



ORIGINAL RESEARCH PAPER

Surgery

CRITICAL ANALYSIS OF CANCELLATION OF OPERATIVE PROCEDURE IN OPERATION THEATRE OF A TERTIARY CARE HOSPITAL

KEY WORDS: Cancellation, Surgery , Operation Theatre , Reasons

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ABSTRACT

Introduction: Unanticipated cancellation of scheduled elective operations decreases theatre efficiency and is inconvenient to the patients, their families and the medical teams.

Materials and Methods: This was a retrospective study. Scheduled elective general surgical procedures were reviewed from theatre records from Jan 2015 to Dec 2017.

Results: Out of 6211 scheduled surgeries, 509 (8.2 %) were cancelled. The most common category for cancellations was surgeon related 234 (46 %), followed by administrative 101 (20 %), Anaesthetic workup related 71 (14%), patient related 62 (12 %) and medical causes 41 (8.05 %). Case cancellations can be reduced by improving preoperative assessment, proper scheduling of cases and better interdepartmental coordination. The study revealed hospital is oversubscribed and utilized. Most operations were cancelled at 24-h notice. The patients and the relatives feel angry, disappointed, frustrated, and anxious. In our study, 8.2% operations were cancelled. Shortage of operating time (46 %) was the most important factor of cancellation of elective operation in this study. A lot of OT time were wasted due to late starts, time between cases, preparation and cleaning OTs, and delayed transportation of patients to OT.

Conclusions: Similar reasons for cancellations have been reported in studies from around the world. By knowing the reasons, appropriate steps can be implemented to reduce the rate of cancellations to a minimum.

Introduction

Operation theater (OT) is the core department of a hospital requiring considerable human resources and expenditure from hospital budget. Cancellations of planned surgical procedures have been a major and long-standing problem for healthcare organisations across the world. They represent a significant loss of revenue and waste of resources, have significant psychological, social and financial implications for patients and their families and represent a significant loss of training opportunities for surgical trainees. By knowing the reasons, appropriate steps can be implemented to reduce the rate of cancellations to a minimum. Operative cancellations were defined as those patients that were scheduled in the operative list, were shifted to the OR but did not have the planned surgery on the intended date.¹

The reported incidence of cancellation of operative procedures in different hospitals ranges from 8 % to 42%. There are many reasons of cancellation of elective surgical cases; and they differ from hospital to hospital. Unexpected operating room (OR) cancellations are traditionally divided into avoidable cancellations (e.g., scheduling errors, equipment shortages, and cancellation due to inadequate preoperative evaluation) and unavoidable cancellations (e.g., emergency case superseding the elective schedule, unexpected changes in the patient's medical status, or patient nonappearance)². The most common factor which has led to cancellation is lack of OR time.³

The aim of this retrospective study was to analyze the causes of cancellation of elective procedures in a multidisciplinary 600 bedded multispecialty public hospital and to suggest measures for optimal utilization of OR time in Delhi NCR.

Objectives

The objectives of the study were :

- (a) To study the reason for cancellation of surgery in operation
- (b) To suggest measures for optimal utilization of OR time.

Material & Methods

This was a retrospective cross-sectional study of all types of elective surgical procedures . Scheduled elective general surgical procedures were reviewed from theatre records and MRD from Jan 2015 to Dec 2017, were audited retrospectively. The overall cancellation rate was calculated from the total number of cancellations divided by the total number of scheduled cases. The

cancellation rate by surgical specialties was reported as mean and 95% CI by the Wilson method using Confidence Interval Analysis software 2.1.2 (Trevor Bryant, University of Southampton, UK) and compared using Chi squared analysis. The level of significance was set at P<0.05. The number of operation cancelled and reasons for cancellation were documented. Data were compiled, entered in Microsoft Excel sheet & by using SPSS version 19 and analyzed by descriptive statistics.

Results:

All data were analyzed by using Microsoft Excel sheet & by using SPSS version 19 and analyzed by descriptive statistics. The reason were grouped in 5 different groups as under :

1. Surgeon related Causes of OT Cancellation
2. Medical Causes of OT Cancellation
3. Administrative Causes of OT Cancellation
4. Anaesthesia related causes of OT Cancellation
5. Patient related causes of OT Cancellation

These causes were studied in details. Their solutions were asked from various user to overcome these problems.

