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CLINICAL ARTICLE

Clinical outcomes after fast-track care in women undergoing laparoscopic hysterectomy



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ABSTRACT

Objective: To evaluate the feasibility and safety of multimodal perioperative care after laparoscopic hysterectomy. **Methods:** A prospective observational study was performed at Clara Campal Comprehensive Cancer Center, Madrid, Spain, between April 1, 2011, and July 30, 2014, and included women who were scheduled to undergo a laparoscopic hysterectomy. Fast-track (multimodal) care included provision of full preoperative verbal and written information, intravenous dexamethasone (8 mg) during surgery, removal of the urinary catheter at the end of surgery, and early mobilization and solid food intake. The main outcome was the length of hospital stay. **Results:** Overall, 88 patients were included. The median hospital stay was 22.7 hours (range 5–72). Same-day discharge was feasible in 24 (27%) patients. A total of 51 (58%) women were discharged after overnight stay, 46 (90%) of whom elected to do so because of personal preference. Finally, 13 (15%) patients were discharged at least 36 hours after surgery. Eleven (13%) women visited the emergency unit after discharge and 3 (3%) were readmitted. **Conclusion:** The perioperative multimodal recovery program is safe and feasible in a selected group of women after an elective laparoscopic hysterectomy.

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1. Introduction

Hysterectomy is the most commonly performed gynecologic surgery in high-income countries [1], with the great majority of these procedures being performed by minimally invasive surgery [2]. Despite the well-known advantages of laparoscopy over laparotomy in terms of the reduction of hospitalization time and postoperative complications [2], some gynecologists prefer to delay hospital discharge after laparoscopy to monitor for postoperative bleeding or any undetected organ damage, or because of other postoperative concerns such as nausea, vomiting, and pain.

In recent years, a multimodal rehabilitation program, known as Enhanced Recovery after Surgery [3] or the Fast-track Perioperative Care Program [4], has been developed to decrease convalescence time after surgery. This approach has reduced the incidence of postoperative complications and increased patient satisfaction [3,4]. It combines various steps of patient-centered care for individuals undergoing elective surgery, comprising adequate preoperative information and counseling,

optimal postoperative pain control, and aggressive postoperative rehabilitation, including early oral feeding and ambulation.

Several studies have shown the feasibility of secure hospital discharge within the first 24 hours after laparoscopic hysterectomy [5–9], a practice that has been widely adopted in the USA and Scandinavia [10,11]. However, this strategy of care has not been widely implemented in other European countries. Therefore, the present prospective observational study was conducted to evaluate the feasibility and safety of multimodal perioperative care after laparoscopic hysterectomy in Spain.

2. Materials and methods

In a prospective observational study, consecutive patients undergoing laparoscopic hysterectomy with or without salpingo-oophorectomy at Clara Campal Comprehensive Cancer Center, Madrid, Spain, between April 1, 2011, and July 30, 2014, were identified. Patients with at least one family or friend available to provide care after discharge were included in the study. The exclusion criteria were conversion to laparotomy, age older than 70 years, limitations in independent mobility at preoperative assessment, or any kind of mental health disability that could limit autonomy. The Clara Campal Comprehensive Cancer

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Center's review board approved the study and all included patients provided written informed consent before surgery.

All staff involved, including gynecologists, anesthesiologists, and nurses, received specific instructions regarding perioperative management according to the fast-track protocol (Box 1). All patients received care according to this protocol.

All patients were evaluated at 4 and 8 hours postoperatively and were discharged following a physical examination and if they were able to tolerate a regular diet without feeling nauseous and/or vomiting, had good pain control with the prescribed oral medication, and had acceptable clinical parameters. Nevertheless, despite meeting the criteria for same-day hospital discharge, some patients preferred to remain in hospital overnight. Oral pain medication was continued in these patients.

After hospital discharge, follow-up was conducted through telephone interviews on postdischarge days 1, 7, and 30, to record all occurrences of readmission in other hospitals and/or long-term postoperative complications. A clinical examination 15 days after surgery was performed in all cases.

Box 1

Multimodal perioperative care in laparoscopic hysterectomy.

1. Preoperative preparation

- Full verbal and written information provided to patient on admission regarding what to expect during the perioperative period (including type of anesthesia and postoperative analgesia, and a clear description of the surgical procedures), postoperative mobilization and feeding, and the planned hospitalization time.
- Drinks and food are allowed until 6 hours before the procedure.
- No mechanical bowel preparation.

2. Intraoperative

- Intravenous antibiotic (2 g cefoxitin given intravenously) 30 minutes before surgery.
- Maintain intraoperative euvoolemia.
- Dexamethasone (8 mg given intravenously) and ondansetron (8 mg given intravenously) 10 minutes before surgery.
- Nasogastric tube inserted as requested by the anesthesiologist during surgery and removed at the end.
- Opioids given intravenously at discretion of anesthesiologist, supplemented with dextropropoxyphene.
- Injection of bupivacaine (2%) at port sites at the end of the surgery.
- Urinary catheters inserted before surgery and removed at the end, unless signs of damage to the bladder noted.

