

Retrospective audit of readmissions and complication rates following cholecystectomies

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Abstract

Aims We aimed to complete a local database of patients undergoing cholecystectomies, and compare complication data to those of the CholeS collaborative national study.

Methods Retrospective study of consecutive patients undergoing cholecystectomies between July 2015 and June 2016 at local district general hospital. Electronic discharge summaries, radiological investigations, and a subset of case notes were analysed to identify patients with postoperative complications and readmissions.

Results 239 patients underwent cholecystectomies in the time period analysed: 70% female patients with an average age of 54 years (21-89 years). Cases were almost equally divided into emergency (110) and elective (129). The majority of cases were laparoscopic (227, 95%), 6 were open cases, and 6 were converted to open (2.6%). The median length of stay was 6 days for emergency patients (min 0 days, max 31 days), and 1 day for elective patients (min 0 days, max 17 days). 68% of elective patients were discharged on the same day as their operation or on day 1 postoperative (26 and 63 patients respectively). In total 15 patients (6.3%) were readmitted within 30 days, with no statistically significant difference ($p = 0.4$) in the rate of readmission between emergency and elective cases. The most common readmission diagnosis was non specific abdominal pain (10), and one recorded bile leak (however more are suspected but not accurately recorded in the notes).

Conclusion Our patient population and complication rates were comparable to the national CholeS data; however, our day case laparoscopic cholecystectomy rate was low (23%). We also highlighted that bile leaks are under reported on electronic and paper documentation. The database will be used for future prospective monitoring and analysis of complications in our department.

Introduction

It is estimated that around 10-15% of the adult population has gallstones, with up to 4% of them seeking medical advice and treatment for symptomatic disease annually (1). The gold standard treatment remains a cholecystectomy, which is now mostly performed as a laparoscopic

procedure, with roughly 61,220 operations per year in the UK (2). In 2013 roughly one third of all laparoscopic cholecystectomies were day case procedures, with the patient being discharged on the same day of the operation (3). However, the national average day case cholecystectomy rate varies hugely from 6 to 50%, with the most successful centres aiming for 70% rates (4).

Clearly this is a cost-effective solution for a common condition, and multiple trials and Cochrane reviews have confirmed that day case laparoscopic cholecystectomies are safe (5,6).

It is important to note that studies into surgical outcomes such as the CholeS study looked at a large number of patients (8820) over a two-month period across 166 hospitals in the UK (7,8). We suspect that large teaching hospitals and small district general hospitals manage these patients differently, mainly due to the resources available on site. Our small district general hospital is 45 miles away from an HPB tertiary centre, hence complex biliary diseases where patients are likely to require bile duct exploration or are at high risks of biliary injury get referred out. It is also likely that due to the fewer number of consultant surgeons on site less patients receive their operation electively, or wait longer periods of time and at times have their operation done as an emergency on repeat admissions.

In this small junior trainee led retrospective audit we wanted to compare local complication data to those of the CholeS collaborative national study, and also aimed to complete a local database of patients undergoing cholecystectomies for future projects and comparison.

Methods

Retrospective study looking at consecutive patients undergoing cholecystectomies between July 2015 and June 2016 at a local district general hospital. A patient list was identified by extracting data from local coding database with key word <cholecystectomy>. A total of 256 patients were identified, but 17 were discarded due to incorrect coding or missing information (2 appendicectomies, 4 no records, 9 no images on local system). Electronic discharge summaries, radiological investigations, and a subset of case notes were analysed to identify patients with postoperative complications and readmissions. We also looked at basic patient demographic data and date of diagnosis/admission/operation/and discharge (we defined diagnosis date as the first scan confirming a diagnosis of gallstones or acalculous cholecystitis).

Results

Two hundred and thirty-nine patients underwent cholecystectomies in the time period analysed: 70% female patients with an average age of 54 years (21-89 years). Cases were almost equally divided into emergency (110) and elective (129). The majority of cases were laparoscopic (227, 95%), 6 were planned open cases, and 6 were converted to open (2.5%). Emergency patients had a higher conversion rate compared to elective patients (4 emergency, 2 elective - 3.6% vs 1.5%).

The median length of stay was 6 days for emergency patients (min 0 days, max 31 days), and 1 day for elective patients (min 0 days, max 17 days).

Of the 129 elective patients 15% were booked for day case only and discharged the same day (100% true day case rate), whilst the rest were booked provisionally for an overnight stay. Of the remaining 109 elective patients 9 were discharged the same day, 59 on day 1 post op, and 41 patients had a stay of 2 days or more (32%).

