The Egyptian Journal of Hospital Medicine (January 2018) Vol. 70 (9), Page 1568-1571

Wound Infection after Laparoscopic Cholecystectomy

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ABSTRACT

Background: Surgeons are regularly not involved in the post discharge care of patients after uncomplicated laparoscopic cholecystectomy. The purpose of the current study was to document the symptomatic recovery of patients following laparoscopic cholecystectomy, because this has a bearing on the planning of a postoperative care package.

Methods: The study was designed as a postoperative telephone questionnaire survey and was carried out prospectively between June2016 and February2017 in King Abdulaziz Hospital, KSA.

Results: The study cohort comprised 51 patients who all completed the study. Postoperatively, only 3% of the patients had postoperative nausea/vomiting lasting ≥2 days. Pain was symptomatic in 12% of patients. Port-site wounds were a source of significant symptoms in 69% of the patients. Postoperative reviews by a nurse and primary-care doctor were necessary in 76% and 34% patients, respectively, with a combined average of 3.1 reviews per patient. Less than 4% of patients believed that they would benefit from a surgeon's review 6 weeks after LC. Median time taken to return to routine preoperative activity after surgery was 21 days (IQR, 16 to 33), which was affected by the degree of activity undertaken, wound-related symptoms persisting for ≥3 weeks, planned follow-up clinic appointment, and discharge as an outpatient.

Conclusion: Wound-related symptoms are common after LC, require substantial input from the community health service in their management, and may delay return to preoperative routine.

Keywords: Laparoscopic cholecystectomy, Return to work, Postoperative symptoms.

INTRODUCTION

Laparoscopic cholecystectomy (LC) is one of the mutual elective laparoscopic procedures implemented. Whereas a few years ago, patients remained in the hospital for 1 or 2 days after uncomplicated laparoscopic cholecystectomy, progressively this procedure is being performed on an outpatient basis. Improved primary care support and increasing financial pressures have likewise, reduced the postoperative follow-up of these patients by the operating surgeon. Basically, the operating surgeon is no longer involved in the post discharge care and follow-up of patients undergoing laparoscopic cholecystectomy [(1,2)].

Though major complications after LC are well recognized, data about the process of patients' short-term recovery after hospital discharge, perceptions of health, and the load of postoperative care prerequisite in the community are not documented. Awareness of this unnoticed recovery phase is not only vital to organizing a community care package and improving service delivery and patient satisfaction, but also is very relevant feedback, which the operating surgeon misses in today's world[(3, 4)].

We therefore performed the current study with a purpose to follow up patients closely after uncomplicated LC to document the postoperative symptoms, evaluate their perceptions concerning return to preoperative routine and assessment the postoperative care they required from the community health services.

METHODS

The study was designed as a postoperative telephone questionnaire survey and was carried out prospectively between June2016 and February2017 in King Abdulaziz Hospital, KSA.

The local audit and patient information department approved the study proposal. All eligible patients were informed about this follow-up study at the time of their discharge from the hospital and were contacted every week for 6 weeks by using a telephone survey questionnaire (Table 1).

Received: 18/12/2017 DOI: 10.12816/0044684
Accepted: 28/12/2017

Table 1. Telephone Survey

Patient Info
Age, sex, employment status, date of operation and discharge, consultant
Weekly Questions
1. Did you have any wound-related problems during this week?
2. Was the pain satisfactorily controlled?
3. Do you think you are capable of returning to your routine activity at home or work during this week? If yes…whatdate?
4. Did you experience any nausea/vomiting during this week?
5. Did you need to see D/N, P/N, GP, A&E, O/P during this week?
6. Have you returned to your routine activity at home or work during this week? If yes…what date?
Additional Question in the Sixth Week
Do you feel any need for us to see you in our clinic at this stage?

Laparoscopic cholecystectomy was performed using a standard 4-port technique. None of the patients received any antibiotic prophylaxis. Skin was prepared with an aqueous povidone-iodine solution. The umbilical port was made first with a 12-mm trocar by using the open technique. Additional a 12-mm epigastric port and two 5-mm right upper quadrant ports were inserted under vision after pneumoperitoneum. The gallbladder was recovered in a BERT bag. All skin wounds were closed using cyanoacrylate-based skin glue. All procedures were performed by consultants or by their trainees with consultant supervision to maintain standard practice.