3. Postoperative

- Out of bed 2–3 hours after surgery, including one or more walks and sitting in chair.
- First urination in the bathroom.
- Patients are encouraged a liquid diet 3 hours after the procedure; if tolerance is satisfactory, a normal, pasta-based diet is indicated.
- Ondansetron (4 mg) in case of nausea and vomiting.
- Pain medication: 1000 mg paracetamol and 60 mg dextropropoxyphene given intravenously every 6 hours after surgery; patients with adequate pain control received 500 mg oral paracetamol every 6 hours until discharge.
- Omeprazole (20 mg) every 12 hours over 14 days.

Table 1

Preoperative characteristics (n = 88).^a

Preoperative characteristics	Values
Age, y	50.6 (37–68)
Body mass index ^b	26.0 (17.4–54.5)
Previous abdominal surgeries	
1	21 (23)
≥2	10 (11)
Comorbidity	
1	14 (16)
≥2	5 (6)
Surgical indication	
Leiomyoma	32 (36)
Endometrial hyperplasia	23 (26)
Endometrial cancer stage IA, grade 1–2	18 (20)
Cervical dysplasia	9 (10)
Cervical cancer stage IA1	2 (2)
BRCA mutation – Lynch syndrome	4 (4)

^a Values are given as median (range) or number (percentage).

^b Calculated as weight in kilograms divided by the square of height in meters.

The main outcome of the study was the length of hospital stay. Secondary outcomes were postoperative complications, postoperative emergency visits, and readmission.

The Kolmogorov-Smirnov test with Lilliefors correction was used to evaluate the normal distribution of the data of the collected variables. Frequencies and proportions were used as summary statistics for categorical variables, and medians and interquartile ranges were used for continuous variables. Statistical analysis was performed using SPSS version 20.0 (IBM, Armonk, NY, USA).

3. Results

A total of 93 consecutive patients underwent laparoscopic hysterectomy during the study period. Four patients were excluded because they were older than 70 years, and one patient was excluded as a result of intraoperative conversion to laparotomy. Thus, 88 patients were finally included in the study (Table 1). A total of 31 (35%) patients had one or more comorbidities, including hypertension (n = 5, 6%), diabetes mellitus (n = 3, 3%), hypothyroidism (n = 3, 3%), and obesity (body mass index [calculated as weight in kilograms divided by the square of height in meters] >30; n = 3, 3%).

The median estimated blood loss was 114 mL and the median operative time was 78 minutes (Table 2). Hysterectomy with adnexectomy was performed in 63 (72%) patients; the specimen was removed vaginally when possible or through a mini-laparotomy in 9 (10%) patients. A laparoscopic morcellator was not used in any case. Intraoperative complications occurred in 2 (2%) patients (Table 2).

Table 2

Intraoperative characteristics (n = 88).^a

Intraoperative characteristics	Values
ASA score	
I–II	82 (93)
III	6 (7)
Estimated blood loss, mL	114 (50–500)
Surgical time, minutes	78 (45–180)
Uterine size, cm	10.1 (5–25)
Surgical procedure	
Hysterectomy with bilateral salpingectomy	25 (28)
Hysterectomy with adnexectomy	63 (72)
Mini-laparotomy for specimen removal	8 (9)
Intraoperative complications	2 (2)
Bleeding (requiring transfusion of two units of packed red blood cells)	1 (1)
Bladder damage (repaired by laparoscopy)	1 (1)

Abbreviation: ASA, American Society of Anesthesiologists.

^a Values are given as number (percentage) or median (range).

Table 3
Postoperative hospital stay and complications (n = 88).^a

Hospital stay and complications	Values
Hospital stay, hours	22.7 (5–72)
Same-day discharge	24 (27)
Overnight discharge	51 (58)
Patient preference ^b	46 (90)
Inadequate pain control	4 (8)
Urinary retention	1 (2)
Time to discharge, h	23.1 (16–24)
≥36 hours to discharge	13 (15)
Patient preference	6 (46)
Inadequate pain control	3 (23)
Migraine	2 (15)
Urinary retention	1 (8)
Nausea and vomiting	1 (8)
Time to discharge, h	48 (36–72)
Visit to emergency unit after discharge	11 (13)
Readmission	3 (3)
Postoperative time until visit to emergency unit or readmission, h ^c	12 (4–33)

^a Values are given as median (range) or number (percentage).

^b Switched to oral pain medication 8–12 hours postoperatively until discharge.

^c n = 11.

