

---

ORIGINAL ARTICLE

# Laparoscopic Cholecystectomy in a Day Case Setting: A Ganga Ram Hospital Experience

SHAHZAD ALAM SHAH; MUHAMMAD ARSHAD; HINA KHAN; ASLAM JAVED; MUHAMMAD TANVEER

*Correspondence: Shahzad Alam Shah, Department of Surgery, Sir Ganga Ram Hospital, Lahore.*

*e-mail:shahzadalamshah@gmail.com; Cell: +92 300 4269681*

## ABSTRACT

Because of the early recovery after Laparoscopic Cholecystectomy, this procedure is now being performed in day care settings. This study was conducted to determine the feasibility, rate and type of complications associated with laparoscopic cholecystectomy as a day case procedure without compromising the health of the patients.

**Material and Methods:** This study was conducted in the Department of General Surgery Sir Ganga Ram Hospital, Lahore from December, 2010 till December, 2012. Seventy five patients of mixed gender were included in the study.

**Sampling Technique:** Convenience sampling technique was employed

**Study Design:** It was a cross sectional descriptive study conducted from December 2010 to December, 2012.

**Results:** Seventy five patients with gallstone disease fulfilling the inclusion criteria were selected for this study. The female: male ratio was 57:18 and age range for female was 20-65 years (mean 35.44 years) and for male was 32-65 years (mean 40.14). The majority of the patients (86%) presented with biliary colic and 14% patient with acute cholecystitis was included in the study. In sixty two (82.66%) of selected patients day case laparoscopic cholecystectomies were successfully performed. Thirteen patients (17.33%) required an overnight stay. Overall complication rate was found at 16 percent (n=12). No major complication and no mortality occurred during the study period.

**Conclusion:** Our results showed that laparoscopic cholecystectomy could be performed as day case in our setup in carefully selected patients with good patient satisfaction.

**Key words:** Day Case; Laparoscopic Cholecystectomy, Cholelithiasis, Abbreviations: ASA; American Society of Anesthesiologists; CBD; Common Bile Duct, LFT's; Liver Function Test

## INTRODUCTION

Laparoscopic cholecystectomy is now the gold standard for treatment of symptomatic gallstones<sup>1</sup>. Rapid recovery after laparoscopic cholecystectomy and increasing experience with its postoperative course has led to progressively shorter postoperative stays<sup>2</sup>. Day case surgery is the admission of carefully selected patients to hospital for a planned surgical procedure, returning home on the same day<sup>3</sup>. The safety of ambulatory surgery is well documented, with low rates of adverse events during or immediately after surgery<sup>4</sup>. Several published studies have testified to the safety and feasibility of day case laparoscopic cholecystectomy<sup>5</sup>. Cholelithiasis is one of the common diseases and because of the limited bed facility we have to refuse some needy patients with other diseases due to non-availability of beds. By performing laparoscopic cholecystectomy as day case the hospital stay of the patients can be cut short and can partially

solve the problem of bed shortage as well as save the costs of the hospital and of the patients. This study was conducted to see the different complications associated with day case laparoscopic cholecystectomy so that patients can be discharged as day case without compromising their health. The purpose of this study was to determine the feasibility, rate and type of complications associated with day case laparoscopic cholecystectomy.

## MATERIAL AND METHODS

This study was conducted in the Department of General Surgery Sir Ganga Ram Hospital, Lahore from December, 2010 till December, 2012. Seventy five patients of mixed gender were included in the study. Convenience sampling technique was employed in this study and it was a cross sectional descriptive study

## Laparoscopic Cholecystectomy in a Day Case Setting: A Ganga Ram Hospital Experience

### Inclusion Criteria

1. Both genders with age less than 65 years with symptomatic gallstone disease.
2. American Society of Anaesthesiologists (ASA) grade 1 and 2 only
3. Living in the vicinity of the hospital within maximum distance of 20 km.
4. Having access to the telephone at all times and were agreed to the procedure.

### Exclusion Criteria

1. Co-morbid diseases like Ischemic heart disease, diabetes myelitis and hypertension.
2. Patients with bile duct stones or deranged LFT's and bleeding profile.
3. Patients with previous upper abdominal surgery.

