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COMPARISON OF CRITERIA BASED DISCHARGE SYSTEM AND TIME BASED DISCHARGE SYSTEM FOR DISCHARGING PATIENTS UNDERGOING MINOR SURGERIES.

Anaesthesiology

Dr. Jigyasa Shahani M.D, Assistant Professor Department of Anesthesia Government Medical College Bharatpur. Rajasthan

ABSTRACT

This study primarily compares criteria-based discharge versus time based discharge methods in moving patients through PostAnesthesia Care Unit, and other non-clinical factors causing delay in shifting.150 patients scheduled for elective minor surgeries under general anaesthesia were studied. Modified Aldrete's score (CBD time) in PACU were recorded. Patients were scheduled to discharge at 60 min based on TBD method. The mean CBD time and actual discharge time from PACU were statistically compared with TBD time. TBD time (60 min) was compared with the mean CBD time (10.70 ± 2.56 min) and actual discharge time (79.75 ± 12.98 min), which were found to be statistically significant. Primarily, anaesthesiologists' busy schedule was accountable for delay in discharge.The study concluded that in patients undergoing ambulatory minor surgeries, discharge times based on Criterion Based Discharge scoring systems such as modified Aldrete's score are significantly lower in PACU Phase I as compared to the traditional Time Based Discharge method.

KEYWORDS

Patient Discharge, Post-anesthesia Care, Recovery Room, Scoring Methods

INTRODUCTION

In the recent years, with the advent of shorter and rapidly acting anaesthetic agents, it has been seen that some patients may be fast tracked from PACU Phase I unit to Phase II unit using physiological scoring systems.[1,2] Most of the institutions follow the traditional time−based discharge (TBD) method in PACU, where patients get discharge after fixed interval of time by anaesthesiologist's orders when established clinical criteria are met.[3] Recent studies have shown that the modern clinical criteria−based discharge (CBD) method based on predetermined physiological scoring system has reduced the length of stay (LOS) in the PACU Phase I.[4−6] The modified Aldrete's score have been widely used in discharging patients from PACU.[7,8] CBD method standardises the discharge criteria across institutions and has been shown to reduce the time spent in the PACU without affecting patient's safety.[5]

This study was conducted to compare CBD and TBD methods for discharging patients so that PACU beds can be better utilised for more sick patients and it may have an economical impact on the healthcare system.

METHOD

This prospective observational study was conducted on 150 patients, aged 18–65 years, American Society of Anesthesiologist's (ASA) physical status I and II, scheduled for elective minor surgeries. Patients suffering from major co−morbidities and undergoing emergency surgeries were excluded from the study.

After obtaining approval of the hospital's Ethics Committee, written and informed consent was taken from the patients. Pre−operative baseline vitals of each patient were noted. All patients were premedicated with midazolam 0.05 mg/kg i.v. and general anaesthesia was induced with propofol 2 mg/kg i.v. and neuromuscular blockade was achieved with atracurium 0.5 mg/kg i.v., and a laryngeal mask airway (LMA) Classic™ was inserted. Anaesthesia was maintained with nitrous oxide and oxygen (FiO2 0.4) and atracurium 0.1 mg/kg every 30 min. Paracetamol 20 mg/kg and diclofenac 1.5 mg/kg were administered i.v.for analgesia after 45 min of induction. Ondansetron 0.1 mg/kg was given i.v. 30 min prior to removal of LMA. The residual neuromuscular blockade was reversed with neostigmine 0.05 mg/kg and glycopyrrolate 0.01 mg/kg i.v. Patients were not divided into different groups. Modified Aldrete's score was calculated in each patient included in the study. However, all the patients were scheduled to discharge from PACU as per our institutional TBD method which was to discharge patients at a fixed interval of 60 min after getting discharge orders from anaesthesiologists, if other physiological parameters were within the normal range.

In PACU, the modified Aldrete's score and postanesthesia discharge score of each patient was recorded at an interval of every 10 min and time to achieve a score of 9 or above was recorded as the CBD time. Heart rate, blood pressure, SpO2 on room air, sedation score, respiratory rate, visual analogue score (VAS), nausea/vomiting score of each patient were monitored at the interval of every 10 min, and the time was recorded for these parameters to achieve their normal range. Any adverse events or complications requiring nursing or medical intervention in the interval between CBD and TBD time were recorded. The actual discharge time of patients (TBD time plus delay in discharge due to other non−clinical factors) was also recorded and statistically compared with the TBD time. Various non−clinical factors causing delay in discharge such as busy schedule of anaesthesiologists, housekeeping and ward nursing staff along with bed availability in ward were also recorded.

