Original Article

Operative cancellations of thoracic surgical procedures: Benefits and Concerns

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Objective: To determine causes of cancellations of daily elective listed operations of thoracic division at our institute.

Methods: This retrospective study included 491 patients, of both genders, aged 14-69years, classified in terms of the American society of anesthesiologists (ASA) as class I-III and scheduled for various thoracic surgical interventions at King Hussein Medical Centre fromApril2011 to May 2012. Patients were evaluated for causes of cancellations and assessed for statistical significance regarding surgical or anesthetic impact.

Results: Of total of12748 surgical interventions during the study period, 491cases (3.85%) were listed for thoracic surgical interventions. Forty four patients (8.96%) were cancelled. Anesthetist causes of cancellations were responsible for 50%, while surgeon related causes of cancellations were responsible for 22.7% cancellations. Respiratory causes were the least frequent causes (0.02%) of these 44 cases.

Conclusions: Causes of cancellations in our division were attributed to medical and anesthesia issues in equal in incidence with least frequent being respiratory problems. Recognition of the frequent causes for postponement of operations will enhance theatre use by anticipating these issues and to find solutions to overcome obstacles. (Rawal Med J 2013;38:388-392).

Key words: Thoracic surgery, cancellation.

INTRODUCTION

Postponements of programmed surgical procedures at the last minute area serious problem in most hospitals and a major factor of inefficient handling of theatre time and a loss of resources. There is significant impact of postponement on patients and on the increased level of emotional engagement before operation.[1] This can result in prolonging the duration of admission and induce dissatisfaction for patients and their relatives.[2] Cancellation caused extra cost for the hospital and the patients.[3] Postponed operations are not suitable for patients, doctors and staff, causing reduced patient comfort, medical confidence and prolonged hospital stay and could affect the clinical outcome. Theaim of our study was to evaluate the reasons of cancellations in our thoracic surgical division so as to overcome these obstacles and to create regulations to help in proper use of theater time.

METHODOLOGY

Our retrospective study included 491 subjects, aged 14-69 years, ASA I-III, of both genders and who were to undergo different elective thoracic surgical procedures at KHMC, Amman, Jordan from April 2011 to May2012.Anelective surgical intervention was defined as that assigned in the daily-published operating theatre list. Demographic data (age, gender, preoperative diagnosis and surgical intervention) were recorded for all subjects. Beginning time of intervention, patient's arrival time in the operating room, finish time and the causes for postponements in each patient was noted. Data on interventions assigned for weekdays excluding public holidays were obtained from the operating room list for that day which is prepared at 3:00 PM the previous day of surgery. Patient were admitted one day before surgery with complete medical and clinical investigation from clinic and complicated cases were admitted 3days prior to procedure to complete investigations and preparation for surgery. All cases were evaluated by anesthesiologist at operating theater. Emergency surgeries were performed in an emergency theatre.

Table 1. Argo criteria for cancellation.

Case	Reason
Patient	Not found. Patient refusal Preoperative instruction not followed
Facility	Administration error, Equipment malfunction Staff shortage, No time, No postop. ICU bed
Medical workup	Inadequate cardiovascular, pulmonary condition Inadequate procedure workup, Acute change in medical condition
Surgeon	Unavailable
Anesthetist	Unavailable
Others	Not in above categories

A cancellation on the day of intended surgery was defined as any intervention that was either assigned on the final theatre for that day or was consecutively added to the list and was not done on thatday. Duringthe day of surgery, a senior registered nurse at the holding area was recording all information about cancellations. Cancellations were divided into medical and nonmedical causes. Cancellations were classified as potentially preventable (no time) or non-preventable (patient refusal). Cancellations were classified also as patient, surgeon and anesthesiologist related. No surgical interventions were allowed at 3:00PM if the intervention was not believed to finish at 4:00PM. The collected data included the overall number of assigned cases for thoracic procedure, the number of overall cancellations and the causes of cancellations. Causes of postponements were classified into 6 categories according to Argo criteria[4] (Table1).The overallcancellation rate was defined as the total number of cancellations divided by the total number of assigned cases. Data analysis was performed using Chi-square test.