The Surgeon related Causes of OT Cancellation were the most common causes . Among these causes , the most important reasons were Surgeons did not show up and Time constraints as shown in table no 1.

Table 1: Surgeon related Cause of OT Cancellation

Surgeon related Causes of OT Cancellation	Number	Percentage
Surgeons did not show up	76	32.47
Time constraints	52	22.22
Emergency case was operated in the night so OT Started late in morning	26	11.11
Emergency surgery during the elective list	18	7.77
Improper preoperative patient preparation	14	5.98
Wrong diagnosis/decision	8	3.41
Workup pending	8	3.41
Changes in surgical plan	8	3.41

Scheduling error	6	2.56
Non-availability of beds in the recovery room	6	2.56
Surgery postponed by surgeons	4	1.7
OT Fumigation done	4	1.7
No senior surgeon available	4	1.7
Total	234	100%

Medical Causes of OT Cancellation also were studied and found in considerable number. Hypertension and low haemoglobin were the main reason for cancellation of OT as shown in Table no 2.

Table 2: Medical Causes of OT Cancellation

Medical Causes of OT Cancellation	Number	Percentage
Hypertension	15	36
Bleeding/ low Hb	13	31.7
RTI	8	20.13
Loose motion	2	4.87
Hypotension	2	4.87
Fever	1	2.43
Total	41	100%

Administrative Causes of OT Cancellation are the second most group of cause for OT cancellation. Most of them were preventable as shown in Table no 3.

Table 3 : Administrative Causes of OT Cancellation

Administrative Causes of OT Cancellation	Number	Percentage
Over subscription	37	36.64
Notes unavailable	15	14.85
Equipment not available	13	12.87
Acute disruption of water/electric supply	5	4.95
Function in Hospital (Annual Day)	5	4.95
Lack of surgical linen	5	4.95
An emergency procedure taken up for this case	4	3.96
Blood not arranged by attendants	4	3.96
Equipment failure	3	2.97
Unwillingness from patient	3	2.97
Lack of beds	2	1.98
Notes unavailable	2	1.98
OT Light not functional	2	1.98
Implant support from company not available	1	0.99
Total	101	100%

Anaesthesia related causes of OT Cancellation are most critical issues which can be overcome easily as shown in table no 4. Paucity of time (lack of theatre time) and Improper pre-anaesthetic check-up can easily be controlled by proper scheduling and training of young anaesthetist for pre anaesthetic check up.

Table no 4 : Administrative Causes of OT Cancellation

Anaesthesia related causes of OT Cancellation	Number	Percentage
Paucity of time (lack of theatre time)	33	46.47
Improper pre-anaesthetic check-up	11	15.52
List transfer	6	8.45
OT manager Software non functional	6	8.45
Operation needed to be done by a different surgeon	5	7.04
Anaesthetic agent not available	4	5.63
Operation no longer necessary	3	4.22
Patient needed another operation first	3	4.22
Total	71	100%

Patient related causes of OT Cancellation are the problem which indicate communication system of hospital is not appropriate as shown in Table 5 . Patient treated already

during the waiting period and hospital don't get information and Patient condition become critical after admission are the main reason in this category.

Table no 5: Patient related Causes of OT Cancellation

Patient related causes of OT Cancellation	Number	Percentage
Patient treated already	8	12.95
Patient condition become critical after admission	8	12.90
Patient did not turn up	6	9.67
Patient not ready (patient not adequately prepared or necessary test or referral not undertaken)	6	9.67
Patient shifted late from ward	6	9.67
Patient not aware of appointment	5	8.06
Patient not starved	5	8.06
Patient refused consent	4	6.45
Pre-operative instructions not followed	4	6.45
Patient reported late	4	6.45
Patient given wrong admission letter	4	6.45
Patient did not report in OT	2	3.22
Total	62	100%

Discussion

The elective case cancellation rate on the day of surgery is an indicator of operating theatre efficiency. Although there is no consensus on the acceptable case cancellation rate when defining efficient operating theatres, less than 5% is generally recommended⁴.

