

Elective day-case laparoscopic cholecystectomy: a formal assessment of the need for outpatient follow-up

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ABSTRACT

INTRODUCTION Elective laparoscopic cholecystectomy (LC) is performed routinely as day-case surgery. Most hospital trusts have a policy of no routine postoperative outpatient follow-up although there are no formal guidelines on this. The aim of this retrospective study was to identify the incidence of complications, the degree of symptom resolution and patient satisfaction with a view to formally appraising the need for outpatient follow-up.

METHODS Patients who underwent LC in the period between February 2011 and June 2012 were contacted retrospectively by telephone. A standardised questionnaire was used to ascertain the incidence of surgical site infection (SSI), other complications, symptom resolution and patient satisfaction.

RESULTS A total of 211 responses were collected. The rate of SSI was 7.6% ($n=16$), with the only specific risk factor being smoking ($p=0.027$). All other complications had a combined incidence of 7% ($n=15$). There was complete resolution of symptoms in 64% of patients. Of the 36% of patients with residual symptoms, 45% described abdominal discomfort or pain, 41% described reflux symptoms and 14% complained of diarrhoea. Patient satisfaction was very high (96%), yet 33% of patients visited their general practitioner postoperatively in relation to their surgery.

CONCLUSIONS Patients are highly satisfied with elective day-case LC. However, SSI is not uncommon, occurring in 1 in 13 patients. Although the majority of patients experience complete symptom resolution, a significant proportion do not. In our experience, routine outpatient follow-up is not required. Nevertheless, the lack of formal follow-up may prove a missed learning opportunity, potentially resulting in inappropriate patient selection for surgery.

KEYWORDS

Laparoscopic – Cholecystectomy – Surgical site infection – Complications – Satisfaction – Follow-up

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Laparoscopic cholecystectomy (LC) is the most common elective day-case laparoscopic procedure performed in the UK.¹ Although continuous advances in single port laparoscopic techniques are reported, the majority of cases are still performed in the manner first described in 1985.² Briefly, three or four laparoscopic ports are used to dissect Calot's triangle and mobilise the gallbladder prior to extraction either through the epigastric port or, more commonly, the umbilical port.

The rates of day-case surgery have risen dramatically over the past decades; over 70% of elective surgery is now performed as a day-case procedure.¹ LC has been no exception. In our trust, 72% of elective LCs are performed as day-case surgery. The remaining 28% are admitted routinely overnight owing to co-morbidities such as a body mass

index of $>37\text{kg/m}^2$, significant heart or respiratory disease (ie ASA grades 2 or 3) or advanced age.⁵

We do not routinely follow up our day-case LC patients in the outpatient department. Instead, we telephone every patient on day 1 following surgery. This allows us to check whether pain and nausea are controlled adequately, and to address any concerns of the patient. Although the lack of routine follow-up reduces waiting times for others by freeing up clinic appointments, it does mean we may not be aware of any issues unless they are significantly serious and warrant hospital admission.

In this substantive retrospective study, we first set out to establish the incidence and nature of postoperative complications. Second, patients were asked about the degree of symptom resolution following surgery. Finally, a patient sat-

isfaction survey was performed. This information was then used to appraise the need for outpatient follow-up.

Methods

Patients who underwent elective day-case LC in the period between February 2011 and June 2012 were identified using the trust database across two hospitals (Wycombe Hospital and Stoke Mandeville Hospital). A telephone questionnaire was designed (Appendix 1 – available in the online version of this article only). Patients were phoned at least four months after their date of surgery.

The first part of the survey focused specifically on surgical site infections (SSIs). SSI was defined according to the criteria specified by the Centers for Disease Control and Prevention (CDC)⁴ and the questionnaire was designed accordingly.

The patients were asked: 'Once you were discharged home, did you visit your general practitioner or emergency department with regard to your wound in the 30 days following the procedure?' If the answer to the question was 'yes', the patient was asked specifically about the presence of pus, pain, tenderness, swelling, erythema and whether the wound had been opened deliberately by a medical professional. If the answer to any of these was 'yes', the patient was deemed to have had an SSI in accordance with CDC criteria. The next question was: 'Did you see a medical practitioner with regard to any complication of surgery in the postoperative period?' This question was deliberately less specific as it was aimed at eliciting any postoperative complication. If the answer to this question was 'yes', the patient was asked why and the answer was documented verbatim.

