Factors associated with postoperative recovery after laparoscopic and abdominal hysterectomy

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Abstract

Objectives: To determine whether the day-by-day recovery of general wellbeing was faster in women undergoing laparoscopic hysterectomy than in total abdominal hysterectomy and to analyse the association between stress coping and sick-leave and the day-by-day recovery measured as general wellbeing.

Study design: A randomised multicentre trial conducted in five hospitals in the South East of Sweden. Hundred and twenty-five women scheduled for hysterectomy for benign conditions were enrolled in the study and 117 women completed the study. Fifty-five women were randomised to abdominal hysterectomy and 62 to laparoscopic hysterectomy. Day-by-day recovery of general wellbeing was measured by a visual analogue scale 1 week preoperatively, 35 days postoperatively, and during 1 week 6 months postoperatively. Stress-coping capability was measured preoperatively using a specific psychometric measurement. Sick-leave was granted with an initial period of 14 days and prolonged on patient demand with 7 days periods.

Effects of operating method and stress-coping ability on the day-by-day recovery adjusted for postoperative complications and analgesics were analysed by means of analysis of variance for repeated measurements.

Results: No significant difference was found in the day-by-day recovery of the general wellbeing between the operating methods. Stress-coping ability did significantly influence the day-by-day recovery of general wellbeing. Duration of sick-leave was associated with the occurrence of postoperative complications but not with stress-coping ability.

Conclusions: The day-by-day recovery of general wellbeing is not faster in laparoscopic hysterectomy than in abdominal hysterectomy. Women with high stress-coping abilities have a better outcome in general wellbeing than women with low stress-coping capacity. Identification of women with low stress-coping abilities and prevention of complications might be of benefit for improving postoperative wellbeing.

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1. Introduction

Laparoscopic hysterectomy has been assumed to benefit women’s psychological wellbeing more than abdominal hysterectomy, but studies have failed to reveal this [1,2] although the recovery time, measured as duration of stay in hospital and sick-leave, after laparoscopic hysterectomy was significantly shorter [1–4]. Since the psychological wellbeing at follow-up does not differ between the methods, the shorter duration of stay in the hospital and sick-leave may indicate that the general wellbeing is recovered faster day-by-day postoperatively after laparoscopic than by abdominal hysterectomy, assuming that the postoperative care concerning discomfort such as pain relief is similar and adequate.

Postoperative advice and restriction after hysterectomy differ significantly between countries, departments and even physicians and evidence based guidelines are lacking [5].
Recovery is not only a matter of treatment of postoperative physical symptoms and complications but probably also a matter depending on preoperative psychological wellbeing and capability of psychological recovery [6–8]. How the capability of dealing with stressful situations, i.e. stress-coping, influences the postoperative recovery after hysterectomy is not known.

The objectives of this study were to determine whether the day-by-day recovery of general wellbeing was faster in women undergoing laparoscopic hysterectomy than in total abdominal hysterectomy and to analyse the association between stress-coping and sick-leave and the day-by-day recovery measured as general wellbeing.

2. Material and methods

This study was part of a randomised controlled trial of laparoscopic and abdominal hysterectomy on benign indications in five hospitals in the South-East Health Region of Sweden, conducted between October 1996 and May 2003.

Detailed information about study design, material and methods has previously been described [2]. Briefly, women, in whom laparoscopic hysterectomy was considered to be possible, were eligible for the study. The medical inclusion criteria were benign gynaecological disorders. The exclusion criteria were genital tract malignancy, preoperative treatment with gonadotrophine-releasing hormone (GnRH) analogues, postmenopausal women without hormone replacement therapy (HRT), and severe psychiatric disorder. At least one ovary was to be preserved at the operation.

After written and verbal informed consent the women were randomised to either abdominal or laparoscopic hysterectomy approximately 1 week before surgery and were informed about their assignment. Sealed opaque envelopes containing assigned method were used and there was a block randomisation with 25 patients per block in each participating centre.

One hundred and twenty five women were randomised. Sixty four were allocated to laparoscopic hysterectomy and 61 to abdominal hysterectomy. Eight women withdrew informed consent before surgery or during the first 5 weeks postoperatively, two in the laparoscopy group and six in the abdominal group. The remaining 117 women constitute our study population.

