

Causes of Last Minute Cancellation of Operative Procedures at King Abdulaziz University Hospital

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Abstract. Cancellations of surgical procedures are frequent occurrences at operating rooms. These cancellations result in the wasting of resources and prolonging patients' hospital stay. Last minute cancellations have more negative impacts since they are usually uncorrectable. The aim of this study was to evaluate the reasons for last minute cancellations of procedures at the University Hospital. Patients scheduled for surgeries over a one year period were recruited. Patients cancelled in the pre-operative holding area were enrolled. For each case, a form which contains the patient's demographic data and relevant information was completed. The incidence of cancellations were higher in general surgery patients (n = 55, 27.1%), compared to patients undergoing pain treatment procedures (n = 1, 0.5%). Improper pre-operative preparation is the major reason for cancellations, which can be minimized by good communication between the preoperative team. The establishment of a pre-anesthetic clinic for the pre-operative evaluation of the patients is suggested as a main solution for these issues.

Keywords: Operating room, Delay, Resources, Cost savings.

Introduction

Cancellations and delays of surgical procedures are not uncommon occurrences at operating rooms throughout the world. The estimated incidence of cancellation ranges from 4.6 to 20 percent of all booked cases. This results in wasting operating room time, prolonging the

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duration of patient hospitalization; resulting in additional expenses to both hospital and patients^[1]. Also, this delay causes inconvenience to patients and their families with prolongation of the period of fear that the patients normally feel before surgery^[2]. On the other hand, during this period of prolonged preoperative hospital stay and delay, surgeons become more concerned about the progression of their patients' disease and subsequent worsening prognosis.

The fear of a possible operation is felt, even before the patients undergoes investigations and receives diagnosis^[3]. The time that elapse from decision concerning operation, and the operation itself is considered by most patients as a time of worry and insecurity^[4-6]. Surgical interventions evoke strong psychological and psychosocial reactions connected with thoughts about death, pain, and risk of complications^[7].

Prolonged waiting time for cardiac patients probably increases the risk of new myocardial infarction^[8]. Research has shown that waiting for transportation to the operating room is one of the most frightening experiences for patients in connection with surgery. Patients may also worry that their operation might be delayed^[9-11]. The reasons for cancellation of the elective surgery include: disruption of the operation program by emergency operations, defective planning of the operation program, sudden lack of beds at the Intensive Care Unit, staff shortage, incomplete preoperative investigations or acute medical reasons^[11-12]. The aim of this prospective study is to evaluate the reasons for cancellations of surgical procedures as a trial to overcome them at King Abdulaziz University Hospital (KAUH).

Hospital Setting

KAUH is a 450-bed tertiary care center with a surgical caseload of about 10,000 to 12,000 cases per year. About 10,000 of these cases are scheduled for surgical operations.

The operating theater suite in KAUH consists of 16 operating rooms, under taking procedures in both public and private patients. The surgeries that have been performed include: Urological surgery, General surgery, Pediatric surgery, Ophthalmic surgery, Otolaryngology, Obstetrics and Gynecology surgery, Orthopedic surgery, Cardiothoracic surgery, Plastic surgery and Neuro-surgery. The obstetric suite has different operating

rooms in a separate location. The operating theaters are supported by 12 beds in the recovery room, 16 beds in the main intensive care unit, 20 beds in the Neonatal ICU (NICU), and 8 beds in the Pediatric ICU (PICU).

Materials and Methods

After obtaining the approval of the Hospital Ethical Committee, all the patients scheduled for surgeries over a period of one year (from January 1, 2005 to December 31, 2005) were included for collection of data. All patients cancelled in the Pre-Operative Holding (POH) area were candidate for enrollment. A cancellation form, which contains the patient's demographic data (age & gender), the diagnosis, surgical procedure, in-patient or day case procedure and causes of cancellations of the procedure were filled for each case. An elective procedure was defined as one scheduled in the daily-published operating theater's list. A day case was defined as an outpatient procedure where a patient was instructed to attend the operating theater the day of surgery and was discharged on the same day. Incomplete filled forms were excluded from the study. The cancellation forms were prospectively collected with conduction of an initial pilot study extending for 2 weeks. Data was collected and put on excel sheet and analyzed using a Number Cruncher Statistical System (NCSS).

