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Removing symptomatic gallstones at their first emergency presentation

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ABSTRACT

INTRODUCTION Early operations for symptomatic gallstones are gaining favour as the complication rate is thought to be lower and it reduces the overall morbidity. This study was performed to clarify how frequently early operations were being performed and what benefits resulted.

PATIENTS AND METHODS Case notes of 171 patients who underwent laparoscopic cholecystectomy at Princess Alexandra Hospital Harlow were retrospectively reviewed. They were grouped according to their initial diagnosis (cholelithiasis, acute cholecystitis) and the delay to surgery (early, interval). Forty-one cases were excluded as they either had incomplete notes or the initial diagnosis was a different manifestation of gallstones such as pancreatitis. Those receiving interval operations were then grouped according to the mode of their initial presentation. A total of 130 case notes were analysed.

RESULTS The delay for an interval operation was 3–6 months compared with less than 2 weeks for early operations. Of patients with acute cholecystitis, 43% had early operations but only 12% of patients with cholelithiasis. Waiting for interval operations was associated with multiple re-admissions equivalent to an average of one extra presentation to accident and emergency per patient. This was particularly marked if the initial presentation was to accident and emergency rather than out-patients ($P = 0.003$). Complication rates were also higher in the interval group.

CONCLUSIONS Early cholecystectomy on the next available list is likely to reduce morbidity and the long-term in-patient burden so should be recommended for all patients presenting as an emergency with symptomatic gallstones.

KEYWORDS

Cholelithiasis – Acute cholecystitis – Laparoscopic cholecystectomy – Gallstones

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Gallstones are common and are responsible for a significant proportion of acute and sub-acute general surgical consultations in the UK. The prevalence is 9% equating to 5.5 million people in the UK.[1]

Two-thirds of gallstones are asymptomatic and the incidence of developing symptoms from gallstones is 1–4% per year. The most common presentations of symptomatic gallstones are cholelithiasis and acute cholecystitis.

The definitive management of gallstones is cholecystectomy, 90% of which can be completed laparoscopically. There has been a trend in recent years to favour early operations.

Prolonged out-patient waiting times for elective laparoscopic cholecystectomy for symptomatic gallstones is thought to be associated with higher morbidity particularly for patients with an initial emergency presentation.[2] Laparoscopic cholecystectomy during the early phase of acute cholecystitis has been shown to reduce postoperative gastrointestinal symptoms and improve quality of life.[3] In a meta-analysis of randomised controlled trials, no advantage was found to delaying laparoscopic cholecystectomy for acute cholecystitis in morbidity or conversion rates to open operations.[4] Lower rates of conversion to open have been reported in calculous acute cholecystitis if laparoscopic cholecystectomy is undertaken within 48 h of the first acute admission.[5] However, it has been suggested that urgent laparoscopic cholecystectomy elevates the costs and resource consumption in comparison to interval laparoscopic cholecystectomy.[6] As yet, early operations for symptomatic gallstones have not become routine in many UK hospitals. Many patients presenting to accident and emergency with cholelithiasis are discharged and followed up in out-patients.

The objectives of this study were to evaluate the current management of symptomatic gallstones, to compare the efficacy of the different treatment options in managing

cholelithiasis and acute cholecystitis and to design a protocol for the improvement of services according to the evidence base.

Patients and Methods

All patients under the care of four surgical teams with a discharge code of laparoscopic cholecystectomy were identified between January and October 2005. Out of a total of 171 patients, 41 notes were excluded due to either incomplete information, unavailability of investigations, major co-morbidity, a major concurrent illness prolonging hospital stay or if the initial diagnosis was an alternative presentation of symptomatic gallstones.

Case notes of 130 patients were requested from the audit department at the Princess Alexandra Hospital. The patients were divided into the following groups and subgroups according to the diagnosis and plan at the first presentation with symptomatic gallstones:

1. Cholelithiasis
   (a) Early/same admission laparoscopic cholecystectomy
   (b) Interval laparoscopic cholecystectomy
2. Acute cholecystitis
   (a) Early/same admission laparoscopic cholecystectomy
   (b) Interval laparoscopic cholecystectomy

The initial diagnosis was decided according to clinical findings recorded in the notes, laboratory tests and imaging reports.