RESULTS

For 491 cancelled patients, age ranged between (14-69 years),and male gender was(48 %) while female gender was (52%), and ASAI was(56.8 %), ASAII was (20.5%)and ASAIII was(22.7%). All investigated cancelled interventions were thoracic. Medical causes of cancellation were 296(54.3%) and non-medical causes were 249(45.7%).Total thoracic surgical cancellations were 44(8.96%) of total thoracic operations (Table 2). There were 2 thoracic consultants (A and B), consultant (A) had (68.2%)of total thoracic cancellations and the consultant (B)had (31.8%).This difference was significant between consultants ($P<0.05$). Consultant (A) had 260 thoracic operations while the consultant (B) had 231operations. Regarding rate of cancelations to their number of operations, consultant (A) had (50%) cancellations and consultant (B) had (50%) cancellations ($P>0.05$) (Table3).

Table 2. Cancelled thoracicoperativeprocedures (n=44).

Cancelled procedure	Number
VAT lungbiopsy	5
VAT mediastinal biopsy	5
VAT bilateralsympathectomy	2
VAT pleural biopsy	3
VAT pleurodesis	1
VAT exploration	1
VAthoracoscopy	2
VAT decortications	2
VAT mass excision	1
VATesophagealdiverticulectomy	1
Thoracotomy for pneumonectomy	1
Thoracotomy for lobectomy	1
Thoracotomy for bullectomy	1
Mediastinoscopy	7
Rigid esophageoscopy	1
Rigid bronchoscopy	3
Thoracotomy for pulmonary hydatidosis	1
Laparoscopic Hiatus hernia repair	2
Laparoscopic Niessen repair for GERD	1
Chest wall mass biopsy	1
Esophagectomy	1
Removal Tracheostomy	1

Cancellations were divided into medical and non-medical causes which were equal in frequency (50%) ($P>0.05$).Non-medical causes were presented in table (Table 4).

Regarding personal cancellations, there were 12

patient causes, there were 22 anesthetist causes and there were 10 surgeon causes.

Table 3. Factors related cancellations.

Factor		Frequency
ASA	I	56.8%
	II	20.5%
	III	22.7%
Preventable		27.3%
No time		66.7%
Non preventable		72.7%
Patient refusal		12.5%
Patient		27.3%
Surgeon		22.7%
Anesthetist		50%
Consultant A		50%
Consultant B		50%

Cancellations were divided into medical and non-medical causes which were equal in frequency (50%) (P>0.05).Non-medical causes were presented in table (Table 4).

Regarding personal cancellations, there were 12 patient causes, there were 22 anesthetist causes and there were 10 surgeon causes.

Table 4. Medical and non medical factors related cancellations.

Cause	Number
Medical	
Laboratory results	3
Cardiac cause	6
Fever	2
High blood pressure	9
Respiratory problem	1
Uncontrolled diabetesmellitus	1
Non-medical	
Not found	4
Not fasting	3
Smoking	1
Patient refusal	4
No time	8
No surgical material	1
Unknown	1

Preventable causes accounted for laboratory results 3, no time 8 and no surgical material 1 in a total of 12 cases (27.3%), while non-preventable causes accounted for not found 4, not fasting 3, cardiac causes 6, smoking 1, patient refusal 4, fever 2, high blood pressure 9, unknown 1, respiratory problems 1 and uncontrolled diabetes mellitus 1 in a total of 32 cases (72.7%). No time reason was responsible equally in both consultants 50% (P>0.05).

DISCUSSION

Inourstudy, total thoracic cancellations were 8.96% which are similar to other international studies. Schofield et al showed that cardiothoracic postponement frequency was over 8% and was mostly due to facility causes (no operating time and no postoperative bed).[5]We found preventable causes in our study to be 27.3% and non preventable causes equal to72.7% of total causes of cancelation. Preventable causes were attributed to shortage of operating theater time and non preventable causes to uncontrolled hypertension and cardiac disease. This can be corrected by overcoming the preventable causes of cancellations by proper usage of operating theater time and increasing working theater days, also by increasing awareness of surgeons for the time needed to fulfill the surgical intervention as they used to under estimate it.

