

Convalescence in the first week after laparoscopic cholecystectomy

Results from a detailed questionnaire on morbidity and recovery of daily activities

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Abstract

Background: The aim of this study was to evaluate postoperative morbidity and return to daily activities after laparoscopic cholecystectomy.

Methods: Thirty-five patients were asked to keep daily detailed structured diaries for 1 week.

Results: Half of the patients were discharged from hospital on the 1st postoperative day (POD1); another third were released on POD2. Distressing pain subsided on POD2, but disturbing pain occurred in 10% of the patients on POD5–7. On POD7, mild pain at rest appeared in 30% of the patients and when moving in 60% of them. Although pain was the most common complaint, the mean consumption of analgesics was low. Even though one-fifth of the patients felt nauseated on POD2–3, and one-seventh again as late as POD7, drinking and eating did not pose problems. At the end of the week, one-third of the subjects experienced slight disorders in night rest and vigilance. Moving and walking were disturbed in one-third of the patients, and bending over and lifting objects were relatively difficult for 60% of the patients on POD7. Thirty percent of the 21 patients who were employed reported that they were capable of returning to work on POD7.

Conclusion: To account for the variability in the rate of convalescence, the length of sick leave after laparoscopic cholecystectomy should be individualized.

Key words: Surgery — Laparoscopic cholecystectomy — Pain — Postoperative morbidity — Fatigue

Data on postoperative morbidity affecting the well-being and readiness of patients to return to their previous activities are still scarce [2]. Regardless of the enthusiasm for laparoscopic cholecystectomy (LCC), detailed reports on the

convalescence period following LCC are scanty. By now, the shorter convalescence after LCC compared with open surgery is taken for granted. However, when compared with small-incision cholecystectomy, LCC was similar [4]. To evaluate the rate of convalescence after LCC, and its characteristics, a group of patients were followed during the 1st postoperative week with the aid of a detailed questionnaire.

Materials and methods

The study was approved by the Ethics Committee of our department. The laparoscopies were performed using two 12-mm trocars (one placed umbilically, the other subxiphoidally in the midline) and two 5-mm trocars placed subcostally. Fascial closure for the 12-mm holes was made externally using resorbable sutures. An intraabdominal pressure of 12 mmHg was maintained by CO₂ insufflation.

Forty patients were contacted at noon on the 1st postoperative day (POD1) after an elective LCC. They were questioned specifically about the time period from the recovery room till the noon of POD1 (called "period 1") and asked to fill out a questionnaire every evening till the 7th postoperative day (POD7) and then mail it in a prepaid envelope. The time period from noon to evening on POD1 was called "period 2". The questions, which were similar to those posed on POD1, dealt with pain, medication, nausea, drinking, eating, sleeping, bowel and bladder function, moving about, and the resumption of daily activities.

The scoring of the items is shown in Table 1. The patients were asked to describe the pain when resting or moving as deep (visceral) and/or superficial (parietal) as well as dull and/or sharp (that is, one alternative did not exclude the other one). Furthermore, they were asked to mention any other problems freely and to give their final comments on their convalescence.

Results

Thirty-five of the 40 patients returned the questionnaire. Twenty-four were women, 11 were men. Their mean age was 51 years (range, 21–78). Thirteen were retired, one was on maternity leave, and 21 were employed (three in heavy manual labor, eight in light manual labor, and 10 in sedentary work). Recovery from the procedures as assessed on

Table 1. Scoring of symptoms and return to normal activities

Pain and nausea	no	mild	disturbing	distressing
Duration of nausea and vomiting	no	momentary	recurring	continuous
Drinking, appetite, and eating	normal	less than usual	much less than usual	hardly at all
Sleep	normal	slightly restless	very restless	hardly at all
Vigilance	normal	slightly tired	very tired	exhausted
Moving, ^a walking, bending down, and lifting	normal	slightly difficult	very difficult	impossible

^a E.g., standing up, lying down, turning in bed

POD1 was uneventful. Nineteen patients were discharged home on POD1 and 12 patients on POD2. Thirteen of those who were discharged later than on POD1 underwent surgery in the afternoon or were older than 50 years. One 75-year-old woman was hospitalized till POD6, partly because she needed parenteral opioids for pain relief and partly for social reasons. She was readmitted for cardiac dyspnea on POD7 and recovered uneventfully thereafter.

