Outpatient laparoscopic cholecystectomy: home visit versus telephone follow-up

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Objectives: To investigate the post-discharge follow-up required for patients who have undergone laparoscopic cholecystectomy on an outpatient basis and to determine if there was a significant difference in mean concern scores and satisfaction level of patients followed up by a home visit versus a telephone call. Design: Prospective 2-group comparison. Setting: A 221-bed acute care community hospital in western Canada. Patients: One hundred and forty-nine patients who had undergone laparoscopic cholecystectomy and agreed to be discharged on the day of operation. Interventions: Subjects were systematically allocated to receive either a home visit (HV, $n = 72$) or a telephone call (TC, $n = 77$) from a registered nurse on the evening of operation. During the follow-up, patient concerns were self-rated, interventions provided by the nurse were recorded, and nurses' perceptions of the need for the home visit were reported. A 48-hour telephone survey was used to determine patient satisfaction. Outcome measures: Patient concern scores, patient satisfaction with follow-up, readmission rates and use of emergency room services within 30 days of operation. Results: Subjects in the TC group had a significantly lower mean concern score ($p < 0.001$) and were significantly more satisfied with their follow-up ($p = 0.034$) than those in the HV group. Nurses perceived that 75% of the home visits were not necessary. Readmission rate was less than 1% (1 HV) and use of emergency room services was 6% (3 HV, 6 TC). Conclusions: Telephone contact is an acceptable method of follow-up for patients who have undergone outpatient laparoscopic cholecystectomy. The call should be made later in the evening on the day of operation or the next morning.

Objectifs : Enquêter sur le suivi qui s'impose après la sortie de l'hôpital dans le cas des patients qui ont subi une cholécystectomie par laparoscopie en chirurgie d'un jour et déterminer s'il y avait une différence significative entre les taux moyens de préoccupation et de satisfaction des patients visités à domicile par rapport à ceux des patients qui ont reçu un appel téléphonique. Conception : Comparaison prospective entre deux groupes. Contexte : Hôpital communautaire de soins actifs de 221 lits de l'ouest du Canada. Patients : Cent quarante-neuf patients qui avaient subi une cholécystectomie par laparoscopie et qui avaient convenu de recevoir leur congé le jour même de l'intervention. Interventions : On a réparti systématiquement les sujets de façon à ce qu'ils reçoivent une visite à domicile (VD, $n = 72$) ou un appel téléphonique (AT, $n = 77$) d'une infirmière autorisée le soir de l'intervention. Pendant le suivi, le patient a évalué lui-même ses préoccupations, on a consigné les interventions de l'infirmière et fait rapport des perceptions de celle-ci quant à la nécessité de la visite à domicile. On a réalisé un sondage téléphonique après 48 heures pour déterminer la satisfaction des patients. Mesures de résultats : Taux de préoccupation des patients, satisfaction des patients à l'égard du suivi, taux de réadmission et utilisation de services d'urgence dans les 30 jours suivant l'intervention. Résultats : Les sujets du groupe AT présentaient un taux moyen de préoccupation beaucoup moins élevé ($p < 0{,}001$) et étaient beaucoup plus satisfaits de leur suivi ($p = 0{,}034$) que ceux du groupe VD. Les infirmières pensaient que 75 % des visites à domicile n'étaient pas nécessaires. Le taux de réadmission n'a pas atteint 1 % (1 VD) et le recours aux services d'urgence s'est établi à 6 % (3 VD, 6 AT). Conclusions : Le contact par téléphone représentait un suivi acceptable dans le cas des patients qui ont subi une cholécystectomie par laparoscopie en chirurgie d'un jour. Il faudrait effectuer l'appel dans la soirée de la journée de l'intervention ou le lendemain matin.

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With the steady growth in the availability and use of ambulatory surgery, there is an increasing trend away from inpatient hospitalization and toward outpatient surgery. Day surgery has come to the forefront as being not only economical and efficient but an effective means of utilizing resources. Furthermore, many patients prefer to have their aftercare at home rather than in hospital,[1] thus minimizing lifestyle interruptions.

Although there are many benefits to surgery in an ambulatory care setting, the growing numbers and increased complexity of same day surgery cases require that these patients continue to receive quality care, follow-up[2] and access to resources once they are discharged from hospital.[1] Post-discharge follow-up is necessary to assess the patient's level of recuperation, evaluate the care received[3] and identify inadequacies of the process. Furthermore, it demonstrates a sense of caring about patients and assists in marketing an ambulatory surgery program.

