

Original Research Article

Incidence of day care discharge in laparoscopic cholecystectomy and correlation with pacu scores: A feasibility study

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Abstract

Introduction: Laparoscopic cholecystectomy has overpowered open cholecystectomy for the treatment of gall bladder disease. The concept of Day Care surgery along with ERAS is very useful in a developing country like ours because it leads to cost containment and better utilization of the health care resources. This study was conducted to correlate PACU scores with discharge feasibility in laparoscopic cholecystectomy patients.

Method: The study was conducted with 48 patients undergoing laparoscopic cholecystectomy. The patients undergoing laparoscopic cholecystectomy either under general or regional anaesthesia, ASA I and II were included in this study. A standard general anaesthesia protocol was followed. Modified Aldrete score and PADSS score were assessed to confirm readiness for discharge. **Results:** 43 patients were discharged on the same day of surgery. Mean hospital stay after surgery of the patients who were discharged on the same day of the procedure was 9 ± 0.74 hours. 5 patients were kept admitted. Of these 5, 3 recovered completely and discharged within 48hrs while 2 had readmission. PACU scores correlated well with all patients. **Conclusion:** Right selection of patient, proper pre-op optimization of comorbid conditions, good postop analgesia, and proper utilization PACU scoring system can promote day care Laparoscopic Cholecystectomy.

Keywords: Day-care surgeries; ERAS; Laparoscopic cholecystectomy; PACU scores

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Introduction

Laparoscopic cholecystectomy has overpowered open cholecystectomy for the treatment of gall bladder disease and is now the treatment of choice for symptomatic cholelithiasis[1]. It is a minimal invasive surgery with low incidence of adverse events or complications during the intraoperative or immediate postoperative periods. This further justifies the rapid upsurge of this day care procedure.

The concept of Day Care Surgery along with Enhanced Recovery After Surgery (ERAS) is very useful in a developing country like ours because it leads to cost containment and better utilization of the health care resources[2]. In order to promote ERAS and day care discharge, the anaesthesia technique involved should utilise shorter acting drugs and at the same time, also making sure that patient remains pain free for a longer duration in the post-operative period. In the advent to achieve day care discharge segmental spinal anaesthesia is gaining an upper hand over general anaesthesia (GA).

The discharge criteria utilised in the post anaesthesia care unit plays a very crucial role in assessing the postoperative status of the patient and whether the patient is fit to be discharged.

There have been many reports stating the day care feasibility of laparoscopic cholecystectomy. There is very limited data available establishing a correlation between PACU scores and discharge feasibility among patients undergoing laparoscopic cholecystectomy [3].

Objective

We conducted this observational study with primary objective of establishing a correlation between discharge criteria score and feasibility of day care discharge. Secondary objective was to note the incidence of readmission after day care discharge.

Methodology

This retrospective observational study was conducted in a tertiary care hospital in complete accordance with Helsinki guidelines. Forty-eight patients in the age group of 35-65 years of both sexes undergoing laparoscopic cholecystectomy either under general anaesthesia or regional anaesthesia were included in the study. **FIG.1**

All patients belonged to American Society of Anaesthesiologists (ASA) physical status I or II, were symptomatic with confirmed ultrasound scan of gallstones and were willing for day care discharge. Patients under ASA III and IV, not willing for day care discharge, not staying in the defined radius of area, with coagulation disorders, abnormal liver functions and Body mass index of >40 were excluded from the study. Routine preanesthetic evaluation was done assessing the general condition of patient, airway assessment by Mallampatti grading, nutritional status, body weight and detailed systemic examination. The baseline investigations including complete hemogram, random blood sugar, renal function test, liver function tests, PT/INR, electrocardiogram, chest x-ray, were noted prior to surgery. All patients were kept nil per orally for 8 hours prior to surgery. On the day of surgery, fasting status was confirmed and a written valid consent was taken from all the patients regarding day care discharge. Then patients were shifted to operating room and standard multipara monitors were attached. A wide bore intravenous line was secured with 18G/20G intracath and ringer lactate was started.