The surgery was performed or supervised by experienced gynaecological surgeons and the procedures were carried out as previously described [2]. All operations were performed under general anaesthesia. The use of analgesics peri- and postoperative was recorded.

The women were discharged from hospital when they were mobilised and had sufficient pain relief with oral analgesics. At discharge all women had a sick-leave of 14 days. After approximately 10 days the research nurse contacted the patient by telephone and asked about the recovery status. The sick-leave was prolonged by only 7 days at a time if considered necessary by the patient, until she was able to return to work or normal daily activity.

The women visited the outpatient clinic 5 weeks and 6 months postoperatively. During these visits a clinical examination was carried out. The women were asked about present medication, de facto duration of sick-leave and whether they had experienced the recovery as uncomplicated or had sought contact with the health care system. The women’s response was categorised by the investigators as an uncomplicated recovery or recovery with minor or major complications.

2.1. Measurement of general wellbeing and stress coping

The women completed a diary concerning their general wellbeing and consumption of analgesics from 1 week before surgery, daily until day 35 postoperatively and 1 week before the 6-month visit. Every evening before bedtime the women were asked to state in a visual analogue scale ranging from 0 to 100 how they considered their overall general wellbeing on average the past day. The figure 0 represented extremely bad wellbeing and 100 represented feeling extremely well.

One week preoperatively the woman completed the stress-coping inventory (SCI) which is a measure developed to study the individual’s appraisal of adaptive resources to deal with stressful situations [9]. It consists of descriptions of 41 stressful situations where the woman is instructed to rate on a six-point Likert scale how often she is able to cope with each situation. The minimum sum score is 41 and the maximum 246. The higher the sum score, the greater is the stress-coping capacity. The SCI has previously been found to have good internal consistency reliability with Cronbach’s alpha at 0.94 and 0.95 [9,10]. No clinical categorisation of the SCI sum score has been established. On empiric basis we categorised the SCI sum score \( \leq 160 \) as low stress-coping ability and \( >160 \) as high [9].

2.2. Ethics

The ethic research committee at the faculty of Health Sciences, Linköping University approved the study.

2.3. Statistics

Figures are given as numbers and per cent, mean ± standard deviation (S.D.) or median and range. Student’s \( t \)-test, Yates-corrected \( \chi^2 \) and Fisher’s exact tests were used for the analyses of the descriptive and demographic data. Analysis of variance (ANOVA) for repeated measurements was used to compare the results of the diary and the consumption of analgesics between the two groups from baseline to 6-month follow up. Statistical significance was set at the 5% level.
3. Results

The demographic and clinical data are shown in Table 1 and there were no significant differences between the groups. The indications for the hysterectomy did not differ significantly between the groups. 92.3% had bleeding disorders, fibroids, endometriosis or dysmenorrhoea as main indication for the hysterectomy and 7.7% had endometrial hyperplasia, cervical dysplasia or other gynaecologic indications.

3.1. General wellbeing

The day-by-day general wellbeing according to the diary did not differ significantly between laparoscopic and abdominal hysterectomy in any of the three periods, i.e. the week before the operation, the postoperative period from day 1 to day 35 postoperatively and a week 6 months postoperatively (Fig. 1). The results were similar when adjusted for per- and postoperative complications, i.e. any complications, minor or major complications, age, parity, smoking, BMI and for postoperative day-by-day use of analgesics (data not shown). In the laparoscopy group the women had regained their self-rated general wellbeing equivalent to preoperative day-7 on postoperative day 17 compared with on day 20 in the abdominal hysterectomy group.

3.2. Consumption of analgesics

Seven women in the laparoscopic group and nine in the abdominal group used analgesics preoperatively. There was no statistically significant difference in the consumption of fentanyl during the operation between the two groups. No woman needed parenterally administered opioids after the third postoperative day. There was a significantly lower consumption of opioids in the laparoscopic group day 0 to day 3, but no difference regarding other analgesics. From postoperative day 4, no statistically significant differences between the two groups regarding use of analgesics could be found.

