AVOIDING SURGERY DAY CANCELLATION BY FINDING PREVENTABLE CAUSES – A TWO YEARS EXPERIENCE

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ABSTRACT

Objective: To present 2 years' experience of working at operating room Armed Forces Institute of Urology finding the causes for surgery cancellation.

Study Design: Retrospective observational study.

Place and Duration of Study: Armed Forces Institute of Urology, Rawalpindi, from Sep 2016 to Sep 2018.

Methodology: The authors retrospectively reviewed operation theatre record of two years finding all cancelled cases. The cases cancelled on each operation day were enlisted for the study while entering the cause of negation. The factors contributing cancellation were separated to patient related and hospital related. These hospital and patient related factors were further divided into avoidable or unavoidable category. "Avoidable" was defined as a cancellation due to circumstances or information that existed prior to the day of surgery and could have been avoided with adequate review or communication by the medical staff before the date of surgery and can be prevented by preemptively addressing the components contributing to cancellation. Similarly unavoidable factors are those factors which are beyond human control and cannot be eliminated but reduced to minimum.

Results: A total of 584/10,000 (5.84%) cases were cancelled on the day of surgery. Avoidable cancellations were found in 359 (61.5%) cases versus 225 (38.5%) of unavoidable causes. Of the avoidable cancellations, 18% were hospital related versus 43% were patient related causes. Of the avoidable, hospital related cancellations, the most common event were related to poor preparation of the patient, scheduling error and poor surgical decision. The unavoidable hospital related causes were 65 (11%) versus patient related 160 (27%).

Conclusions: A thorough pre anesthetic checkup, optimization of concurrent conditions and discussing next day operation list may minimize the surgery cancellation rate.

Keywords: Contributing factors, Case cancellation, Efficiency, Operating room efficiency, Perioperative care.

INTRODUCTION

Operating rooms are the largest source of revenue generation department in the hospital while spending the highest cost[1]. They achieve this excellence by smoothly runningtheir operation list[2]. Despite utilizing all efforts to avoid, cancellations of elective surgical cases is a quite often in our hospitals which increases sufferings and inconvenience ofpatients andfamily[3]. The routine of cancellation affects operating room productivity, and staff efficiency underutilizing the available resources[4,5]. Moreover cancellation exerts extra burden on hospitals causing loss of revenue having extra impact on annual budget. The case cancellation rate and causes varies among hospitals as well as countries[6-9]. Some studies have suggested that lack of available surgery resources was the common cancellation cause. While others have reported that resource planning and scheduling were the major consideration. The patient issues, workup related, facility reasons, planning issues, medical reasons, anaesthesia related causes, and surgeon related are the most common reasons for cancellation. All these causes have been divided into avoidable and unavoidable causes. All efforts should be exercisedto reduce avoidable causes. Most of the studies relating this topic have been carried out aiming for reducing the cancellation rate of elective casesbutit still occurs and it's multifactorial. 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.

METHODOLOGY

After hospital ethics committee review approval, we retrospect 24 months (Sep 2016-Sep 2018) operation list for surgery cancellation data collection. Our facility lets inonly urology procedures including living related renal transplant. The majority of cases came to operating room after pre anaesthetic evaluation (>70%) and if needed are sent to various facilities for further evaluation and optimization. Pulmonary functions tests

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and cardiac evaluation is done in patients having underlying disease for elective cases of known history of illness or incidental finding. Our patients are given operation date once they are declared fit in pre anaesthesia clinic. Elective surgeries are rarely cancelled due to operating room non availability once they are scheduled. The operation list is finalized by the consultant urologist a day before surgery while consulting the operation date record diary maintained at OPD by a single person. Emergency cases are accommodated in between the elective surgeries after discussion with anaesthetist. All cases suffering from Hepatitis B and Hepatitis C virus positive lab tests are operated at the end of negative cases.

All cases cancelled on operation day were recorded in a database mentioning common reasons for cancellation table-I. Once confirmed cancelled, patients were sent to ward or home depending upon the cause of illness while endorsing the reason for not operating and record was maintained for this cancellation. "Avoidable" was defined as a cancellation due to circumstances or information that existed prior to the day of surgery and could have been avoided with adequate review or communication by the medical staff before the date of surgery. Further, the reasons for cancellation were divided into hospital versus patient related causes. Data was analyzed in SPSS version 21. Descriptive statistics were used to summarize the data like frequency and persantage.

RESULTS

During the study period, 10000 cases were scheduled for the surgery. Of the elective surgery performed during the study period (including elective cases added on the day of surgery), our working hours were 8am to end of operating list (average 6-9pm) from Monday to Friday. Of the total cases during this period, 5.84% (584/10,000) were cancelled due to different causes. Therefore, 584 cases were available for analysis (table-II).

Out of 584 cases 359 cases were avoidable and rest 220 cases were unavoidable. Hospital related cancellations were 29.45% and 70.55% were patient relatedand largest in number. Of the avoidable, hospital related cancellations (upper left quadrant, table-II), the most common event were cases that were cancelled due to poor surgical decision 17 (2.9%), incomplete medical evaluation 100 (17%), poor preparation 50-8 (56%) and scheduling error 40-6 (84%). An additional 45 (7.7%) cases were cancelled due to non-availability of blood. Incomplete surgical and medical evaluation together represented 100 cases in this subset. The greatest numbers of cancellations were deemed avoidable and patient related (252 lower left quadrant, table-II). Of the 252 cases in this category, 100 (39.7%) were cancelled due to incomplete medical evaluation. Abnormal lab values (e.g. abnormal prothrombin time or potassium level) resulted in 90 cancellations (56%). There were 35 (5.9%) cancellations due to patient non appearance.

