

Causes of Cancellation for Elective Orthopedic Procedures on the Day of Surgery in a Large Tertiary Care Teaching Hospital

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Abstract: The most expensive department of any hospital is the operation theatre. Its capacity often limits the amount of surgical work that can be carried out. The inefficient use of OT's time and waste of resources is a loss for organization. Apart from economic loss to hospital, it is also stressful for patients and their families. All of these increase patient's therapeutic expense. Avoidance of cancellation of elective surgery, therefore should lead to reduction in the overall cost of treatment. This audit was a retrospective study in a medical teaching hospital. The aim was to assess the causes of cancellation of orthopaedic procedures scheduled on day of surgery and to suggest measures so that there can be optimum utilization of manpower and resources. This in turn will help in making appropriate recommendations in interest of patients to avoid such cancellations.

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I. Introduction

The operating theatre is one of the most expensive departments of any hospital. Its capacity often limits the amount of routine surgical work that can be carried out. Surgeons therefore have a responsibility to ensure that theatre facilities are used as fully as possible, and also that good use is made of the operating time in the theatre. Cancellations of operations leads to prolonged hospital stay and in many cases repetition of various aspects of pre-operative preparation(1). Apart from economic loss to hospital, it is also stressful for patients and their families.

Studies show that a total of 10 to 40% of booked elective operations are cancelled before the surgery takes place. The reasons include cancellation by the patient, cancellation for poorly optimized medical conditions or cancellations due to poor organization, lack of co-ordination among the surgical team and the anaesthetist, or sometimes poor co-ordination between the patient and the hospital administration(2).

A variety of studies have examined the reasons for late cancellations based on the retrospective analysis of hospital records. This audit was a retrospective study in a medical teaching hospital. The aim was to assess the causes of cancellation of orthopaedic procedures scheduled on day of surgery and to suggest measures so that there can be optimum utilization of manpower and resources. This in turn will help in making appropriate recommendations in interest of patients to avoid such cancellations.

II. Material And Methods

This study was performed in an Orthopaedic Operation Theatre at a tertiary care teaching hospital over 6 months period from 1 December 2015 to 31 May 2016. The orthopaedic operation theatre is a complex of 3 operation rooms. This was a retrospective study of all elective orthopaedic surgical procedures. Total 1947 patients were posted for elective orthopaedic operations. The operation list is prepared by the surgeons before 3:00 P.M. This audit was analysed by the findings from the cancellation notes in the Operation Room (OR). A cancelled case was defined as a scheduled elective surgery that was cancelled on the day of surgery after the release of the operation list at 3:00 P.M. on the previous day. The overall cancellation rate was calculated from the total number of cancellations divided by the total number of scheduled cases. In addition, the durations of surgical procedures were analysed to get a more realistic picture of the actual time taken in order to improve scheduling of surgery.

There was no proper record of the estimated time at scheduling the list and the actual time taken for that surgery in our study. 23 commonly performed surgeries were analysed which formed 70% (1367) of the total elective surgeries (1947) scheduled during the study period. The time taken for all these surgeries were collected from the operation theatre register which actually included the time for induction of anaesthesia i.e., the time at which the patient enters the operating room (table start time) and the time at which the patient is brought out of the operating room (table end time) were taken into account. Because of the wide scatter of

times, instead of means, the estimated time was calculated using the mode, the minimum and the maximum times.