As a result of the increasing expertise of physicians with the laparoscopic technique, diminishing health care resources, decreasing length of hospital stay for surgical patients and more outpatient surgery being performed safely, laparoscopic cholecystectomy (LC) is becoming a commonly performed outpatient procedure. Although studies support the cost-effectiveness[4,5] and safety[6,7] of this, evidence to support the type of follow-up required by these patients is limited. The purpose of this study was to determine the appropriate follow-up (home visit or telephone visit) required by patients who underwent LC and were discharged the same day.

Patients and methods

The study was undertaken in a 221-bed acute care community hospital in western Canada. A convenience sample of patients scheduled for elective or urgent LC, and deemed by the surgeon or anesthetist preoperatively as not requiring postoperative admission, were enrolled. In addition, patients had to be willing to be discharged on the day of operation, have a responsible caregiver remain with them that night and have a telephone at the home location. Patients subsequently were excluded if they required conversion to an open cholecystectomy or required admission to hospital postoperatively.

After institutional approval, 6 surgeons involved in the study discussed with potential subjects detailed information relating to the surgical procedure, the risks involved and the opportunity to be discharged home on the day of surgery with follow-up by a registered nurse either by telephone or in the home. Patients indicating a strong desire to remain in hospital overnight after the operation had their request respected. Banta[8] noted that patients must know that they have an alternative and be able to choose day surgery or hospitalization. Informed consent was obtained from patients willing to participate in the study.

Patients slated for outpatient LC were systematically allocated by the operating room slating clerk according to a predetermined schedule to either the home visit (HV) or the telephone call (TC) arm of the study. Patients were informed during their preoperative assessment of the type of follow-up assigned to them.

LC was performed by the standard 4-port laparoscopic technique. All patients recovered in the postanesthesia care unit (PACU) and later in the ambulatory surgical centre (SC). To determine readiness for discharge, each patient was regularly assessed and rated on a discharge criteria scale. At discharge, patients were provided with, and encouraged to use if needed, the telephone number of the hospital's 24-hour surgical hotline.[9]

After discharge, patients were assessed either in their home by a registered nurse from the Victorian Order of Nurses or by telephone call from a hospital surgical nurse. To determine if there was a significant difference in concerns between the TC and HV groups after hospital discharge, patients were asked to answer 7 questions relating to 5 areas of concern (activity, pain, wound, diet and elimination). Concerns were self-rated by patients on a scale of 1 to 5 (1 = none, 2 = mild, 3 = moderate, 4 = moderate to severe, 5 = severe), lower scores indicating less concern. For each patient, the lowest score possible was 7; the highest was 35. Nurses recorded the patients' responses and any nursing interventions provided. In addition, HV nurses recorded whether they perceived the home visit as necessary, taking into account the patient's concerns and the interventions provided.

Patients in both groups were telephoned 48 hours after the operation and asked to rate their satisfaction with care received in hospital, the follow-up visit or telephone call, and the overall experience. A scale of 1 to 5,[10] with 1 being lowest and 5 being highest, was used for the satisfaction questions. Patients also were questioned about their current level of activity and their perception of the need for the follow-up visit.

The level of significance was set at $p < 0.05$ (2-tailed t-test). A sample of 128 subjects was required to detect a significant difference with 80% power.[11] t-tests or χ^2 analyses were used as appropriate to determine if there was a significant difference in mean concern scores and satisfaction ratings between the TC and HV groups. Correlation analysis was used to determine if there was a relationship between concern scores and the variables of age and time interval between discharge and follow-up. Summary statistics of baseline data and demographic data were analyzed by treatment group to assess group differences. Further analysis was undertaken to determine if patients discharged home on the day of surgery differed significantly from patients admitted postoperatively in terms of demographic variables.

Results

During a 20-month data collection period, 180 patients agreed to participate in the study. Of these, 28 (15.6%) patients were admitted postoperatively: 5 required conversion to open cholecystectomy and 23 for a variety of reasons, including uncontrolled pain, refractory nausea and vomiting, or unsatisfactory vital signs. The remaining 152 patients were allocated to either the HV or the TC arm of the study. Follow-up was complete for 149 patients. Of these, 72 received an HV and 77 received a TC. When patients were resting or unable to speak with the nurse, the family provided data: 4.3% in the HV group and 22.7% in the TC group. Satisfaction surveys were completed for 128 (85.9%) patients.

