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## Laparoscopic cholecystectomy in a surgical day unit setting: short term results

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Laparoscopic cholecystectomy (LC) is a safe alternative to open cholecystectomy (OC). A series of 285 patients with uncomplicated cholelithiasis were scheduled for LC in a day surgery unit (DSU) setting with overnight stay. Our objective was to facilitate the movement from inpatient to outpatient care for this group of patients, of whom 93.3% were discharged during the first 23 h. Overall morbidity was 4.25%; there was no mortality and the readmission rate was 1%. LC can therefore be performed with acceptable morbidity in the DSU setting and is now on the day-case schedule. Our programme offers the advantages of day-case surgery, namely, better operating room efficiency and a high patient satisfaction rate, while allowing for safe supervision during the first 24 h.

Key words: Laparoscopic cholecystectomy, ambulatory surgery

### Introduction

Laparoscopic cholecystectomy (LC) is a safe alternative to conventional open cholecystectomy (OC), allowing a reduction in iatrogenic trauma, less postoperative pain and a more rapid return to normal activity. It therefore has the potential for being introduced into day-case surgery<sup>1</sup>. Outpatient LC has been performed by some authors<sup>2-4</sup> but it should not be forgotten that LC still represents major surgery and we were concerned with problems arising at home. The introduction of LC also brought about a re-examination of conventional practices, therefore we have developed an intermediate option to in-hospital surgical care: the 'first day' LC programme in a hospital-based day surgery unit (DSU).

Our objective was to separate the flow of LC patients and traditional inpatients to achieve increased operating efficiency without compromising the quality of patient care.

### Patients and methods

Our Health Care District has two hospitals: the main Valme University Hospital and a dependent small Hospital El Tomillar, where, in February 1992, a DSU was opened. In March 1992 we began performing LCs in the DSU. We kept the patients overnight in a specific

postsurgery recovery area, where they received the same level of nursing care as in a medical/surgical unit in an acute care hospital (laboratory services, x-ray, pharmacy).

Patients who met the following criteria were admitted to the programme: (a) symptomatic uncomplicated cholelithiasis; (b) patient acceptance; (c) anaesthetic risk (American Society of Anesthesiologists) ASA I, II or III with systemic diseases well controlled preoperatively. Patients with choledocholithiasis were accepted if the stones were removed preoperatively by endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy (EP). The study population comprised 335 patients attending the outpatient clinic of our DSU between March 1992 and September 1994, of whom 285 patients (85%) were included in the programme, 50 (15%) being excluded for the criteria (a), (b) or (c) and treated as inpatients. The results of the first 285 patients were analysed.

All of the outpatient evaluation was done the week prior to the procedure. All patients underwent preoperative ultrasound of the right upper quadrant and serum levels of liver enzymes were measured. Educational leaflets were prepared, including preoperative and follow-up care. These pamphlets provided an important source of information, including the telephone number of the DSU for the patient after discharge. The patients were admitted between 8 and 8.30 a.m., operated on during the morning and discharged the next morning. Orogastric tube and urinary catheter were not used routinely. We gave a single dose of a third generation

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cephalosporin (cefotaxim 1 g) and 2500 U of low weight molecular heparin. All patients received general anaesthesia with tracheal intubation. Anaesthetic techniques were planned with the avoidance of nausea as a high priority. Antiemetics were given intravenously at the end of surgery.

A portable C-arm image amplifier was used when intraoperative cholangiography (IOC) was performed. A four-puncture technique was used for LC<sup>5</sup>. At closure of the surgical wounds they were infiltrated with 0.25% bupivacaine hydrochloride. The operations were performed by a consultant and a senior surgical registrar. Oral fluids started 4–6 h after the end of the operation. Patients were encouraged to get out of bed as soon as they had recovered from the anaesthetic.

Patient follow-up was by telephone or domiciliary visit by nurses of our Home Hospitalization Service (specially trained nurses from the DSU). We assessed the efficacy of our programme by a postdischarge patient satisfaction questionnaire 2 months after surgery.

Of the 285 patients treated by laparoscopic cholecystectomy, 228 (80%) were women and 57 (20%) were men. The patients' ages ranged from 16–76 yr (mean 51 yr) and they weighed 39–115 kg (mean 72 kg). The anaesthetic ASA ratings were: 113 (39.7%) ASA I, 137 (48.1%) ASA II and 35 (12.2%) ASA III.

## Results

There were no deaths. LC was converted to open cholecystectomy in 10 (3.5%) of the 285 patients because of dense adhesions or unclear anatomy (six patients), cholangiographic filling defects (common bile duct stones; two patients), common bile duct injury (one patient) and unsuspected hepatic adenoma (one patient). LC was performed successfully on the remaining 275 patients (96.5%). The duration of the laparoscopic operation ranged from 25–220 min (mean 50 min).