Table-I: Common causes of case cancellation.

Common Causes of Cancellation
Incomplete Medical evaluation
Laboratory tests not available
List beyond capacity/overbooked cases
Surgeon not available
Further evaluation/optimization required
Incidental finding demanding further evaluation
Poor work up
Financial problem
Equipment failure
Blood not arranged
Impossible IV access
Patient not reported

Table-II: Case cancellation.

	Avoidable	Unavoidable	Total
Hospital related	Poor surgical decision (17) Poor preparation (50) Scheduling error (40)	Surgeon not available (40) Equipment related problem (25)	107 ± 65 = 172
Patient related	Incomplete medical evaluation (100) Patient not admitted (35) Patient not NPO (19) Incomplete investigations (53) Blood not arranged (45)	Medical status has changed (30) Abnormal lab reports (90) Family issues (8) Financial issues (20) Impossible IV access (5) Patient refusal (7)	252 ± 160 = 412
n=584			584

Family related issues 8 (1.36%) and refusal on the day of surgery accounted for 7 (1.1%) of the cancellations. Examples of these cases include family members who became ill, unexpectedly couldn't travel to be with the patient, or at that last minute decided to cancel surgery or road blockade. Unfortunately equipment failure 25 (4.28%) and blood not arranged has led to cancellation of 45 cases (7.7%). There were 40 (6.8%) cases being scheduled on operation list but not operated due to non-availability of surgical specialist.

DISCUSSION

The problem of surgery day cancellation is complex and solution is multifactorial. Avoidable factors of

cancellation are the factors which can be minimized by improving hospital systems whereas unavoidable are beyond human control. The rate of case cancellation varies among different hospitals and depends on hospitals practices. Moreover it is different in primary care or tertiary care hospitals, Asian or European countries. While inevitable, the cancellation rate can be minimized by improving factors, like through preoperative evaluation, optimization of concurrent medical conditions, keeping backups of equipment and discussing the surgical list a day before operation. Another important factor is not considering emergency surgical cases which can delay or cancelroutine elective cases. Despite practicing all measures some cancellation of surgery will occur and inevitable. When defining efficient operation theatre, there is no consensus on the acceptable rate of cancellation but the rate ranged from 1.96-24%[11-14] and is the generally recommended acceptable rate of case cancellation[15,16]. However, most believe that <5% would be an acceptable rate; nevertheless, a rate of <2% was reported in one study[17]. The cancellation rate in our study was 9.3%, compared to the rates in Saudi 11.1%, Lebanon 4.4%, Jordan 3.6% and Hong Kong 7.6%[18-20].

Most common avoidable and patient related reason for surgery cancellation in our study was poor preparation of medical conditions like hypertension, followed by other factors. Hypertension was also the most common reason for cancellation by the anesthetist. The range of readings was between 220/140 and 180/120 before cancellation despite sedating the patient. We follow the criterion that if high blood pressure is not associated with end organ damage and is due to or anxieties then we operate. On the other hand if the patient has not taken medicines on operation day and blood pressure is high causing organ damage and surgery calls for blood pressure control then we postpone surgery. The reasons behind high blood pressure readings were not looked into in our study.

The reason for overbooking a surgical list was abundance of elective cases[21], in our setups which is almost similar in different studies. Poor control of medical conditions was either due to lack of education of patients, poor communication between patient and doctor or poor referral system. Moreover few investigations were given appointment of few weeks/months but patient was placed on operation list.

We recommend dealingdifferent factors that contribute to "long list" in our setups like discussing each case before placing his/her name on OR list, focusing on actual time of starting the case, time takenbetween different cases and anesthesia set-up time. Although discussion was a routine for next day surgery list in our hospital but in sketchy manner. Moreover surgery performed by experienced surgeons takes short time compared to trainee doctors making a big difference[22].

Cardiology consultation was the third common cause of cancellation, 38 (9%) and few patients were cancelled because they were taking antiplatelet having chances of bleeding during surgery of TURP. The new changes in the medical conditions of patients were also a cause of cancellation like developing sepsis, increasing urea, createnine and hyperkalemia calling for dialysis. Nonappearance, insufficient work up, inoperability or wrong surgical plan was also noticed in patient related factors. Equipment failure, poor back up of different utilities in OR and non-availability of surgeon was among the hospital related factors which can be reduced. Few surgical cases incurcomplications taking long time for management and result in cancelation of other cases.

Weakness of our study is its retrospective design and restricted to urology related surgery. The financial impact of surgery cancellation was also not calculated in this study. The rate of surgery cancellation can be minimized by discussing the patient as well as hospital related factors among stake holders running hospital and OR. Despite the variation of causes for cancellation, the two most important factors to be addressed are mandatory pre anaesthesia evaluation and final review of cases, a day before surgery by senior surgeon.

CONCLUSION

A thorough pre anaesthetic checkup, optimization of concurrent conditions and discussing next day operation list may minimize the surgery cancellation rate.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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