

ORIGINAL RESEARCH

Day Care Laparoscopic Cholecystectomy: A Prospective Study

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ABSTRACT

Background: Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. Rapid recovery after laparoscopic cholecystectomy and increasing experience with its post operative course has led to progressively shorter post operative period and the recent trend of day care surgery without an overnight stay at hospital. Now due to advances in anesthesia and surgical techniques, day surgery is the standard pathway of care for many complex patients and procedures traditionally treated through inpatient pathways. The purpose of present study is to evaluate feasibility and outcome of day care laparoscopic cholecystectomy in JLN Medical College & Hospital, Ajmer.

Material & Methods: This is a hospital based prospective study done on 50 patients undergoing laparoscopic cholecystectomy in Department of General Surgery at JLN HOSPITAL, Ajmer, Rajasthan from January 2020 to June 2021. Assessment of the post operative symptoms like nausea, vomiting, post operative pain was done in the recovery room itself. The discharged patients were followed up in surgical outpatient department on 2nd, 5th and 10th post operative day. Student's t test, Fisher's exact test were applied appropriately as per distribution of data. P-value<0.05 were considered statistically significant.

Results: Our study showed that the mean age of all the patients was 39.46 ± 10.06 years. 30% of all the patients were male, while 70% were female. Mean height was calculated to be 167.28 ± 6.89 cm. Mean weight was calculated to be 67.52 ± 10.47 kg and the mean BMI of the sample size was calculated to be 24.03 ± 2.69 kg/m². It was found that the mean nausea & vomiting score was highest post-operatively than at discharge at least on 2nd day follow up (p value<0.05). The difference between the percentage of patients discharged and those not discharged was statistically significant (p value<0.05).

Conclusion: After undergoing the extensive research, collecting the data for the study purpose, analyzing the data, we could conclude that day-case laparoscopic cholecystectomy is feasible and safe and effective treatment for symptomatic gallstones.

Keywords: Day care surgery, Laparoscopic cholecystectomy, Pain score, Nausea score, Vomiting score.

INTRODUCTION

Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. This technique essentially has replaced the open technique for routine cholecystectomies since the early 1990s. Laparoscopic cholecystectomy has replaced open

cholecystectomy for the treatment of gall stone disease and now treatment of choice for symptomatic cholelithiasis. Cholelithiasis was first described in 1420 by a Florentine pathologist Antonio Benivenius. Further, Jean-Louis Petit, the founder of gall bladder surgery in 1733 suggested removal of gall stones and drainage of gall bladder.

It is one of the most commonly performed abdominal surgical procedures, and in developed countries many are performed laparoscopically. As an example, 90 percent of cholecystectomies in the United States are performed laparoscopically.¹ Laparoscopic cholecystectomy is considered the "gold standard" for the surgical treatment of gallstone disease. This procedure results in less postoperative pain, better cosmesis, and shorter hospital stays and disability from work than open cholecystectomy.²⁻⁸ However, the overall serious complication rate in laparoscopic cholecystectomy remains higher than that seen in open cholecystectomy.

Laparoscopic operative procedures have revolutionized surgery with many advantages: a smaller and a more cosmetic incision, reduced blood loss, reduced postoperative stay and pain, decreased risk of surgery and anesthesia related complications, which is reflected in patient's earlier return to normal routine life and work activities. The new procedure has been widely accepted and adopted by surgical community and has become new "gold standard" for management of cholelithiasis.⁹ However as the experience advances further, a few centers have recently shown that the operation is safe and feasible even as an out patients procedure in properly selected and pre counseled patients.¹⁰ So, one of the latest advancement in the field of laparoscopic surgery is the introduction of Day Care surgery.

