

Cancellation of the elective orthopedic surgery, an audit to improve the quality of care.

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Abstract

Background

Cancellation of elective surgical procedure puts a lot of extra burden on hospital resources across the world. For the same reason, cancellation rate of elective operations is considered as a parameter for assessment of the quality of patient care. The aim of this retrospective study is to analyze the causes of cancellation of elective orthopedic procedures in a multidisciplinary government hospital and to suggest measures for optimal utilization of OR time in order to improve the quality of the patient care.

Patients & methods

It's a retrospective study, performed at the King Saud University Medical City (KSUMC), orthopedic surgery department, Riyadh, Saudi Arabia. All the patients admitted in orthopedic wards for elective procedures requiring general anesthesia between Jan. 2016 and Dec 2016, were included in the study. We excluded the patients booked for surgery, but they did not show up for admission, patients undergoing emergency surgery and patients not requiring general anesthesia.

Results

A total of 1090 patients were scheduled during the study period. There were 599 (55%) male and 491 (45 %) female patients. Mean age was noted 31.3 with 22.72 standard deviation. The most frequent condition was respiratory tract infections in 26 (38.8%) patients followed by uncontrolled diabetes mellitus in 5 (19.2%), uncontrolled hypertension in 4 (15.3%), anemia in 3 (11.5%), urinary tract infections in 2 (7.6%) and ischemic heart disease in 1 (3.8%) patient.

Conclusion

OR cancellations can be reduced remarkably by improving workflow for the preoperative assessment, proper scheduling of cases, better interdepartmental coordination and proper estimation of the procedural time keeping in the account all the pre-procedural and post procedural variables which adds further to the inter procedural delay.

Keywords

Cancellation, Elective surgery, Quality of patient care

Introduction

Cancellation of elective surgical procedure puts a lot of extra burden on hospital resources across the world. Unanticipated cancellation of elective operations is directly associated with reduced operation room (OR) efficiency, wastage of OR time, resources, and hospital expenses in addition to causing inconvenience to patients, their families and the medical teams⁽¹⁻³⁾. Moreover, cancellation of surgical procedures increases the burden on waiting list, contributes to patient dissatisfaction and decreases staff morale⁽¹³⁾. For the same reason, cancellation rate of elective operations is considered as a parameter for the assessment of quality of patient care⁽¹⁾. The reported incidence of cancellation of elective surgical procedures in different hospitals ranges from 10% to 40%⁽¹⁰⁾. A number of avoidable and unavoidable reasons for cancellation of elective procedures have been reported. Avoidable reasons for cancellation include scheduling errors, equipment shortage or

malfunction and inadequate pre-operative evaluation whereas unavoidable reasons include priority for emergency procedure, unforeseen changes in patient medical status or non-appearance of patient.⁽⁴⁾ Better organizational and preemptive measures have been shown to reduce the cancellation rates to minimum⁽⁵⁾. This retrospective study was performed to assess the reasons for cancellation of elective orthopedic procedures at King Khalid University Hospital, Riyadh. The aim of this retrospective study is to analyze the causes of cancellation of elective orthopedic procedures in a multidisciplinary government hospital and to suggest measures for optimal utilization of OR time in order to improve the quality of the patient care.

Patients and methods

This retrospective study was performed at the King Saud University Medical City (KSUMC), orthopedic surgery department, Riyadh, Saudi Arabia.

All the patients admitted in orthopedic wards for elective procedures requiring general anesthesia between Jan. 2016 and Dec 2016, were included in the study. We excluded the patients booked for surgery, but they did not show up for admission, patients undergoing emergency surgery and patients not requiring general anesthesia. Relevant data were extracted from OR records for all patients undergoing scheduled elective orthopedic surgical procedures during the study period. Operative cancellations were defined as patients admitted and scheduled for the operation but failed to undergo planned surgery on the intended date due to cancellation either on preoperative day or inside OR. This study was conducted as an audit under quality assurance project; it didn't require approval of the hospital ethics committee. Record of all the admitted patients was gathered electronically through the database and cancelled cases were segregated. Information about the reasons for cancellation for each patient was recorded in the database as coded variables. Statistical analysis was performed using SPSS version 15 software.