Early or same admission laparoscopic cholecystectomy was defined as an operation on the next available list, whether they were seen in out-patients (OP) or accident and emergency (A&E). The evidence base suggests that this is preferable for most patients, particularly those initially presenting as an emergency.[2]

The notes of each patient were reviewed with regard to days from presentation to operation, number of pre-operative presentations after the initial presentation, total pre-operative in-patient stay, total operative time (arrival in theatre to arrival in recovery according to operative note), rate of conversion to open cholecystectomy, complication rate, total in-patient stay and total number of consultations with the surgical team including follow-up appointments. A proforma recording these data was completed for each set of notes. Variance in the data from each group was tested using ANOVA performed with the aid of MINITAB™.

Results

Out of 96 patients with cholelithiasis, 90 waited for interval laparoscopic cholecystectomy. For many patients this led to serial presentations with symptoms of gallstones before their operations. Three went on to have acute cholecystitis and two were admitted with pancreatitis. For cholelithiasis operative duration, conversion rates and complications were comparable regardless of the delay to surgery. There were no advantages of interval laparoscopic cholecystectomy (Table 1).

Out of 34 patients with acute cholecystitis, 14 had early operations. This reduced the pre-operative wait from an average of 5 months to 5 days. Of those patients whose operations were delayed, 13 of 20 patients had 18 further presentations

Table 1 **Pre-operative waiting times, peri-operative and operative factors**

	Cholelithiasis		Acute cholecystitis	
	Early	Interval	Early	Interval
Number of patients	6	90	14	20
Average age (years)	55	52	55	59
Average days until operation	3	114	5	150
Further symptomatic presentations pre-operatively	0	30 patients, 38 visits, (0.4 v/p)*	0	13 patients, 18 visits, (0.9 v/p)*
Average total in-patient days pre-operatively	1	1	5	3
Proportion converted to open	0/6 (0%)	2/90 (2%)	5/14 (36%)	0/20 (0%)
Average duration of operation – arrival in theatre to arrival in recovery (min)	72	70	103	88
Complications	0	7/90 (8%)	0	5/20 (25%)
Total no. of consultations with surgeons	2.3	3.6	1.6	3.6

v/p, visits per total number of patients in subgroup.

pre-operatively. Additionally, 5 of 20 patients awaiting interval procedures had postoperative complications compared with 0 of 14 of those having early procedures. Complications documented were: 1 DVT, 1 RUQ collection managed conservatively, 1 patient re-admitted due to abdominal pain and diagnosed with hydronephrosis on ultrasound so taken over by the urologists, 1 patient with transient postoperative pyrexia and 1 patient persistently complained of an 'itchy' epigastric port site. No complications were reported for the 14 early laparoscopic cholecystectomy patients during this period and delaying laparoscopic cholecystectomy was equivalent to an average of at least one extra symptomatic presentation per patient.

In those 77 patients with an initial diagnosis of cholelithiasis who presented to OP, only 19 had a total of 23 further pre-operative presentations. Table 2 shows that out of the 13 who initially presented as an emergency, 11 had a total of 15 further presentations. This difference was statistically significant ($P = 0.003$, unpaired t-test).

Of those with acute cholecystitis, 13 of 17 patients presenting as an emergency to A&E and waiting for an interval operation had a total of 18 further pre-operative presentations compared to none of the out-patient subgroup.

Discussion

The current evidence indicates that all patients presenting to a surgical team with symptomatic gallstones should be placed on the next available list for cholecystectomy.

At the Princess Alexandra Hospital, a typical mid-sized centre, interval cholecystectomy is still the most common management plan for patients with symptomatic gallstones. This was associated with serial symptomatic presentations. This increase was most marked for those initially presenting to A&E. This was equivalent to at least one extra symptomatic presentation per patient over an average of 5 months.