Postoperative analgesia recommended at discharge was in the form of paracetamol (1g PO up to 4 times a day as requisite) and codeine phosphate (30mg PO up to 3 times a day as required). Young patients who denied sensitivity to NSAIDs were also prescribed Diclofenac sodium (50mg PO up to 3 times a day) as the postdischarge analgesic. Assessment and care of wounds, within the first week, by a community nurse was requested as routine at the time of discharge.No specific instructions were given to the patients concerning returning to routine work after the procedure. Patients who asked for a sick-leave note at the time of discharge were routinely given a 2-week note. Patients could get additional extension of their sick-leave note from their primary-care family physicians after that if essential.

Data from the survey were analyzed, setting $P<0.05$ as significant, using SPSS. Normally distributed data (age) were represented as means and further compared using the *t* test. The rest of the data are represented as medians and IQR and were further compared with the Mann-Whitney test, Wilcoxon matched pairs test, and Spearman's correlation test, where appropriate. Proportions were compared using Fisher's exact test.

The study was done after approval of ethical board of King Abdulaziz university.

RESULTS

The study comprised 51 patients who completed the study and whose results were analyzed. Study population demographics and hospital stay are shown in Table 2. Available data were analyzed under the categories of postoperative symptoms, necessary after-care, and patients' return to preoperative routine.

Table 2. Patient Demographics, Employment Status, and Hospital Stay (N=51)

Characteristics	
Mean age in years (range)	49.7 (20 to 79)
Male to Female ratio	7 to 44
Working	28
Retired	17
Unemployed/homemakers	6
Outpatients	8
Median inpatient stay in days (IQR)	1 (1 to 2)

Postoperative nausea/vomiting and pain were not a significant problem for most patients (Table 3). Though, a large proportion of patients were troubled by wound-related symptoms, mainly discharge from the umbilical port-site wound (Table 3).

Table 3. Type and Incidence of Postoperative Symptoms

Postoperative Symptom	**Proportion of Patients (%)**	**%**
Nausea/Vomiting present after hospital discharge	12	23,5%
Postoperative pain not controlled by prescribed analgesia after hospital discharge	6	11,8%
Wound-related symptoms developing after hospital discharge	36	70,6%
Site of Wound Involved		
Umbilical port site	38	74,5%
Epigastric port site	9	17,6%
Umbilicus + epigastric	2	3,9%
Right lateral port-site	2	3,9%
Type of Symptom		
Wound discharge 88%	41	80,4%
Wound gape + discharge 11%	9	17,6%
Wound erythema 1%	1	2,0%

Age, gender, and employment status had no impact on the presence of wound-related symptoms. Mean age of patients having wound-related symptoms (49.7 years) was similar to the mean age of patients without wound-related symptoms (P=0.2). Incidence of wound-related symptoms in males (65%) and females (72%) was statistically similar (P=0.7). Wound-related symptoms were also similar in those who were employed (76%) and those not employed (62%, P=0.17).Treatment for wound-related symptoms was largely in the community with 54.9% receiving nurse-led wound care and 41% receiving treatment from primary-care doctors. The median number of nurse-led reviews for patients with wound-related symptoms was 4 (IQR: 2 to 8, range: 1 to 21). Antibiotics were prescribed to 38.9% (14/36) of study participants for their wound-related symptoms/conditions in the community.

In the 6-week postoperative study period, 78.5% of patients (40/51) were checked by the community nurses. The median number of reviews for patients was 1 (IQR, 1 to 3; range, 0 to 21). Of these 40 patients, 20 had specific wound-related symptoms. The routine surgical outpatient clinic appointment was offered to and attended by 23/51 patients about 6 to 8 weeks after the operation. Only 1 of these 23 patients felt that it was necessary to have such a routine appointment. One other patient from the remaining 28 patients also felt that they would have benefited from a routine postoperative follow-up at 6 weeks in the surgical clinic. Generally, only 2/51 (4%) patients believed that it would be of some value to have such a routine postoperative outpatient appointment.

In our questionnaire, we asked patients when they really returned to work or routine activity at home (if not working) and correspondingly when they felt able to return to work or routine activity at home. Median time to perceived capability of returning to preoperative routine was 14 days (IQR, 11 to 21). This was significantly prior than median time to actual return to preoperative routine work/activity, which was 21 days (IQR, 16 to 33) (P<0.0001).Being employed, having wound-related symptoms persist for ≥3weeks, and having a postoperative routine surgical clinic appointment delayed return to routine activity, while being discharged on the day of the operation had the opposite effect. In contrast, age of the patient, sex of the patient, presence or absence of wound-related symptoms, and antibiotic treatment in the community did not have any impact on the time taken to return to preoperative routine activity or work.

