

Day Case Laparoscopic Cholecystectomy

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Background: Day case laparoscopic cholecystectomy (DC-LC) is being practised in the USA and at sporadic centres in the UK including our department. The aim was to evaluate the initial experience of DC-LC at the unit.

Patients & methods: Prospectively collected data was analysed retrospectively. The case notes of all patients were retrieved from the medical records and reviewed individually. Standard laparoscopic cholecystectomy was performed. All patients had anti-DVT prophylaxis (pneumatic compression and enoxaparin), per-operative antibiotic, oro-gastric tube, paracetamol suppository and local anaesthetic to all wounds. They were discharged the same day. The end point was 6-week follow-up (86% overall). **Results:** Over a 32-month period, 164 consecutive patients with symptomatic cholelithiasis and ASA score of III or less were included. M:F was 1:5 and median age 43y. There were two conversions. The direct admission rate (DAR) was 26/164 (14%). The indication for direct admission included observation alone (7/26), wound pain (6/26), nausea (3/26), suction drain (2/26) and operation in the afternoon (2/26). Six (3.6%) required re-admission. One had a cystic artery pseudo-aneurysm presenting with colonic bleeding and another with an injury to CBD. One had post-op mild pancreatitis and three had wound pain and bruising. **Conclusion** DC-LC is safe and feasible in non-acute patients with symptomatic cholelithiasis.

Keywords: Laparoscopic, cholecystectomy, day case, ambulatory

It has been a long-term observation that after inpatient laparoscopic cholecystectomy (IP-LC), patients in general do not require active intervention on the first post op evening/night. The evidence comes from observed clinical practice, published results of IP-LC¹ and the Consensus Statement 1992 (Consensus Development Conference Statement 1992)² all revealing post-operative length of stay of 1-2 days. Day case laparoscopic cholecystectomy (DC-LC) has been adopted in the USA and at sporadic centres in the UK. The aim of this study was to evaluate the initial experience of DC-LC at the unit.

Patients & methods:

The study was carried out at the Department of Surgery, Causeway Hospital Coleraine, a District General Hospital in N/Ireland UK. Study period was 32 months (Jan 2002 – Oct 2004). The data was prospectively collected and included demographic details, symptoms, signs, liver function profile, ultrasound results including CBD size, ASA score, anaesthetic procedure, operative details, post-operative admission / discharge, direct admission and finally unplanned re-admission after initial discharge. The case notes of all the patients were retrieved from the medical records and reviewed individually.

Direct admissions refer to the patients requiring admission to the ward post operatively on the day of the operation. *Unplanned re-admission* represents patients re-admitted to the ward after initial discharge from the hospital.

Patients with cholelithiasis along with symptoms of right upper quadrant or epigastric pain (persistent or episodic), with normal sized common bile duct (CBD, <7mm dia) and with ASA III or less were included. The presence of a responsible adult to look after the patient at

home was confirmed. The patients signed up to the consent for DC-LC after having been explained the three options of cholecystectomy namely open chole, in-patient lap-chole (IP-LC) or day case lap-chole (DC-LC). Information leaflets were designed to educate the patients regarding conversion (<5%), post op pain, shoulder discomfort, time off work, and dietary advice. Patients with current active acute cholecystitis, ASA score IV-V and history of pancreatitis within the last four weeks were excluded from the practice. Age alone was not an exclusion criterion.

The anesthetic technique involved short acting inhalational anesthesia with pre-emptive analgesia and anti emetics. It included propofol, isoflurane, remifentanyl and muscle relaxant. Pethidine 2mg/kg, paracoxib 40 mg IV and paracetamol suppository were used as pre-emptive analgesics. Ondansetron was used as a pre-emptive anti-emetic at the time of induction. Post operatively morphine was used if required. Codafen two tablets BD and paracetamol 1g 6 hourly PRN were prescribed to take home.

Standard 4-port video-laparoscopic cholecystectomy was performed. Hasson's (open) method of access was used for CO2 insufflation (pressure 11-14 mm). Operative cholangiogram was not performed on any patient. All patients had thrombo-embolic deterrent (TED) stockings, intermittent pneumatic compression device (IPCD) and on-table subcutaneous enoxaparin as anti-DVT prophylaxis. They had per-operative prophylactic single-dose antibiotic (augmented amoxicillin or cefuroxime if penicillin allergic), oro-gastric tube, local anesthetic infiltration to the all wounds and pressure dressings. The gall bladder was retrieved via the umbilical port after swapping the camera to the epigastric port. The oro-gastric tube was removed at the end of the operation.

Post operatively the patients were discharged home between 4.00 and 8.00 pm after having tea and toast in recovery. They were advised to contact the GP, the ward or A&E in case of complaints like pain, vomiting or delayed return to physical activity. The end point of the study was at the 6-week follow up in the outpatients (86% overall).