In comparison, of the 110 emergency patients 5 were discharged on the same day as their operation and 44 on day 1 post op, with 61 patients having a stay of 2 days or more (55%). The median time from admission to operation in emergency patients was 3 days, with 12% of patients having their laparoscopic cholecystectomies on the day of admission (13) and 49% waiting longer than 3 days (54).

In our series 14 patients had a preoperative ERCP (10 emergency patients, 4 elective patients) and 2 patients required post-operative ERCP (both emergencies, 1 as inpatient, and 1 required readmission for CBD stones). In the data frame studied there were no on-table cholangiograms performed.

About a third of all emergency patients were diagnosed prior to admission (36), however we could not determine which of these patients were scheduled to have an elective procedure prior to their admission. Overall the median time from diagnosis to operation was 88 days, with 16 patients diagnosed the same day as their operation (6.7%) and 111 patients waiting longer than 100 days (46%).

In total 17 patients were readmitted within 30 days (9 emergency, 8 elective, 7% overall), with the most common readmission diagnosis being non specific abdominal pain (10), and one bile leak.

4% of patients had complications related to the procedure (9 total: 3 intra-abdominal post op collection, 3 wound infections, 1 liver abscess, 1 pancreatitis, 1 CBD stone with subphrenic abscess). Overall no patients had to return to theatre during their admission or on readmission, and all complications were treated conservatively.

Discussion

When laparoscopic cholecystectomy was first introduced in 1990s in the UK, within the first two years roughly 25% of all operations were done laparoscopically (9) (10,000 operations). In the last 20 years laparoscopic cholecystectomies have become the gold standard for treatment of gallstone disease due to better outcomes for patients and quicker discharges allowing a greater turnover and smaller cost. A meta-analysis by Tenconi and colleagues in 2008 showed enough evidence to prove the feasibility of day case laparoscopic cholecystectomies with appropriate patients selection and staff training (10).

In a prospective population based cohort study by the CholeS group there was a marked variation in the number of emergency laparoscopic cholecystectomies performed across different hospitals, which was put down to patients' and hospitals' factors. According to their data the predicted probability of having an emergency cholecystectomy ranged from 0.02 to 0.95 across 165 hospitals (8).

Our results are comparable to the national CholeS study, with the same readmission rate within 30 days (7%, 633 of 8909 in CholeS, 17 of 239 in this study). Our series showed a smaller rate of postoperative complications (10.8%, 962 of 8909 in CholeS versus 4%, 9 of 239 in this study).

Interestingly, no bile leak was found on initial analysis. When we presented the data at our local departmental meeting we were met with disbelief from the consultant body, therefore we analysed the notes of all patients readmitted as well as those with an inpatient stay of over 10 days. Only then did we eventually find one patient with a clearly recorded bile leak not documented in the electronic discharge summary. This has highlighted a separate issue, namely the underreporting of bile leaks in electronic documentation, which we will try and address in following projects.

Our patient dataset is small but our results are comparable to large published studies. The rate of conversion to open is similar to a large retrospective study in a tertiary centre in Leeds from 2010 – where over a 10 year period they noted that the rate of conversion to open in emergency patients was higher than electives (11) (10% vs 3%, and 3.6% vs 1.5% in our series). The local elective conversion rate was lower compared to that reported in an older European study (12) (3.6%).

It is important to note that gallstone related disease is a costly business, estimated at £4697 per patient from referral to discharge and up to £12011 with additional costs¹³. A considerable amount of these expenses is due to delays in definitive treatment, with patients spending long periods of time on waiting lists and having multiple readmissions for ongoing symptoms and complications of gallstones disease. Therefore, it is not only better for the patient but cost effective to attempt to operate on patients soon after their initial presentation.

Of the 129 elective patients 20 were initially booked as a day case with the rest having a planned overnight inpatient stay. It was unclear from our data collection why so many patients were originally booked for an inpatient stay, however 38% of them did stay longer than one day (41 out of 109). This could be due to multiple factors, perhaps due to patients' co-morbidities, post operative drains, or lack of support in the community making the discharge unsafe and should be looked into as a separate project to improve the day case rates locally.

There were multiple limitations to our study. Firstly, it relied on patients being identified by accurate coding, hence we can assume that some patients were missed to begin with. The data was mainly extracted from electronic documentation and the availability of images in our local IT systems, therefore some of the data might be inaccurate due to documentation errors. However we reached our aim of comparing our local general complications and readmission data to the national data and have highlighted that bile leaks are under reported on electronic and paper documentation, which could be due to multiple factors and should be looked at separately in a future project. The database created by this audit will be used for future prospective monitoring and analysis of complications in our department.

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