Cancellation of Elective Procedures on the Day of Surgery

Ali R. Karashi, MUDr, CABs (Ortho)* Mohammed AlSaif, MD, CABs (Ortho)**
Fatima Rashid, BSc*** Haneen Alboosta, MD**** Abdulla AlMalki, MD*****

Objective: To evaluate the rate and causes of cancellation of elective procedures.

Design: A Retrospective Study.

Setting: Salmaniya Medical Complex, Bahrain.

Method: Data were collected for four months from the operation theatre register and were analyzed.

Result: Day of surgery (DOS) cancellation rate in our study was found to be 7.3%. The causes of cancellation were lack of time, high blood pressure, cardiology consultation, chest infection and upper respiratory tract infection. Most cancellations in the OT were because of high blood pressure. These causes can be avoided if proper preoperative assessment and control were applied.

Conclusion: DOS cancellation is a universal problem. Several common factors that play a role in increasing cancellation rate and these should be considered individually for a better outcome. A general understanding and cooperation between the caring firm, anesthesia department, nursing team and other medical departments is paramount in reducing the incidence to a minimum and to increase the efficacy of the hospital.

Bahrain Med Bull 2018; 40(1): 38 - 41

Day-of-surgery cancellation is a global problem with reported rates ranging from 1.96% to 24%[1,2]. It could go unnoticed if the turnover of cases were high at the operating hospital. It causes distress to the treating doctors, the nursing staff, the families and the patients. Public and private hospitals suffer from waste of fund, resources and the unused slots, which cause delay to other patients on waiting list. In the long-term, this issue creates a financial drain, extended hospital stay, and multiple repeated tests and preoperative preparations[3-7].

Several reasons were identified including the unavailability of operating room time due to long lists, insufficient pre-operative assessment and preparation, patient refusal, surgeon-related issues, prediction bias and the disruption of the ongoing list by the presence of urgent life-saving procedure[8-14]. Some reasons can be avoided by proper planning which could reduce the number of canceled cases.

The aim of this study is to evaluate the rate and causes of cancellation of elective procedures during 4 months.

METHOD

All the consultants and their respective specialties were assigned to numbered operating theaters throughout the week. There was no specific operating theatre assigned for urgent and life-saving procedures.

Elective surgery was defined as surgery booked in advance, written on the list and registered in the operating theatre register before 1:00 pm of the preceding day of surgery. In addition, late elective cases can be added after 1:00 pm and is handled by the OR nurse covering on-call or during night shifts.

We defined the day of surgery (DOS) cancellation as any procedure booked in advance, written on the list and registered in the operating theatre register for that day, (generated 1:00 pm on a preceding day) and were canceled on the same day of surgery. Therefore, in our study, only elective surgeries were analyzed. Emergency life-saving and trauma surgeries were excluded.

* Consultant, Chairperson
** Chief Resident
Department of Orthopedics
*** Deputy Chief Staff Nurse
Main Operation Theatre
**** Senior Resident
Department of General Surgery
***** Consultant
Department of Orthopedics
Salmaniya Medical Complex
The Kingdom of Bahrain
E-mail: draliredha@gmail.com

The study was performed from 15 March 2016 to 15 July 2016. All patients who were booked in advance and were in the operating theatre register were included in the study. The documented data included the patients' names, CPR number, surgeons' names/caring team, procedure, operating theatre number, estimated time of surgery and type of anesthesia.

Data were collected on the following variables: the different surgical specialties, the number of canceled elective surgeries, the responsible individual for the order of cancellation, the place of cancellation and the reasons for cancellations.

The cancellation reasons were confirmed by the operating theatre staff nurse who added additional clarification if needed into the registry.

RESULT

Four hundred twenty-one elective procedures were canceled from the routine list. The number of total elective cases booked was 5,760, a rate of 7.3%.

