Costs of waiting for gall bladder surgery

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Laparoscopic cholecystectomy is one of the most commonly awaited general surgical procedures in the UK. However, many patients awaiting a cholecystectomy are admitted with recurrent gallstone related symptoms while on the waiting list, resulting in significant morbidity. The aim of this study was to quantify this problem, and also to analyse the cost implications of these admissions for the NHS. A retrospective study was performed of all patients who underwent an elective cholecystectomy by three consultants in a district general hospital between January 1999 and January 2000. The demographic details, indications for surgery, details of the emergency admissions while on the waiting list, and the treatment given during these episodes were recorded. One hundred and fifty six patients were included in the study, of which 122 (78%) were females. The mean (SD) age of the patients was 54 (5) years. The mean waiting time for surgery in these patients was 12 (3) months. Thirty seven patients (23.7%) were admitted as an emergency due to gallstone related symptoms and complications while awaiting surgery. There were 47 episodes of admissions in total, of which 32 were for biliary colic, 13 were for acute cholecystitis, and two were for acute pancreatitis. In addition to routine blood tests, 20 abdominal radiographs, 10 chest radiographs, three endoscopic retrograde cholangiopancreatography tests, five ultrasonograms, and one computed tomogram were carried out in these patients. The mean duration of each episode of admission was three days. The cost of treatment per episode was £946 and the total cost of treating the 37 patients was calculated to be £44 462. Performing early laparoscopic cholecystectomy for acute cholecystitis may help to reduce costs by preventing recurrent emergency admissions in these patients. Further studies to identify risk factors associated with recurrent symptoms and complications in patients with gallstone disease may help to prioritise them for early surgery.

Patients with gallstone disease make up a significant percentage of those awaiting elective surgical procedures. Many of these patients are admitted as an emergency with recurrent gallstone related symptoms. In addition to the morbidity, significant costs are involved in treating these patients.

Our aims were to study the incidence of emergency inpatient admissions because of gallstone related problems among those awaiting an elective cholecystectomy, and to assess the direct NHS costs involved in treating these patients.

METHODS

A retrospective analysis was performed of all the patients who underwent an elective cholecystectomy by three consultants in a district general hospital between January 1999 and January 2000. Data were collected on demographics, the duration of the waiting time, the specific indications for including the patients in the waiting list, details of emergency admissions while awaiting surgery, and the investigations and treatment given during these episodes.

RESULTS

A total number of 156 patients underwent elective cholecystectomy of which 122 (78%) were females. The mean (SD) age of the patients was 54 (5) years. The indications for listing the patients for surgery were biliary colic in 127 patients (81%), acute cholecystitis in 24 patients (15%), obstructive jaundice in four patients (3%), and acute pancreatitis in one patient (0.6%). The mean (SD) duration of the waiting time for cholecystectomy was 12 (3) months. One hundred and twenty seven patients (81%) underwent a laparoscopic cholecystectomy, 13 patients (8%) underwent an open cholecystectomy, and 16 patients (10%) underwent conversion to an open procedure after an initial attempt to operate laparoscopically. Of the 156 patients, 37 patients (23.7%) were admitted as an

Figure 1 Summary of results.

Table 1 Costs of surgery and radiological investigations

Procedure	Costs (in pounds sterling)
Laparoscopic cholecystectomy	1657
Abdominal radiograph	30
Chest radiograph	30
Computed tomography of abdomen	75
Ultrasound of abdomen	50
ERCP	125

ERCP, endoscopic retrograde cholangiopancreatography.

emergency with recurrent gallstone related symptoms while on the waiting list. Twenty eight patients were admitted once, eight patients were admitted twice, and one was admitted three times. Of the 47 episodes of admissions, 32 were for biliary colic, 13 were for acute cholecystitis, and two were for acute pancreatitis. The criteria used to diagnose acute cholecystitis were acute exacerbation of the abdominal pain, and right upper quadrant tenderness, associated with fever and a raised white cell count. These results have been summarised in fig 1. In addition to routine blood tests, 20 abdominal radiographs, 10 chest radiographs, five ultrasonograms, one computed tomogram, and three endoscopic retrograde cholangiopancreatography tests were carried out in these patients. The mean (SD) duration of each episode of admission was 3 (1) days. The cost per episode of admission was £946 and the total costs of treating these 37 patients was £44 462 (see below). Fourteen of 24 patients (58%) with previous acute cholecystitis were admitted with recurrent symptoms when compared with 23 of 127 patients (18%) with previous biliary colic ($p < 0.001$).