The second part of the survey centered on patient satisfaction. The patients were asked to rate elements of their care on a three-point scale: completely happy, partly happy or not at all happy. The questions related to the adequacy of preoperative information, postoperative pain and nausea control, time of discharge, degree of responsibility put on their carer and overall satisfaction with the care received. The patients were then asked whether they had visited their general practitioner with regard to the operation at any point after surgery.

The final part of the survey was designed to establish the degree of symptom resolution. The question asked was: 'Since your surgery, have your symptoms fully resolved?' If the answer was 'no', the patient was asked what the nature of the symptoms were and whether they were new or residual. The answers were documented verbatim.

The notes of the patients who had an SSI were reviewed to identify independent risk factors for SSI. These notes were compared with those of 50 patients selected at random from within the study cohort.

Results

A total of 211 patients (162 female, 49 male) were contacted. There were 162 female patients with a mean age of 46 years while the mean age of the 49 male patients was 59 years. Sixteen patients (8%) suffered SSIs. Of these, two had

multiple port site infections. The umbilical port was involved in 13 cases (81%). All but two patients required only a single course of oral antibiotics to achieve symptom resolution; the remaining two had complete resolution of their SSI with a second course of antibiotics. The only significant risk factor for infection in our series was smoking ($p=0.027$) with an odds ratio of 6.49 (Table 1).

Table 2 shows all other complications. One 89-year-old patient died on day 3 secondary to a myocardial infarction. Patient satisfaction was very high: 96% of patients said they were completely happy with the overall care and support they received (Table 3). Although 31 patients (15%) suffered a postoperative complication, 69 (33%) visited their general practitioner. The most common reasons for this were uncertainty as to how to manage the wounds and reassurance.

Table 1 Assessment of independent risk factors for surgical site infection following elective day-case laparoscopic cholecystectomy

Variable	No SSI	SSI	p-value
Mean BMI	29.46kg/m ²	32.25kg/m ²	0.206*
Performed by consultant	69.23%	41.67%	0.074 [†]
Female	80.77%	91.67%	0.643 [‡]
Diabetic	0%	8.33%	0.316 [‡]
Smoker	3.85%	25.00%	0.027[‡]
Raised LFT	23.08%	25.00%	1.000 [‡]
Mean anaesthetic time	62.69 mins	75.00 mins	0.121*
Bag used	34.62%	33.33%	1.000 [‡]
Antibiotic	19.23%	25.00%	0.689 [‡]
Epigastric extraction	34.62%	58.33%	0.458 [‡]
Umbilical extraction	42.31%	33.33%	

SSI = surgical site infection; BMI = body mass index; LFT = liver function test

*Unpaired t-test; [†]Mann-Whitney U test; [‡]Fisher's exact test

Table 2 List of complications following elective day-case laparoscopic cholecystectomy

Complication	Incidence
Surgical site infection	16 (7.6%)
Bile leak	4 (1.9%)
Fluid collection	2 (1.0%)
Haematoma	2 (1.0%)
Retained stone	2 (1.0%)
Deep vein thrombosis	1 (0.5%)
Myocardial infarction	1 (0.5%)
Pancreatitis	1 (0.5%)
Pneumonia	1 (0.5%)
Pulmonary embolism	1 (0.5%)

Table 3 Patient satisfaction following elective day-case laparoscopic cholecystectomy ($n=211$)

Question	Completely happy	Partly happy	Not at all happy
Pain control	203	7	1
Nausea control	200	9	2
Information provided	208	3	0
Level of responsibility	198	12	1
Time of discharge	208	2	1
Overall satisfaction	203	8	0

Table 4 Symptoms reported after elective day-case laparoscopic cholecystectomy

Symptom	Incidence
Complete resolution	135 (64%)
Abdominal pain	33 (16%)
Dyspepsia	29 (14%)
Diarrhoea	14 (6%)

When the telephone questionnaire took place (at least four months following surgery), almost two-thirds (64%) had complete resolution of symptoms. Somewhat surprisingly, 36% of patients reported residual or new symptoms (Table 4).