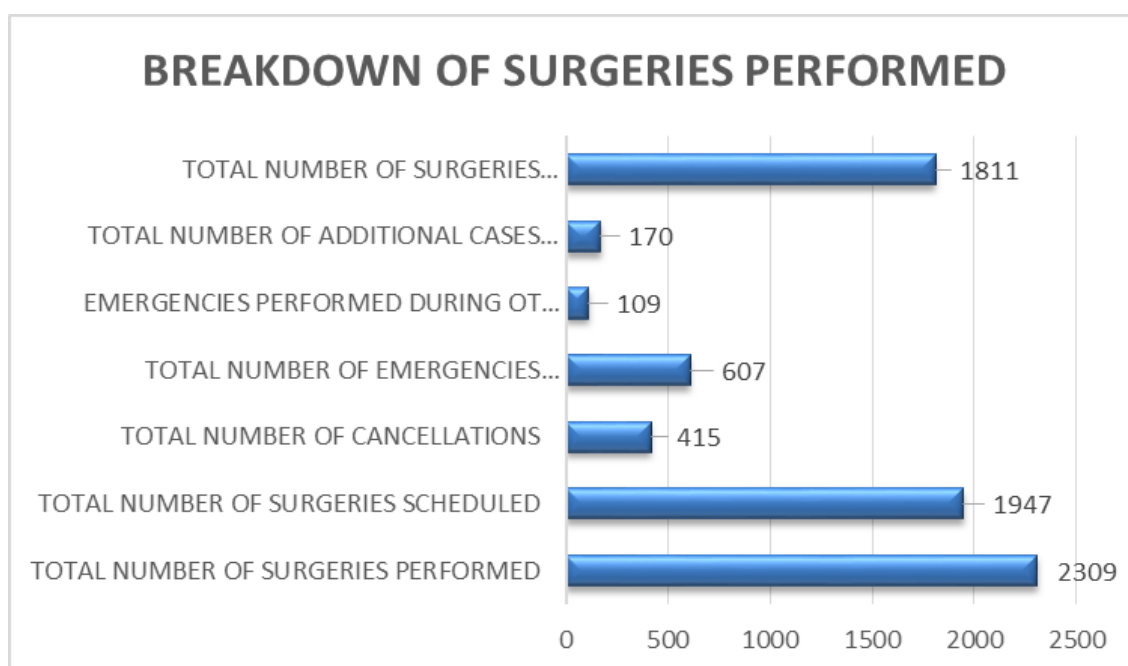
$$\text{Estimated time} = \frac{a + 4b + c}{6}$$

Where 'a' and 'c' are minimum and maximum times taken for the surgeries and 'b' is the mode.

To provide an estimated time range to these surgeries, one standard deviation was calculated and was added to it which means that 68% of the surgeries were done within this time range.

III. Result

A total of 1947 surgeries were scheduled during the study period. Out of the total 1947 surgeries scheduled, 415 cases (21.3%) were cancelled because of various factors. Surgeries were performed on 170 additional cases who were not in the OT list during the study period. A total of 607 emergency procedures were carried out during the study period. Of which, 109 surgeries were performed during the scheduled OT hours i.e., between 9:00 AM to 5:00 PM. Thus a total of 2309 surgeries were performed during the study period. Of which, 1811 surgeries were performed during the scheduled OT hours.



Cancellations occurred in 415 (21.3%) cases. The reasons for cancellation were grouped into patient related, surgeon related and work-up related. Out of the 415 cancellations, no detailed reason could be found in the medical records of 67 patients. The most common category for cancellations was patient related 138 (39.66%), followed by surgeon related 112 (32.18%) and workup related 98 (28.16%). Overall, the three most common reasons for on the day cancellations in our study was patient not admitted followed by patient not fit for surgery and the lack of availability of theatre time, (or time constraints) which in turn was because of overrun of previous surgery and overbooking of the OR list.

Reasons For Cancellations

PATIENT NOT ADMITTED	98
PATIENT NOT WILLING FOR SURGERY	33
DISCHARGE AGAINST MEDICAL ADVISE	7
TOTAL PATIENT RELATED	138 (39.66%)
LACK OF TIME	85
CANCELLED BY SURGEON	27
TOTAL SURGEON RELATED	112 (32.18%)
PATIENT NOT FIT FOR SURGERY	95
DELAY IN RADIOLOGICAL INVESTIGATIONS (MRI)	3
TOTAL WORK-UP RELATED	98 (28.16%)
NO REASON FOUND	67
TOTAL CANCELLATIONS	415