Daycare Surgery is the modern type of surgery wherein the patient usually undergoes surgery in the morning and can be discharged on the same day in less than 24 hours. If the patient gets admitted in the morning, undergoes the surgery and can be discharged in the evening. This is the actual concept of daycare surgery. The concept of day care is not about sending the patient home. It's to make sure that the patient is recovered completely and is pain free by the same evening of the surgery. She should be able to walk around, eat normal food, and take care of her own needs herself, without being dependent completely. In addition, shorter hospital stay enables the patient to be back in the comfortable home surroundings early. Also, it allows the rest of the family to get back to the routine quickly. The patient always has the option of staying longer in the hospital if she wishes.¹¹

In the last decade, laparoscopic cholecystectomy (LC) has become a regular daycare surgery at many centres across the world. However, only a few centres in India have a dedicated daycare surgery centre, and very few of them have reported their experience. Concerns remain regarding the feasibility, safety and acceptability of the introduction of daycare laparoscopic cholecystectomy (DCLC) in India. There is a need to assess the safety and acceptability of the implementation of short-stay DCLC service at a centre completely dedicated to daycare surgery. Rapid recovery after laparoscopic cholecystectomy and increasing experience with its post operative course has led to progressively shorter post operative period and the recent trend of day care surgery without an overnight stay at hospital. The advantages of patient satisfaction and cost effectiveness were highly attractive to surgeons and hospital administrators.¹¹ Most of the surgeons in India follow the concept of observing the patient overnight post laparoscopic cholecystectomy. Though, some cases of Day Care surgery have been reported in the literature from India, the concept of Day Care surgery is very beneficial for a developing country because it not only leads to cost containment but also better utilization of the health care resources.

A daycare surgery is an independent unit that comprises a surgeon, an experienced anesthetist, experienced nursing staff, managers and more. The role of the nursing staff is very much crucial during or after a daycare surgery. They need to look after the patient every now and then after shifting them from the operation theatre to the ward or recovery room.

The nursing staff must see whether the patient is having pain, vomiting, urination and more. They need to check all these things every hour and report the same to the consulting doctor. So, the nursing staff should be highly experienced in taking care of the patient during and after a daycare surgery.

Day surgery is now established practice with rates still increasing around the world and has greatly evolved since the early days of the specialty which saw minor procedures carried out on fit patients. Now due to advances in anesthesia and surgical techniques, day surgery is the standard pathway of care for many complex patients and procedures traditionally treated through inpatient pathways. The purpose of present study is to evaluate feasibility and outcome of day care laparoscopic cholecystectomy in JLN Medical College & Hospital, Ajmer.

MATERIAL & METHODS

This is a hospital based prospective study done on 50 patients undergoing laparoscopic cholecystectomy in Department of General Surgery at JLN HOSPITAL, Ajmer, Rajasthan from January 2020 to June 2021. The patients presented to the surgical outpatient department with confirmed diagnosis of gall bladder stones but not having any symptoms of acute cholecystitis were considered. Patients who gave informed consent after full explanation of day care process were electively admitted for an ambulatory laparoscopic cholecystectomy. Patients data was collected on a pre designed computer based Performa consisting of various data like demography, disease, treatment, outcome and follow up.

INCLUSION CRITERIA

1. Signs and symptoms suggestive of symptomatic gall bladder stones.
2. Absence of clinical and radiological findings of acute cholecystitis, biliary pancreatitis or empyema gall bladder at time of admission.
3. American society of Anaesthesiologists grade I and II ASA grade I healthy patient. No medical problems, ASA grade II mild systemic illness
4. Patients under 60 years of age.
5. Normal liver function tests.
6. Body weight less than 100 kg.

EXCLUSION CRITERIA

1. Multiple co-morbidities (severe hypertension, uncontrolled diabetes, tuberculosis, immune-compromised patients).
2. Coagulation disorders.
3. Adverse anaesthetic history.
4. Other procedures performed along with cholecystectomy or undergoing bile duct exploration, per operative finding cholecystitis or suspect/proven malignancy.
5. American society of anaesthesiologists grade III, IV, V ASA grade III severe systemic disease, but not incapacitating ASA grade IV severe systemic disease that is constant threat to life ASA grade V moribund, not expected to survive without operation.
6. Unavailability of competent adult to accompany the patient will be excluded from the study.