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A standard general anaesthesia protocol was followed for all patients. Patients receiving regional anaesthesia were administered subarachnoid block with Inj Ropivacaine Hydrochloride 0.75% isobaric solution 2 – 2.2 ml with 25 micrograms of inj. Fentanyl citrate as adjuvant in T8 to T10 intervertebral space. Any

modification in the anaesthesia regimen was noted during post anaesthesia care unit (PACU) observation and discharge. After the surgery patients were shifted to PACU and modified Aldrete score and PADSS score were noted every 15 mins until discharge.

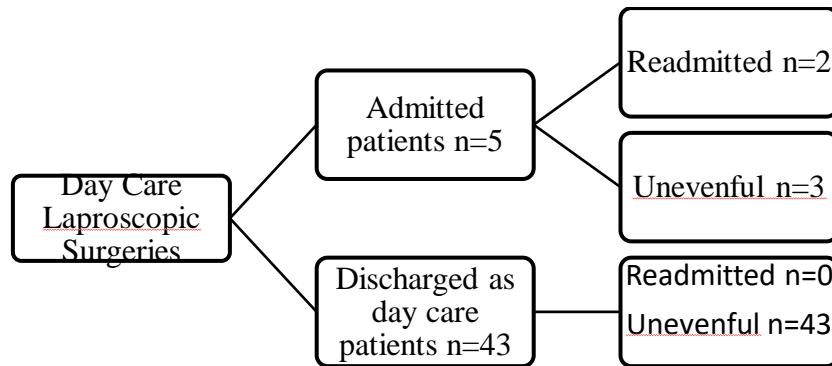


Fig 1

Consort flow chart of the study.

Modified Aldrete Score[4]

Level of Consciousness 2 Fully awake, orientated in place and time
1 Rousable on calling name
0 Not responding

Activity 2 Moving all four limbs on command
1 Moving two limbs spontaneously
0 Not moving at all

Respiration 2 Breathes and coughs well
1 Dyspnoea or tachypnoea
0 Apnoea

Circulation 2 BP +/- 20% of pre-anaesthetic value
1 BP +/- 20 – 49% of pre-anaesthetic value
0 BP +/- 50% of pre-anaesthetic value

Saturation 2 SpO₂ > 92% on room air
1 O₂ required to keep SpO₂ at 90%
0 SpO₂ < 90% with O₂

Post-anesthesia discharge scoring system (PADSS)[5]

Vital signs: Vital signs must be stable and consistent with age and preoperative baseline

BP and pulse within 20% of preoperative baseline	2
BP and pulse 20–40% of preoperative baseline	1
BP and pulse 40% of preoperative baseline	0

Activity level: Patient must be able to ambulate at preoperative level

Steady gait, no dizziness, or meets preoperative level	2
Requires assistance	1
Unable to ambulate	0

Nausea and vomiting: The patient should have minimal nausea and vomiting before discharge

Minimal: Successfully treated with PO medication	2
Moderate: Successfully treated with IM medication	1
Severe: Continues after repeated treatment	0

Pain: The patient should have minimal or no pain before discharge. The level of pain that the patient has should be acceptable to the patient. Pain should be controllable by oral analgesics. The location, type, and intensity of pain should be consistent with anticipated postoperative discomfort

Acceptability	Yes 2
	No 1

Surgical bleeding: Postoperative bleeding should be consistent with

expected blood loss for the procedure	
Minimal: Does not require dressing change	2
Moderate: Up to two dressing changes required	1
Severe: More than three dressing changes required	0

Maximum score = 10, score ≥ 9 is fit for discharge
Patients were monitored for the following clinical parameters before discharge.

1. Hemodynamically stable for >30 minutes (within 20% of baseline parameters.)
2. Patients were able to understand instructions (cognitive assessment).
3. No new signs or symptoms after the surgery.
4. No active bleeding from the surgical site.
5. Accepting orally with no vomiting.
6. No or minimal pain controllable with oral analgesics.
7. Able to void the urine.
8. Resolution of sensory and motor block
9. Able to walk without support.

An Aldrete score of >9 and PADSS Score >9 was considered adequate for the patient to be discharged. It was made sure that a responsible person is present at home to take care of the patient. These patients were instructed to report back to the emergency if any complications appear.

