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ORIGINAL ARTICLE

AUDIT OF CANCELLATION OF ELECTIVE SURGERIES IN A TEACHING HOSPITAL IN SOUTH INDIA

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ABSTRACT: BACKGROUND: Cancellation of scheduled surgical procedures is an issue of healthcare quality as well as a major cause of waste of health resources. This results in emotional trauma and inconvenience to the patients and their families. **AIM**: The objective of this audit was to find out the prevalence and causes of cancellation so that solutions can be made out to improve the quality of healthcare. **SETTINGS AND DESIGN**: It was an observational study carried out in 400 bedded Teaching hospital in South India. **METHODS AND MATERIALS**: Elective surgeries scheduled in 400 bedded teaching hospital were studied from June 2014 to January 2015. On the day of surgery, the completed surgeries that were scheduled and the list of cancellations with the reason for cancellation were entered in separate registers, by the anaesthesiologist. **STATISTICAL ANALYSIS**: These data were analysed using Epi info software version 7. **RESULTS**: 2067 patients were scheduled for surgeries out of which 269 got cancelled resulting in 13.01% cancellations. The most common cause of cancellation was lack of operating time which was 43.12% of cancelled cases. **CONCLUSION:** Most of the reasons for cancellation were avoidable by judicious scheduling of lists and careful planning by the team involved in surgeries.

KEYWORDS: Cancellation, Elective surgeries, Reasons, Lack of operating time, Overscheduling of cases.

INTRODUCTION: Surgery remains one of the main modalities of treatment for some diseases and it is a team work involving the surgeons, anaesthesiologists and paramedical staff requiring a lot of planning and preparation. All patients scheduled for surgery undergo pre anaesthetic checkup well before surgery. Last moment cancellations of scheduled surgeries are arguably an issue of health care quality as well as a major cause of waste of health resources.[1] The resulting prolonged hospitalization causes anxiety, frustration, anger, emotional involvement and inconvenience to patients and their families,[1] quite apart from increasing the cost in terms of working days lost and disruption to daily life.[1,2] The simplistic approach to solve the problem of late cancellations focuses on finding the reasons for these cancellations, and then to provide a solution for each cause individually, or collectively for all identified causes. The rates and causes of cancellations are diverse and differ from one hospital to another.[3]

Between 10% and 40% of booked elective operations may be cancelled before surgery takes place.[1,2,3,4,5] The most common cause of cancellations was lack of theatre time (i.e. over-running operating lists).[2,3,4,6,7] The other reasons include cancellation due to patient factors, cancellation for poorly optimized medical conditions, or cancellations due to administrative reasons.[2,3,4,6,8] An operating list may over-run because of delayed starts, slow turnover, unanticipated surgical/ anaesthetic problems or staff shortages.[9] Many of these are difficult to quantify. This study was designed to find out the prevalence of and the reasons for last minute cancellations of elective surgeries to offer better services by effective utilization of theatre resources.

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METHODS AND MATERIALS: This was an observational study carried out in a 400 bedded teaching hospital in South India for a period of 8 months from June 2014 to Jan 2015. It involved 4 operating rooms which undertook surgical procedures covering the disciplines of orthopaedics, general surgery, urology, oral & maxillofacial surgery (OMFS) and ear, nose and throat (ENT) departments. Each of these specialities was allocated only two days in a week to use for elective surgery. The scheduled surgeries were performed in these operating rooms only from Monday to Saturday except public holidays, and every day between 9 am to 4 pm. At our hospital, all patients were evaluated in the pre-anaesthesia clinic well before surgery. High risk patients with poor general condition, co-morbidities, difficult airways and anticipated long duration surgeries were reviewed one day prior to surgery. The operating list scheduled for next day was prepared by the surgeons, and sent to the operating room by afternoon. A cancellation of the elective surgery was defined as any surgery that was listed previous day and that was not performed on that day. On the day of surgery, the completed surgeries that were scheduled and the list of cancellations with the reason for cancellation were entered in separate registers, by the anaesthesiologist. The data on patient age, sex, diagnosis, planned procedure, operating department and the reasons for cancellation were collected.

The reasons for cancellation were broadly classified as cancellation due to lack of operating time, patient related factors, administrative or technical reasons, medical reasons and manpower shortage. Surgeries not performed beyond operating hours due to late start, slow turnover, overscheduled list, unanticipated complications in surgery were all grouped as cancellation due to lack of operating time. Patient not turning up, not willing, not fasted or not prepared were all grouped under cancellation due to patient related factors. Failure of air conditioners, instrument failure, no water, no linen and non availability of drugs/suture materials were grouped under administrative/ technical reasons. Respiratory infections, acute exacerbation of chronic conditions, high blood pressure, high blood sugar, continuation of anticoagulants, electrolyte abnormalities, ECG (Electrocardiogram) changes and arrhythmias etc. were classified as cancellation due to medical reasons. Shortage of operating surgeons, anesthesiologists, staff nurses and other paramedical personnel was treated as manpower shortage.