PREANAESTHETIC ASSESSMENT

On the day prior to surgery a thorough clinical examination of the patient was performed including general physical examination and systemic examination.

LAB INVESTIGATIONS

Routine investigations were done (CBC, RFT, LFT, PT/INR, Blood sugar, Chest X-ray, ECG). Other Specific investigations required pertaining to the procedure and patient.

All the patients were given Tablet Alprazolam 0.25 mg orally the night before surgery. All selected cases were advised to remain nil orally for fluids and solids as well, at least 6 (six) hours prior to the time of performing the block.

On arrival in the operation theatre, each patient's baseline heart rate, noninvasive blood pressure, electrocardiogram, respiratory rate and oxygen saturation were recorded and noted.

An intravenous cannula was secured in the non-affected limb and appropriate IV fluid was started.

OPERATIVE TECHNIQUE

Patients were kept fasting overnight. The operative field prepared and draped. All patients received a dose of pre-operative prophylactic antibiotics. Four port techniques for laparoscopic cholecystectomy were used. Two 10mm ports and two 5mm ports were used. 10 mm ports in the umbilical and epigastric region. 5mm ports in the right hypochondrium and anterior axillary line (subcostal). Pneumoperitoneum was created by inserting Veress needle in the supra-umbilical region. Once the pneumoperitoneum was created a 10 mm port was introduced and a telescope was put in. After the abdominal survey, rest of the ports were put under direct vision i.e. the 10 mm port in the epigastric region, 5 mm port in the right hypochondrium and another 5mm port in the anterior axillary line (subcostal). The patient was placed in reverse trendelenburg's (fowler's) position with the patient head up and tilted to the left and the surgeon standing on the left side of the patient. Gall bladder was grasped from the fundus through a 5mm port and retracted. Dissection was done at the level of calot's triangle. Cystic artery and duct were defined.

Clipping of the cystic duct and cystic artery was done separately using liga clips. Gall bladder was removed from a 10 mm port (epigastric). Abdominal cavity was washed with normal saline to remove all the clots and spilled biliary content if any. Complete haemostasis was achieved. All port sites were injected with 0.5% bupivacaine before closure.

POST OPERATIVE COURSE

Patients were given i.v. antiemetic, i.v. NSAIDs in the recovery room itself. Assessment of the post operative symptoms like nausea, vomiting, post operative pain was done in the recovery room itself. Patients were allowed to take a liquid diet 6 hours after surgery with a repeat dose of both anti emetic and pain killer injection. Patients who accepted orally and did not develop any post operative symptoms/complication were discharged on the very same day of the surgery. These patients were instructed to report back to the emergency if any complications appear. The discharged patients were followed up in surgical outpatient department on 2nd, 5th and 10th post operative day. But the patients who developed any post operative fever, persistent vomiting, severe pain not relieved by medication were not discharged from the hospital and were taken care of under the supervision of the surgical team at the hospital itself.

OUTCOME VARIABLES

1. Pain scoring through VAS scale
2. Vomiting scoring based of severity of symptoms
3. Nausea scoring based on the Nausea scale

STATISTICAL ANALYSIS

The data were analysed by using software Epi-info ver 6 and Epicalc. The quantitative data was presented as mean \pm standard deviation and qualitative data were presented as number and percentage. Student's t test, Fisher's exact test were applied appropriately as per distribution of data. p-value < 0.05 were considered statistically significant.

RESULTS

Our study showed that the mean age of all the patients was 39.46 ± 10.06 years. The maximum number of patients belonged to the age group of 31 to 40 years and 41 to 50 years that is 30% followed by 24% of patients in the age group of <30 years. 30% of all the patients were male, while 70% were female. Mean height was calculated to be 167.28 ± 6.89 cm. Mean weight was calculated to be 67.52 ± 10.47 kg and the mean BMI of the sample size was calculated to be 24.03 ± 2.69 kg/m² (table 1).

