True Day Case Laparoscopic Cholecystectomy: Safety And Feasibility In A District General Hospital In The UK

Corresponding Author:
Mr. Zaher Toumi,
Specialty Registrar, General Surgery- Pennine Acute Hospitals NHS Trust, Rochdale Road, OL1 2JH - United Kingdom

Submitting Author:
Mr. Zaher Toumi,
Specialty Registrar, General Surgery- Pennine Acute Hospitals NHS Trust, OL1 2JH - United Kingdom

Article ID: WMC00886
Article Type: Original Articles
Article URL: http://www.webmedcentral.com/article_view/886
Subject Categories: HEPATOLOGY
Keywords: Laparoscopy, Cholecystectomy, Day case, Outpatient

How to cite the article: Toumi Z, White S, Sharma S, Pursnani K. True Day Case Laparoscopic Cholecystectomy: Safety And Feasibility In A District General Hospital In The UK. WebmedCentral HEPATOLOGY 2010;1(10):WMC00886

Source(s) of Funding:
Funding was neither sought nor received.

Competing Interests:
None.
True Day Case Laparoscopic Cholecystectomy: Safety And Feasibility In A District General Hospital In The UK

Author(s): Toumi Z, White S, Sharma S, Pursnani K

Abstract

Introduction:
A prospective audit was undertaken of true day case laparoscopic cholecystectomies performed by a single surgeon in a DGH. The audit aims primarily to ascertain the outcome of the operation and patients' satisfaction with the experience. Data was analysed to find out factors that led to overnight admissions.

Methods:
Data was collected prospectively using audit proformas. Collected data included intra- and post-operative analgesics and antiemetics and a phone survey of patients on the day after the operation. Data related to postoperative complications and readmissions was extracted from patients' records.

Results:
Fifty-two patients were admitted for day case laparoscopic cholecystectomy over a twelve-month period. 41 patients (79%) were discharged on the same day. 11 patients (21%) were admitted, of these: two (18%) were discharged within 24h and eight (73%) were discharged within 36h, one (9%) patient stayed 47h after the start of his operation. Indications for overnight admission were optimisation of pain relief 6(55%), continued medical observation that required no intervention 4 (36%), and urinary retention 1(9%).

Of the 42 patients that responded to the telephone survey conducted the day after discharge, 40 (95%) were happy or very happy with the analgesia they were provided with, both on the day of the operation and at home. 41 patients (98%) were happy with the anaesthetic they were given. No patients required readmission after discharge.

Statistically significant factors leading to admission were related to pain control: requiring an NSAID (p=0.001), or requiring strong opioid analgesia (morphine) in the immediate post-op period (p=0.0001). Though not reaching statistical significance in this study (p=0.06), the length of operation may become significant as more day case laparoscopic cholecystectomies are performed and their data is analysed.

Conclusions:
This audit showed that day case laparoscopic cholecystectomy service met its objectives with a low rate of overnight admission, and a very low rate of readmission. Patients were satisfied with their experience. The audit identified factors that could lead to overnight admission. These require further assessment in a larger cohort.

Introduction

Gallstones are common, with a prevalence ranging from 2.3% to 42% depending on sex, age, and country of residence [1]. Despite the majority remaining asymptomatic, in the western population about 1% to 4% becomes symptomatic in a year. Traditionally, cholecystectomy was performed via the 'open' route. Since the mid-1990s, laparoscopic management of gallstone disease has become the accepted standard. The median total hospital stay was 8.8 days for open cholecystectomy verses 2.7 days for laparoscopic cholecystectomy [2, 3].

In the year 2000, the NHS announced that around three-quarters of operations should be carried out on a day case basis with no overnight stay required [4]. The current national average day case cholecystectomy rate is only 6.4%. The highest performing organisations achieve rates of between 40 and 50%, but almost half of all trusts have a day case rate of less than 5% for cholecystectomy, with many doing no day cases at all[5]. Today, most patients with gallstones requiring elective cholecystectomy are eligible for day surgery [6]. A Cochrane review comparing the outcomes of patient groups that were either discharged the same day as their laparoscopic cholecystectomy or were kept in hospital overnight showed that whether the patient underwent day-case or overnight stay did not make any difference to the incidence of serious complication, timing of re-admission, or the outcome of any further intervention [22].