For cholelithiasis, no operative or peri-operative advantage was found by delaying laparoscopic cholecystectomy. In acute cholecystitis, the mean operative durations were shorter for interval operations (–14.9 min; 95% CI, –47.1 min to 17.2 min) and no conversions to open procedure were reported, although there were several postoperative complications reported as listed above. Of note, 5 of 14 patients undergoing early cholecystectomy were converted to open procedures compared to 0 of 14 patients having interval procedures. Reasons given in the operative notes for conversion to open were: (i) in 3 cases, the gallbladder was grossly distended with dense adhesions and inflammation making dissection difficult; (ii) in 1 case, a huge pedunculated mass in the mesentery was found needing open excision; and (iii) in 1 case, the gallbladder had formed a large mass with distorted anatomy. We have found that early laparoscopic cholecystectomy can have technical difficulties as a result of acute infection and inflammation potentially complicating laparoscopic procedures.

In addition to this, patients undergoing early procedures had longer in-patient stays pre-operatively as they waited for a slot on the next available list, than the average cumulative in-patient stay considering multiple admissions for those awaiting interval laparoscopic cholecystectomy. Overall, they also had longer postoperative in-patient stays, most likely due to the higher conversion rate. Thirteen of the 110 patients awaiting interval laparoscopic cholecystectomy were done as day cases. Only 1 of the 20 patients undergoing early laparoscopic cholecystectomy went home the same day.

This must be weighed against an average waiting-time reduction of 5 months (Table 1), which may represent significant morbidity. During the time waiting for interval laparoscopic cholecystectomy, of those 90 patients initially placed on the waiting list for laparoscopic cholecystectomy due to biliary colic, three re-presented with acute cholecystitis, two were admitted with pancreatitis and one with obstructive jaundice needing ERCP.

Table 2 Further presentations pre-operatively while awaiting interval laparoscopic cholecystectomy considering location of initial presentation

Diagnosis	Location of initial presentation	Number of patients	Further symptomatic presentations pre-operatively
Cholelithiasis	A&E	13	11 patients, 15 visits, 1.2 v/p*
	OP	77	19 patients, 23 visits, 0.3 v/p*
Acute cholecystitis	A&E	17	13 patients, 18 visits, 1.1 v/p
	OP	3	0 patients, 0 visits, 0 v/p

v/p, visits per total number of patients in subgroup.
*$P = 0.003$ (unpaired t-test).

Patients presenting to accident and emergency may have more severe symptoms from their pathology and/or be in social groups less willing to access services through primary care providers. It may be for these reasons that the frequency of attendance for these patients was higher than those initially presenting in out-patients (Table 2).

Therefore, the initial focus should be to provide early laparoscopic cholecystectomy for cholelithiasis and acute cholecystitis for patients presenting to A&E. This can be made to be cost effective by saving extra admissions and reducing morbidity in these patients. In this cohort of patients, however, there were no savings recorded primarily due to the longer postoperative stay following open cholecystectomy. Further work must be done to demonstrate the savings that could be made.

This requires appropriate resource allocation. It is our experience that many A&E doctors and general surgical junior doctors are unaware of the advantages of early laparoscopic cholecystectomy. In addition the acquisition of special tests delays confirmation of the diagnosis and this prevents consultant surgeons from offering in-patient operations on an emergency list within 24 h of admission.

We propose that all patients presenting with clear clinical features of symptomatic gallstones to A&E be referred for review by the general surgical team on-call. Each morning, a number of ultrasound slots should be reserved for patients admitted with suspected symptomatic gallstones so that the presence of gallstones can be confirmed and these patients could then be placed on the morning emergency list when the consultant is available. Emergency lists should prioritise laparoscopic cholecystectomy to allow the presence of senior surgical staff. This should lead to a long-term decrease in the number of presentations and admissions with symptomatic gallstones and thus reduce morbidity, increasing quality of life of patients.[5] Those presenting through out-patients should continue to be managed with interval laparoscopic cholecystectomy, preferably as day-cases. Resources would thus be more effectively and efficiently allocated.

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