Table 1: Distribution of patients on the basis of their demographic profile

Demographic profile	Number of patients	Percentage
Age group (yrs)		
<30 years	12	24%
31-40 years	15	30%
41-50 years	15	30%
51-60 years	8	16%
Mean \pm SD	39.46 \pm 10.06	
Gender		
Male	15	30%
Female	35	70%
Anthropometric measurements		
Height (in cm)	167.28 \pm 6.89	
Weight (in kg)	67.52 \pm 10.47	
BMI (kg/m ²)	24.03 \pm 2.69	

The present study showed that the distribution of patients on the basis of thickness of wall of gallbladder, Pericholecystic fluid collection, number and size of stones. It was found that in 84% of patient the GB wall thickness was less than 3 mm while in 16% of patients the GB wall thickness was more than 3 mm, pericholecystic fluid collection was present in only 10% of patients while in rest 90% it was absent, 82% of all the patients had more than one stone in their gallbladder while in 18% of patients only one stone was present in the gallbladder and in 90% of patients the size of stone was less than 5 mm whereas in 8% of patients the size of stone was between 6 and 10 mm. Only one patient had a gall stone of more than 10 mm. Moreover, the difference between the percentage of patients between the two categories was statistically significant (p value < 0.05* respectively) (table 2).

Table 2: Sonographic details of the patients:

Sonographic details	Number of Patients	Percentage	P-value
GB wall thickness			
<3 mm	42	84%	<0.005*
>3 mm	8	16%	
Pericholecystic fluid collection			
Present	5	10%	<0.005*
Absent	45	90%	
Number of Stones			
Single	9	18%	<0.005*
Multiple	41	82%	

Size of Stones			
<5 mm	45	90%	<0.005*
6-10 mm	4	8%	
<10 mm	1	2%	

It was observed that pain increased slightly from post-operatively to the discharge, and then the pain decreased gradually during the follow-up on second day, fifth day and 10th day (table 3).

Table 3: Pain at various time intervals

PAIN	Post Operative	At Discharge	2 nd Day Follow Up	5 th Day Follow Up	10 th Day Follow Up
No Pain/Mild	40	36	48	50	50
Moderate	8	12	2	0	0
Severe	2	2	0	0	0
Mean pain score	3.12±1.55	3.46±1.46	2.32±0.77	0.42±0.61	0±0

It was found that the mean nausea & vomiting score was highest post-operatively than at discharge at least on 2nd day follow up (p value<0.05) (table 4,5).

Table 4: Distribution of Patients based on the nausea scores

Nausea& Vomiting	Post operative	At discharge	2 nd day Follow Up	P-value
Nausea				
No symptoms/Mild	40	48	50	<0.05*
Moderate	8	2	0	
Severe	2	0	0	
Mean Nausea Score	3.08±1.60	1.88±0.98	1.08±0.27	<0.001**
Vomiting				
No symptoms/Mild	40	48	50	<0.05*
Moderate	6	0	0	
Severe	4	2	0	
Mean Vomiting Score	3.38±1.66	1.9±1.43	1.2±0.49	<0.001**

Ours study that 92% patients were discharged on the same day while 4 patients (8%) were not discharged out of which 4% patients were not discharged due to high pain and 4% patients were not discharged due to severe vomiting. The difference between the percentage of patients discharged and those not discharged was statistically significant (p value<0.05) (figure 1).