DISCUSSION

Prolonged wait for surgery presents a burden to the patients in terms of unrelieved symptoms, and has been shown to reduce their health related quality of life.¹

Waiting list initiatives have been implemented as a means of tackling this problem, but there is a fear that the conditions that are more potentially serious may be overlooked in favour of relatively minor procedures.² Some hospitals have tried scoring systems to prioritise patients, but have found them to be inaccurate when compared with the surgeon's clinical judgment of the patient's condition.^{3,4}

Gallstone disease is a common problem in the Western world, and a large number of these patients await surgery in the UK. Many of these patients are admitted with recurrent symptoms related to gallstone disease while on the waiting list. A few of them develop more serious complications such as acute pancreatitis and obstructive jaundice.

Of the 156 patients in our study, 37 patients (23.7%) were admitted with recurrent symptoms, and there were 47 episodes of admissions in this group. Thirty two episodes were for biliary colic, the mean duration of stay for this being two days. Thirteen episodes were for acute cholecystitis and the mean duration of stay was five days. For the two episodes of pancreatitis, the mean duration of stay was seven days. None of the patients had to be treated in the high dependency or intensive therapy unit. We also analysed the various investigations generated by these admissions. Haematology and biochemical tests were routinely carried out in all the patients. In addition, 20 abdominal and 10 chest radiographs were performed. The majority of these were requested by the accident and emergency department staff. Other investigations that were performed included five ultrasonograms, one computed tomogram, and three endoscopic retrograde cholangiopancreatography tests.

Learning points

- Emergency admission with gallstone related problems is common among patients awaiting cholecystectomy and has a significant cost implication.
- Previous acute cholecystitis is a risk factor for recurrence of gallstone related symptoms.
- Early laparoscopic cholecystectomy for acute cholecystitis reduces the overall costs of treating gallstone disease by preventing future admissions with recurrent symptoms and complications.

Cost estimates

The costs involved were calculated per episode of admission, based on a day's stay in a general surgical ward including the cost of the investigations performed. In our hospital, this amounts to £299 a day. The individual costs of the various radiological investigations and the cost of a laparoscopic cholecystectomy in our hospital is presented in table 1. The costs of treatment in the accident and emergency department was £49. The mean duration of each episode was three days. Hence, the cost per episode was £946, and the total cost of treating these patients was calculated to be £44 462. This is a significant amount of money that could theoretically have been used to operate on these 37 patients early, thereby preventing the morbidity. However, the difficulty is in identifying the patients who are prone to recurrent gallstone related problems while awaiting surgery.

An observation from our study was that the patients who were included in the waiting list after an episode of acute cholecystitis were admitted more frequently with recurrent symptoms (14 of 24 patients, 58 %) when compared with patients who were listed after an episode of biliary colic (23 of 127 patients, 18%). This was statistically significant on applying the χ^2 test ($p < 0.001$). We are currently studying a larger patient group to identify any other factors that could influence the incidence of readmission with recurrent symptoms in those with gallstone disease.

Studies have shown that the conversion rate from laparoscopic to an open cholecystectomy is increased in patients with a previous episode of acute cholecystitis.⁵ This is reflected in the results of our study in which the conversion rate was high (11%), many of these patients having had recurrent cholecystitis while awaiting surgery. Early laparoscopic cholecystectomy in acute cholecystitis, however, has been found to be a safe procedure.⁶ Hence this approach may reduce the overall costs of treating these patients by preventing readmissions, and by reducing the chances of conversion from laparoscopic to open cholecystectomy. Also, prioritising patients for early surgery, based on any risk factors that may increase the incidence of recurrent symptoms and complications, would help to reduce the morbidity in such patients, and also reduce the costs of treating gallstone disease.

CONCLUSIONS

Emergency admission with gallstone related problems is common among patients awaiting elective cholecystectomy. The cost of treating these patients is high. Early laparoscopic cholecystectomy after acute cholecystitis may help to prevent some of these emergency admissions. Further studies are needed to identify the possible risk factors, that may be associated with recurrent symptoms and complications in patients with gallstone disease. This would help to identify the susceptible patients, and to offer them early surgery.

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