The patients were admitted through outpatient department. History, thorough physical examination and routine investigations especially ultrasonography for hepatobiliary passages were done in all cases on outdoor basis. An anesthetist evaluated and assigned American Society of Anesthesiologists' (ASA) physical status score grade to the patients on outdoor basis. The patients were admitted at 07:00 hours on the day of surgery and were done as first or second patient on the list. All patients received a single dose of prophylactic antibiotic before induction. The operations were performed using general anesthesia with endotracheal intubation. The procedure was performed using three-port technique with CO<sub>2</sub> peritoneal cavity insufflation. All port sites were injected with 0.5% Bupivacain before making an incision. Abdominal pressure was kept below 13 mm Hg. All procedures were performed by an experienced surgeon. A closed suction drain was used only after a difficult dissection and the insertion of a drain was not a contraindication for discharge provided other discharge criteria were met. Patients were observed after every 30 minutes by a member of the surgical team for pain, nausea and vomiting. Intravenous Nalbufine was used postoperatively whenever indicated. Patients were encouraged to sit up, drink as soon as possible, and to go to the toilet under supervision. The patients were discharged if they were stable, fully conscious, pain free and were satisfied with discharge decision. Patients were given a standard package of analgesics on discharge consisting of Paracetamol (1g four times daily). Telephone

numbers of the ward, the resident on call, and the consultant were provided. The patients were followed up in the hospital on seventh postoperative day for removal of stitches and for enquiry about their satisfaction to the procedure.

### Data Analysis

All the data was collected on especially designed proforma and was analyzed by Statistical Program for Social Sciences (SPSS). Female to male ratio, mean value of ages and mean value of weights both for male and female patients was calculated. Reasons for failure to discharge as day case were analyzed and success rate of patients discharged as day case was calculated. Reasons for readmission after discharge were analyzed. Readmission rate was calculated. The types and proportions of complications were analyzed and presented as tabular classification. Since this was a descriptive study no statistical test was necessary.

### RESULTS

A total of 180 patients were admitted for cholecystectomy from December 2010 to December, 2012 out of which 75 patients (41.66% of the total) were selected for day case laparoscopic cholecystectomy. The female: male ratio was 57:18 and age range for female was 20-65 years (mean 35.44 years) and for male was 32-65 years (mean 40.14). Weight range for female was 45-88 kg (mean 74.41 kg) and for male was 53-78 kg (mean 65 kg) (Table-1). The majority of the patients (86%) presented with biliary colic and 14% patient with acute cholecystitis was selected for the study. Thirty one (62%) patients were of American Society of Anesthesiologists (ASA) grade 1 and 19 (38%) patients were of ASA grade II (Table-2). A total of 105 patients out of 180 were found not suitable for day case laparoscopic cholecystectomy. Reasons for unsuitability are listed in Table-3. In sixty two (82.66%) of selected patients day case laparoscopic cholecystectomies were successfully performed and such patients were discharged 6-9 hours after operation. Thirteen patients (17.33%) required an overnight stay. The reasons for failure to discharge are shown in Table-4. Five patients (6.66%) were readmitted on first post operation day after discharge (Table-5). Overall complication rate was found 16 percent (n=12). All complications were Toronto classification system grade I. The complications are listed in Table-6. No major

complication and no mortality occurred during the study period. Fifty eight patients (77.33%) were satisfied with the treatment and were agreed to recommend the procedure to others.

**Table 1: Age Range**

Age Range	Female 20-65 years	Male 32-65 years
Mean	Female 35.44 years	Male 40.14 years
Sex (F: M)	57:18	
Weight Range	Female 45-88 kg	Male 53-78 kg
Mean	Female 70.41 kg	Male 65 kg

**Table 2: ASA grade and presentation of patients (n=75)**

	Female n(Percentage)	Male n(Percentage)	Total n(Percentage)
<b>ASA Grade of Selected Patients</b>			
Grade I	42 (73.7%)	14 (77.8%)	56 (74.7%)
Grade II	15(26.3%)	04 (22.2%)	19(25.3%)
<b>Presenting Diagnosis of Selected Patients</b>			
Biliary Colic	49 (86%)	12 (66.7%)	61 (81.3%)
Acute Cholecystitis	08 (14%)	06(33.3%)	14 (18.7%)

**Table 3: Reasons For Unsuitability For Day Case Laparoscopic Cholecystectomy (N=105)**

<b>Reasons</b>	<b>Number of Patients</b>
Unsuitable ASA grade	21
Age greater than 65 years	14
Unsuitable Social Conditions	09
Lived out of defined area	28
Suspected CBD stones	05
Deranged LFTs	08
Previous upper abdominal surgery	08
Not agreed to the procedure	12

**Keys:** ASA; American Society of Anesthesiologists Grade CBD; Common Bile Duct; LFTs; Liver Function Tests

**Table 4: Reasons For Failure To Discharge as Day Case (N=13)**

<b>Reasons</b>	<b>Number of Patients</b>	<b>Percentage</b>
Conversion to open surgery	Nil	Zero
Insertion of drain	02	2.66%
Nausea and vomiting	03	4.%
Pain and abdominal distension	04	5.33%
Sedation	01	1.33%
Patient refusal	03	4.%
Total	13	17.33%