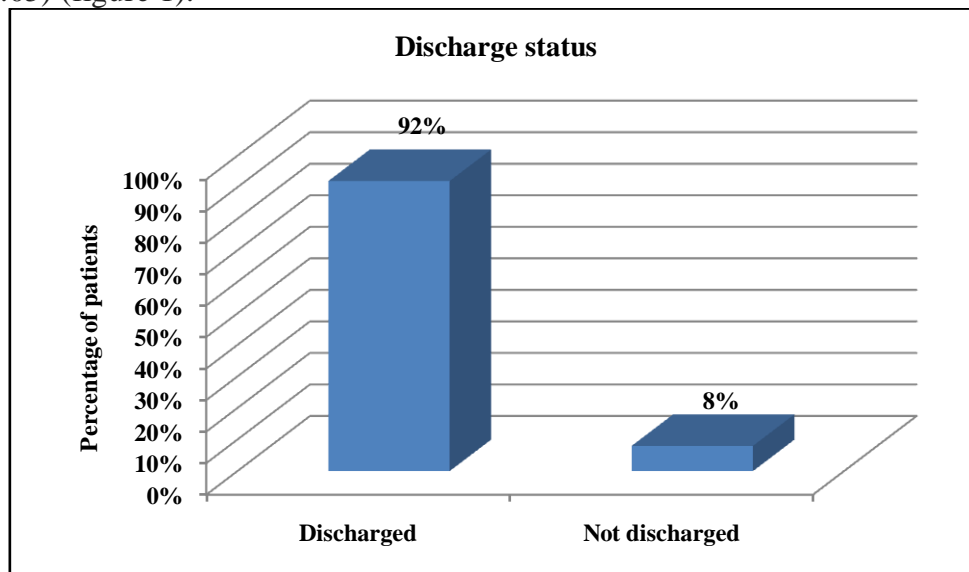


Figure 1: Discharge status of patients

DISCUSSION

Day surgery is now established practice with rates still increasing around the world and has greatly evolved since the early days of the specialty which saw minor procedures carried out on fit patients.¹² Now due to advances in anesthesia and surgical techniques, day surgery is the standard pathway of care for many complex patients and procedures traditionally treated through inpatient pathways.

The mean age of all the patients was approximately 50 years. Similar to our results, Sato A et al¹³ reported the mean age as 53.6 years, Briggs CD et al⁹ and Al-Qahtani HH et al¹⁴ reported the mean age of the patients in their study to be 42 years.

In a similar study conducted by Briggs CD et al⁹, the mean body mass index was 28 kg/m² which was much higher than what was calculated in our study, and mean weight was 77 kg which was also substantially higher than our study's mean weight of patients.

In our study, it was found that pericholecystic fluid collection was present in only 10% of patients while in rest 90% it was absent with significant statistical difference (p value<0.05). However, the results reported by Al-Qahtani HH et al¹⁴ were contradictory to our results. He reported zero intra-abdominal collection in any of the patients.

In our study, 80% of all the patients had either no pain or mild pain, 16% patients had moderate pain while 4% patients had severe pain when pain score was assessed post-operatively and it was mild, moderate and severe for 72%, 24%, and 2% patients respectively, at discharge. While 96% of patients had mild or no pain when assessed at second day follow up. Furthermore, when mean pain scores were compared, pain increased slightly from post-operatively to the discharge, and then the pain decreased gradually during the follow-up on second day, fifth day and 10th day. In a similar study conducted by Kueleman Y et al¹, he reported that the visual analog pain scores during the first 48 hours after surgery showed a similar decreasing profile. Neither medication intake nor pain scores were significantly different.

In the study conducted by Kueleman Y et al¹ similar results were obtained where 92 % patients preferred LC as day care surgery. In another study conducted by Briggs CD et al⁹ 84% patients were discharged on the day of surgery out of a total of 106 patients with patient satisfaction rate of 94%. Al-Qahtani HH et al¹⁴ in his study concluded that, only 5% patients were admitted for overnight stay for different reasons, while 95% patients were discharged before 8 pm which further pointed towards the efficacy of LC as a prominent day care procedure. In the study of Sato A et al¹³ it was concluded that 38% of 50 patients undergone LC stayed overnight and of them 12 patients (out of 19) were discharged the following day.

CONCLUSION

After undergoing the extensive research, collecting the data for the study purpose, analyzing the data, we could conclude that day-case laparoscopic cholecystectomy is feasible and safe and effective treatment for symptomatic gallstones.

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