The characteristics and baseline data of the HV and TC groups were analyzed to determine if the 2 groups were equal before the intervention (Table 1). Where applicable, means and standard deviations are reported.

Overall age was 41.8 (13.2) years and weight was 81.5 (17.1) kg. The majority (80.5%) were women and 1 of every 4 patients smoked. The mean time from the start to the end of the operation was 51.8 (19.9) minutes, in the postanesthesia care unit (PACU) was 84.4 (17.4) minutes and in the surgicentre (SC) was 312.0 (55.7) minutes (Table 2). Overall, 91.9% of patients in the PACU and 70.5% in the SC received analgesics. Antiemetics were required by 59.0% of patients in the PACU and 13.4% in the SC (Table 2). No significant differences in any of these variables were noted between the HV and TC groups. In addition to LC, minor procedures were performed on 4 (2.7%) patients.

Time spent in the SC for all patients varied from less than 4 hours (9.7%) to between 8 and 9 hours (1.2%), the majority (41.2%) spending between 4 and 5 hours. By 6 hours, 84.2% of patients had been discharged and by 7 hours 95% had been discharged. The mean difference in discharge time from hospital of 12 minutes between the 2 groups was not significantly different ($t = –0.914$, $p = 0.362$). A significantly shorter time between discharge and follow-up ($t = –5.963$, $p < 0.001$), however, was noted for HV (131 minutes) compared with TC patients (198 minutes). For HV patients, mean follow-up time by the registered nurse was significantly earlier in the evening (1942) compared to TC patients (2104) ($t = 7.381$, $p < 0.001$).

During follow-up, less than 1 in 4 patients (24%) in each group required some intervention. With the exception of 1 (1.4%) referral to the emergency room in the HV group, the main intervention provided by the nurse to patients was advice (22.2% in the HV group, 23.7% in the TC group). There was no significant percentage difference ($\chi^2 < 0.001$, $p = 0.922$) between the groups in terms of intervention received.

The surgical hotline was used by 22% of patients in the HV group and 14.3% in the TC group, a difference that was not significant ($\chi^2 = 1.312$, $p = 0.252$), and there was no difference in reported difficulties encountered at home following discharge ($\chi^2 = 0.286$, $p = 0.593$) or activity level ($\chi^2 = 0.001$, $p = 0.970$). By 48 hours postoperatively, 1 of every 4 (25.6%) patients in both groups reported that they had returned to normal activities.

Table 1

Characteristics of Patients Who Underwent Outpatient Laparoscopic Cholecystectomy Then Same-Day Follow-up by Home Visit or Telephone Call

Characteristic	Home visit ($n = 72$)	Telephone call ($n = 77$)	Test value	p value
Mean (SD) age, yr	42.1 (14.1)	41.6 (12.5)	0.211*	0.833
Mean (SD) weight, kg	80.2 (16.7)	82.7 (17.5)	–0.899*	0.376
Female gender, %	81.9	79.2	0.176†	0.675
Small children at home, %	29.2	40.3	2.01†	0.156
Stairs at home, %	22.2	27.3	0.508†	0.476
Smoker, %	25.0	26.0	0.019†	0.892

*t-test.
†χ^2 test.

Table 2

Surgery and Recovery Data for Patients Who Underwent Outpatient Laparoscopic Cholecystectomy Then Same-Day Follow-up by Home Visit or Telephone Call

Data	Home visit ($n = 72$)	Telephone call ($n = 77$)	Overall ($n = 149$)	Test value	p value
Mean (SD) surgery time, min*	50.6 (17.4)	52.9 (22.0)	51.8 (19.9)	–0.697†	0.487
Mean (SD) time in PACU, min	84.4 (16.1)	84.4 (18.8)	84.4 (17.4)	0.028†	0.978
Mean (SD) time in SC, min	319.0 (56.0)	305.5 (55.0)	312.0 (55.7)	1.479†	0.141
Analgesic in PACU, %	94.4	89.6	91.9	1.174‡	0.279
Antiemetic in PACU, %	61.1	53.2	59.0	0.939‡	0.332
Analgesic in SC, %	69.4	71.4	70.5	0.070‡	0.791
Antiemetic in SC, %	15.3	11.7	13.4	0.413‡	0.521

*Time interval, in minutes, between "operation started" and "operation ended" as noted on the intraoperative record.
†t-test
‡χ^2 test
PACU = postanesthesia care unit, SC = surgicentre.