Table 1
Demographic and clinical data

<table>
<thead>
<tr>
<th></th>
<th>Abdominal hysterectomy n = 55</th>
<th>Laparoscopic hysterectomy n = 62</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>44.0 (29–60)</td>
<td>44.5 (32–62)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>24.4 (18.4–33.5)</td>
<td>23.9 (18.2–40.4)</td>
</tr>
<tr>
<td>Parity</td>
<td>2 (0–5)</td>
<td>2 (0–5)</td>
</tr>
<tr>
<td>Smokers</td>
<td>15/54 (28%)</td>
<td>19/59 (32%)</td>
</tr>
<tr>
<td>Uterine weight (g)</td>
<td>132 (45–995)</td>
<td>160 (49–350)</td>
</tr>
<tr>
<td>Minor complications</td>
<td>11 (20%)</td>
<td>13 (21%)</td>
</tr>
<tr>
<td>Major complications</td>
<td>2 (3.6%)</td>
<td>8 (12.9%)</td>
</tr>
<tr>
<td>No complications</td>
<td>42 (76%)</td>
<td>41 (66%)</td>
</tr>
<tr>
<td>Conversion to laparotomy</td>
<td>NA</td>
<td>3 (4.8%)</td>
</tr>
</tbody>
</table>

Data are expressed as median (range) or number (%). BMI, Body Mass Index.

3.3. Stress coping

The internal consistency reliability in the present study for the SCI was excellent (Cronbach’s alpha = 0.948). As demonstrated in Fig. 2 the SCI sum score was significantly associated with the postoperative general wellbeing. There was no statistically significant difference between the groups of laparoscopic and abdominal hysterectomy in SCI sum score at baseline (mean 183.5 ± 27.3 vs. 185.2 ± 25.2; p = 0.728).

3.4. Minor and major complications

The complication frequency is shown in Table 1. Minor complications comprised abdominal wall incision haematoma; wound infection; prolonged period with pain; fatigue; and other conditions occurring in the postoperative period causing substantial, but not severe discomfort to the patient. Major complications consisted of per- or postoperative intra-abdominal bleeding exceeding 1000 mL; intra-abdominal infection; visceral injury; re-laparotomy or re-laparoscopy; fracture of the lower limb and conversion of laparoscopy to laparotomy.

3.5. Sick-leave

One hundred and six women received a sick-leave at discharge from the hospital. The remaining 11 women in the study were either already on sick-leave for other reasons than the hysterectomy, had disability pension, or did not need a sick-leave for other reasons. The mean duration of sick-leave differed significantly between the hysterectomy groups (27.5 days ± 15.3 for the laparoscopic group vs. 34.4 days ± 10.9 for the abdominal group; p = 0.010). The stress-coping ability did not seem to influence the sick-leave significantly (low vs. high SCI sum score: 30.9 days ± 12.3 vs. 30.8 days ± 14.2; p = 0.997) nor did occurrence of major complications (major complication vs. no major complication: 37.9 days ± 16.9 vs. 30.3 days ± 13.4; p = 0.133). In contrast, minor complications did influence the sick-leave significantly. In cases with minor complications the mean sick-leave was 36.7 days ± 15.9 compared...
with 29.3 days ± 12.8 in those without minor complications ($p = 0.025$).

4. Comment

A woman undergoing hysterectomy on benign indication regardless of surgical method most often experiences improved health related quality of life (QoL) postoperatively since the symptoms such as bleeding disorders disappear [11,12]. In this randomised study we showed that the general wellbeing improved significantly from operation even up to 6 months after the operation but did not find any significant difference in the day-by-day recovery of self-reported general wellbeing between laparoscopic and abdominal hysterectomy. On the contrary, the stress-coping ability predicted the day-by-day recovery of general wellbeing.

Quality of life is a broad term. Even in a more narrow sense, as in heath related QoL, the term is wide. A simple generic measure may be thought to be too blunt to detect changes in general wellbeing but Davies and Doyle showed an increase in QoL using the EuroQol Health questionnaire (EQ-5D) in a prospective cohort of 109 hysterectomies [13]. We used a visual analogue scale (VAS) ranging from 0 to 100 for measuring the general wellbeing. This generic measure is comparable with other measures such as a part of the EQ-5D that has been used in other studies as a measure for health related QoL overall [14]. Lumsden et al. also used a visual analogue scale for self assessment of wellbeing and found a higher QoL after hysterectomy but no changes in the self reported general wellbeing between laparoscopic and abdominal hysterectomy [15]. These studies together with the present study indicate that a VAS may be sensitive enough to measure the improvement in general wellbeing after hysterectomy for benign gynaecological disorders.