Results

During the period from the 1st of January 2005 to 31st of December 2005, a total of 9301 surgical procedures were scheduled in KAUH operating theater out of these, 7388 (79.4%) surgical procedures were performed according to their schedule. However, 960 (10.3%) of the scheduled procedures were not done as scheduled, as the patients did not show up while 953 (10.2%) of these surgical procedures were cancelled. Among these cancelled procedures; 254 surgical procedures were cancelled in the POH, which constitutes (26.65%) of the cancelled cases. The details of all done, no show basis; and the cancelled of patients for various specialties are given in Fig. 1.

A total of 203 POH cancellation cases were completed. The incidence of cancellations in the POH was higher in patients scheduled for general surgery operations (n = 55, 27.1%), while it were the least in

patients undergoing maxillo-facial and pain management procedures (n = 1, 0.5%) each. Table 1 shows the number of cancelled cases in the POH according to various subspecialties.

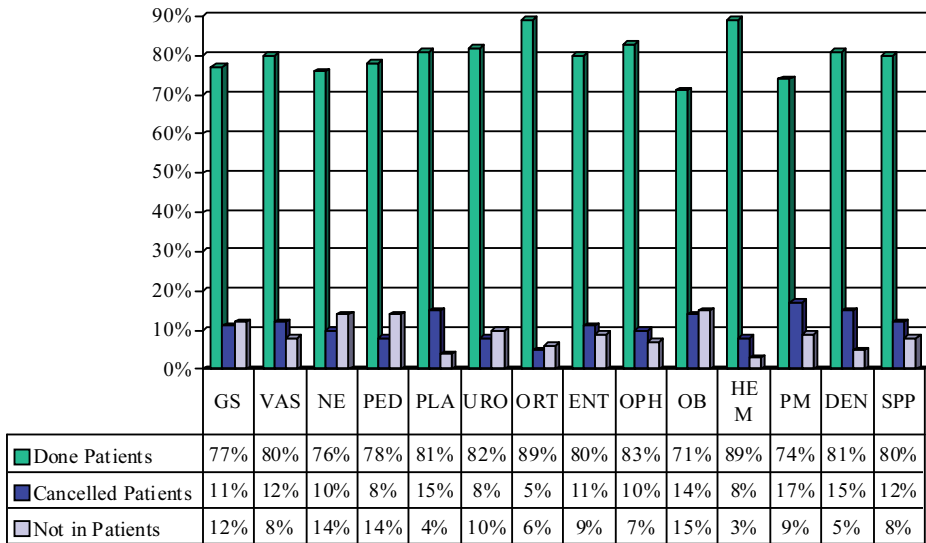


Fig. 1. Status of booked patients in OR (Jan. - Dec. 2005).

There were many reasons recorded for cancellations; as medical reasons (*e.g.*, uncontrolled DM, uncontrolled hypertension, chest infection, anemia, *etc.*), no time, surgical and patients' cause, no ICU bed, no blood available and unavailability of instruments and supplies.

The most common reason for cancellation in POH was due to medical reasons (n = 106, 52.2%), while unavailability of ICU bed, and equipment lack of readiness was the least cause (n = 4, 2%) for each. Other causes of cancellation were lack of time (n = 35, 17.2%), surgical causes (n = 28, 13.8%), unavailability of blood (n = 12, 5.9%), surgeons' and patients' causes (n = 5, 2.5%) per each.

Discussion

Cancellations in surgical procedures may have profound impact on the outcome of patients in terms of morbidity and mortality, especially in emergency and urgent cases. A recent study has reported the increased morbidity in patients who wait longer duration for elective laparoscopic

Table 1. Number (and percentages) of cancelled cases in preoperative holding area per cause per speciality.