The Aldrete score, PADSS Score and the clinical criteria were assessed separately. The patient if found to be clinically fit for discharge were discharged and the Aldrete score and PADSS score was noted in the patient's records. Later a correlation was tried to be established among the incidence of discharge and both the scores.

Results

Demographic profile was similar among all patients (Table 1). Out of 48 patients 43 patients were discharged on the same day (Fig 2). Mean hospital stay of these 43 patients after surgery was 9 ± 7.04 hours. Five patients were not fit for discharge and had to stay back. These patients were discharged after 48 hours. Of these 5 patients 3 recovered uneventfully while 2 patients had to be readmitted. One patient came back with wound gape while patient complained of pain abdomen. Out of 43 patients 24 patients had an Aldrete score and PADSS score of 10, while 12 had an Aldrete score of 9 and PADSS score of 10, while 7 patients had Aldrete score of 8 and PADSS score of 9. Five patients who were admitted in hospital had both Aldrete score and PADSS score of 7 and less.

The readmission of patients was not correlated to the discharge criteria and were attributed patient's personal negligence with medications and care which was prescribed during home care.

In 83.72 % patients Aldrete score and PADSS score completely correlated with clinical discharge criteria and incidence of discharge PADSS score being much accurate to meet the discharge criteria. While both the Aldrete and PADSS scores were also accurate in

holding back the day care discharge in 5 patients. While in 16.28 % patients though the patient was clinically ready for discharge with PADSS score of 9, the Aldrete score was not achieved (Table 2).

Table 1:Demographic data

Demographic data n = 50	No. (%)
Age	
Mean \pm SD	39.66 \pm 11.33
Range	
Sex	
Female	40
Male	08
ASA	
ASA I	33
ASA II	15
Presenting symptoms	
Recurrent biliary pain	42
Previous cholecystitis	04
Previous biliary pancreatitis	02
Elective	48

The demographic characters were similar among all the patients.

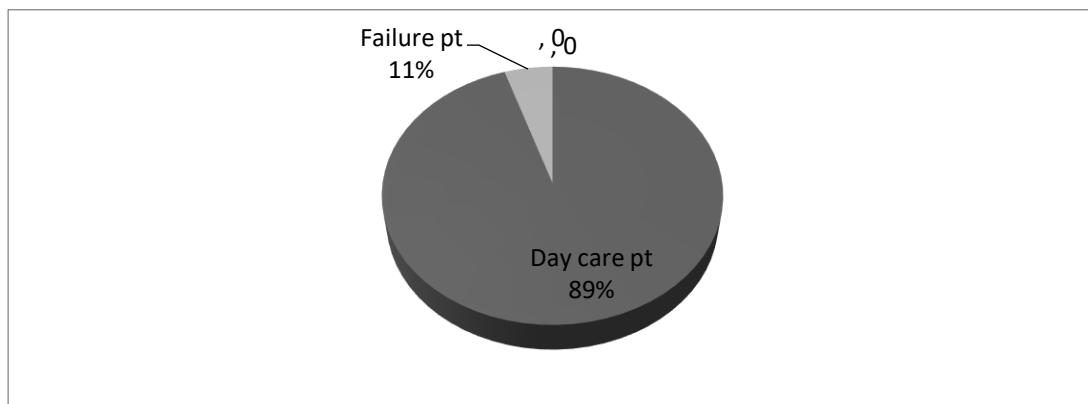


Fig 1:Demographic data

Distribution of day care discharged and hospitalised patients

Table 2: Distribution of day care discharged and hospitalised patients

Percentage of patients	Mean Modified Aldrete score	Correlation with incidence of discharge	PADSS score	Correlation with discharge
Discharged on same day 89% 83.6% 16. 3%	9.5 8	YES NO	10 9	YES YES
Retained for admission 10.4%	6.5	YES	7	YES
Discharged after 48hrs. 6.3%	9.6	YES	10	YES
Readmission after hospitalisation 40%	NA#	NA#	NA#	NA#

Correlation between incidence of discharge and PACU Scores.

NA: not applicable

Discussion

This study was conducted to derive a correlation between the two PACU scores and the incidence of day care discharge among the patients undergoing laparoscopic cholecystectomy.