ETHICS: As the study was considered departmental audit under quality assurance project, it did not require ethical approval.

STATISTICS: The data collected were coded, entered in excel sheet and were analyzed using EPI INFO software (version 7). The mean age and the sex wise distribution of the cancelled cases were determined. The total number of cancelled cases, the department wise cancellations and the reasons for cancellation were expressed in proportions.

RESULTS: There were total of 198 operating days and 792 operating tables during this study period. Total number of cases scheduled for elective surgery were 2067 out of which 1798 (86.98%) were operated. The total number of surgeries cancelled were 269 (13.01%) [Table 1]. The mean age of the cancelled cases was 41.49 with standard deviation of 16.6. Out of these cancelled cases, 175 were males and 94 were females. Out of an average of 10.4 cases scheduled per day, an average of 9 cases have undergone surgery and an average of 1.3 cases got cancelled.

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Among the cancelled cases, the maximum cancellations happened with the department of orthopaedics (41.64 %) and the minimum with department of OMFS (4.9%) [Table 2]. The department wise cancellations proportionate to their respective schedules were most in the department of orthopaedics (23.72%) and least with the general surgery department (8.5%) [Table 3].

The reasons for cancellation were depicted in Table.4. Among the reasons for cancellation, lack of operating time was the most common cause (43.12%), whereas the manpower shortage was the least common cause (3.35%).

Sl. No	Scheduled Cases	Frequency N	Percentage %
1.	Operated Cases	1798	86.98 %
2.	Cancelled Cases	269	13.01%
Total		**2067**	**100%**

Table 1: Cancellation of Cases

Department Cancelled	Frequency	Percent
1. General Surgery	83	30.86%
2. Orthopaedics	112	41.64%
3. Ear, Nose, Throat	35	13.01%
4. Urology	28	10.41%
5. Oral & Maxillo Facial Surgery	11	4.09%
Total	**269**	**100.00%**

Table 2: Distribution of Cancellation

Sl. No	Department	Operated Cases N (%)	Cancelled Cases N (%)	Scheduled Cases N (%)
1.	General Surgery	893 (91.49%)	83 (8.50%)	976 (100%)
2.	Orthopedics	360 (76.27%)	112 (23.72%)	472 (100%)
3.	Ear, Nose, Throat	336 (90.56%)	35 (9.43%)	371 (100%)
4.	Urology	172 (86.00%)	28 (14.00%)	200 (100%)
5.	Oral & Maxillo Facial Surgery	37 (77.08%)	11 (22.91%)	48 (100%)
Total		**1798 (86.98%)**	**269 (13.01%)**	**2067 (100%)**

Table 3: Department wise Cancellation of Cases

Reasons for Cancellation	Frequency	Percent
1. Lack Of Operating Time	116	43.12%
2. Patient Related Factors	77	28.62%
3. Medical Reasons	33	12.27%
4. Administrative/Technical Reasons	34	12.64%
5. Manpower Shortage	9	3.35%
Total	**269**	**100.00%**

Table 4: Reasons for Cancellation

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DISCUSSION: Last minute cancellations of elective surgeries result in dissatisfaction to the patients and their families in addition to the hospital resources being wasted. Though there is no consensus on the acceptable rate of cancellations of elective surgeries, the objective of healthcare system would be to keep it as low as possible. In our study the overall rate of cancellations was 13.01%, which is comparable to the rates reported in various studies. Abderrazak Sahraoui and Mohamed Elarref et al had reported 13.4% as the cancellation rate at Hamad General Hospital, Doha, Qatar in their study.[7] Some other studies also had similar results like 13.2% at a major Australian Tertiary Hospital,[6] 13.2% and 13.3% at a United States Californian Hospital [10] with 9% and 13% cancellations at United States Chicago Hospital.[11] Rakesh Garg et al had observed 30.3% cancellations in a government hospital in North India.[2] In a 500 bedded government hospital 17.6 % cancellations happened as per the study conducted by Rajender kumar et al.[4]

The commonest reason for cancellation found out in our study was lack of operating time (43.12 %). Many studies world over have also determined, lack of operating time as the main reason.[2,4,6,12,13,14]

Further analysis has revealed, overscheduling of cases, underestimation of the time consumed by the operating surgeon, surgeries being done by the inexperienced surgeons and trainees, teaching the residents, unanticipated complications of previous cases, were all the reasons for lack of operating time. Shortage of supporting staff leading to delay in providing necessary help to the operating surgeon, lack of assistants have also contributed to the lack of operating time. Slow turnover of cases due to the delay caused in cleaning in between surgeries, delay in shifting the patients out of operating room due to shortage of shifting attendants, poor coordination among the team and fatigue of staff due to continuous assisting of cases were also some of the reasons contributing to lack of operating time, similar to the observations from other studies.[5,6,13] Our hospital being a teaching hospital, some of the reasons for lack of operating time such as teaching and training the residents could not be avoided. However most of the other causes would have been avoided by proper planning, realistic scheduling, having adequate manpower and better coordination between the team.

