the number of suspensions, however, as the authors describe, "due to the socioeconomic shortage, patients are hospitalized without presenting the ideal clinical conditions for surgery"[12].

Another major reason for surgical suspensions was overbooking; this condition represents an important indicator of organizational improvement and planning in the institution. It is necessary to think about all the preparation, both on the part of the patient and in the logistical sense, for the performance of surgery.

Studies show that 16.5% of surgeries are canceled because they exceed the routine hours of the institutions analyzed. Scheduling surgeries in excess of what can be performed reflects an organizational failure in planning and surgical routine[8,13].

It is essential to plan the surgical map, taking into account the availability of professionals, equipment and essential materials to perform the anesthetic-surgical act[14].

The cancellation of scheduled surgeries has a significant impact on health, resources, cost and quality of care. To plan a solution, it is necessary to understand the reasons for the cancellations[15,16].

The patient's absence was also the reason for a large number of cancellations of surgeries in the analyzed period. This reason requires further investigation through an active search service, in order to confirm the patient's hospitalization, making it effective for surgeries scheduled for up to 48 hours after hospitalization[13].

An important point to consider is the role of the Material and Sterilization Center (CME) in surgical suspensions. Despite presenting a low relative frequency in the years analyzed, the lack of material and/ or instruments must be considered, since this sector has the responsibility to provide health products for patient care, directly reflecting on the quality of the care provided[17].

Joint actions must be taken by those involved in caring for the surgical patient - outpatient, UTI, ICU, CME and SC - in order to achieve a reduction in the rates of surgical suspensions.

The lack of registration regarding the reason for the suspension in some forms, which, in turn, were eliminated from the study, can be highlighted as a limitation of the study. In addition, there are incomplete data, such as, for example, the type of medication that prevented the surgery or whether the patient's clinical condition evolved to death. It is noteworthy that the data were compiled from forms filled out by the medical team of the institution under analysis.

CONCLUSION

After analyzing and discussing the data, it was possible to identify that the main reasons for surgical suspensions at the institution in question were: lack of clinical conditions for the patient and overbooking in 2015 and 2016, respectively; and patient's absence in 2017.

The rates of surgical suspensions show the need to reassess the practices adopted by the institution and by health professionals involved in the perioperative process.

The identification of previous clinical changes, the prescription and planning of care to improve or correct the condition and the adoption of effective administrative measures, such as scheduling the number of daily surgeries according to the hospital structure, managing the time of the OR, availability of a multidisciplinary team and pre-operative outpatient visit can help to reduce the rate of surgical suspension.

By reducing the cancellation of surgical procedures, there is an improvement in this indicator, with a reduction in unnecessary expenses by the institution.

In relation to the patient and his family, the cancellation of surgery generates dissatisfaction with the service, in addition to changes in routine, creating new expectations for the surgical procedure. Confirming the date of the surgery on days closer to the procedure can help to reduce the "patient's absence" reason.

Measures such as control and investigation of the reason for the suspension can help to identify changes early, even before surgical scheduling. It is noteworthy that it is essential to raise the awareness of those involved in devoting efforts to the implementation of measures that reduce the rates of surgical suspension, in addition to monitoring this quality indicator.

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