Results

A total of 1090 patients were scheduled during the study period. There were 599 (55%) male and 491 (45 %) female patients. Mean age was noted 31.3 with 22.72 standard deviation. These patients were scheduled for a variety of procedures including trauma, implant removals, pediatric procedures,

arthroscopic procedures, spine surgery, arthroplasties, deformity correction, irrigation and debridement and tumor surgeries. Out of the total 67 (6.1 %) procedures were cancelled. Upon looking into further details, we observed that only fifteen of the cancelled cases visited pre-anesthesia clinic and the time between pre-anesthesia clinic assessment and surgery was noticed ranging from 7-16 weeks, average duration was 11.5 weeks on average.

Figure 1, describes the data for reasons leading to cancellation of elective surgical procedures. The most common reason for the cancellation was medical reasons rendering patients unfit for surgery. The number of patients in this category was 26 (38.8 %) followed by shortage of time in 22 (32.8 %) patient refusal for surgery in 9 (13.4 %), incomplete investigations in 3 (4.5 %), unavailability of implant in 3 (4.5%) surgeon's decision against surgery in 2 (4.55 %) and 1 (1.5%) procedure was cancelled due unavailability of bed in surgical intensive care unit.

Figure 2, shows data for the medical conditions resulting in cancellation of elective surgical procedures among. The most frequent condition was respiratory tract infections in 26 (38.8%) patients followed by uncontrolled diabetes mellitus in 5 (19.2%), uncontrolled hypertension in 4 (15.3%), anemia in 3 (11.5%), urinary tract infections in 2 (7.6%) and ischemic heart disease in 1 (3.8%) patient.