The median hospital stay in the entire cohort was 22.7 hours (range 5–72). Same-day discharge was feasible in patients (Table 3). A total of 51 (58%) of the women were discharged after an overnight stay. Of the eight patients who required mini-laparotomy for specimen removal, 2 (25%) were discharged on the same day of surgery, whereas the remaining 6 patients were discharged 24 hours after surgery, one due to uncontrolled abdominal pain and 5 due to patient preference.

Reasons for postdischarge emergency unit visits and readmission are given in Table 4. All the emergency unit visits occurred at least 4 days after discharge, and the great majority of consultations were due to mild complications. Oral antibiotics were indicated in 6 (55%) of the 11 women, while the two cases of wound check and vaginal bleeding did not require any medication. From the overall cohort, only 3 (3%) patients required surgical re-exploration to treat vaginal cuff dehiscence (n = 2) and a vesicovaginal fistula (n = 1); both cases of vaginal cuff dehiscence occurred after sexual intercourse at 22 and 33 days postoperatively in patients without specific comorbidities. The patient who presented with a vesicovaginal fistula had a history of three cesarean deliveries, although there was no evidence of bladder damage at the time of surgery even after bladder injection with blue dye.

4. Discussion

The present study demonstrates that fast-track laparoscopic hysterectomy is safe and feasible. However, the rate of same-day discharge

was low (27%) and approximately half of women of the entire cohort preferred to remain hospitalized overnight despite being fit for discharge.

In Europe, it is customary for patients to remain in hospital for 2–3 days after hysterectomy, even after minimally invasive procedures; this process is supported by both physicians and patients. Therefore, the present finding that many women wished to remain in hospital is not surprising. Previous studies have also indicated that “patient request” is an important reason to delay discharge after laparoscopic hysterectomy (6%–12% of patients) [11–13].

In previous studies [6,7,10–12,14,15], same-day laparoscopic hysterectomy discharge rates have ranged from 22% to 93% (Table 5). It has been previously speculated that the proportion of women requesting to remain hospitalized overnight would be reduced if surgeons were to emphasize the benefits of minimally invasive surgery during preoperative counseling. However, convincing surgeons and patients to accept discharge within a few hours following laparoscopic hysterectomy could be a long-term process. In this context, a population study in the USA by Schiavone et al. [10] observed that the proportion of women who had undergone a laparoscopic hysterectomy and were discharged on the same day of surgery increased from 11% in 2000 to 46% in 2010. The study also demonstrated that patients treated by high-volume surgeons and at intermediate-volume hospitals were more likely to have a same-day discharge.

There are common concerns regarding the safety of fast-track laparoscopic hysterectomy. Despite postoperative management being aimed at reducing complications and the length of hospital stay, and increasing patient satisfaction, a main reason to delay discharge is often to detect postoperative complications such as bleeding or intraoperative organ damage. It has been well demonstrated that postdischarge complications after laparoscopic hysterectomy unfortunately do occur, but they can appear 2–3 days after discharge [7,8,13]. Schiavone et al. [10] evaluated 128 634 women who had undergone a laparoscopic hysterectomy and showed a 4.0%, 3.6%, and 5.1% rate of re-evaluation within 60 days for women discharged on the same day of surgery, for those discharged after a 24-hour stay, and for those whose length of stay was 2 days or longer, respectively ($P < 0.001$). The multivariable analysis showed that patients discharged on postoperative day 1 were 11% (rate ratio 0.89; 95% confidence interval 0.82–0.96) less likely to require re-evaluation than women discharged on the day of surgery. However, re-evaluations of patients discharged on the same day of surgery showed mild complications with minor symptoms [10]. Therefore, delayed hospital discharge to detect early complications does not seem to be justified on the basis of the results of the present study and those of other case series [7,10–12].

The reported readmission rate after fast-track laparoscopic hysterectomy varies from 1% to 14% [6,7,12,14]; similar rates have been observed in patients with traditional perioperative care following a laparoscopic hysterectomy [14] or after an open hysterectomy [16]. In the present study, the overall readmission rate of 3% was similar to those in previous studies [6,7,12,14]. However, only 12% of readmissions occurred in patients who were discharged in the same-day; both patients experienced vaginal cuff dehiscence at 22 and 33 days postoperatively, and a delay in discharge would not have prevented these complications because both cases occurred after sexual intercourse in patients without specific comorbidities. Therefore, it is recommended that no sexual activity occurs within 30 days of surgery; nevertheless, evidence shows that this complication can present at any time between 3 days and 6 years after surgery [17].

Appropriate pain and nausea/vomiting control are a crucial part of multimodal perioperative care because they are commonly associated with prolonged hospitalization. Therefore, a protocol should include intraoperative dexmethasone and ondansetron administration, postoperative aspiration of the pneumoperitoneum, port-site injection with local anesthetics, intravenous analgesics, and anti-inflammatory medication [8]. Further, to avoid readmission, the selection of

Table 4
Characteristics of patients requiring emergency visits and readmission (n = 11).