For the major outcome variables of patient concern scores and satisfaction with the follow-up, the 2 groups exhibited significant differences. Mean concern score for TC patients was 9.3, significantly lower than the 12.3 reported by the HV group ($t = 6.941$, $p < 0.001$). Level of pain, difficulty moving and dizziness or lightheadedness were the major concerns of patients in both groups, whereas difficulty voiding was rated as the least concern (Table 3). Only patients with no missing data points were entered into the analysis ($n = 140$).

No significant correlation was noted for concern scores and age ($p > 0.05$); however, a low but significant negative correlation was noted between concern scores and time interval between discharge and follow-up ($r = –0.305$, $p = 0.001$). The greater the time between discharge and the follow-up visit, the lower the concern scores expressed by patients.

Although nonsignificant differences were noted between the 2 groups on their satisfaction ratings of hospital care ($\chi^2 = 1.869$, $p = 0.600$) and the whole experience ($\chi^2 = 6.659$, $p = 0.155$), this was not the case when patients reported how satisfied they were with their postdischarge follow-up. Mean satisfaction with the follow-up, as rated by patients on the 1 to 5 scale (higher scores indicate higher satisfaction), was rated significantly higher ($\chi^2 = 10.381$, $p = 0.034$) by patients who received a TC (4.64) than by patients who received an HV (4.08). However, these results, should be viewed with caution because of small cell sizes.

A significant difference between the 2 groups in their perception of the need for the follow-up visit ($\chi^2 = 20.471$, $p < 0.001$) was noted. When questioned at 48 hours after discharge, 61.0% of HV patients perceived the nursing visit as not necessary compared with 21.7 % of patients in the TC group. Furthermore, nurses undertaking the HV deemed that 75.0% were not necessary because the majority of patients required no intervention.

To determine the rate of postoperative complications, readmission rates and use of emergency room services within 30 days after the operation were assessed. One patient (less than 1%) was readmitted from the HV group on postoperative day 3 for sudden abdominal pain diagnosed as a biloma. This was treated and the patient recovered well. Nine patients (6.0%; 3 HV, 6 TC) returned to the emergency room for various reasons but none required admission (Table 4).

Lastly, to determine if the outpatient LC patients ($n = 152$) differed from the postoperative admission patients ($n = 28$), these groups were analyzed in terms of demographic variables and surgery and recovery times. No significant differences between these 2 groups were noted for mean age ($t = 1.139$, $p = 0.256$), weight ($t = –1.073$, $p = 0.285$) percentage who were female ($\chi^2 = 0.064$, $p = 0.801$), percentage who were smokers ($\chi^2 = 0.273$, $p = 0.085$), mean operative time ($t = 1.282$, $p = 0.212$) or mean time in the PACU ($t = –0.136$, $p = 0.892$).

Table 3

Mean Scores of Patient Concerns for Patients Who Underwent Outpatient Laparoscopic Cholecystectomy Then Same-Day Follow-up by Home Visit or Telephone Call*

Patient concern	Home visit ($n = 69$)	Telephone call ($n = 71$)
Pain	2.5	2.1
Difficulty moving	2.5	1.5
Dizziness or lightheadedness	1.9	1.4
Nausea	1.7	1.2
Discharge on dressing	1.3	1.1
Vomiting	1.4	1.1
Voiding	1.1	1.0
Total†	12.3	9.3

*Scale: 1 = none, 2 = mild, 3 = moderate, 4 = moderate to severe, 5 = severe.
†Maximum score = 35, $p = 0.001$.

Table 4

Reasons for Postoperative Emergency Room Visits and Number of Days After Operation

Reason	No. of patients	No. of days after operation
Nausea and vomiting (? Meniere's disease)	1	1
Urticaria	1	2
Deep vein thrombosis	1	3
Minor stab wound dehiscence	1	4
Abdominal pain not yet diagnosed	5	5,7,9,4,21

Discussion

Although studies have been undertaken using either telephone follow-up[7,12,13] or having a nurse remain in the home with the patient postoperatively,[14] no studies have compared home versus telephone follow-up. Determining the most appropriate follow-up for outpatient LC patients, whether it be an HV or a TC, ensures that aftercare is safe, that patients' needs are met, and that health care dollars are appropriately used. This study was undertaken to determine if there was a significant difference in mean patient concerns and satisfaction with follow-up between subjects receiving a TC or an HV after discharge home on the same day as the LC. Although it was anticipated that the more personal contact provided to patients in the HV group might result in fewer concerns and higher satisfaction with the follow-up, this was not the case.