Results:

All patients fulfilling the inclusion criteria opted for DC-LC (n=164). None were operated as inpatients.

The results are summarized in Table 2. Twenty six (14%) patients were admitted on the same day, the most common reasons being admission for observation (7/26), wound pain (6/26) and nausea (3/26). These patients had a median length of hospital stay of one day.

Six patients (3.6%) were re-admitted after initial discharge. Three of them were due to wound related cause (bruising and pain) not requiring surgical intervention. The fourth patient presented with massive lower GI bleeding was found out to have a cystic artery pseudo-aneurysm eroding into the transverse colon, requiring right hemicolectomy. The fifth patient developed biliary peritonitis and laparotomy revealed a lateral laceration to the CBD which was repaired over a T-tube. She subsequently recovered and was well at the early follow-

up. The long-term outcome remains unknown. The sixth patient presented with mild post op pancreatitis which was managed conservatively. All the re-admissions presented after the fourth post-op day

Table 1: demographic data of the patients

n=	164
Median age	43y (21-78y)
M : F	1 : 5
ASA	1 - III
Age >55y	56 (34%)
Conversion	2 (1.2%)
Follow-up (6-weeks)	141 (86%)

Table 2: Summary of the results

	n=164
Admitted (median 1 day)	26 (14%)
Conversions	2
Observation	7
Wound pain	6
Nausea	3
Severe shoulder pain	1
Operation in the afternoon	2
Suction drain	2
Cough (difficult intubation)	2
Abdominal distension	1
Retained stones CBD	0
Patients requiring re-admission	6 (3.6%)

Table 3: Various studies demonstrating major complication rate. The Swedish trial was prospective. DAR-Direct Admission Rate.

Study	n=	Conversion	DAR	Re-admission	Complications
Amarnath (2002) ⁶ UK	170	1.8%	29%	2.5%	0.6%
Robinson (2002) ⁷ USA	387	6.7%	30%	2%	0.25%
Lam (1997) ⁸ USA	213	2.8%	3%	0%	0%
Bringman (2001) ⁹ Sweden	100	4%	11%	0%	0%
<i>This study (2005) UK</i>	164	1.2%	16%	3.6%	1.2%

Discussion

The national audit commission of UK, in 2001, has recommended LC as a day case along with 24 other operations³. The UK experience however is scanty. A possible reason may be reluctance in practice since day procedure units (DPU) usually close down before 7.00 pm and there are no step-down units like in the USA.

This study gives an account of the first 164 patients undergoing DC-LC at the unit. It so far is the only unit in Northern Ireland UK carrying out this practice. In the year preceding the study the patients at the unit were undergoing routine IP-LC in the afternoon with overnight stay. It was found that their hospital stay was uneventful. Since the construction of the new hospital with its dedicated DPU, the practice of day case laparoscopic cholecystectomy was adopted in light of the in-patient experience.

The American experience has been more than a decade long and successful in terms of low direct admission rate, ultra-low major complication rate and high patient satisfaction levels.

The aim of achieving low direct admission rate at the cost of undue patient's suffering at home could be a source of concern and should be avoided since it would be against good medical practice. All the followed up patients (86% overall) were satisfied with the procedure as a day case especially the elderly who were happy to have their own environment after operation. The causes shown in bold italics in Table 2 were potentially avoidable causes of direct admission. In retrospect most of these patients could have been discharged if there was a twilight nurse facility available to pay a visit to the patients late in the evening. The patient satisfaction was non-quantified and the use of a standard Quality of Life (QOL) instrument is being contemplated for the future. Patients who were over 55 years of age did not have higher incidence of admission than those of a younger age group. This was contrary to perception before the study. Direct admission rate was not affected by gall bladder wall thickness, duration of symptoms, male sex, technical difficulty, or grade of the operator since the incidence of these findings was the same in admitted and discharged patients.

Our results have been compared with various studies (Table 3). These studies including ours together represent about 1000 patients having undergone DCLC with a median conversion rate of 2.8%, median DAR of 16%, median re-admission rate of 2% and a median major complication incidence of 0.25% (Table 3). Comparison between open cholecystectomy (OC) and IP-LC based on 20,000 patients with OC and 10,000 patients with IP-LC performed in two states of the USA^{2, 8} indirectly suggests that the true cost benefit of laparoscopic cholecystectomy does not appear until it has been adopted as a day case

Conclusion

In non-acute patients with symptomatic cholelithiasis and having an ASA score of III or less, day case laparoscopic cholecystectomy was found to be safe and feasible.

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Fig 1: Outline of the study.

