

Original Article

Evaluate the Outcome and identify Predictive failure of outpatient laparoscopic cholecystectomy

Seyed Nejat Hosseini,¹ Seyed Nouraddin Mousavinasab,² Haleh Rahmanpour³
Department of Surgery, Shafieeh Hospital,^{1,3} Department of Social Medicine, School of Medicine,²
Zanjan University of Medical Sciences, Zanjan, Iran.

Abstract

Objective: To evaluate the outcome of undertaking out-patient laparoscopic cholecystectomy (OLC) and identifying its predictive failures.

Methods: One hundred and forty-nine consecutive patients with symptomatic cholelithiasis scheduled for preplanned elective laparoscopic cholecystectomy (LC) from August 2004 to December 2006 were included in the study. Patients with associated severe diseases, ASA class III and IV who would have required post operative surgical care, residents of remote areas and other surgical reasoning were entered in Inpatient's Laparoscopic Cholecystectomy (ILC) group (n=57) and others were enrolled in OLC group (n=87). Five patients converted to open surgery and thus were excluded from the study. All patients were recruited during the initial outpatient visit and the full preoperative details were explained to them. All of the related factors of OLC were recorded in every visit. Significant differences were evaluated using Chi-square and fisher exact test.

Results: Eighty seven patients (58.3%) were selected for outpatient group from which 69 patients (79.3%) successfully underwent outpatient LC. Eighteen (20.7%) patients (failure rate) were not discharged at all. Comparing successful and unsuccessful OLC, the mean age was 41.1 ± 12.7 vs 51.3 ± 16.1 years ($P=0.005$), also the mean operation time was 33.7 ± 13.3 vs 33.1 ± 13.8 minutes and the ability for oral intake existed in 66 patients (95.7%) vs 15 patients (83.3%) ($P = 0.1$) respectively. Pain was the most common cause of failure of OLC.

Conclusions: OLC is safe and feasible with low readmission. It achieves high levels of patient satisfaction and acceptance, when patients are carefully selected. A prospective study with a larger sample size should be warranted to verify whether OLC can be useful for high age and high ASA class patients (JPMA 59:452; 2009).

Introduction

Over the last two decades, laparoscopic cholecystectomy (LC) has revolutionized the treatment of symptomatic cholelithiasis. This procedure, now usually performed electively on an outpatient basis, provides the advantages of decreased pain and safe procedure.^{1,2} Outpatient laparoscopic cholecystectomy (OLC) has been undertaken in several centers in the world,³ but has not been introduced sufficiently in developing countries. OLC has been shown to be less expensive than inpatient surgery (by decreasing health care costs, relieving pressure on hospital beds³⁻⁶ and being performed with high patient satisfaction and facilitating patients' feelings of well-being).^{2,3,5-8}

OLC is a feasible and safe procedure which does not increase morbidity.^{4,6,9,10} OLC was conducted in 44% to 92% of the total elective LC in previous studies.^{5,11-13} Problems of outpatient LC were readmission, vomiting, severe pain and rare complications such as haemorrhage from a cystic artery.^{7,14,15} Today, a large group of patients who can be transferred from inpatient to outpatient surgery, are patients with cholelithiasis. Since hospital resources are limited, it has become more imminent to accurately predict who will require inpatient postoperative care.

The experience of OLC in developing countries is still limited; the aim of this prospective study was to evaluate the outcome of OLC; predictive factors for OLC, identify predictive failure of OLC, patients' satisfaction, acceptance of this procedure and causes of readmission.

Patients and Methods

From August 2004 to December 2006 in Shafieeh hospital, Zanjan, Iran, 149 consecutive patients with symptomatic cholelithiasis scheduled for preplanned elective LC were included in the study and were prospectively registered in a protocol. Patients were excluded: if they had bilirubin greater than 3.5 mg/dl or Alkaline phosphates greater than 250 (UL), acute cholecystitis, gallstone pancreatitis, cholangitis and choledocholithiasis and if they were incapable of understanding information regarding the study.