Pain

The patients localized their pain most often in the right upper quadrant and paraumbilically. Up to one-third of the patients reported pain on the lower thoracic areas as well, again more often on the right side. The incidence and grade of pain at rest and on moving are shown in Fig. 1A.

Distressing pain ended on POD2. Mild pain at rest persisted in 30% of the patients and when moving in 60% of them on POD7. On POD5–7, there was an increase in the occurrence of disturbing pain at rest; disturbing pain when moving had not subsided either. Disturbing pain when moving prevailed in ~10% of the patients over the whole study period. The nature of the pain is shown in Fig. 1B. On average, over the study period, superficial and deep pain were equally frequent at rest; but from POD2 on, superficial pain was more common when moving. Dull pain was more frequent than sharp pain.

Pain radiating to the right shoulder was deliberately not specifically mentioned on the questionnaire. Eleven patients reported it spontaneously. This kind of pain was most frequent during period 2 (eight of 35 patients); it generally lasted for 2 days and not longer than 3 days, but occasionally it was the most distressing symptom. Four patients complained of backache.

Pain was relieved with an i.v. opioid (oxycodone or pethidine) and/or an NSAID in the recovery room and with an i.m. opioid and an i.m. peroral or rectal NSAID in the ward. During period 1, the need for opioid doses (mean \pm SD/range) was $3.6 \pm 2.3/0-9$, and the need for NSAID doses was $1.9 \pm 1.3/0-4$. Thereafter, three patients needed opioids on POD1, two on POD2, and one until POD5. The mean number/range of NSAID doses were 1.2/0–3 during period 2. They were 1.8/0–4 on POD2 and steadily decreased to 0.4/0–3 on POD7. Six percent of the patients reported insufficient pain relief during periods 1 and 2, 9% on POD2, 0–3% on POD3–6, and 6% on POD7.

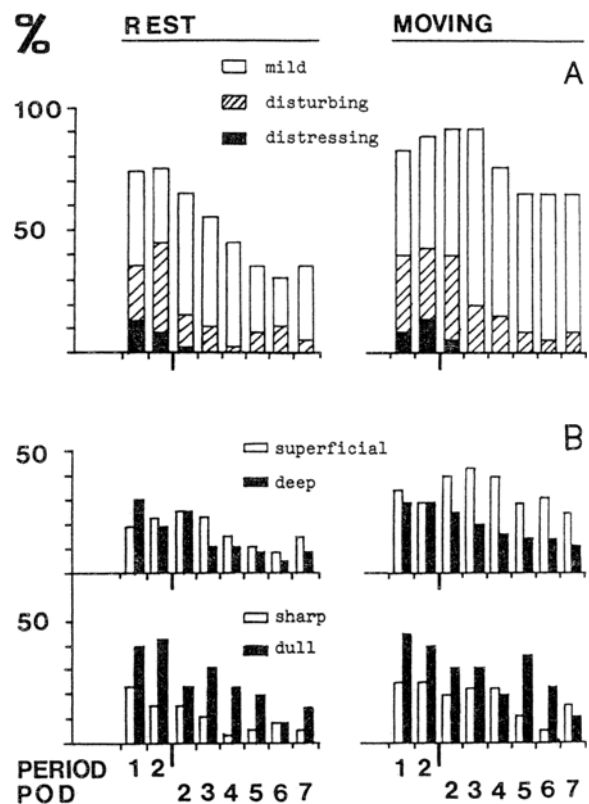


Fig. 1. A The incidence and grade of pain at rest (left) and when moving (right) after a laparoscopic cholecystectomy as a percentage of patients ($n = 35$) over time; POD2–7 = 2nd to 7th postoperative days, p1 = period 1; till the noon of the first POD, p2 = period 2; from p1 to the evening of the first POD. B The character of pain at rest (left) and when moving (right).