The number of cancelled cases by each specialty were as follows: 109 (25.9%) general surgery, 19 (4.5%) thoracic and vascular, 24 (5.7%) plastic, 75 (17.8%) urology, 41 (9.7%) orthopedic, 39 (9.3%) gynecology, 20 (4.8%) pediatric surgery, 5 (1.2%) gastrology, 30 (7.1%) ENT, 10 (2.4%) maxillofacial, 34 (8.1%) ophthalmology, 15 (3.5%) neurosurgery, see figure 1.

Figure 1: Cancellation by Specialty

The most common causes for cancellation were as follows: 110 (26.1%) long list, 39 (9.2%) high blood pressure, 38 (9%) cardiology consultation, 21 (5%) chest infection, 19 (4.5%) upper respiratory tract infection and 15 (3.5%) high glucose levels.

Three hundred eighty (90.3%) cases were canceled before reaching the theatre, forty-one (9.7%) cases were canceled in the Operation Theatre (OT), see figure 2.

In the OT, 18 (4.3%) high blood pressure was the main reason; other seasons were as follows: 4 (0.9%) surgery was not indicated, 3 (0.7%) non-palpable lesion, 2 (0.5%) allergic reaction, 2 (0.5%) delay by anesthesia, 2 (0.5%) cardiology consultation (only 31 out of 41). Other causes of cancellation in the OT were as follows: wound infection 1 (%), the need for GA 1 (0.2%), vasovagal attack 1 (0.2%), arrhythmia 1 (0.2%), high TSH 1 (0.2%), conjunctivitis 1 (0.2%), urgent lifesaving procedure that requires theatre 1 (0.2%), chest infection 1 (0.2%), reports not ready 1 (0.2%) and long list 1 (0.2%).

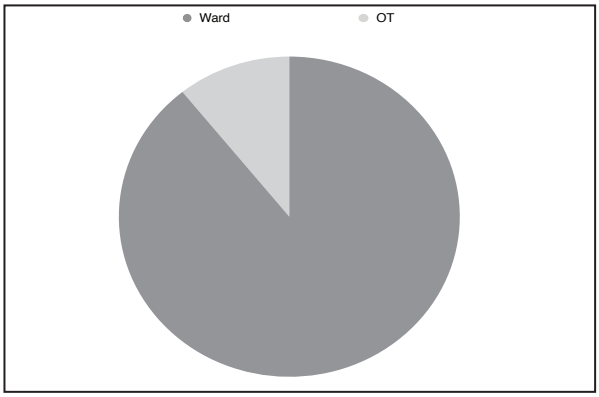

Figure 2: Cancellation by Area

Cancellation by ordering source revealed that 223 (53%) cases were cancelled by orders of the firm; the anesthetist was responsible for ordering the cancellation in 148 (35%), the patient was responsible for cancelling in 30 (7%), joint decision between the firm and anesthetist in 17 (4%), two (0.5%) cases were cancelled due to relatives and one (0.2%) case was cancelled from the nephrology team, see figure 3.

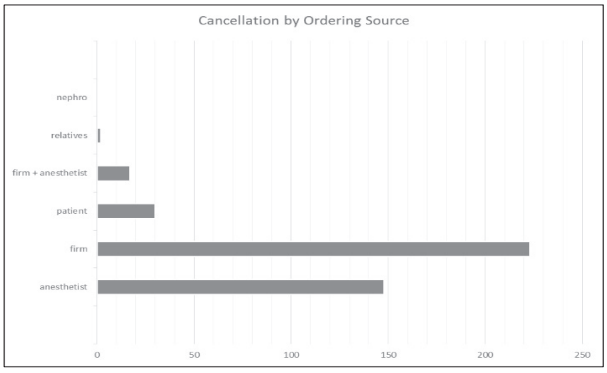

Figure 3: Cancellation by Ordering Source

DISCUSSION

Elective cancellation or Day-of-Surgery (DOS) cancellation is a global dilemma. It is an indicator of operating room efficiency[15]. The rate ranged from 1.96% to 24%[1,2].