Patients were entered in the Inpatients Laparoscopic Cholecystectomy (ILC) group if they were more than 75 years age, had surgery reasons as intra operative bleeding, multiple surgery (Hernia and LC) and intestinal seromuscular damage, severe associated diseases as ASA class III and IV who needed post surgery care, were living in remote areas (more than 50 KM from center) and the patient was not interested. These patients were typically managed as ILC group (n=57) (Table-1) and those enrolled in OLC group were 87. Five patients were converted to open surgery and were excluded from the study. Complete written and verbal information of the procedure was given to all patients. All patients were recruited

Table-1: Reason of selected inpatient group.

| Variable | Inpatient (n=62) |
|--------------------------------|------------------|
| Surgery reasoning: | |
| Difficult operation | 8 |
| Monitoring for haemorrhage | 5 |
| Multiple surgery (Hernia & LC) | 3 |
| Converted patients* | 5 |
| Without acceptance by patients | 3 |
| Remote area | 8 |
| Age over 75 years** | 8 |
| ASA class III & IV | 30 |

n= number, ASA class = American Society of Anesthesiologists class

* These patients excluded from inpatient LC group.

** Some patients had more than one exclusion criteria.

during the initial outpatient visit and the full preoperative details were explained to them. The routine blood tests, blood reserve, liver function test, anesthesiologist visits, were all done. All the patients were admitted in hospital at 7:30 am on the day of surgery. All patients were intubated and received standardized I.V. anaesthesia (sodium thiopental, Pancronium, fentanyl and diazepam). A standard four trocar LC was performed by an experienced laparoscopic surgeon. A dose of prophylactic antibiotics was given at the induction of anaesthesia. Gastric tube and foley catheter were not routinely used. The surgeon selected some of patients for outpatient group according to their operating results. By the end of the procedure all patients received 50 mg Pethidine i.m. All patients were allowed liquids orally after post operative orientation. Metoclopramide and hyoscine were given after the procedure if the patient developed repeated vomiting.

All patients were visited by the intern on the day of surgery. The patients who did not have unresponsive pain, repeated vomiting, administrative reasons for discharge (official discharge time was till 7 pm), and a normal ambulation and mental status, were discharged in the afternoon on surgery day. Acetaminophen codeine tablets and/or diclofenac were prescribed. Patients were nursed at home by their family and were advised to call the surgeon or come to the hospital clinic if there was any problem. Routine follow-up was scheduled for all patients. The pre-set questionnaire was used in the afternoon of surgery day and the operating surgeon followed up all patients in the hospital clinic on the fourth, twelfth and thirtieth postoperative days. Patients' satisfaction, acceptance of this procedure, conversion rate, reasons for failure of discharge, readmissions and other data were collected.

Significant differences were evaluated using Chi-square and fisher exact test. P-values less than 0.05 were considered statistically significant. All analyses were performed using SPSS 11.5.

Results

A total of 149 patients underwent elective LC. Their

mean age was 47.99 ± 16.1 years, and 133 (89.3%) were females. Preoperative diagnosis included symptomatic cholelithiasis in 146 (98%), gallbladder polyp in 2 (1.3%) and biliary dyskinesia in 1 (0.7%). The ASA classification was distributed as follows: 107 patients (71.8%) were class I & II and 42 (28.2%) were class III & IV. Eighty-seven patients were enrolled for OLC, and 57 for ILC group. Five patients were converted to open surgery and consequently were excluded from the study (Table-2).

Table-2: Result of outpatient laparoscopic cholecystectomy (OLC) group.

| Variable | Outpatient Successful (n=69) | Unsuccessful (n=18) | Inpatient (n=57) |
|---------------------------------|------------------------------|---------------------|------------------|
| Sex | | | |
| female | 64(92.8%) | 17(94.4%) | 49(85.9%) |
| male | 5 | 1 | 8 |
| Age (range) | 41.1(18 – 72) | 51.3 (27 – 75) | 53.9 (31–90) |
| Mean Hospital stay (days) | 1.28± 0.8 | 2± 0.4 | 2.9± 2.7 |
| Mean Postoperative stay (Hours) | 7.5± 1 | 25.7± 8.2 | 36.5± 49.1 |
| Mean Operative time (minute) | 33.7± 13.3 | 33.1± 13.8 | 45.3± 18.2 |
| ASA class I & II | 62(89.8%) | 13(72.2%) | 27(47.3%) |
| ASA class III & IV | 7(10.2%) | 5(27.8%) | 30(52.6%) |
| Successful oral intake | 66 (95.7%) | 15 (83.3%) | 52 (91.2%) |
| Readmission | 1 | 2 | 2 |
| Mortality | 0 | 0 | 0 |

n= number, ASA class = American Society of Anesthesiologists class.

The 62 patients not selected for outpatient's surgery, had the following reasons surgery factors, patients with ASA class III and IV who would require post surgical care and those converted to open surgery (Table-1). All these patients were enrolled to the inpatients group.

