

Original Article

Outpatient Laparoscopic Cholecystectomy in Hong Kong Chinese – An Outcome Analysis

Kenneth Siu Ho Chok¹, Wai Key Yuen, Hung Lau, Francis Lee and Sheung Tat Fan,¹

Department of Surgery, University of Hong Kong Medical Centre, Tung Wah Hospital, and

¹Department of Surgery, University of Hong Kong Medical Centre, Queen Mary Hospital, Hong Kong SAR, China.

BACKGROUND: Laparoscopic cholecystectomy (LC) is now the procedure of choice for symptomatic gallbladder disease. Although many recent studies, mostly from abroad, report that it can be performed safely in the outpatient setting, the experience of outpatient LC in Hong Kong is still limited. This retrospective study evaluated the feasibility, safety and patient acceptance of outpatient LC in Hong Kong Chinese patients.

PATIENTS AND METHODS: The **data** of 73 consecutive patients who had undergone outpatient LC between February 2000 and October 2002 in the Day Surgery Centre of Tung Wah Hospital were **prospectively collected and** reviewed. The selection criteria for patients undergoing outpatient LC included American Society of Anesthesiologists risk classification I or II, age less than 70 years, and the availability of a competent adult to accompany the patient home and look after them for 24 hours. No effort was made to exclude complicated cases. After assessment by the operating surgeon, patients were discharged from the Day Surgery Centre in the afternoon when their clinical condition satisfied pre-defined discharge criteria. All patients were followed up in the Day Surgery Centre in the first and fourth postoperative weeks.

RESULTS: The same-day discharge rate was 88% and the conversion [**It's a common language for doctors, keep it please**] rate was 4%. Six patients (8.2%) with uneventful LC required hospitalization after the procedure. There was no major complication and no unplanned admission. Two patients had port site wound infection requiring hospital admission at the first follow-up. Patient satisfaction was high, pain acceptance was good, and analgesic consumption was minimal. Mild fat intolerance was common in postoperative patients (> 50%) but this had almost all resolved by postoperative week four. All patients were able to resume their usual daily activities within 2 weeks after surgery.

CONCLUSIONS: LC is a safe and feasible outpatient procedure in Hong Kong, with high levels of patient satisfaction. A prospective study with a larger patient population is warranted to verify whether it should be recommended as treatment for gallstone disease in selected patients in future.

[*Asian J Surg* 2004;27(4):xx–xx]

Key Words: laparoscopic cholecystectomy, outpatient, gallstone, gallbladder disease

Address correspondence and reprint requests to **Dr. Wai Key Yuen**, Department of Surgery,

Running Title: OUTPATIENT LAPAROSCOPIC CHOLECYSTECTOMY

Authors: CHOK AND OTHERS

Issue: *Asian Journal of Surgery* Vol. 27 No. 4 October 2004

Introduction

Laparoscopic cholecystectomy (LC) has been performed since 1989 in the USA and has become the standard treatment of choice for symptomatic gallbladder disease.¹ It is regarded as an inpatient procedure in most centres. Reddick and Olsen first introduced outpatient LC in 1990, but the results were disappointing,² mainly due to impaired pulmonary function, high consumption of opiate analgesics and related complications.³ Recent studies have reported that LC could be a safe and feasible outpatient procedure, and it has been much encouraged in some American and European ambulatory surgery centres because of its economical and practical benefits.⁴ However, the experience of outpatient LC in Hong Kong is limited. The aim of this study was to evaluate the feasibility, safety and patient acceptance of outpatient LC in Hong Kong Chinese patients.

Patients and methods

The **data** of 73 consecutive patients who had undergone outpatient LC in the Day Surgery Centre of Tung Wah Hospital, Hong Kong, between February 2000 and October 2002 were **prospectively collected and** reviewed. Selection criteria included American Society of Anesthesiologists (ASA) risk classification I or II, age less than 70 years, and the availability of a competent adult to accompany the patient home and take care of them for at least 24 hours. No attempt was made to avoid difficult cases.

All patients were recruited during the initial outpatient visit and the full perioperative details were explained. Surgery was scheduled at the same time and written instructions concerning preparation, admission and highlights of the procedures were given to all patients. One day before the procedure, an experienced anaesthetist and the operating surgeon assessed all patients in the pre-anaesthetic clinic. Informed consent was obtained and routine blood tests, including cross-matching of blood, were done. Patients with abnormal liver function tests were subjected to further investigations before surgery.