Patients followed up by telephone had a significantly lower mean concern score and a significantly higher satisfaction rating for their follow-up than did patients receiving an HV. These indicators suggest that a telephone call to patients who have undergone outpatient LC is an acceptable method of follow-up. Further, the home visiting nurses' perceptions that 3 out of 4 home visits were not necessary suggests that the more time-consuming and expensive HV may not be required.

Although pain scored highest of the concerns by patients in both

groups, the mean score of 2.3 on a scale of 1 to 5 indicates mild to less than moderate levels of pain. Interventions by the nurses, when required, often were recorded as encouraging the patient to take analgesic as directed. Preoperative teaching to reinforce the use of analgesics for pain control should be stressed. Further, it is important to note that pain and difficulty moving, the 2 greatest concerns of patients in both the HV and TC groups are factors that are both controllable and non-life-threatening.

It is unclear why there was a significant difference between the concern scores of the 2 groups. The difference may have occurred for the following reasons. Responses to concerns were answered more frequently by family members in the TC group than in the HV group and thus may not have truly reflected the patients' concerns. Visual cues, available to nurses making the HV but not to nurses making a TC may have influenced the patients' responses. Lastly, the time interval between discharge and follow-up was significantly longer for the TC group than the HV group. Since correlation analysis revealed a significant negative correlation between concern scores and time interval between discharge and follow-up, it would seem that allowing patients more time to rest and adjust to being home before follow-up may be prudent. This is supported by comments from patients who suggested that follow-up should be made later in the evening or the next morning.

Although patient satisfaction ratings for hospital care and the overall procedure were high for both groups, satisfaction with the follow-up was significantly higher for the TC group than the HV group. The lower satisfaction score by the HV group may be explained by unmet expectations from patients who, because they received an HV, may have expected the nurse to provide some intervention, even though nurses making the HV frequently reported that no intervention was required. Alternatively, TC patients may have had lower expectations because the nurse was not physically present and therefore were more satisfied with the follow-up. Voitk[7,13] also reported high patient satisfaction with elective outpatient cholecystectomy. However, he did not provide empiric data to support this finding.

Lastly, the results of this study support statements by others that laparoscopic surgery has revolutionized operations on the gallbladder[15] and has paved the way for a rapid recovery and less traumatizing surgery.[16] In this study, when questioned 48 hours after hospital discharge, one-quarter of the patients reported they had resumed their normal activities and more than three-quarters encountered no difficulties.

The conversion of 2.7% of subjects to an open procedure was similar to the 2% reported by Smith and colleagues,[6] but lower than the 7% reported by Taylor and colleagues[17] and the 4% reported by Voitk.[7] The 15.6% rate of postoperative admissions, although lower than the 19.4% observed by Smith and colleagues,[6] was almost double the 8% rate reported by McKernan[14] and Voitk.[7,13] We expect that as physicians and nursing staff become more comfortable with this procedure on an outpatient basis, this rate may decrease. The increased tendency during this study to keep patients overnight may have resulted from staff being overcautious owing to the newness of LC as an outpatient procedure. The rates of readmission and emergency room visits in this study are similar to those reported in other studies of outpatient LC patients.[13,18]

This study had several limitations. There may have been self-selection bias, by allowing patients the option of having surgery on an inpatient or outpatient basis, so that patients who felt more capable or who had good home support may have elected to participate in the study. Further, we could not obtain satisfaction data from 14% of patients. It is possible that the ratings of these patients might have differed from those who were contacted. Lastly, data were provided more frequently by the caregiver in the TC group. The response from the family member may have differed from the response the patient would have given and may have skewed the findings.

Conclusions

Physicians, nurses and patients should feel confident that LC performed on an outpatient basis with follow-up by telephone is a satisfactory means of aftercare. Based on patient suggestions, it is recommended that the follow-up call be made later the evening on the day of operation or the next morning. Since less than one-quarter of the subjects required some intervention after discharge and with, the exception of 1 patient, advice was provided as the only intervention, the telephone would provide a suitable medium for this. For facilities with a surgical hotline, this may be all that is required by this population. Research, however, is needed to support such a move.

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