In New South Wales, Australia, the benchmark for booked patient cancellations on the day of surgery (for any reason) was less than 2%, cancellation due to a medical condition was set at less than 1% and for patients not attending on the day of surgery it was less than 0.5%.⁵

If operations are cancelled, OTs are underused; efficiency is jeopardized, waiting list increases, and cost rises .The study revealed hospital is oversubscribed and utilized. Most operations were cancelled at 24-h notice. The patients and the relatives feel angry, disappointed, frustrated, and anxious. In our study, 8.2% operations were cancelled. Shortage of operating time (46 %) was the most important factor of cancellation of elective operation in this study. A lot of OT time were wasted due to late starts, time between cases, preparation and cleaning OTs, and delayed transportation of patients to OT.

Recommendation

1. Avoidance of late starts can be achieved by cooperation from anesthesiologists' and surgeons⁵.
2. A team approach, in presence of efficient theater In-charge, can improve OT management.
3. A diversity of staff work in operation theatre and conflicts among them can lead to inefficiency⁷.
4. A good administrator can improve scheduling; reduce time spent preparing/cleaning and handle resources better.
5. Overlapping induction, i.e., induction of anesthesia with an additional team while the previous patient⁸.
6. Appropriate preoperative anesthesia assessment in preanesthesia clinics.
7. The OT list should be made judiciously to avoid under or over utilization of OT facilities.
8. The requirement of the instruments/drugs/other equipment necessary for scheduled surgical list should be discussed among surgeon, staff nurse, and the anesthesiologist a day prior to planned OT list⁹.
9. A formal liaison with the physicians and by improving communication between patient, doctors, and nurses to decrease the cancellation of OT under medical cause.
10. Quality improvement strategies are needed to reduce same-day cancellation of surgical procedures
11. Efforts should be made to improve patient communication

- and facilitate their compliance with scheduled procedures¹².
12. Implementation of an integrated preoperative preparation system may significantly decrease the rate of same-day-intended surgery case cancellations.

Conclusion:

This audit highlight that most causes of cancellation of operations are avoidable, efforts should be made to prevent cancellation of surgery by careful planning, bearing in mind the local constraints in human and material resources. Case cancellations were mainly due to facility factors, such as no operating room time being available.

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References

1. Farhanul Huda, "A Retrospective Analysis of Reasons for Cancellation of Elective Surgery in a Teaching Hospital". *Int J Sci Stud.* 2014;2(2):28-30.
2. Kumar R, Gandhi R. Reasons for cancellation of operation on the day of intended surgery in a multidisciplinary 500 bedded hospital. *Journal of Anaesthesiology, Clinical Pharmacology.* 2012;28(1):66-69. doi:10.4103/0970-9185.92442.
3. .El-Dawlatly AA, Turkistani A, Aldohayan A, Zubaidi A, Ahmed A. Reasons of Cancellation of Elective Surgery in a Teaching Hospital. *Intern J Anesthesiol.* 2008;15:2
4. Macario A. Are your hospital operating rooms "efficient"? A scoring system with eight performance indicators. *Anesthesiology* 2006;105:237-40
5. Pre-Procedure Preparation Toolkit. Sydney: NSW Department of Health website: http://www.health.nsw.gov.au/policies/gl/2007/GL2007_018.html . Accessed 1 Mar 2018
6. Pandit JJ, Carey A. Estimating the duration of common elective operations: Implications of operating list management. *Anaesthesia.* 2006;61:768-76
7. Zafar A, Mufti TS, Griffin S, Ahmed S, Ansari JS. Cancelled elective general surgical operation in Ayub teaching Hospital. *J Ayub Med Coll Abbottabad.* 2007;19:64-6.
8. Hanns R, Buttergreit BB, Tonner PH, Bein B, Schleppers A, Steinfath M, et al. Overlapping induction of anaesthesia: An analysis of benefits and costs. *Anesthesiology.* 2005;103:391-400.
9. Garg R, Bhalotra AR, Bhadoria P, Gupta N, Anand R. Reasons for Cancellation of Cases on the Day of Surgery-A Prospective Study. *Indian J Anaesth.* 2009;53:35-9
10. Paschoal ML, Gatto MA. Rate of surgery cancellation at a university hospital and reasons for patients' absence from the planned surgery. *Revista Latino Americana Enfermagem.* 2006;14:48-53.