Day-Case Laparoscopic Cholecystectomy: Is it a Safe and Feasible Procedure?

Selim Sözen, Cengizhan Şan Özdemir

Elazığ Training and Research Hospital
General Surgery, Elazığ, Turkey

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***Correspondence**: Dr. Selim Sözen*
Elazığ Training And Research Hospital
General Surgery, Elazığ, Turkey
E-mail: selimsozen63@yahoo.com

ABSTRACT

***Aim**: Laparoscopic cholecystectomy (LC) is the most common minimally invasive surgery in Turkey. However, Day case LC is not a common practice in Turkey. The purpose of this work was to evaluate the feasibility, benefits(advantage of cost effectivenes) and safety outcome of elective laparoscopic cholecystectomy as a daycase procedure in our hospital.*

***Method**: 40 Patients who had received laparoscopic cholecystectomy for various bening gallbladder pathologies. Laparoscopic cholecystectomies were performed by an experienced surgeon or a surgeon-in-training with an experienced surgeon as an assistant in the American position through four trocars. Operations were performed under general anaesthesia. They were admitted and operated on in the morning hours and discharged after a double check by the surgeon and an anaesthetist 4 to 6 hours later. For the purpose of this study, we defined the following criteria as prerequisites for same-day discharge after 6-8 hours of monitoring in the DS ward: ability to tolerate oral feeds; ability to pass urine spontaneously; and ability to ambulate independently.*

***Result**: Two hundred laparoscopic cholecystectomies were performed in day case surgery from January 2009 to December 2009. Of fourty patients selected for day case LC, 90% were discharged successfully after 6-8 hrs observation. No significant perioperative complications were noted. Unplanned admission and readmission rate was 10%, respectively. All four patients (10%) were discharged the next day. Two of the patients (5%) who underwent DS LC successfully were readmitted on a later date.They were succesfully treated.*

***Conclusion**: These results suggest that laparoscopic cholecystectomy can be routinely performed as a day-case procedure.*

***Key words**: Postoperative nausea and vomiting, laparoscopic cholecystectomy, day-case*

Günübirlik Laparoskopik Kolesistektomi: Güvenli ve Uygulanabilir mi?

Amaç: *Laparoskopik kolesistektomi (LK) Türkiye'de en yaygın minimal invaziv cerrahidir. Ancak, günübirlik LC Türkiye'de yaygın bir uygulama değildir. Bu çalışmanın amacı hastanemizde daycase prosedür olarak uygulanan elektif laparoskopik kolesistektominin fizibilite, fayda (maliyet etkinliği avantaj) ve güvenlik sonuçlarını değerlendirmektir.*
Metod: *Çeşitli selim safra kesesi patolojileri için laparoskopik kolesistektomi yapılan 40 hasta çalışmaya dahil edildi. Laparoskopik kolesistektomi, deneyimli bir cerrah ya da deneyimli bir cerrah nezaretinde asistan ile birlikte dört trokar aracılığıyla Amerikan pozisyonda yapıldı. Ameliyatlar genel anestezi altında yapıldı. Hastalar sabah saatlerinde ameliyat edildi. 4-6 saat sonra cerrah ve bir anestezist tarafından çift kontrolden sonra taburcu edildi. Bu çalışmada, 6-8 saat sonra aynı gün taburcu için önkoşul olarak aşağıdaki kriterler belirlemiştir. Kendiliğinden idrar yapma yeteneği, oral gıdayı tolere edebilmesi ve ihtiyaçlarını karşılıyabilir durumda olması.*
Bulgular: *Ocak 2009 tarihinden itibaren Aralık 2009' a kadar iki yüz laparoskopik kolesistektomi ameliyat yapıldı. Günübirlik LC için seçilen kırk hastann %90'ı başarıyla 6-8 saat gözlem sonrası taburcu edildi. Anlamlı bir perioperatif komplikasyon kaydedilmedi. Plansız başvuru ve geri kabul oranı ise %10 idi. Dört hasta (%10) ertesi gün taburcu edildi. Günübirlik LC yapılan 2 (%5) hastada başka bir gün başvuru yaptı ve başarıyl tedavi edildi.*
Sonuç: *Bu sonuçlar, laparoskopik kolesistektominin rutin olarak günübirlik olarak yapılabileceğini desteklemektedir.*
Anahtar kelimeler: *Postoperatif bulantı ve kusma, laparoskopik kolesistektomi, günübirlik vaka*