DISCUSSION

The purpose of the current study was to document the unnoticed phase of recovery after LC, focusing on patients' symptoms, because they have a direct impact on the patients' recovery and health.Surgical-site infection rate after LC is well established at <2% based on large trials with post discharge follow-ups[2, 5]. Over 70% of our patients experienced wound-related symptoms. The predominant symptom was discharge, typically from the umbilicus. Nevertheless it is easy to consider that some discharge from operative wounds is physiological, this symptom was worrying enough to most patients, to merit repeated reviews by the community nurse or doctor.

While the principal treatment for such wound-related symptoms in the community was nurse-led wound care, 38% of the patients with wound-related symptoms received antibiotics in the community.We did not utilize routine antibiotic prophylaxis in our cases, and there is indication to recommend that perioperative antibiotic prophylaxis does not alter wound infection rates after LC[3, 6].We used cyanoacrylate-based skin glue for closure. Multiple trials have presented that skin closure with such tissue adhesive results in no higher adverse wound results compared with traditional subcuticular skin closure[1, 7].Two other studies [8, 9] have established a higher umbilical wound complication rate compared with other port sites, particularly after LC. Native umbilical bacterial flora and contamination throughout gallbladder extraction have been implicated. Our study once again has confirmed that a large majority of patients will have discharge from umbilical port-site wounds after uncomplicated LC.

Interestingly, 37% of the patients with wound-related symptoms (26% of the study group) were prescribed therapeutic antibiotics for their wound problems by community doctors. Whether these represented true wound infections is debatable, because no objective data are available, and most patients received empirical antibiotics in the community. Postoperative wound management in the community is known to be pragmatic. A large study, involving follow-up of over 5500 patients after caesarean deliveries showed that almost all women with wound problems were treated with antibiotics, regardless of how minor the problem, with 97% being prescribed in the community[10].

Two other consequences of the high wound-related symptom rate were observed in our study. Firstly, it burdened the community service with post-LC after-care. Our study showd a combined doctor or nurse average review rate of 3.1 per patient. Secondly, wound-related symptoms that persisted for 3 or more weeks significantly delayed return to work or preoperative routine activity. This proposes

the necessity for methods to decrease wound-related symptoms if possible or at least to have an organized community care package for these patients to ensure that their wounds are looked after efficiently, economically, and without the use of incorrect antibiotics.The final feature of the current study was to evaluate when patients really got back to their preoperative state.

Evaluating return to the preoperative state of health after an operation is not easy, more so when the study population is heterogeneous in terms of age, fitness, and comorbidity. Return to preoperative state of well-being is distinct from being able to return to a preoperative state of physical activity or exercise capacity. For this, we used return to work or routine preoperative activity in those who did not work as an indirect marker. When questioning patients who did not work, we ensured that they understood that returning to preoperative activity level meant going back to social, sporting, shopping, household, and child-care related activity, which they performed before the operation and not just returning to full physical mobility. The time taken to return to work or routine activity in the current study was comparable to other study[10], which specifically assessed this. This in comparison is a lot longer than time taken to return to preoperative physiological exercise capacity[11, 12].

Return to work or preoperative routine was accelerated by discharge as an outpatient. This result can be clarified by the fact that patients who get discharged as outpatients are frequently fitter, younger persons and have had an undemanding operation. Nonetheless, it ought to be distinguished that our unit started applying some laparoscopic cholecystectomysas outpatient cases throughout the time of this prospective study. This means that numerous patients who would fulfill the criteria for outpatient discharge were managed as inpatients with at least a 1-day hospital stay. However, our results favor outpatient laparoscopic cholecystectomy for early return to work, it ought to be distinguished that our study was not intended to look at this effect. A recent Cochrane review [14] recommended that there was no dissimilarity in return to normal activity and work in patients discharged as outpatients or overnight stay after laparoscopic cholecystectomy.

CONCLUSION

Wound-related symptoms are mutual after uncomplicated LC, and patients ought to be instructed. They add an important load on the community health service and if continued can postpone return to work. Routine surgical outpatient follow-up is not compulsory. A well-organized community care package is necessary for most patients after discharge following laparoscopic cholecystectomy.

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