Speciality	Med reason		No time		Not for surgery		Blood not ready		Patient not prepared		Surgeon not available		Equipment not ready		No intensive care unit bed		Other		Total			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%		
General surgery	29	14.3%	10	4.93%	13	6.4%	2	0.99%	1	0.49%	0	0%	0	0%	0	0%	0	0%	0	0%	55	27.1%
Gynae & obstetric	6	2.96%	5	2.46%	5	2.46%	6	2.96%	1	0.49%	2	0.99%	0	0%	1	0.49%	2	0.99%	2	0.99%	28	13.8%
Urology	14	6.9%	8	3.94%	2	0.99%	0	0%	1	0.49%	0	0%	1	0.49%	1	0.49%	0	0%	0	0%	27	13.3%
ENT	16	7.88%	4	1.97%	3	1.48%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0.49%	1	0.49%	24	11.8%
Ophthalmology	10	4.93%	2	0.99%	1	0.49%	0	0%	0	0%	1	0.49%	1	0.49%	0	0%	0	0%	0	0%	15	7.39%
Pediatric surgery	8	3.94%	1	0.49%	3	1.48%	0	0%	1	0.49%	1	0.49%	0	0%	1	0.49%	0	0%	0	0%	15	7.39%
Plastic surgery	2	0.99%	3	1.48%	1	0.49%	1	0.49%	0	0%	1	0.49%	0	0%	0	0%	0	0%	0	0%	8	3.94%
Dental	3	1.48%	2	0.99%	0	0%	1	0.49%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	6	2.96%
Orthopaedic	5	2.46%	0	0%	0	0%	1	0.49%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	6	2.96%
Neurosurgery	3	1.48%	0	0%	0	0%	1	0.49%	0	0%	0	0%	0	0%	1	0.49%	0	0%	0	0%	5	2.46%
Vascular surgery	4	1.97%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0.49%	0	0%	0	0%	0	0%	5	2.46%
Pediatric procedure	2	0.99%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0.49%	0	0%	1	0.49%	1	0.49%	4	1.97%
Haematology	3	1.48%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	3	1.48%
Maxillofacial surgery	1	0.49%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0.49%
Anaesthesia/pain service	0	0%	0	0%	0	0%	0	0%	1	0.49%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0.49%
Total	106	52.2%	35	17.2%	28	13.8%	12	5.91%	5	2.46%	5	2.46%	4	1.97%	4	1.97%	4	1.97%	4	1.97%	203	100%

cholecystectomy^[13]. Cancellations and delays of elective procedures have been reported by many authors especially in ambulatory surgeries^[14]. Every hospital is unique in terms of its service, staff pattern, demographics of the region and also the work ethics and culture.

Hence, an attempt to assess the situation in KAUH, which is a tertiary care teaching hospital, in which the surgical departments cater services to both public patients (who are offered service free of cost) and private patients (who pay fee for the services offered). If operating theater is not effectively utilized, these hospital resources are largely wasted, and it significantly impacts on the patient care^[15].

Inefficient or inaccurate scheduling of operating theater time often results in delays of surgery or cancellations of procedures, which are costly to the patient and the hospital. Thus, it is better to analyze the root cause of these problems^[16]. The data of this study shows an incidence of 2.73% cancellation rate of the surgical procedures in the POH out of all patients booked. Many avoidable causes for cancellations can be attended to and be minimized to ensure an effective utilization of operating theater time^[17]; such as late arrival of the patients from the ward to the OR (Operating Room) for the schedule surgery delays, the early procedures in the list leading to exhaustion of the OR, time available for the late cases which in turn are cancelled due to no time. These problems could have been avoided by early preparation of the patients in the wards and allowing sufficient lead-time for the theater orderlies to transport the patient to the operating theater. Also, overbooking is one of the common causes of “no time” cause of cancellations, which can be solved by accurate and reasonable scheduling. As regards to the unavailability of instruments and supplies (*e.g.*, blood, prosthesis for joint replacement, instruments for spine surgery, unprepared chemotherapeutic agents for oncology patients and endoscopic instruments), which constitutes 10% of cancellations, proper and clear communication between the surgeons, the nursing staffs, and suppliers will lessen this problem.