All patients were admitted at 7:00 am on the day of surgery. A dose of prophylactic antibiotic was given at induction of anaesthesia. All patients received general anaesthesia with a standard regimen with no pre-medication. Anaesthesia was induced using intravenous propofol and fentanyl at a body-mass-dependent dose. Following endotracheal intubation, all patients were put on

mechanical ventilation and inhalational anaesthetic agents (nitric oxide and isoflurane) for maintenance. Before reversal of the anaesthesia, all patients received intravenous metoclopramide as an anti-emetic. A gastric tube and Foley catheter were not routinely used. Metoclopramide and ondansetron were given when necessary after the procedure if patients developed repeated vomiting. We adopted a standard four-port technique using 12 mmHg CO₂ pneumoperitoneum; intraoperative cholangiography was not routinely used. At the end of the operation, all port sites were infiltrated with 2–3 mL of 0.25% bupivacaine. Patients were then transferred back to the Day Surgery Centre for close observation and were discharged when their clinical condition satisfied pre-defined discharge criteria (Table 1). All patients were given adequate oral analgesics – Dologesic[®] (Llorens Pharmaceuticals, Miami, FL, USA) 1 tablet every 6 hours and diclofenac (Voltaren SR[®]; Novartis Pharmaceuticals, [City, State, Country?]) 100 mg tablet daily when necessary – and a 24-hour hotline telephone number was available for enquiry if problems arose.

The definition of outpatient LC was that patients were discharged before 6:00 pm on the day of surgery. A pre-set questionnaire was used on postoperative days 1 and 3 over the phone by an independent third party (e.g. a nurse working in the Day Surgery Centre) to enquire about patient satisfaction, degree of postoperative pain and consumption of analgesics. The operating surgeon followed up all patients in the Day Surgery Centre in the first and fourth postoperative weeks.

Results

A total of 73 patients underwent outpatient LC; there were 19 men and 54 women, with a mean age of 46 years (range, 21–69 years). Of these, 62 patients had ASA grade I and 11 patients had ASA grade II **status**. The mean operating time was 89 minutes (range, 30–420 minutes). The overall conversion rate **[keep it]** was 4% ($n = 3$) (Table 2) and the successful outpatient LC rate was 88% ($n = 64$). The overnight stay percentage was 8% ($n = 6$); four of these patients were hospitalized for psychosocial reasons, one due to poor pain control requiring intramuscular analgesic injection, and one due to perforation empyema of the gallbladder. There were two planned readmissions because of severe wound infection requiring intravenous antibiotic therapy after follow-up in the first postoperative week. All other complications were related to minor wound problems. About 50% of patients claimed that they had mild fat intolerance symptoms (e.g. loose stool, belching after meals) at the first postoperative follow-up, but this had almost all resolved by the second follow-up. All patients returned to their usual activities of daily living by the second postoperative week.

In patients who underwent successful outpatient LC, median pain score (visual analog scale at rest) was 3 ± 1.8 (0 = least painful, 10 = most painful) on postoperative day 1. On postoperative day 3, more than 80% of patients experienced only mild wound pain (median pain score, 1 ± 1.26). Analgesic consumption was minimal (Figure 1) and a high level of patient satisfaction was achieved (Figure 2).

Discussion

LC is now widely accepted as the treatment of choice for symptomatic gallbladder disease. Many procedures are performed on an outpatient basis and LC is one of them. The factors contributing to successful outpatient LC are poorly defined. Potential barriers to this process are multifactorial. Robinson et al recently reported that age more than 50 years, ASA class III or more, and surgery start time later than 1 pm were predictive factors for failure in more than 50% of patients.⁵ Many patients with symptomatic gallbladder disease have comorbidities rendering inpatient observation more acceptable. The other obstacle is patient resistance caused by peers' experience. Also, the surgeon's and anaesthetist's concerns about postoperative complications (e.g. decreased pulmonary vital capacity) are a hindrance to outpatient LC. Studies report that morbidity and mortality rates might be higher following outpatient LC for the above reasons.^{3,6} In addition to physical factors, the patient's personality and social support determine suitability for outpatient LC.⁷ The feasibility of outpatient LC was high in the present study and was comparable to that in other studies (Table 3).⁸⁻¹⁰

The complication rate was low and the severity of complications was not significant. Less than 3% of patients refused an outpatient procedure if they were to be treated again, reflecting that patient acceptance was high. A recent study also supported that outpatient LC was a safe procedure, and that patients would experience the same satisfaction with no increase in complications compared with patients admitted overnight.¹¹ Another important claimed advantage is cost-effectiveness. Theoretically, outpatient LC can reduce hospital expenses considerably.^{12,13} Keulemans et al concluded that outpatient LC should be the preferred treatment in ASA class I and II patients, and that the cost was lower than in patients treated on an inpatient basis.¹⁴ However, the need for more experienced surgeons to perform the operation may increase the cost. Also, training experience may not be adequate for surgical trainees. Therefore, more large-scale studies are warranted to investigate these aspects further.