We failed to show a difference between laparoscopic and abdominal hysterectomy regarding day-by-day recovery of general wellbeing. There was a difference of only 3 days between the laparoscopic and abdominal hysterectomy group (17 vs. 20 days) to reach the rated mean general wellbeing score corresponding to baseline at 7 days before surgery. It is possible that the patient 1 week prior to surgery already is biased by the procedure-related anxiety and estimates the wellbeing lower than in general. There is however no reason to believe that the difference in days of regaining general wellbeing between the modes of surgery should be influenced by this.

In order to avoid potential selection bias we excluded women with obvious psychiatric disorders, malignancies, users of GnRH analogues and postmenopausal women without HRT, which may influence the recovery of general wellbeing. Use of analgesics might also be considered as a confounding factor, but the results did not change when adjustments were made for this. There was no significant

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**Fig. 1.** General wellbeing according to the diary from 7 days preoperatively to 35 days postoperatively and in 7 days 6 months after laparoscopic and abdominal hysterectomy. Plots indicate mean ± 1 S.D.
difference in the number of women who used analgesics preoperatively between the groups. We found a significantly lower use of opioids in the laparoscopic group, which is consistent with other studies [3,16–18]. This difference disappeared after the third postoperative day. No patient needed opioids parenterally from day 4 and thus the findings indicate that within 3 days of the hysterectomy postoperative pain is sufficiently controlled with oral/rectal analgesics in both laparoscopic and abdominal hysterectomy.

The complex nature of hysterectomy suggests that multiple factors may potentially influence postoperative psychological outcome. Personality factors have been shown to possess some predictive value for psychological outcome after hysterectomy [19,20]. The present study indicates that the woman’s stress-coping ability plays an important role in the general wellbeing after hysterectomy.

The duration of time to return to normal daily activity has been shown to be shorter for laparoscopic hysterectomy than for abdominal hysterectomy in several trials. In a meta-analysis the weighted mean difference in return to normal daily activity between the laparoscopic and abdominal hysterectomy was 13.6 days [21] but the recovery time or sick-leave varies a lot. This may be due to different local tradition among surgeons, healthcare systems, social benefits and patients’ expectations. Because of this the sick-leave period seems to be a blunt measurement of recovery. In our study the women themselves decided when they were capable to return to work and the sick-leave was prolonged with a maximum of 7 days at a time. One might therefore assume that local social traditions including hearsay and media-related opinions are strong and that women in Sweden for example might be predetermined to be at home approximately 4–5 weeks after a hysterectomy although the results of the present study seem to indicate that the recovery is sufficient prior to this. Evidence based guidelines for length of sick-leave based on medical conditions are still lacking and studies to determine this should be encouraged.

Occurrence of major complications did not statistically affect the length of the sick-leave, but if the patient suffered a minor complication, the sick-leave was significantly longer than if no minor complication occurred. This may be explained by the fact that the number of major complications was low and thus exhibit a low statistical power. However, major complications including peroperative bleeding and reoperations usually occur in the operating room or in the immediate postoperative period. In that way it may not influence the further postoperative period significantly and
therefore often plays out its role in a 4- or 5-week sick-leave as long as no further complication arise. The minor complication on the other hand, being for example a wound infection, pain or fatigue, most often become a problem when the patient has left the hospital being at home trying to recover normal daily activities and thus causes relatively more discomfort to the patient. This may lead to a longer sick-leave because of the self-requested sick-leave “on demand”.

5. Conclusion

The day-by-day recovery of general wellbeing is not faster in laparoscopic hysterectomy than in abdominal hysterectomy. The general wellbeing after surgery improves up to 5 weeks postoperatively and even during 1 week 6 months postoperatively, independent of mode of hysterectomy. This study supports that personality factors have an impact on the postoperative recovery. Women with high stress-coping abilities have a faster recovery in general wellbeing than women with low stress-coping abilities. The length of the sick-leave after hysterectomy is influenced by occurrence of complications, but not by the stress-coping ability. In order to speed up the postoperative recovery of general wellbeing interventions to improve the stress-coping capability and efforts to prevent and detect complications should be encouraged. This may spare suffering for the patient and be a socioeconomic win.

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References