Patient related factors was the second most common reason for cancellation contributing to 28.62% of total cancelled cases in our study. Abderrazak Sahraoui et al had noted in his study that 55.8 %of cancellations were due to patient related factors.[3] HA. Ezike et al had stated that 25.3% cancellations were caused by patients.[8] Ulla Caesar et al had observed that 33% of cancellations were due to different patient-related factors.[15]

Poor preparation, apprehension and sudden worsening of existing comorbid conditions were all found out to be the reasons for not turning up to the operating room in inpatients whereas the same could not be ascertained for outpatients. Patients not willing for surgery at the last moment could be due to fear, unfavorable conditions in the family or lack of awareness about surgeries. Better communication to instill confidence in the patients by the surgical team would have prevented these reasons.

Ulla caesar et al concluded in his study that, preparing the patients well before surgery had resulted in fewer cancellations on the day of planned surgery. In his study 2% of the patients never showed up at the booked appointment for surgery.[15] Similar findings were reported in other studies too.[2,11,16,17] Pre-operative instructions not being followed or patients not being instructed adequately are issues that can be improved in order to reduce cancellations.[14,15] Paschoal et al reported that

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54.3% cases of the total cancelled cases were due to absenteeism of the patient because of unawareness of the date of surgery, clinical problems like respiratory tract infections and socioeconomic reasons.[18]

12.64 % of total cancellations in our study were caused by administrative or technical reasons such as air conditioner failure and instrument failure which are at times beyond our control. Though power failure,[8,19] water failure, non-availability or shortage of sterile linen, surgical equipments, drugs were all stated to be the reasons for cancellation in some hospitals,[5] those issues were not reported in our hospital during this period. HA. Ezike et al and Garg R et al had independently reported in their studies that linen shortage could be the reason in some patients.[2,8]

Medical reasons such as worsening of preexisting conditions such as hypertension, diabetes, patients not discontinuing anticoagulants, electrolyte abnormalities, respiratory infections, cardiac events such as arrhythmias, ECG changes on the day of surgery have all resulted in 12.27 % of cancellations in our study. Though patients undergo pre anaesthetic checkup well in advance, some of the conditions may worsen especially when there is long gap between assessment and scheduling of cases or poor control when there is less time for adequate preparation of patients.[7] Overburden, fatigue, noisy environments near pre anaesthesia clinic may lead to missing of certain findings during assessment which may be detected on the day of surgery causing last moment cancellations.

Dimitriadis PA et al had proved that 33.73. % of cancellations were due to medical reasons.[20] Chamisa et al had also explained that medical reasons contribute to 65.1% of cancellations.[21] Medical reasons contributing to cancellations were reported in other studies too.[2,12]

Unavailability of staff was also reported to be an important problem in other studies,[22] whereas it had contributed less cancellations (3.35 %) in our study.

Miscellaneous factors such as emergency surgery during elective list,[5,12,13] lack of beds[6] and late start of operating room[23,24] were also reported whereas we did not face such problems.

In our study orthopaedics, OMFS and urology departments had maximum percentage of cancellations compared to ENT and general surgery. In three other studies orthopaedics, urology and gynaecology had maximum cancellations.[22,25,26] However PL Chalya et al in his study observed General surgery department had more cancellations.[5] Department of ENT had maximum cancellations in a study conducted by Schofield WN et al.[6]

Though the exact reason was not clear why certain departments had more cancellations in our study, possibly shortage of surgeons in these departments, underestimation of the time taken for surgeries and unrealistic scheduling forced by factors such as the mounting backlog of waitlisted patients or the fear that some scheduled cases might get cancelled due to medical reasons, could have been the causes for lack of operating time, as in other studies[9].

The medical, administrative and patient related reasons as described above were all common for all departments. Regular periodic audits of this kind will throw more light into the patterns and variations of reasons for cancellations.

CONCLUSION: Though the overall rate of cancellation is much less compared to other studies, most of the reasons for cancellation were avoidable. Better preoperative planning and coordination, realistic/judicious scheduling of cases, improving manpower availability and good administration will all result in effective utilisation of resources and avoid hardship to the patients. Periodic conduct of such audits and rectification of shortfalls will improve healthcare delivery.

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