Nausea

One-third of the patients experienced nausea during periods 1 and 2, one-fifth on POD2–3, and one-seventh on POD4–7. The nausea was usually mild. The incidence of recurring nausea was $\leq 6\%$, except on POD1 and POD6, when it was 9%. Twenty percent of the patients vomited during period 1 and 11% during period 2. One patient vomited on POD2; another one vomited as late as POD7. Only four patients received anti-emetic medication postoperatively.

The patients were allowed only a small amount of fluids on the evening of the day of the operation. An unlimited amount of fluids and a light breakfast were served on POD1.

Twenty percent of the patients drank less than usual in period 2, 10% on POD2–3, 3% on POD4–6, and 6% on POD7. The appetite of 40–50% of the patients was less than usual on POD1–2, and of 20% of the patients up to POD7. Half of the patients ate less than usual on POD1–2, one-third on POD3–4, and one-fifth till POD7.

Thirty percent of the patients had trouble with micturition in period 1. Half of the patients defecated on POD2, and over 80% did so early on POD3.

Eighty percent of the subjects slept restlessly on the 1st postoperative night, "slightly" and "very" restless being mentioned equally often. Fifty percent were restless on the 2nd night and 40–30% during POD3–7, whereas $\leq 10\%$ had severe disturbances over the study period. Vigilance was depressed in 80% of the cases (generally slightly) on POD1–2. The disturbance decreased steadily to one-third of the cases on POD6–7.

The frequency of difficulties in moving (changing position) and walking showed an identical profile over time. POD1–3 presented most problems, when $\leq 90\%$ of the patients had (generally slight) difficulties in moving and 80% found it hard to walk. Twenty percent said that movement was "very difficult" during periods 1 and 2, but that figure decreased to 9% on POD2. Slight difficulties were encountered by 30% of the patients on POD7. Similarly, bending over and lifting objects were difficult for 80–90% of the patients on POD1–3 and for 60% on POD7. Lifting was impossible for 30% during period 2 and for 5% on POD4–5, and there were slight difficulties in bending over.

Among the 21 employed patients, the cumulative self-assessed capability to return to work was 5% on POD3 and POD4, 10% on POD5, 15% on POD6, and 30% on POD7. Of the six patients capable of returning to work on POD7, two were engaged in sedentary work and four in light manual labor.

Pain was the most common complaint in 13 of the 24 patients who reported their most disturbing daily symptom. The pain occurred most often in connection with getting up or lying down, bending over, and dressing. Occasionally, it was colicky, linked with meteorism and radiating to the hypochondrium or upper trocar holes, so that breathing was laborious. Six subjects experienced longer-lasting or more severe pains than expected. Ten patients recovered faster than they had anticipated.

Discussion

Possibly because the main interest has been in the end points of surgical success, the methods and their precision have not always been specified clearly in earlier reports, including aspects of general convalescence. Previous studies on convalescence have addressed the duration of hospital stay (as determined either by institutional routines [1, 6, 7, 8] or by the patients' choice [4]), intake of solid food [4, 6], duration of fatigue [8], time to full activity [4, 6, 7, 8, 9], and duration of sick leave (either prescribed [6, 7, 8, 9] or as determined by the patients [4]).

In most cases, patients are discharged from the hospital on the 1st POD [1, 7, 8]. However, in a large study performed in the United Kingdom, the patients wanted to stay

in the ward for >3 postoperative nights, regardless of whether the surgical method was LCC or small-incision cholecystectomy [4]. As after any kind of surgery, discharge depends on pain, nausea, voiding, moving, and social factors.

Based on the present results, drinking, appetite, and eating pose no problems. Only on rare occasions was recurring nausea troublesome. Difficulties in voiding in one-third of the patients apparently arose from the peritoneal irritation and abdominal pain.