**Table 5: Reasons For Readmission And Outcome**

<b>Reasons</b>	<b>Number of Patients n (percentage)</b>	<b>Outcome</b>
Pain and abdominal distension	03 (4%)	Observation and discharged after 24 hours
Nausea&Vomiting	02 (2.66%)	Conservatively managed and discharged after 24 hours

**Table 6:** Complications And Their Rate And Toronto Classification Grade

Type of Complication	Number of Patients	Percentage	Grade	Outcome
Nausea and vomiting	04	5.33%	I	Observation
Distension	03	4%	I	Observation
Pain abdomen and distension	02	2.66%	I	Observation
Wound infection	03	4%	I	Wound dressing

## DISCUSSION

Patient selection is very important in the success of day case surgery. In this only patient with ASA grade I and II having age less than 65 years were selected. The same criteria was set by Chok KS et al.<sup>7</sup> in their study conducted in Hong Kong in 2004. However, some studies (Robinson et al.<sup>8</sup>, Richardson WS et al.<sup>9</sup>) also recommend high risk patients with ASA grade III to be included for day case laparoscopic cholecystectomy. As Sir Ganga Ram hospital is a tertiary care hospital and most of the patients are referral cases from different cities, therefore we only included patients living within 20km of hospital. Kumar A et al.<sup>10</sup> also included patient living within 20km of the hospital.

The age range was 20-65 years in our study comparable to most of the studies including of Lillemoe KD et al.<sup>11</sup> (17-76 years). We noticed female to male ratio 43:7 which is near and comparable to Kiely JM et al.<sup>12</sup> that was (6:1).

Although Acute cholecystitis was not in the exclusion criteria but we remained selective to an extent that on ultrasonography findings large pericholecystic edema and raised total leucocyte count in blood examination were avoided to be included in the study. Most of our cases (86%) presented with uncomplicated biliary colic and 14% presented with acute cholecystitis. In the study of Leeder PC et al.<sup>13</sup> 76% cases presented with biliary colic and 9% with acute cholecystitis. There was no incidence of conversion to open surgery in our study, while Johnston SM et al.<sup>14</sup> found it 9% conversion rate. Similarly Pattilo JC et al.<sup>15</sup> noted it at about 2.2% and the study of Jain PK et al.<sup>16</sup> 1% procedure were converted to open surgery. A nationwide American study of Livingston EH et al.<sup>17</sup> in 2004 found and even higher conversion rate of 5-10%. Four patients (5.33%) of our cases could not be discharged due to nausea and vomiting which was the major cause for overnight admission in our study while Dirksen CD et al.<sup>18</sup> found it a much major cause of retention as 26% had this complication.

The overall complication rate was 16% (n=12) in our study. Johnston SM et al.<sup>19</sup> found complication rate 12.5% (n=19) out which one was common bile duct injury and Vuilleumier H et al.<sup>20</sup> noted 7.9% (n=9). Bueno LJ et al.<sup>16</sup> observed 11.7% (n=59) post-operative complications. Our complication rate was slightly high because of our small sample size but still it is comparable to other international studies. Yousaf M et al.<sup>21</sup> has emphasized the need to follow the international guidelines in reducing the complication rate in a day care surgery setup in general. Readmission rate in our study was 6.66% (n=5) which is comparable to Lau H et al.<sup>22</sup> (4.5%) and to Sui WT et al.<sup>23</sup> (10%). The telephonic contact for follow-up was used which was also the acceptable method in the study of Fallis WM et al.<sup>24</sup>. Fifty eight patients (77.33%) were satisfied with the treatment and were agreed to recommend the procedure to others. Blatt A et al.<sup>25</sup> found 78% patients satisfied to the procedure while Bardram L et al.<sup>26</sup> found 90% patients satisfied to the procedure.

## CONCLUSION

The reduction in the cost and waiting times and increased patient satisfaction are well known advantages of day case surgery. Our results showed that laparoscopic cholecystectomy could be performed as day case in our setup in carefully selected patients with good patient satisfaction.

## REFERENCES

1. Bingener J, Richards ML, Schwesinger WH, Strodel WE, Sirinek KR. Laparoscopic cholecystectomy for elderly patients: gold standard for golden years? *Arch Surg* 2003; 138: 531-35.
2. Calland JF, Tanaka K, Foley E, Bovbjerg VE, Markey DW, Blome S, et al. Outpatient laparoscopic cholecystectomy: Patient outcomes after implementation of a clinical pathway. *Ann Surg* 2001; 233: 704-15.