The cancellation rate in this study was 7.3%, compared to the rates in Saudi 11.1%, Lebanon 4.4%, Jordan 3.6% and Hong Kong 7.6%[13,17-19]. Although there is no consensus regarding the cancellation rate, most believe that less than 5% would be an acceptable rate; nevertheless, a rate of less than 2% was reported[20,21].

In our study, the most common reason for DOS cancellation was "long list" or (n=110) due to the increased time of surgeries on the list, due to overbooking. In our study, it was found that overbooking was a shared issue with an estimated rate of 50% of lists being over-booked. We believe that one of the reasons to over-book a list was the number of pending elective cases[22].

The majority of surgeries were booked and started at 7:30 am or after, which was considered a "lost" working time.

We recommend evaluation of the different factors that contribute to having "long list" as a cause for cancellation in the future, focusing on the actual time of start, time of break between surgeries, anesthesia set-up and the availability of experienced surgeons that would perform the surgery in a shorter time compared to trainee doctors[23,24].

High blood pressure was the second most common cause for cancellation in our study, 9.3%; it was also the most common reason for cancellation by the anesthetist. The range of readings was between 220/140 and 140/90. High blood pressure was also the most common cause of cancellation in the OT, 4.3%.

We believe that identification of the problem would save operating time for further procedures and that focusing on preoperative assessment and controlling of patients' blood pressure would help in reducing the incidence of canceled cases. Also, we recommend in-depth evaluation of the blood pressure range that might require postponing the surgery. Looking into the possible causes for reading errors is recommended[24].

Cardiology consultation was the third common cause of cancellation, 38 (9%). We believe that the rate of cancellation could be reduced if a preoperative assessment by the anesthesia and cardiology specialists are performed simultaneously. General surgery, urology, and orthopedics also had high cancellation rates. This may be related to the high turnover of cases in these specialties.

The main limitation of this study was its retrospective design and in-depth assessment of the working time of each operating theatre, and evaluation of the break-time between cases. Although provided in the register, we did not include the estimated time provided by the caring team before starting the procedure and the actual time taken for each procedure. The reasons behind high blood pressure readings were not looked into in our study.

CONCLUSION

DOS cancellation rate in our study was found to be 7.3%. The most common causes for cancellation were lack of time, high blood pressure, cardiology consultation, chest infection and upper respiratory tract infection. Most cancellations in the OT were due to high blood pressure. These causes could be avoided if proper preoperative assessment and control were practiced.

Author Contribution: All authors share equal effort contribution towards (1) substantial contributions to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the manuscript version to be published. Yes.

Potential Conflicts of Interest: None.

Competing Interest: None.

Sponsorship: None.

Acceptance Date: 3 February 2018.

Ethical Approval: Approved by the Research Committee for Secondary Care, Ministry of Health, Bahrain.