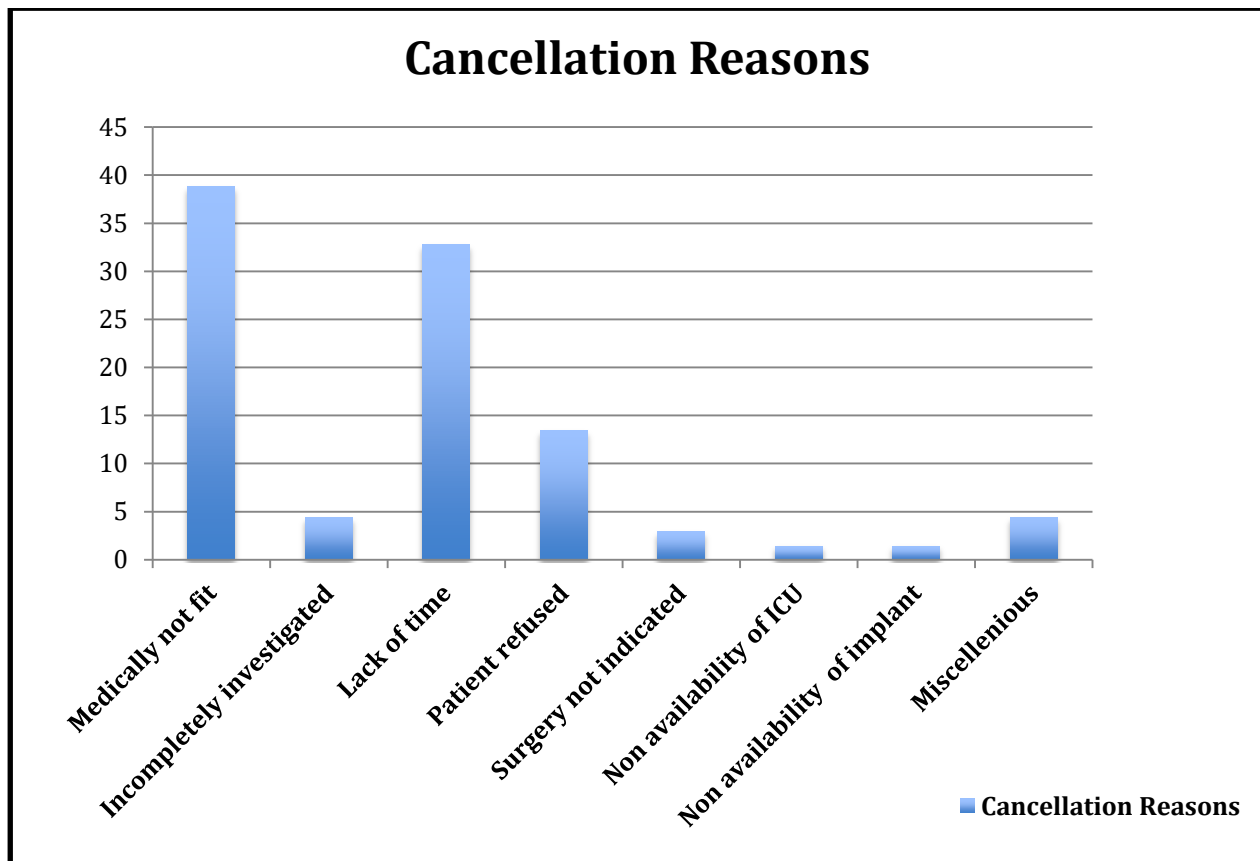


Figure 1. Reasons leading to cancellation of elective procedure

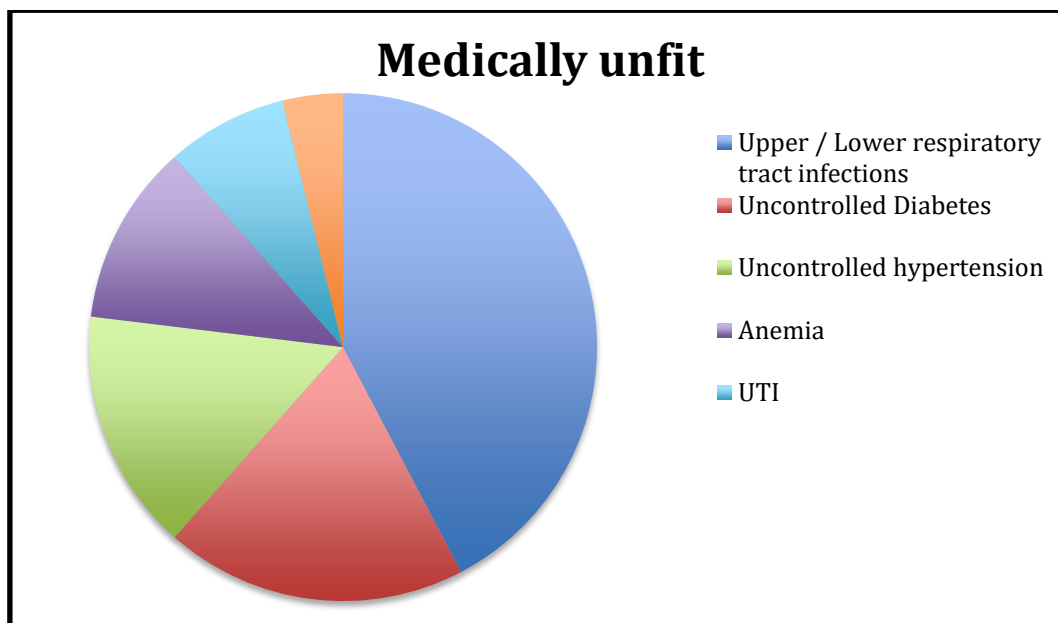


Figure 2. Medical conditions resulting in cancellation of selective surgery

Discussion

This study reports 6.1% cancellation rate of elective orthopedic surgeries at King Khalid University Hospital, Riyadh. This appears to be higher than the 5% cancellation rate of elective surgeries generally regarded as the higher limit of acceptable range for cancellation of elective surgical procedures⁽⁶⁾. Cancellation of operative room (OR) poses undue burden to the hospital facilities and adds to the prolonged waiting time. Undoubtedly, these delays and cancellations result in increased costs for hospitals and frustration among the patients and their families. Although there is still debate on the acceptable rate of OR cancellation, when analyzing the efficiency of theatre facilities, less than 5% is generally recommended.⁽⁶⁾ In New South Wales, Australia, the benchmark for booked patient cancellations on the day of surgery was less than 2% and cancellation due to medical reasons was set at less than 1%⁽⁷⁾ while it observed as high as 24% in other study groups.⁽¹²⁾