Discussion

The incidence of SSI following LC has been reported previously as 2.4–9%.^{5,6} This compares unfavourably with other laparoscopic procedures such as colorectal surgery or even appendicectomy^{6,7} for reasons that are not clear. The umbilicus was involved in 81% of SSIs even though gallbladder extraction was routinely through the epigastric port site. This port is likely to be more prone to infection due to the inherent difficulty in achieving sterility and maintaining cleanliness.⁶ Many prospective studies have examined the role of prophylactic antibiotics in elective LC; a meta-analysis has shown no significant benefit.⁸

Risk factors for SSI following LC have previously been shown to include sex, diabetes mellitus, low serum albumin levels, positive bile culture, acute cholecystitis and raised serum bilirubin levels.⁹ In our experience, the length of surgery, grade of surgeon, sex and body mass index were not significant risk factors for SSI following LC. Our data, however, are the first to show that smoking is an independent risk factor for SSI following LC ($p=0.027$).

The incidence of complications other than SSI was low (<1.8%). A large multicentre study in the US has shown that independent risk factors for all complications following LC include male sex, age >65 years, <12 operations performed by the operating surgeon per annum and higher Charlson co-morbidity index.^{10,11}

The degree of non-resolution of symptoms observed in our cohort was surprising. Although postcholecystectomy syndrome (PCS) is a widely recognised entity, the extent of the symptom non-resolution may not be attributed to this alone. PCS is defined by residual abdominal symptoms after surgery and was first described well over 65 years ago.¹² It is characterised by persistent right upper quadrant pain, bloating, nausea and vomiting, and diarrhoea. Although the incidence of PCS has been estimated at 5–30%,¹³ the question must be asked as to whether the initial diagnosis of symptomatic gallstones was indeed appropriate.

A study by Sanders and Kingsnorth revealed that only 22% of junior doctors were able to attribute specific symptoms to biliary colic accurately, often confusing these with alternative upper gastrointestinal pathology such as gastro-oesophageal reflux disease (GORD).¹⁴ Part of the issue may be that the term ‘colic’ does not accurately describe the sensation of pain associated with symptomatic gallstones. Rather than waxing and waning, which is classical for colic, biliary colic normally waxes but then remains at that crescendo for potentially hours or days.

Given that the prevalence of gallstones is 5–27% in the general adult population and yet 80% of patients with gallstones remain asymptomatic,^{15,16} accurate diagnosis is vital in ensuring patients are only offered surgery if necessary. This is especially relevant considering the prevalence of dyspepsia is 20–40% in the population.¹⁷ The overlap in upper gastrointestinal symptoms means the possibility of attributing symptoms to asymptomatic gallstones is substantial. The inherent bias towards an expert diagnosis of biliary colic through the process of referral accompanied by ultrasonography proven gallstones may well be significant.

A questionnaire, developed in the US, was validated to distinguish between biliary colic, GORD and irritable bowel syndrome.¹⁸ Its mean completion time of 36 minutes may reduce its practical use in clinic. Nevertheless, it does suggest that precise questioning should allow a clinician to differentiate accurately between these clinical entities.

Conclusions

Our data suggest that it is indeed appropriate to not follow patients up in the outpatient clinic following day-case elective LC. Although SSI is relatively common, this is readily managed in primary care. The fact that all SSIs became apparent after day 3 means an overnight admission would have had no impact on this complication. Those patients who had more serious complications (eg a bile leak) were all seen in hospital having been referred by their general practitioner. In spite of very high overall patient satisfaction, a third of patients visit their general practitioner post-operatively, often for reassurance, commonly related to the wounds. This unnecessary workload could be avoided (or at least reduced) by addressing any queries directly and at several junctures during the patient’s journey. Advice on wound care should be reiterated before and after the surgery.

Lastly and possibly most importantly, our study raises the question of whether surgery was the appropriate treatment for all our patients in the first instance. In light of the

relatively high prevalence of both gallstones and upper gastrointestinal symptoms, this may be a common problem. Unfortunately, this learning point is lost by the lack of formal follow-up. We propose that all patients undergoing LC should be told that 'non or partial resolution of symptoms' is possible as part of the consenting process.

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