Throughout the study period, the patients in our series reported pain when moving, unlike the patients in a Belgian study, who were pain-free 2 days after the operation [3], or a group of Canadian patients who reported mean VAS scores below 2/10 on POD1–2 [5]. The majority of our patients accepted mild pain and did not take analgesics at home. A few of the patients with disturbing pain did not consume analgesics either, but this may be a sign of insufficient patient information. On POD5–7, there was a recurrence of disturbing pain, possibly induced by increased physical activity.

Pain may be the reason why the quality of sleep in one-third of the cases was poor as late as POD7. The patients in our series regained their normal vigilance slightly slower than the patients in a Danish survey (5 days) [8].

The time to full activity varied from a mean of 7 days (range, 3–35) in Denmark [8] and 1 week [7] or 2 weeks [6] in the USA, to 3 weeks (range, 1–26 days) in the UK [4]. Two-thirds of our patients had slight difficulties in at least one of the specified physical activities (moving, walking, bending, lifting) on POD7, in line with the wide scattering of referenced results on "full activity."

The mean duration of sick leave was 2 weeks in two Swedish studies [1, 10]. British patients thought that a sick leave of 5 weeks (range, 1–12) was appropriate, even though they reported full activity 2 weeks earlier [4]. Patients with small incisions returned to work 1 week sooner [4]. The assessments by our employed patients indicated that one-third of them were willing to go to work on POD7. Thus a 1-week sick leave is sufficient in selected cases. The quality of health insurance and local habits affect the motivation to return to work. Concurrently, 65% of Americans, but only 25% of French people, were back to work by POD14 [9]. At our hospital, the usual sick leave prescribed after LCC is 1 week. Based on our results, we recommend that sick leave be customized to provide optimal economic benefits following laparoscopic cholecystectomy.

References

1. Berggren U, Gordh T, Grama D, Haglund U, Rastad J, Arvidsson D (1994) Laparoscopic versus open cholecystectomy: hospitalization, sick leave, analgesia and trauma responses. *Br J Surg* 81: 1362–1365
2. Chumbley GM, Hall GM (1997) Recovery after major surgery: does the anaesthetic make any difference? [Editorial]. *Br J Anaesth* 78: 347–348
3. Joris J, Thiry E, Paris P, Weerts J, Lamy M (1995) Pain after laparoscopic cholecystectomy: characteristics and effect of intraperitoneal bupivacaine. *Anesth Analg* 81: 379–384
4. Majeed AW, Troy G, Nicholl JP, Smythe A, Reed MWR, Stoddard CJ,

- Peacock J, Johnson AG (1996) Randomised, prospective, single-blind comparison of laparoscopic versus small-incision cholecystectomy. *Lancet* 347: 989–994
5. Michaloliakou C, Chung F, Sharma S (1996) Preoperative multimodal analgesia facilitates recovery after ambulatory laparoscopic cholecystectomy. *Anesth Analg* 82: 44–51
 6. Peters JH, Ellison EC, Innes JT, Liss LJ, Nichols KE, Lomano JM, Roby SR, Front ME, Carey LC (1991) Safety and efficacy of laparoscopic cholecystectomy: a prospective analysis of 100 initial patients. *Ann Surg* 213: 3–12
 7. Schirmer BD, Edge SB, Diw J, Hyser MJ, Hanks JB, Jones RC (1990) Laparoscopic cholecystectomy: treatment of choice for symptomatic cholelithiasis. *Ann Surg* 213: 665–677
 8. Schulze S, Thorup J (1993) Pulmonary function, pain, and fatigue after laparoscopic cholecystectomy. *Eur J Surg* 159: 361–364
 9. Vitale GC, Collet D, Larson GM, Cheadle WG, Miller FB, Perissat J (1991) Interruption of professional and home activity after laparoscopic cholecystectomy. *Am J Surg* 161: 396–398
 10. Wenner J, Graffner H, Lindell G (1995) A financial analysis of laparoscopic and open cholecystectomy. *Surg Endosc* 9: 702–705