In the year 2007, a single Consultant surgeon in a hospital that offered only elective lists started a day case laparoscopic cholecystectomy service. This audit was conducted with the primary aim of ascertaining the outcome of these operations and patients' satisfaction with the experience. Data collected was
also analysed to investigate factors that may have led to overnight admissions.

**Methods**

The care pathway starts with an initial outpatient consultation where a member of the surgical team saw the patient. If cholecystectomy was indicated and the patient was deemed potentially suitable for a day case procedure, the patient would be referred to the day case nurses where more formal and strict criteria are used to determine the suitability of the patient for a day case procedure (appendix 1).

On the day of surgery, a selection of drugs was given for analgesia and prophylaxis against postoperative nausea and vomiting depending on the Anaesthetist's personal preference. Unless contraindicated, all patients were provided with an outpatient supply of Dihydrocodeine, Paracetamol and Diclofenac for five days. Patients were discharged home after review from the Nursing staff if they met the following two conditions: Firstly, their vital signs were normal and had been stable during their recovery in the day case unit. Secondly, their pain, nausea and vomiting were under control. A member of nursing staff from the Day Case Unit then contacted the patient at home on the first post-operative morning to enquire on their progress.

Data was collected prospectively over a one-year period. Variables measured included patient demographics (age and sex), analgesia and antiemetics administered intra-operatively and in the recovery period prior to discharge. Operation start and finish times, available recovery time (operation finish time to time the Day Case Unit closed) and time of discharge were all recorded. Operation outcome (whether completed laparoscopically) was documented.

The morning after discharge, patients were contacted by a member of nursing staff and were asked to give ratings for their experience of postoperative nausea and vomiting, pain and dizziness. They were also asked to give a score for their satisfaction with the anaesthetic they received and the analgesia they were provided with. Finally, patients were given the opportunity to comment on their overall experience.

Length of stay was documented along with any reasons for any unplanned overnight stay.

Patient electronic records were reviewed to see if any post operative problems that required readmission in the first two weeks post discharge had occurred.

Once the data had been collated, the subjects were divided into two groups, those that were discharged home the same day and those that had had an unplanned overnight stay. Chi square test and Mann Whitney tests were conducted (as appropriate) on the variables between the two groups to see if any significant differences could be found that might indicate variables that predisposed to unplanned overnight stays.

**Results**

In the twelve-month period audited, 52 laparoscopic cholecystectomies were carried out with intended same day discharge via the Day Case Unit. A Consultant or an experienced Staff Grade Surgeon conducted all operations. Forty-nine patients (94%) were female with a median age of 40.5 years (range 20- 73 years).

All procedures were completed laparoscopically and no patients required readmission in the first two weeks post discharge with a post-operative complication. Forty-one patients (79%) were discharged home the same day as their operation but 11 patients (21%) required an unplanned overnight stay. All patients were discharged home within 48 hours of their operation start time (range 7h 21m – 48h). The median operation start time was 09:18 (range 08:55-11:36). The median operation length was 62 minutes (range 26- 112 minutes). Twenty-seven (84%) operations were completed within 90 minutes, with 15 (47%) completed within 60 minutes. The median available recovery time was 7h 35m (range 4h 55m – 8h 15m).

**Antiemesis:**

Intra-operatively, 47 patients (90%) received Ondansetron, seven patients (13%) received Cyclizine and 39 patients (75%) received Dexamethasone as prophylaxis against post-operative nausea and vomiting. In the recovery period prior to discharge, three (6%) received Ondansetron, 10 (19%) received Cyclizine and one (2%) received Metoclopramide for nausea and vomiting. Nobody (0%) required more than one dose of antiemetic post-operatively.