There were four (1.4%) postoperative bile leakages: slippage of metal clips (three patients); laceration of anomalous right hepatic duct (one patient). Selective IOC was performed in 29 patients (10.2%): choledocholithiasis was detected in three patients (two converted to OC and the other was removed by postoperative endoscopic pancreatography (EP)). Major morbidity occurred in five patients (1.8%): two common bile duct injuries (0.7%) and three biliary leaks (1.1%). Minor morbidity occurred in seven patients (2.4%): four wound seromas, two umbilical cellulitis and one patient with abdominal pain. The majority of patients experienced no pain or only a minimal degree of postoperative pain.

Two hundred and sixty-six patients (93.3%) were discharged on the first day postsurgery, 10 (3.5%) stayed in hospital for 48 h and nine (3.2%) more than 48 h (Figure 1).

The home management of the patients was by our home care service in 191 patients (67%) and by tele-

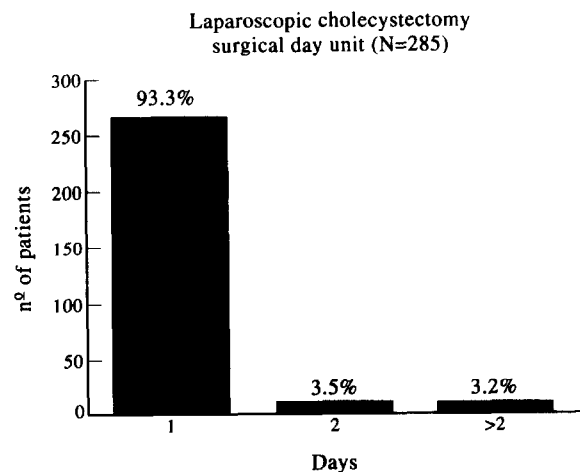


Figure 1. Times of discharge.

phone in 94 (33%). Only three (1%) required readmission after discharge from hospital. Eighty per cent of questionnaires were returned 2 months after surgery. The degree of patient acceptance was 97%.

## Discussion

Changes in surgery towards less invasive procedures, such as laparoscopic cholecystectomy, influence institutions to make major decisions involving same day surgery<sup>6,7</sup>. For cholecystectomy patients these changes have trimmed the usual hospital stay to 23 h following laparoscopic surgery, vs. up to a week following open surgery. Less psychological trauma is one of the proven benefits of day surgery, owing to the clear separation of inpatients and outpatients. Our purpose was to make the process of LC for uncomplicated cholelithiasis more convenient and more acceptable to the patients and their families. The hospital-based DSU is the ideal environment in which to reach this aim for several reasons: the DSU is less threatening than the traditional inpatient setting, scheduling is easier, turnover times are much faster and there is no risk of being cancelled when emergencies come in. The patient's recovery time after LC requires more than a few hours postoperative stay and they may qualify as an observational stay of less than 24 h. Our hospital-based unit has the advantage that bed availability is not an issue, making possible a 24-h service for LC patients. Our first day LC programme ensures that all patients receive the same standard of care that surgical patients currently receive and time spent in the sick role is minimized.

All patients in the current study were admitted the morning of the operation. The postoperative course in most patients was uneventful, with 93.3% of patients in our study being discharged from the hospital within 23 h of surgery.

The rate of conversion to OC of 3.5% is comparable to that reported by other authors in larger studies<sup>8</sup> that reported a conversion rate of 4.7%. Reasons for conversion to the open procedure were also consistent with other reports<sup>9,10</sup>.

Postoperative complications were divided into minor and major categories. Patients with complications characterized as minor did not have prolonged periods of hospitalization. Major morbidity was 1.8%, which is comparable with, although slightly higher than, the rate reported in another series<sup>10</sup> of 1.6% in 647 patients. Neither of these complications is believed to be related to early discharge. Only three patients (1%) were readmitted for problems caused by the procedure: two patients were readmitted for bile leakage and one patient was readmitted for abdominal pain (but the cause of the pain was not discovered). Our readmission rate is comparable with other reports which range from 0.5–3.8%<sup>11,12</sup>.

In our experience, the Home Hospitalization Service has been a valuable means of offering security to the patients and structuring a continuum of care. A visit once a day by a registered nurse to evaluate the patient's progress is important, particularly in the early detection of complications<sup>13</sup>. We believe that the programme has led to increased patient satisfaction.

Our results indicate that LC can be safely performed in a DSU setting if the patients are properly selected. Long experience with the laparoscopic approach will continue to shift most elective cholecystectomies from an inpatient to a day-case environment<sup>4,13,14</sup>. The next aim of our plan of early discharge will be outpatient LC. As more experience is gained with the technique and with the assurance of early access to the hospital, more patients should be able to spend their first night after the operation at home.

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