On the other hand, surgeon's related causes in our study were 22.7% and anesthetist related causes were50%of total cancellations. This can be attributed to improper evaluation and optimization of patients prior to surgery with lackof preoperative anesthesia evaluation as it was done on operating table. Preoperative evaluation clinics can reduce the frequency of last minute postponement for medical causes. This allows early discovery of co morbidities and permits time for pharmacological procedures, reducing expenses, morbidity and hospitaladmission.[4]

Translating the frequency of surgery postponement on the day of surgery is extremely difficult due to the range of causes: patient causes, inadequate workup and non-organized preoperative preparation. Surgeons of ten underestimate the interval period. The elective surgery postponement rate is a guide of theatre effectiveness. Lessthan5% is recommended.[6]InNew South Wales, Australia, the

rate of postponement was less than 2%,postponement due to medical causes was less than 1%.[7]Hospitals will not decrease the frequency of cancellations unless they handle every issue in the process. As failure of patients to present due to doubts and fears, solution in the USA is to charge patients for failing to present, which cannot be applicable in our region.

Surgical postponement must be considered as adverse events and monitored routinely in hospitals clinical incident monitoring system. Postponement could have deep effect on the outcome of patients regarding mortality and morbidity. Law rent schuket al had showed a high morbidity in patients who waited longer time for elective laparoscopic cholecystectomy.[8]Each hospital has its special service, staff, demographics, work pattern and culture. If the atre time is not used logically, the resources will be lost with effects on patient's care.[9]Improper utilization of theatre time could cause postponement of interventions which are expensive to patient and hospital.[10] Preventablereasons for cancellations can be reduced for the good usage of theatre time.[11]

Inadequate preoperative preparation has been considered as a major reason for postponement. This problem can be decreased by keeping good communication between anesthetist and surgeon. This issue was the cause of delay and not cancellation in other study.[12] The average expenses of theatre time is 175 US dollars per hour. This is ahugeinte rest for hospital administration.[12] The most important limitation of this study is that it was retrospective.

CONCLUSION

Causes of cancellations in our division were attributed to medical and non-medical issues. Thoracic surgery cancellation causes and anesthesiologist related reasons were equal in incidence with least frequent to respiratory problems. Recognition of the frequent causes for postponement of operations will enhance theatre use by anticipating those issues and may help in finding solutions to this problem.

RECOMMENDATIONS

Proper pre admission evaluation of medical condition of patients scheduled for operation and proper pre operative anesthesiologist evaluation by means creation of anesthesia pr operative clinic may be helpful. Proper communication with patients to show importance of time to follow pre operative regulations should be done. Proper communication between surgeons and anesthesiologist with the support of administration can improve this situation considerably.

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REFERENCES

1. IvarssonB, KimbladPO,SjobergT, Larsson S.Patient reactions to cancelled or postponed operations.J NursManag2002;10:75-81.
2. VenkataramanS, SriramK.Cancelled elective surgery: study in an Indian corporate hospital.Indian JSurg 1997;59:372-6.
3. DufekS, GaucherE, GialanellaJ.The totalquality process applied to operating rooms and other clinical Processes.Surgery 1993;113:255-9.
4. Chiu CH, Anna Leo, Chiu PT.Cancellation of elective operations on the day of intended surgeryina Hong Kong hospital: pointprevalence and reasons.Hong Kong Med J 2012;18:5-10.
5. Schofield WN, Rubin GL, Piza M,Lai YY, Sind Hussake D, Feamside MR, et al.Cancellation of operations on the day of intended surgery at a majorAustralian referral hospital.Med JAust 2005;182:612-5.
6. MacarioA.Are your hospital operating rooms efficient?A scoringsystem with 8Performance indicators.Anesthesiology 2006;105:237-40.
7. Preprocedure preparation toolkit. Sydney: NSW Department of health website:<http://www.health.nsw>.Gov.au/policies/gl/2007/GL2007_018.html.Accessed 1Mar 2010.
8. Law rent schuk N, Hewitt PM, Pritchard MG. Elective laparoscopic cholecystectomy: implications of prolonged Waiting times for surgery.ANZ J

Surg2003;73:890-3.
9. Lacqua MJ, Evans JT. Cancelled elective surgery: an evaluation. Am Surg1994;11:809-11.
10. Gordon T, Paul S, Lyles A, Fountain J. Surgical unit time utilization review: resource utilization and Management implications. J Med Syst1988; 12:169-79.
11. Wildner M, Bulstrode C, Spivey J, Carr A, Nugent I. Avoidable causes of cancellations in elective orthopedic surgery. Health Trends 1991;23:115-6.
12. Jonnalagadda R, Walrond ER, Hariharan S, Walrond M, Prasad C. Evaluation of the reasons for cancellations and delays of surgical Procedures in a developing country.IntJClinPract2005;59:716-20.