The available literature primarily discusses and highlights the surgical aspects and complications during day care discharge. There is very limited data establishing and focusing on a correlation between the PACU scores which are being implemented and the incidence of day care discharge and if these scores can be relied upon to predict the day care discharge especially in developing countries like ours. Day-care discharge has been practised for patients undergoing short surgical

procedures like in gynaecology or urology, but the practice of day care discharge is the newer practice after laparoscopic cholecystectomy in developing countries[6]. Recent advances in medical technology, anaesthesia and pain management have allowed a huge expansion of concept of ambulatory surgery with a consequent reduction in the need for hospitalization. This has in turn led to the growth of newer trends in early recovery aftersurgery (ERAS). There are several controversies regarding the day care discharge after laparoscopic cholecystectomy such as the data is sparsely available especially from developing countries.

There has been no previous experience and the infrastructure is quite inadequate. The High-risk patients cannot be included or considered and hospitalisation and observation. The safe guidelines are not well-defined. Surgeons prefer hospitalised patients under there observation. The poor telecommunication and transport services makes the patient's access to medical facilities rather difficult[7].

Sarala BBN et al[8] conducted a study evaluating the factors responsible for causing hindrance in day care discharge after lap cholecystectomy. They also utilised PADSS score for predicting discharge and concluded that lap cholecystectomy can be conducted as a day care procedure with proper selection of patients. Their findings were similar to those of our study. In our study we state that PADSS score better predicted day care discharge than modified Aldrete score. Estimation of appropriate inclusion and exclusion criteria for selection of patients is necessary. Robinson's et al reported successful day care laparoscopic cholecystectomy in 70% patients and identified ASA classification, procedural duration, surgery start time as factors affecting day care program[9]. Patients of ASA grade I and II, with no previous abdominal surgery, no history of acute cholecystitis and a procedural duration of shorter than 90 min are optimal candidates for DCLC. This can be attributed to uncomplicated disease, minimal surgical handling, minimal exposure to anaesthetic agents. These authors did not correlate PACU scores and incidence of day care discharge as in our study.

H Vaghadia et al[10] conducted a study comparing the readiness for discharge as anticipated by patient themselves and by the attending staff nurse and also by the score achieved in modified Aldrete score and concluded that the staff nurse tends to keep patients in the PACU for longer duration than needed, while the patient themselves and the Aldrete score predicted early discharge. In their study the Aldrete score matched well with readiness for discharge. While in our study alderete was less predictive of discharge, though the authors did not compare alderete score with any other scoring system. Zirpeetal[11] conducted a feasibility study where they considered patients undergoing laparoscopic cholecystectomy with short day care stay. In the study they found that short stay day-care lap cholecystectomy was feasible in a dedicated day care surgical centre. Authors also commit a well-established patient selection criterion in order to facilitate safe and effective day care anaesthesia and discharge. We also recommend proper selection of patient to facilitate day care discharge. High risk patients should be separately stratified and hospitalised for post-operative care and observation. Kaman et al[12,13] also conducted an observational study to assess the feasibility, safety and success of day care lap cholecystectomy in tertiary care centre and found that day care lap cholecystectomy is feasible safe and equally effective in well selected patients in Indian setup. Their study findings are also coherent with those of ours. All the studies discussed earlier except for one have been published in surgical journals and have been highlighting the shortcomings for day care discharge for surgical prospective. None of the studies have established the correlation between PACU scores and actual feasibility of discharge. Hence this study can be informative and aid in modifying present scores or developing further tools to facilitate day care discharge even after major surgeries like lap cholecystectomies. This will also help in cost containment and better utilisation of medical resources.

Limitations

We authors admit certain limitations of the study.

1. Sample size is very limited to formulate a strong correlation. Further studies need to be conducted.

2. A combination of scores should have been attempted to rule out any bias.
3. Human errors/ variability during assessment of PACU scores was not considered.

Conclusion

PACU scores have a very strong co relation with the feasibility of day care discharge. Proper utilization and application of PACU scores promote day care surgeries. A combination two or more PACU scores is a better predictor of day care discharge. Lap cholecystectomies can be performed as ambulatory surgeries with proper application of a combination of PACU scores.

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