Conclusions

LC is a safe and feasible outpatient procedure in Hong Kong, with high levels of patient satisfaction. A prospective study with a larger patient sample is warranted to verify whether outpatient LC would be a future trend for treatment of gallstone disease in selected patients.

References

1. Soper NJ, Stockmann PT, Dunnegan DL, et al. Laparoscopic cholecystectomy. The new 'gold standard'? *Arch Surg* 1992;127:917-21.
2. Reddick EJ, Olsen DO. Outpatient laparoscopic laser cholecystectomy. *Am J Surg* 1990;160:485-9.
3. Saunders CJ, Leary BF, Wolfe BM. Is outpatient laparoscopic cholecystectomy wise? *Surg Endosc* 1995;9:1263-8.
4. Siu WT, Leong HT, Law KB. Outpatient laparoscopic cholecystectomy in Hong Kong: patient acceptance. *Laparosc Endosc* 2001;11:92-6.

5. Robinson TN, Biffl WL, Moore EE, et al. Predicting failure of outpatient laparoscopic cholecystectomy. *Am J Surg* 2002;184:515–9.
6. Fenton-Lee D, Riach E, Cooke TG. Day surgery and gastroenterology. *Gut* 1995;36:324–6.
7. Cuschieri A. Day-case (ambulatory) laparoscopic surgery. Let us sing from the same hymn sheet. *Surg Endosc* 1997;11:1143–4.
8. Lam D, Miranda R, Hom SJ. Laparoscopic cholecystectomy as an outpatient procedure. *Am Coll Surg* 1997;185:152–5.
9. Richardson WS, Fuhrman GS, Burch E. Outpatient laparoscopic cholecystectomy. *Surg Endosc* 2001;15:193–5.
10. Serralta A, Espinosa G, Martinez-Casan P. Outpatient laparoscopic cholecystectomy. Four years of experience. *Rev Esp Enferm Dig* 2001;93:211–3.
11. Curet MJ, Contreras M, Weber DM, et al. Laparoscopic cholecystectomy: outpatient vs inpatient management. *Surg Endosc* 2002;16:453–7.
12. Prasad A, Foley RJ. Experience of day case laparoscopic cholecystectomy: safety and cost considerations. *J One Day Surg* 1994;4:11–2.
13. Farha GJ, Green BP, Beamer RL. Laparoscopic cholecystectomy in a freestanding outpatient surgery centre. *J Laparoendosc Surg* 1994;4:291–4.
14. Keulemans Y, Eshuis J, de Haes H, et al. Laparoscopic cholecystectomy: day-care versus clinical observation. *Ann Surg* 1998;228:734–40.

Table 1: Discharge criteria

	Score
Vital signs	
Within 20% of pre-op value	2
Between 20–40% of pre-op value	1
> 40% or < 40% of pre-op value	0
Ambulation and mental status	
Oriented [Deleted x 3] AND gait steady	2
Oriented [Deleted x 3] OR gait steady	1
Neither	0
Pain, nausea or vomiting	
Minimal	2
Moderate	1
Severe	0

Surgical bleeding	
Minimal	2
Moderate	1
Severe	0
Intake and output	
Has had PO fluids AND voided	2
Has had PO fluids OR voided	1
Neither	0

Pre-op = preoperative; PO = [per-oral]; Patient must achieve at least score of 8 before one is eligible for discharge.

Table 2. Reasons for conversion

Reason	<i>n</i>
Bleeding	1
Right posterior segmental duct anomaly	1
Prolonged procedure	1

Table 3. Comparison with other studies

	Current study (<i>n</i> = 73)	Lam et al (<i>n</i> = 213) ⁸	Richardson et al (<i>n</i> = 847) ⁹	Serralta et al (<i>n</i> = 271) ¹⁰
Outpatient LC rate, %	88	96	74.5	71.2
Conversion rate, %	4	2.8	3	1.1
Mortality rate, %	0	0	0.1	0
Overnight stay rate, %	8.2	3.3	24	23.6
Unplanned readmission rate, %	0	0	2.4	1.1
Complication rate, %	9.6	18	–	7.7

LC = laparoscopic cholecystectomy.

Figure 1. Analgesic consumption on postoperative days 1 and 3.

Figure 2. Patient satisfaction. 0 = least satisfied; 10 = most satisfied.