Estimated Time Taken For Common Elective Surgeries

NAME OF THE SURGERY	NO. OF SURGERIES PERFORMED	ESTIMATED TIME (MIN)	STANDARD DEVIATION
OPEN REDUCTION AND INTERNAL FIXATION	314	110	50
IMPLANT REMOVAL	208	120	55
WOUND DEBRIDEMENT AND PROCEED	175	105	48
SPLIT SKIN GRAFTING	72	115	65
TOTAL KNEE REPLACEMENT	63	110	70
FLAP DIVISION	63	120	40
ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION	63	115	60
INTRA MEDULLARY NAILING	54	105	60
WOUND INSPECTION	43	110	40
ARTHROSCOPIC DEBRIDEMENT	37	100	50
ROTATOR CUFF REPAIR	35	100	45
K WIRE REMOVAL	35	105	50
SYNOVECTOMY	27	124	52
TOTAL HIP REPLACEMENT	27	102	33
EXFIX REMOVAL	22	135	35
CLOSED REDUCTION	22	115	45
BONE GRAFTING	21	120	45
ANTIBIOTIC BEAD REMOVAL	17	102	30
TENSION BAND WIRING	15	110	40
SCREW REMOVAL	15	75	45
MINIMAL INVASIVE DISCECTOMY	15	90	40
PROXIMAL FEMORAL NAILING	12	100	30
DYNAMIC HIP SCREW FIXATION	12	150	60

IV. Discussion

In our study most of the on day cancellations were due to potentially avoidable reasons. Patient not admitted, Patient not fit for surgery and the Lack of availability of theatre time were the most common reasons for cancellations in our study.

Patient related cancellations which included patient not turning up on the day before surgery can be minimized by giving proper instructions to the patient. When they are well informed, they feel more motivated, resulting in fewer cancellation(3). Patient participation in planning date for surgery may improve patient satisfaction.

One major reason behind this patient related cancellations was actually administration related(4). The patient arriving on the day before surgery are made to wait till a vacant bed is arranged in the ward. Even though there were already admitted patients who can be discharged from the ward, bed availability is a problem as many of these patients leave the hospital at their convenient times(5). This shows that there is a strong need for a proper planning method to identify transition beds in the hospital so as to reduce denial of admission. Strengthening the discharge process and communicating the estimated date of discharge to patients and involved personnel ahead of time(6).

Patient related cancellations like patient not willing for surgery were majorly due to financial issues on patient side. This can be reduced by providing proper information regarding the cost of the surgery, regarding the insurance coverage (if any) and reducing the gaps in communication.

In most of studies related to cancellations, planning and scheduling of elective surgery is focused while one of the common reason for cancelling elective surgery is emergency surgery given higher priority(7). This audit showed that almost 26% of cancellations were due to emergency cases with higher priority which has to be kept in mind while planning the OT list.

It is easy to ensure that lists rarely go on late, simply by shortening them, but this of course decreases the number of operations done. Only by adjusting the average session length to the time allocated, and by reducing the scatter of operating times, overlong sessions can be avoided without decreasing the work done.

Estimating the operating time is also a very important factor to be kept in mind while preparing the OR schedule list for the next working day (8). The time taken for a particular surgery depends on the skill of the operating surgeon. Less experienced and trainee surgeons take more than expected time. Sometimes, the total duration of surgery increases due to unanticipated surgical complication

It was further observed that cancellations due to overrun of previous surgery and overbooking the schedule, which was most common reason in other studies can be reduced by keeping in mind the estimated operating time while preparing the OR schedule list. For some surgeries, the total duration exceeded the usual surgical time due to an unexpected surgical complication, unavailability of sterilized instruments and technical problems in instruments which can be reduced by careful planning and effective communication within the

surgical team. Use of individual surgeon's historical estimates is one way to improve scheduling problems related to predictable over-runs and subsequent cancellations.

Patients should complete their pre-operative assessments and obtain medical clearance few days before their surgery date(9). This not only significantly decreases cancellations and delays of elective cases, but it also enhances patient satisfaction as well as cuts down on the length of hospital stay due to decrease in pre-operative admissions and post-operative morbidities and complications.

V. Conclusion

On the day cancellations of elective Orthopaedic cases was a significant problem at this hospital. Identifying and addressing the cause improves the efficiency of theatre facilities.

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