INTRODUCTION

Laparoscopic cholecystectomy (LC) has now become the standard treatment for symptomatic gallstone disease. Because of the smaller scars and reduced postoperative pain, patients enjoy a shorter hospital stay. Primary aim of day care surgery is to provide convenience to the patients by avoiding hospitalization, but patient's safety is the ultimate priority (1). The advantages of patient satisfaction and cost effectiveness were highly attractive to surgeons and hospital administrators (2,3). Although in some countries like the United-States or Canada the concept of day-case laparoscopic cholecystectomy has already been widely accepted, with recent reports focusing less on feasibility but rather on the possibility to apply wider patients inclusion criteria, in Europe, the treatment of symptomatic cholelithiasis on an outpatient basis is still infrequent (4).

MATERIALS AND METHODS

From January 2009 to December 2009, surgeons were encouraged to propose day-case cholecystectomy to patients with symptomatic galbladder diseases and disorder. Presurgical investigation included a physical examination, liver biological tests (gamma-glutamyl transferase, alkaline phosphatase, transaminases), ultrasonography of the gallbladder and the bile ducts and an anaesthetic evaluation. Patients with an American Society of Anaesthesiology (ASA) classification of I or II were considered eligible for an outpatient management. Clinical suspicion of common bile duct stones and previous abdominal surgery were excluded.

Laparoscopic cholecystectomies were performed by an experienced surgeon or a surgeon-in-training with an experienced surgeon as an assistant in the American position through four trocars. Operations were performed under general anaesthesia. Patients were given cefuroxime 1.5 g intravenously at the start of the procedure. The patients were anaesthetized with fentanyl 0.1-0.2 μg/kg and thiopentone 5 mg/kg or propofol 2.5 mg/kg. Intraoperative analgesia was maintained with boluses of fentanyl (0.25-0.5 μg/kg). At the beginning of the operation 50 mg ropivacaine mixed with saline was injected above the liver and on each side of the gallbladder beneath the liver. The four ports were infiltrated with local anaesthetic before incision and placement of ports to minimise postoperative wound pain.

Patients were admitted one hour before surgery and operated on the morning list before 2:00 PM. Patients were encouraged to get up 4-6 h after surgery and to take a liquid diet and were discharged from daycare unit in the evening once they have adequate pain control, passed urine, and resumed oral feeding. Discharge analgesia included compound analgesic tablets, acetaminophen 325 mg, and oxycodon HCL 5 mg for 3 days. In case of postoperative nausea and/or vomiting 0.5 mg/kg of metoclopramide and in persisting symptoms 4 mg of ondansetron were administered. For the purpose of this study, we defined the following criteria as prerequisites for same-day discharge after 6-8 hours of monitoring in the day surgery (DS) ward: ability to tolerate oral feeds; (3) ability to pass urine spontaneously; and (4) ability to ambulate independently.

***Table1**. Demographic data and presenting symptoms*

	n(%)
Age, years	*44±13.3*
Female,	*25/(62.5)*
Male,	*15/(37.5)*
ASA- I	*10/(25)*
ASA-II	*30 /(75)*
Symptomatic gallstones	*39/(97.5)*
Gallbladder polyp	*1/(2.5)*

Discharge criteria were applied by means of a recovery score (PADSS-postanesthesia discharge scoring system) (Table 2) (discharge was authorised with a score of ≥9.).

RESULTS

A total of 40 patients were planned for DS LC (Day surgery laparoscopic cholecystectomy) during the ten-month period (Table 1). In the same period, the surgeon had a total number of 200 laparoscopic cholecystectomies performed, giving a inclusion rate of 20% for DS LS. There were 15 men and 25 women, with a mean age of 44 (range 24–68) years. Patients demographic data and presenting symptoms are given in Table 1. There were no conversions to open cholecystectomy nor operative complications. Mean operative time for LC only was 45±15.1 SD min. Twenty five percent (10/40) of patient's experienced postoperative nausea and vomiting received single dose of ondensetron during postoperative stay, but only one require admission. Three patients had to be admitted due to persistent postoperative pain, All four patients were discharged the next day.