**Analgesia:**

Intra-operatively, 49 (94%) received Paracetamol, 22 (42%) received an NSAID (contraindicated in one (2%) patient), 50 (96%) received morphine with a median dose of 12mg. 25 (48%) received Fentanyl with a median dose of 100mcg.

In the recovery area, prior to discharge, 25 (48%) received Paracetamol, 10 (19%) received an NSAID, 6 (12%) received morphine with a median dose of 8mg, 26 (50%) received Dihydrocodeine (median dose
Patient’s experience:

Results from the patient survey on the first day post-operatively showed that on the day of their operation 23 (52%) reported no nausea or vomiting, 15 (34%) reported mild, and six (14%) reported moderate nausea or vomiting. On the first post-operative day 32 (84%) reported no nausea or vomiting, five (13%) reported mild, and one (3%) reported moderate nausea or vomiting. At no time did any subject report severe symptoms of nausea or vomiting.

On the day of their operation, 7 (16%) reported no pain, 17 (39%) reported mild, 18 (41%) reported moderate and two (4%) reported severe pain. On the first post-operative day 4 (11%) reported no pain, 28 (74%) reported mild, 5 (13%) reported moderate pain and 1 (2%) reported severe pain (this patient said that this severe pain was partly due to a chronic underlying medical condition and that she was happy with the analgesia provided. She also experienced severe pain on the day of the operation).

Twenty (48%) patients were very happy and 22 (52%) patients were happy with the anaesthetic they received. Seventeen (40%) patients were very happy and 23 (55%) patients were happy with the analgesia provided. 1 patient (2.5%) was unsatisfied; another patient (2.5%) was very unsatisfied with the analgesia they received, though this latter patient reported that ‘although their pain was not controlled, they were happy with attempts to alleviate it’.

In the patients requiring overnight stay, the reported median pain score was moderate compared to a median score of mild in those discharged the same day. (p=0.007)

Six (55%) patients in the group that required an overnight stay (n=11) required NSAID analgesia post-operatively compared to four (10%) patients in the group that were discharged the same day (n=41). (p=0.001)

Successful vs. unsuccessful day case admissions:

Five of the 11 (45%) of patients who went on to be admitted required morphine post operatively compared to one (2%) of those discharged the same day (n=41). (p=0.0001)

The duration of the operation was longer in the group, which required overnight admission. The median length of time in the group which required admission was 68 minutes compared to 57 minutes in the group that were discharged the same day (p=0.06). The duration of the operation though not shown to be statistically significant may prove to be an area that warrants further investigation with a larger cohort.

There was no significant difference between the two groups in terms of intra-operative analgesics, intra-operative antiemetics or post-operative antiemetics.

In the group that required an overnight stay, reasons stated by the attending nurse on the Day Case Unit, or the resident surgical Senior House Officer included; nausea, pain not controlled, hypotension, drowsiness, low oxygen saturations, a temperature of 38°C and urinary retention.

Discussion

Table 1 shows the standards identified by the British Association of Day Surgeons (BADS) and the proportion of cases that met the standards.

We defined day case laparoscopic cholecystectomy in this audit as patient being discharged prior to 18:00 hours in the evening after an 8:00 hour’s admission. Current practice as reported by other units defined day case as ‘discharge six to eight hours after surgery’[7], or within 23 hours of surgery, though this longer length of stay is often differentiated as ‘ambulatory surgery’ rather than ‘day case’. [8]

The results of this audit show that the day case laparoscopic service met its objectives, achieving an acceptable rate of same day discharges and a nil rate of unplanned readmissions due to surgical complications. The 79% same day discharge rate found in this audit compares well with an overall same day discharge rate of 78% to 94%[7, 9, 10, 11] in studies with the same definition of day case length of stay. Our nil readmission rate was very favourable compared to a reported rate of between 1.9% to 8%.[10, 11, 12, 13, 14]

In the UK a survey revealed that almost 50% of patients would tolerate some degree of pain after major surgery rather than complain.[15] On the other hand, patients ranked pain in the top three of most undesirable outcomes after ambulatory surgery.[16, 17]

Patient satisfaction with the service, including the anaesthetic they received and the analgesia they were provided with was very high, with all subjects surveyed either rating it good or very good.