The sample size was calculated as 150 patients based on the assumption that modified Aldrete's scoring system−based discharge criteria will decrease the LOS in PACU by 10 min at 5% level of significance and 80% of power. Statistical testing was conducted with the Statistical Package for the Social Sciences system version 17.0 (Version 17.0; SPSS Inc., Chicago, IL,USA).Continuous variables are presented as mean ± standard deviation and categorical variables are presented as absolute numbers and percentages. The comparison of TBD time with mean CBD time and the mean actual discharge time was performed using paired Student's t−test. $P < 0.05$ was considered statistically significant.

RESULTS

The mean age of patients included in the study was 38.5 ± 12.47 years, among which 77 were females and 73 were males; 81 had ASA physical status I and 69 had ASA physical status II. The pre−operative baseline vitals of each patient were noted to be stable. There were no intraoperative complications noted in any of our patients. It was observed that 143 patients achieved the modified Aldrete's score of 9 or above in 10 min and the remaining 7 patients in 20 min. Therefore, CBD time was recorded as 10 min in 143 patients and 20 min in 7 patients. The mean CBD time (10.70 ± 2.56 min) and TBD time (60 min) when compared were found to be statistically significant ($P < 0.001$). There were no respiratory and haemodynamic complications observed in any patient in the interval between the CBD and TBD time. It was found that there was a delay in discharge of patients from PACU to the ward due to various non−clinical factors. Thirty six patients were discharged without any delay; however, 88 and 26 patients were discharged between 60–90 min and 90–120 min,respectively. The mean delay in discharge was found to be 19.75 ± 12.98 min. The mean actual discharge time (79.75 ± 12.98 min) and TBD time (60 min) when compared were found to be statistically significant ($P < 0.001$). It was observed that busy schedule of anaesthesiologists to write discharge orders (32%) and unavailability of housekeeping staff to shift patients from PACU to wards (34%) were the two key factors accountable for causing delay in discharge and increasing the LOS of patients in PACU. Other factors noted were busy schedule of PACU nursing staff (23%) and ward nursing staff (13%) followed by unavailability of beds in ward (18%).

DISCUSSION

Traditionally, TBD method has been used to discharge patients from PACU which varies among institutions, whereas CBD method standardises and objectifies the discharge criteria across the

institutions.[3] The mean CBD time calculated by modified Aldrete's score was found to be statistically significant ($P < 0.001$) when compared with TBD time. All the patients were breathing comfortably, maintaining SpO2 above 90% and haemodynamics was stable between CBD and TBD time. This implies that modified Aldrete's scoring method of discharge may improve the workflow of patients by shifting them quickly and safely from PACU Phase I to Phase II without compromising their safety.

Our results were found to be consistent with the other studies which also illustrated that the CBD method significantly reduces the PACU LOS in comparison with the TBD method without observing any adverse events.[4,5]

There is plenty of literature demonstrating fast tracking of patients from OR directly to PACU Phase II without affecting their safety.[9-12] The mean actual discharge time (delay due to various non−clinical factors) was found to be statistically significant ($P < 0.001$) when compared with the TBD time. Busy schedule of anaesthesiologists and unavailability of housekeeping staff to shift patients from PACU were found to be the two main factors accountable for increasing PACU LOS. Similar results have been found in other studies.[5,13−15] This suggests that if an institution has clinical scoring systems for discharging patients objectively ,it may increase the productivity of both nurses and anaesthesiologists by saving their time to perform other activities and may cut down the hospital cost by better resource utilisation. Other studies have also concluded that fast tracking is a suitable intervention to increase workflow efficiency and decrease both patient and hospital costs while promoting a more rapid discharge from the facility.[12]

CONCLUSION

In patients undergoing ambulatory minor surgeries,discharge times based on Criterion Based Discharge scoring systems such as modified Aldrete's score significantly lower in PACU Phase I as compared to the traditional Time Based Discharge method.

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Conflicts of interest
There are no conflicts of interest.

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