Two of the patients (5%) who underwent DS LC successfully were readmitted on a later date. One patient presented with jaundice one week postoperation and was subsequently diagnosed to have a retained stone in the common bile duct, although her preoperative liver function test and imaging did not suggest any ductal obstruction. She was treated endoscopically. The other patient was readmitted because of postoperative fever and incisional infection at the umbilicus on fourth postoperative day and successfully treated on an outpatient basis by repeated wound dressings.

DISCUSSION

Day case LC has now become routine practice in the USA (5) as well as many centers in Europe. In Turkey, however, there is still no published data of any local hospitals offering day-case LC despite the results achieved elsewhere. DS LC is a safe and feasible procedure, which is likely to show increasing popularity among both pati ents and surgeons in view of its practical benefits Most authors agree that DS LC offers many advantages as compared with inpatient LC. It allows the patient to recuperate at home and reduce hospitalisation cost. In the case of elective laparoscopic cholecystectomy the morbidity has been reported to be between 2 and 4%, but the incidence of major complications requiring

***Table 2**. PADSS-postanesthesia discharge scoring system*

Parameters	*Result*	*Points*
Systolic blood pressure	*<20% of preoperative value*	*2*
	20-40% of preoperative value	*1*
	>40% of preoperative value	*0*
Ambulation	*Walking without vertigo possible*	*2*
	Walking with assistance possible	*1*
	No walking possible, vertigo	*0*
Nausea, Vomiting	*Minor*	*2*
	Moderate	*1*
	Severe	*0*
Pain	*Minor (VAS 1-2)*	*2*
	Moderate (VAS 3-4)	*1*
	Severe (VAS >4)	*0*
Bleeding	*Minor*	*2*
	Moderate	*1*
	Severe	*0*

urgent operative management is much lower (0.15 to 0.6% for bile duct injury and less than 0.05% for arterial bleeding). Additionally pilot studies have demonstrated a 4 to 6 hours observation interval to be sufficient to detect early complications (6). Bile duct injuries are most often detected during surgery or become symptomatic only several days after laparoscopic cholecystectomy (7). Day case LC was advocated to have a high success rate of 95% in selected patients. Young patients without biliary complications were usually selected to receive day case LC.

Many authors have suggested that careful patient selection helps to increase the success rate of DS LC.(8,9). A crucial aspect in the development of safe day case surgery program is the criteria for patient's selection. Robinsons et al. (10) reported their experience in a public academic institution have achieved outpatient LC in 70% of an unselected patients and they have identified ASA classification, procedural duration and surgery start time as factor associated with failure of outpatient management. Some authors have come to the conclusion that appropriate patients selection lowers failure rate and patients most likely to fulfill the criteria of outpatient LC, who have an anesthetic preoperative classification of ASA grade I or II, with no previous abdominal surgery no history of acute cholecystitis and a procedural duration of shorter than 90 min (11-13). Our univariate analysis results confirmed that patients with age less than 60 years, ASA class 2 or below, and uncomplicated gallstones and disorders were suitable for outpatient LC.

The success rate (90%) and re-admission rate (10%) in our study are comparable to that of other studies which performed DS LC or ambulatory LS,(5,14,15) with a success rate of 86%–95% and re-admission rate of 1.5%–8%. Postoperative nausea and vomiting(PONV) remained a frequent reason for unplanned admission after ambulatory LC.(16). Optimal control of postoperative pain, nausea or vomiting is pivotal to enhancing the outcome of day case LC. Several authors recommend the use of standard protocols to minimize postoperative symptoms of pain, nausea or vomiting. Methods used to prevent nausea include avoiding the use of volatile anesthetic agents and the under use of opiates in the postoperative period. Ondensetron and cyclizine were chose as effective antiemetic in reducing postoperative nausea or vomiting (17,18).

Propofol is well- established for ambulatory anaesthesia. The combination of remifentanil and propofol proved to be that, it is suited for laparoscopic surgery, because of haemodynamic stability and significantly shorter time of emergence compared with combination of remifentanil and sevoflurane. For clinical use remifentanil must be combined with another anaesthetic agent (21). Remifentanil was not help us in reducing healthcare costs.

İn conclusion, our results demonstrated that day case LC as an outpatient day care procedure is safe with high success rate in carefully selected patients with uncomplicated symptomatic galbladder disease and has the advantage of cost effectiveness. Patient selection has a major impact on the success rate of a day-case LC program (19,20). Better management of PONV and postoperative pain could further improve the success rate of day case LC.

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