Unavailability of ICU bed was among least causes of cancellation in this study (2%) as enough ICU beds are present. The ratio between ward beds to ICU beds is maintained in our hospital design (> 10:1).

Improper pre-operative preparations have been quoted as a major reason for cancellations^[18] and this also has been shown in the results of this study in which medical reasons for POH cancellations constitutes

52.2% as shown in Table 1. This issue can partly be minimized by maintaining good communication between the anesthetists and the surgeons^[19]. The establishment of a pre-anesthetic clinic for the pre-operative evaluation of patients by anesthetists has been proved to address these situations^[20]. Our hospital does not have such a clinic, and in many cases, patients are seen by anesthetist only in the POH before the surgical procedures. This problem had been overcome by some centers as it used a nurse-led pre-operative assessment to minimize cancellations^[21]. This will be difficult in our hospital due to the language barrier between foreign nurses and the patients. However, the medical board of the hospital and in the process has approved the pre-anesthesia clinic project in the time being to lessen the medical cause of POH cancellations. Appreciation of the common reasons for cancellations of surgeries will improve operating theater utilization as the administrators and the providers will anticipate these problems and will pay additional attention to them^[22]. Others have found that cancelled surgery is expensive for the institution, notwithstanding the inconvenience for the patient^[23].

Conclusion

This study showed the reason for the cancellations of surgical procedures in the POH from tertiary care teaching hospital (KAUH). The main constraints were lack of communication between the surgeons and the anesthetist, lack of counseling and instructions for day-care surgery patients, absence of the pre-anesthesia clinic, poor pre-operative preparations of the patient, poor communication between the surgeons and the nursing teams who are preparing the instruments and supplies for specialized surgeries.

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أسباب إلغاء العمليات الجراحية في آخر لحظة بمستشفى جامعة الملك عبدالعزيز

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المستخلص. إلغاء العمليات الجراحية يعتبر من الأمور الشائعة وينتج عنه إهدار للموارد وتمديد فترة بقاء المريض في المستشفى بما يتسبب في عواقب سلبية، لأنها غالبًا لا يمكن تفاديها. هدف هذه الدراسة هو تحديد أسباب إلغاء العمليات الجراحية في آخر لحظة بالمستشفى الجامعي. شملت الدراسة جميع مرضى العمليات الجراحية لمدة عام. جميع المرضى الذين تم إلغاء عملياتهم في منطقة قبل العمليات تم إدراجهم بالدراسة لكل حالة تم إلغاؤها. تم جمع المعلومات الإحصائية مثل نوع العملية، نوع الدخول للمستشفى، وكذلك سبب إلغاء العملية. كانت أعلى نسبة للإلغاء بين مرضى الجراحة العامة (٥٥ حالة، ٢٧,١٪) وأقل نسبة لحالات علاج الألم (حالة واحدة، ٠,٤٪) وقد كان وجود أعراض طبية لدى المرضى هو السبب الرئيسي للإلغاء (١٠٦ حالة، ٥٢,٢٪)، بينما عدم توفير سرير بوحدة العناية المركزة، وعدم جاهزية الأدوات أقل الأسباب، (٤ حالات، ٢٪) لكل منها، بينما عدم كفاية الوقت مثلت (٣٥ حالة، ١٧,٢٪)، والأسباب الخاصة بالجراح أو المريض (٥ حالات، ٥,٢٪) لكل منها. إن عدم تحضير المريض طبيًا قبل الجراحة هو السبب الرئيسي للإلغاء في آخر لحظة، مما يتطلب مستوى أفضل من التواصل بين الفريق الطبي قبل الجراحة.