Patient no.	Length of original hospitalization, h	Reason for visiting emergency unit	Time between surgery and emergency visit, d	Readmission (no. of days)
1	24	Wound check	12	No
2	24	Urinary tract infection	11	No
3	5	Vaginal cuff dehiscence	22	Yes ^a
4	48	Wound infection	7	No
5	24	Vaginal bleeding	17	No
6	20	Fever	6	No
7	8	Fever	4	No
8	6	Vaginal cuff dehiscence	33	Yes ^b
9	24	Urinary tract infection	12	No
10	24	Wound infection	6	No
11	24	Vesicovaginal fistula	10	Yes ^a

^a Required surgical re-exploration; readmission for 2 days.

^b Required surgical re-exploration; readmission for 1 day.

Table 5
Case series reporting the feasibility of same-day laparoscopic hysterectomy.

Author, Year	Country	Number of participants	Type of surgical procedures	Same-day discharge ^a	Re-evaluation ^b	Readmission ^b
Thiel and Gamelin, 2003 [6]	Canada	66	TLH with or without BSO	61 (92.5)	NA	Overall: 9 (14)
Hoffman et al., 2005 [14]	USA	359	TLH/LSH with or without BSO	80 (22)	NA	Same day discharge: 4/80 (4.9); ≥1 day discharge: 6/279 (2.2)
Lieng et al., 2005 [15]	Norway	43	LSH with or without BSO	40 (93)	4/43 (9)	0
Perron-Burdick et al., 2011 [7]	USA	1015	TLH with or without BSO	527 (52)	Same-day discharge: 29/527 (5.5)	Overall: 42/1015 (4.1) at 1 year
Schiavone et al., 2012 [10]	USA	128 634	TLH with or without BSO	34 070 (26.5)	Overall: 5459/128 634 (4.2); After same-day discharge: 1362/34 070 (4.0); After discharge on day 1: 1741/48 365 (3.6); After discharge after ≥2 days: 2356/46 199 (5.1)	NA
Alperin et al., 2012 [12]	USA	431	TLH/LSH with or without BSO	400 (98.2)	NA	Overall: 5/431 (1.1)
Lassen et al., 2012 [11]	Denmark	26	TLH with or without BSO	23 (88)	3/26 (12)	NA
Present study	Spain	88	TLH with or without BSO	24 (27)	Overall: 11/88 (12); After same-day discharge: 3/24 (12); After discharge on day 1: 7/51 (13); After discharge after ≥2 days: 1/13 (7)	Overall: 3/88 (3.4); After same-day discharge: 2/26 (8); After discharge on day 1: 1/51 (2); After discharge after ≥2 days: 0

Abbreviations: TLH, total laparoscopic hysterectomy; BSO, bilateral salpingo-oophorectomy; NA, not available; LSH, laparoscopic supracervical hysterectomy.

^a Values are given as number (percentage).

^b Values are given as number/total number (percentage).

candidates for early discharge after a laparoscopic hysterectomy is important. The main selection criteria should include patients aged younger than 70 years, with no mobility limitations or mental health problems that could impede their autonomy, and who reside close to a hospital, have at least one family or friend caregiver after hospital discharge, and have appropriate telephone contact and transport if necessary. It is also important that certain risk factors, such as the presence of immediate postoperative complications or significant comorbidities, which are more likely to be associated with postoperative evaluation in an emergency unit, are taken into consideration when assessing early hospital discharge [10]. Finally, successful multimodal care in patients undergoing a laparoscopic hysterectomy should include adequate information about perioperative care, as well as the expected length of hospital stay, management of postoperative mobilization, feeding, and urinary catheter care. Egbert et al. [18] demonstrated that well informed patients require less analgesia, experience a significantly lower level of pain and anxiety, and have better surgical outcomes than do patients who have not received adequate information. In addition, patients who are advised about the scheduled length of hospitalization will arrange their own transport and accommodation after discharge. As it has been demonstrated, the ability to safely treat individuals with a shorter hospital stay leads to lower postoperative complications and costs [10,19,20]. Moreover, patients who are discharged earlier have been shown to have a significantly higher level of satisfaction and quality of life [20].

The main limitations of the present study include the small sample size and the study design. It is proposed that these results should be validated in a randomized controlled trial with an adequate sample size for confirmation.

In conclusion, the present study indicates that a perioperative multimodal recovery program is safe and feasible in a selected group of women after an elective laparoscopic hysterectomy. Patient and physician information is important to increase the number of early hospital discharges, as well as to increase patient satisfaction and reduce medical costs. This strategy of care should be progressively implemented in Europe in selected patients.

Conflict of interest

The authors have no conflicts of interest.

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