Statistical analysis has identified variables that may contribute to unplanned overnight admissions. These variables mainly relate to operation length, and analgesia.

The length of the operation seems to be approaching significance in regards to overnight admissions in this audit. Length of operation has previously been shown to be the most important predictive factor for unplanned admission after ambulatory laparoscopic
cholecystectomy [18,19] and is therefore an area that warrants further investigation with a larger sample size. The pharmacological interventions were not significantly different between the two groups. We did not find a significant difference between the two groups in regards to intra-operative analgesics, intra-operative antiemetics and postoperative antiemetics. However, a significant difference was found concerning postoperative morphine requirements, with a higher proportion of those patients admitted requiring morphine compared to those that went home the same day. It is yet to be established whether this indicated that the group of admitted patients had an overall greater requirement for analgesia, or whether the administration of morphine resulted in delayed recovery due to the possible effects on the patients' level of consciousness, decreasing bowel motility and increasing nausea, and by delaying ambulation.

Inadequate pain control after surgery has always been a hurdle in the early discharge of patients and is often the cause of unplanned admissions in the ambulatory setting. [20] It has been reported that as a result of all day case procedures surveyed, 55% of patients had some degree of pain at home with 21% having moderate pain (pain score 4–6) and 10% experiencing severe pain (pain score 7–10). It also concluded that laparoscopic cholecystectomy was also the second most painful day case surgery on offer, second only to a lumbar micro-discectomy, highlighting the need for effective analgesia.

The BADS recommendation of administering an NSAID one hour before operating [21] was not implemented at the time of this study. No significant difference was found between the two groups (same day discharge v. unplanned admission) concerning intra-operative administration of an NSAID. The authors recognise that there are some weaknesses in this study. The main criticism is the number of subjects that could not be contacted after discharge for their scoring of their pain, nausea and vomiting, and satisfaction with the anaesthetic and analgesia and consequently were lost to follow up. This occurred mainly in the group that received an overnight stay because they were not at home on the first post-operative morning and therefore unavailable for a telephone call from the Day Case Unit. This could therefore skew the data we have collected with regards to the assessment of patient satisfaction. Five patients did not complete their scores relating to the day of the operation and nine patients did not supply their scores relating to the first post-operative day. This reduction in sample size must be taken into account when the statistical analysis of potentially significant variables is considered.

In conclusion, the current day case laparoscopic cholecystectomy service was found to be fit for purpose with an acceptable unplanned admission and re-admission rate when compared to similar services. Certain factors such as which analgesia was administered in the immediate post operative were found to have a significant impact on the unplanned admission rate. Further factors such as the length of the operation and the analgesia administered in the peri-operative period were identified as areas that warranted further investigation concerning their impact on unplanned admission rates. Further assessment using a larger cohort is required to test the results found in this audit and it is ongoing.

References

1. Acakoveschi M. Cholesterol Gallstones: from epidemiology to prevention. Postgraduate Medical Journal 2001;77:221-229
20. Ahmwed NZ, Byrnes G, Naqvi SA. A meta-analysis of ambulatory versus inpatient laparoscopic cholecystectomy. Surgical Endoscopy 2008 Sep;22(9):1928-34
### Illustrations

#### Illustration 1

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant, experienced Specialist Registrar, or Staff Grade to perform operation.</td>
</tr>
<tr>
<td>Operation up to 90 minutes duration</td>
</tr>
<tr>
<td>6 hours recovery time available after finish of operation</td>
</tr>
<tr>
<td>Dexamethasone used as prophylaxis against post-operative nausea and vomiting.</td>
</tr>
<tr>
<td>Ondansetron used as prophylaxis against post-operative nausea and vomiting.</td>
</tr>
<tr>
<td>NSAID given one hour before operation commenced.</td>
</tr>
</tbody>
</table>
Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.