REFERENCES

1. Schofield WN, Rubin GL, Piza M, et al. Cancellation of Operations on the Day of Intended Surgery at a Major Australian Referral Hospital. Med J Aust 2005; 182(12):612-5.
2. Argo JL, Vick CC, Graham LA, et al. Elective Surgical Case Cancellation in the Veterans Health Administration System: Identifying Areas for Improvement. Am J Surg 2009; 198(5):600-6.
3. Perroca MG, Jericó Mde C, Facundin SD. Surgery Cancelling at a Teaching Hospital: Implications for Cost Management. Rev Lat Am Enfermagem 2007; 15(5):1018-24.
4. Seim AR, Fagerhaug T, Ryen SM, et al. Causes of Cancellations on the Day of Surgery at Two Major University Hospitals. Surg Innov 2009; 16(2):173-80.
5. Leslie RJ, Beiko D, van Vlymen J, et al. Day of Surgery Cancellation Rates in Urology: Identification of Modifiable Factors. Can Urol Assoc J 2013; 7(5-6):167-73.
6. Chalya PL, Gilyoma JM, Mabula JB, et al. Incidence, Causes and Pattern of Cancellation of Elective Surgical Operations in a University Teaching Hospital in the Lake Zone, Tanzania. Afr Health Sci 2011; 11(3):438-43.
7. Correll DJ, Bader AM, Hull MW, et al. Value of Preoperative Clinic Visits in Identifying Issues with Potential Impact on Operating Room Efficiency. Anesthesiology 2006; 105(6):1254-9; discussion 6A.
8. González-Arévalo A, Gómez-Arnau JI, delaCruz FJ, et al. Causes for Cancellation of Elective Surgical Procedures in a Spanish General Hospital. Anaesthesia 2009; 64(5):487-93.
9. Kumar R, Gandhi R. Reasons for Cancellation of Operation on the Day of Intended Surgery in a Multidisciplinary 500 Bedded Hospital. J Anaesthesiol Clin Pharmacol 2012; 28(1):66-9.
10. Schofield WN, Rubin GL, Piza M, et al. Cancellation of Operations on the Day of Intended Surgery at a Major Australian Referral Hospital. Med J Aust 2005; 182(12):612-5.
11. Schuster M, Neumann C, Neumann K, et al. The Effect of Hospital Size and Surgical Service on Case Cancellation in Elective Surgery: Results from a Prospective Multicenter Study. Anesth Analg 2011; 113(3):578-85.
12. Ezike H, Ajuzieogu V, Amucheazi A. Reasons for Elective Surgery Cancellation in a Referral Hospital. Ann Med Health Sci Res 2011; 1(2):197-202.
13. Kaddoum R, Fadlallah R, Hitti E, et al. Causes of Cancellations on the Day of Surgery at a Tertiary Teaching Hospital. BMC Health Serv Res 2016; 16:259.
14. Ministry of Health – Bahrain Publications Statistics. https://www.moh.gov.bh/Content/Files/Publications/statistics/HS2014/PDF/Secondary%20Health%20Care/Government%20Sector/salmaniya%20medical%20complex_MoH_2014.pdf. Accessed in January 2017.
15. Macario A. Are Your Hospital Operating Rooms "Efficient"? A Scoring System with Eight Performance Indicators. Anesthesiology 2006; 105(2):237-40.

16. Haana V, Sethuraman K, Stephens L, et al. Case Cancellations on the Day of Surgery: An Investigation in an Australian Paediatric Hospital. ANZ J Surg 2009; 79(9):636-40.
17. Fayed A, Elkouny A, Zoughaibi N, et al. Elective Surgery Cancelation on Day of Surgery: An Endless Dilemma. Saudi J Anaesth 2016; 10(1):68-73.
18. Mesmar M, Shatnawi NJ, Faori I, et al. Reasons for Cancellation of Elective Operations at a Major Teaching Referral Hospital in Jordan. East Mediterr Health J 2011; 17(8):651-5.
19. Chiu CH, Lee A, Chui PT. Cancellation of Elective Operations on the Day of Intended Surgery in a Hong Kong Hospital: Point Prevalence and Reasons. Hong Kong Med J 2012; 18(1):5-10.
20. Dexter F, Epstein RH. Operating Room Efficiency and Scheduling. Curr Opin Anaesthesiol 2005; 18(2):195-8.
21. Pandit JJ, Carey A. Estimating the Duration of Common Elective Operations: Implications for Operating List Management. Anaesthesia 2006; 61(8):768-76.
22. Harders M, Malangoni MA, Weight S, et al. Improving Operating Room Efficiency through Process Redesign. Surgery 2006; 140(4):509-14.
23. Friedman DM, Sokal SM, Chang Y, et al. Increasing Operating Room Efficiency through Parallel Processing. Ann Surg 2006; 243(1):10-4.
24. Varon J, Marik PE. Perioperative Hypertension Management. Vasc Health Risk Manag 2008; 4(3): 615–627.