3. Woods S. Laparoscopic cholecystectomy: evaluating the effect of decreasing length of stay. *Aust NZ J Surg* 2000; 70: 551-52.
4. Critchlow JT, Paugh LM. Is 24-hour observation necessary after elective laparoscopic cholecystectomy? *South Med J* 1999; 92: 1089-92.
5. Lillemoe KD, Lin JW, Talamini MA, Yeo CJ, Snyder DS, Parker SD. Laparoscopic cholecystectomy as a "true" outpatient procedure: initial experience in 130 consecutive patients. *J Gastrointest Surg* 1999; 3: 44-9.
6. Mjaland O, Raeder J, Aasboe V, Trondsen E, Buanes T. Outpatient laparoscopic cholecystectomy. *Br J Surg* 1997; 84: 958-61.
7. Chok KS, Yuen WK, Lau H, Lee F, Fan ST. Outpatient laparoscopic cholecystectomy in Hong Kong Chinese -- an outcome analysis. *Asian J Surg* 2004; 27: 313-16.
8. Robinson TN, Biffi WL, Moore EE, Heimbach JK, Calkins CM, Burch JM. Predicting failure of outpatient laparoscopic cholecystectomy. *Am J Surg* 2002; 184: 515-8.
9. Richardson WS, Fuhrman GS, Burch E, Bolton JS, Bowen JC. Outpatient laparoscopic cholecystectomy. Outcomes of 847 planned procedures. *Surg Endosc* 2001; 15: 193-5.
10. Kumar A, Seenu V, Mohan N, Kaul A, Bhalla AP, Batra RK, et al. Initial experience with day case laparoscopic cholecystectomy at a tertiary care hospital in India. *Natl Med J India* 1999; 12: 103-7.
11. Lillemoe KD, Lin JW, Talamini MA, Yeo CJ, Snyder DS, Parker SD. Laparoscopic cholecystectomy as a "true" outpatient procedure: initial experience in 130 consecutive patients. *J Gastrointest Surg* 1999; 3: 44-9.
12. Kiely JM, Brannigan AE, Foley E, Cheema S, O'Brien W, Delaney PV. Day case laparoscopic cholecystectomy is feasible. *Ir J Med Sci* 2001; 170: 98-9.
13. Leeder PC, Matthews T, Krzeminska K, Dehn TC. Routine day-case laparoscopic cholecystectomy. *Br J Surg* 2004; 91: 312-6.
14. Johnston SM, Kidney S, Sweeney KJ, Zaki A, Tanner WA, Keane FV. Changing trends in the management of gallstone disease. *Surg Endosc* 2003; 17: 781-6.
15. Pattillo JC, Kusanovic R, Salas P, Reyes J, Garcia-Huidobro I, Sanhueza M, et al. Outpatient laparoscopic cholecystectomy. Experience in 357 patients. *Rev Med Chil* 2004; 132: 429-36.
16. Bueno LJ, Planells RM, Arnau BC, Sanahuia SA, Oviedo BM, Garcia ER et al. Outpatient laparoscopic cholecystectomy: a new gold standard for cholecystectomy. *Rev Esp Enferm Dig* 2006; 98:14-24.
17. Livingston EH, Rege RV. A nationwide study of conversion from laparoscopic to open cholecystectomy. *Am J Surg* 2004; 188: 205-11.
18. Dirksen CD, Schmitz RF, Hans KM, Nieman FH, Hoogenboom. Ambulatory laparoscopic cholecystectomy is as effective as hospitalization and from a social perspective less expensive: a randomized study. *Ned Tidschr* 2001; 145: 2434-9.
19. Johnston SM, Kidney S, Sweeney KJ, Zaki A, Tanner WA, Keane FV. Changing trends in the management of gallstone disease. *Surg Endosc* 2003; 17: 781-6.
20. Vuilleumier H, Halkic N. Laparoscopic cholecystectomy as a day surgery procedure: implementation and audit of 136 consecutive cases in a university hospital. *World J Surg* 2004; 28: 737-40.
21. Yousaf M, Yousaf HJ, Amin S, Hussain M. Day surgery: A need for guidelines. *J Surg Pak* 2003; 8: 25-9.
22. Lau H, Brooks DC. Contemporary outcomes of ambulatory laparoscopic cholecystectomy in a major teaching hospital. *World J Surg* 2002; 26: 1117-21.
23. Siu WT, Leong HT, Law BK, Onsiang SM, Fung KH, Li AC, et al. Outpatient laparoscopic cholecystectomy in Hong Kong: patient acceptance. *Surg Laparosc Endosc Percutan Tech* 2001; 11: 92-6.
24. Fallis WM, Scurrah D. Outpatient laparoscopic cholecystectomy: home visit versus telephone follow-up. *Can J Surg* 2001; 44: 39-44.
25. Blatt A, Chen S. Day-only laparoscopic cholecystectomy in a regional teaching hospital. *ANZ J Surg* 2003; 73: 321-5.
26. Bardram L, Klarskov B, Rosenberg J, Lund CM, Kehlet H. Outpatient laparoscopic cholecystectomy: two years of experience. *Ugeskr Laerger* 2005; 167:2644-8.