The mean age was 53.9 ± 16.7 years and the mean operation time was 45.3 ± 18.2 minutes, and the mean post operative stay was 36.5 ± 49.1 hours (7 to 480). The ability for oral intake was present in 52 patients (91.2%).

From the 87 (58.3%) patients selected for outpatient's group, 69 (79.3%) successfully underwent OLC. On the other hand, 18 (20.7%) patients (failure rate) were not discharged (Table-3). Twelve (13.7 %) patients of OLC group had ASA class III or higher and 5 (41.6%) were failures (Table-2). The mean duration of post operative stay

Table-3: Reason of failure for outpatient laparoscopic cholecystectomy (OLC).

| Variable | Unsuccessful(n=18) |
|------------------|--------------------|
| Pain | 8 |
| Vomiting | 4 |
| Official reasons | 4 |
| not ambulant | 2 |

n= number.

in successful OLC group was 7.5 ± 1 hours. The ability for oral intake was seen in 66 (95.7%) patients. In comparing successful and unsuccessful OLC, the mean age was 41.1 ± 12.7 years vs. 51.3 ± 16.1 years ($p=0.005$) also the mean operation time was 33.7 ± 13.3 minutes vs. 33.1 ± 13.8 minutes and ability of oral intake existed in 66 patients (95.7%) vs. 15 patients (83.3%) ($p = 0.1$). Pain was the most common cause of failure of OLC.

Three patients (2%) did not agree to enroll in outpatient group, and were taken in the inpatient group. The acceptance rate for OLC was 97%.

Satisfaction rate showed 81.2% excellent, 10.1% good, 5.8% satisfied and 2.9% dissatisfied. In the successful outpatients group, patients who were not satisfied had more pain.

Three patients (3.4%) in the OLC group were readmitted after being discharged. One (1.4%) patient in OLC had delayed peritonitis, due to inadequate washing, and was treated conservatively. Two (11.1%) patients in this group had severe vomiting causing aspiration pneumonia. Two (3.5%) patients in ILC group were readmitted after discharge due to duodenal ulcer and residual common bile duct stone which was diagnosed by endoscopy and endoscope retrograde cholangiopancreatography (ERCP). There was no significant difference between successful OLC and ILC groups regarding minor and major complications.

Six patients (8.7%) of the successful OLC group returned within 48 hours after discharge with severe pain and were given diclofenac suppository.

Discussion

The results of the present study indicate that OLC is safe and feasible and has a low rate of complications and readmission. Patient acceptance and satisfaction for this procedure is very high. OLC is associated with reduction in treatment cost which may be of interest for developing countries.

All patients with gallstones selected for LC, agreed (97.9%) to enroll in OLC group. This finding was similar to other studies.^{16,17} Satisfaction was expressed by 97.1% patients which is in concordance with the results of Kasem et al⁹ who reported patient satisfaction of 99%.

From the 87 (58.3%) patients of the OLC group, 69 (79.3%) were discharged. In other studies the range of patients' selection for OLC was between 78% and 88%^{4,12} and their successful discharge rate was 63-96.1%.^{3,4,12} The patients selection rate for OLC group depended on age, time of operation, ASA class, conversion to open surgery, living in remote areas and surgery reasons. Identifying these factors can help in better selection of cases for OLC. The

feasibility of OLC was high in the present study and is similar to other studies.

The factors responsible for failure to discharge (failure rate 20.7%) in the OLC group were pain, high age, high ASA class and unsuccessful oral intake (vomiting), but the operation time was not different. Good management of pain and vomiting gives an early discharge from hospital.¹⁵ In this study the ability to tolerate oral diet was not different between OLC and ILC groups. However, Martinez et al reported a statistical difference between the two groups.¹⁶ These results can be used in scheduling and counseling patients in preoperative decision making. In this study the maximum age was 72 years with a few of patients with ASA class III and IV. In other studies the age was less than 60 years,⁴ and ASA class I & II.^{2,4,9} Robinson et al were of the opinion that age more than 50 years and ASA class III and IV, were predictive factors for failure in more than 50% of the patients.⁷ Paterson et al reported that 29 out of 40 high risk patients were discharged within 23 hours.¹⁸ Older age and high ASA class do not have limitations for OLC.^{7,18}

Readmission rate and complications were low in our study and were the same in the two groups. This is similar to other studies.^{2,9,10,19} OLC reduced hospital stay which has also been shown in other studies.^{5,10}

LC is a safe, feasible and cost effective outpatient procedure in Iran, with high levels of patient satisfaction, high acceptance, successful results and low readmissions, when patients are carefully selected. More studies will verify the use of OLC in old age and high ASA class patients.

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