In our study most of the cancellations were preventable. As we have seen that larger number of the cancellations fell in the category of medically unfit. There were n=26 (38.8%) patients in this category which are not as high as mentioned by Dalton et al.⁽¹⁶⁾ in his recent work 81%, although his total cancellation rate was much lower 3.5 % in his day of surgery admission patients. Our data showed that the most common reasons were upper/lower respiratory tract infections n=11, uncontrolled diabetes n=5, uncontrolled hypertension n=4, Anemia n=3, urinary tract infections (UTI) n=2 and ischemic heart disease (IHD) n=1. Cancellation on medical grounds is significantly high which can be improved by making

some organizational changes to the work flow of the pre anesthesia clinic. Fifteen of the cancelled cases only visited pre-anesthesia clinic. Time between pre-anesthesia clinic assessment and surgery was noticed ranging from 7-16 weeks, average duration was 11.5 weeks on average. We believe that by simply reducing the pre-anesthesia clinic to surgery time would have a stronger positive impact. Furthermore, these cancellations could be prevented by improved communication between scheduler, patient and operating team. Scheduler should inquire about any recent onset symptoms or any change in pre-existing symptomatology. Another important observation was the higher percentage of respiratory illnesses among the cancelled patients. Most studies agree that patients with active and recent URIs are at increased risk for perioperative complications, these events, for the most part, are manageable and have no long-term adverse sequelae⁽¹⁵⁾. We believe that the environmental factor has an important contribution toward that increased respiratory problems as well.

Lack of the OR time was the second most common and yet avoidable reason for cancellations. There were 22 (32.8%) patients in this category which is comparable to other centers in the area reporting 27% in a recent study⁽¹³⁾. Overbooking of the scheduled list and inaccurate estimation of the operating time was the most common reason for it. Sports surgery related procedures (n=15) accounted for the most of those cases. Higher number among sports group is possibly because of their high turn over as they had the most

surgeries after trauma group during the study period. There were 4 patients from the arthroplasty, 1 from F&A and 1 from deformity correction. Several performance parameters relevant to OR utilization have been identified. These include accurate case-duration estimate, percentage of on-time first case starts, pre-admission screening, patient-in-to-incision time and average turnover time¹⁰. The first case on-time start of an OR is viewed as a harbinger of efficiency for the daily schedule. Across 26 ORs of a large, academic medical center, only 49% of cases started on time in October 2011⁽¹¹⁾. Pandit *et al.* found that over running OT lists were the commonest cause of cancellation of cases on the day of surgery (50% lists were overbooked and 50% over ran their scheduled time)¹⁴. Lists are generally overbooked as under the pressure of long waiting lists and doubts about the patient cancellation for unavoidable circumstances.

Another important subgroup among cancelled case was patient's refusal from surgery which is considered partly as unavoidable cause. We encountered 9 (13.4 %) patients who didn't give consent after admission. Six patients had emergency situation related to their family while another three patients changed their mind for surgery as they were in a much better state as compared to the booking time for OR.

The main limitation of this study is that it is a retrospective study, even though the reasons of cancellations were documented adequately in 95.5% of the patients. More than 80% of the cancellations can be avoided by improved planning. Our study has identified common and avoidable causes of cancellation of Orthopedic surgical cases. We recommend that the number of cancellations can be reduced and theatre utilization can be improved by following as under.

- 1- More efficient work flow and improved pre-anesthesia assessment (PAA).
- 2- By Reducing the time from PAA to OR.
- 3- Better communication between scheduler, patient and operative team.
- 4- Early on time start, precise estimation of the procedure time.
- 5- Avoidance of the overbooking.

in solution of a problem is to identify the cause. This study has identified major avoidable causes and their possible solutions. OR cancellations can be reduced remarkably by improving work flow for the preoperative assessment, proper scheduling of cases, better interdepartmental coordination and proper estimation of the procedural time keeping in the account all the pre-procedural and post procedural variables which adds further to the inter procedural delay.

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Conclusion

Cancellations of elective orthopedic surgical cases is a significant problem at this hospital. First step