



Post-Hysterectomy Pelvic Presentations; Incidence and Clinical Significance

Raziye Mohammad Jafari¹, Mahin Najafian¹, Zahra Kazemi^{1*}

Abstract

Objectives: This study aimed at evaluating ultra-sonographic manifestations in the pelvic system following hysterectomy surgery.

Materials and Methods: This cross-sectional study examined women who underwent hysterectomy. The included women in the study underwent a pelvic ultrasound examination at three different time points. These three-time points were 3, 7, and 40 days after hysterectomy. All ultra-sonographic findings as well as women's demographic data and clinical records were recorded in this study.

Results: This study included a total of 80 women. The mean age of women was 53 years (between 36-72 years). The most common cause of hysterectomy in these women was abnormal uterine bleeding (AUB) with a frequency of 52.4%, followed by uterine prolapse and uterine fibroids with 16%. Ultrasound evaluation on the third day after surgery showed that 65 (81.2%) women had no pelvic symptoms, and 12 (16.25%) had free fluid. However, 7 women showed pelvic fluid accumulation from the seventh day, 3 of them showed hematoma, and 2 women showed a coincidence of hematoma and pelvic free fluid. In general, 9 women were hospitalized for fever complications.

Conclusions: Overall, the findings of this study indicated that pelvic manifestations are a common hysterectomy-associated complication. Also, the study indicated that the pelvic manifestations usually resolve on their own and do not require therapeutic interventions. Moreover, this study did not find any relation between postoperative pelvic symptoms and febrile complications.

Keywords: Hysterectomy, Pelvic, Hematoma, Pelvic fluid, Abnormal uterine bleeding, uterine prolapse, uterine fibroid.

Introduction

Hysterectomy is the surgical removal of the uterus that was first performed in the fifth century AD in the era of the hypocrites (1). Hysterectomy is the most common gynecologic procedure in the United States, with more than 600,000 procedures performed annually (2). The main indications for hysterectomy are leiomyoma, abnormal uterine bleeding (AUB), adenomyosis, endometriosis, uterine prolapse, pelvic pain, and refractory dysmenorrhea. Emergency hysterectomy is also performed for severe vaginal bleeding after delivery. Cervical, uterine, and ovarian malignancies as well as pelvic inflammatory disease are other causes of hysterectomy. Hysterectomies are performed both abdominally and vaginally. In vaginal hysterectomy, the uterus is removed through the vagina which is usually done for uterine prolapse without a record of pelvic adhesion. Vaginal hysterectomy may also be performed instead of abdominal surgery for leiomyomas, AUB, and adenomyosis, depending on surgeon's preference. In abdominal hysterectomy, the uterus is removed through the abdominal cavity (3,4).

The most common complications after hysterectomy can be categorized as infectious, venous thromboembolic, genitourinary (GU) and gastrointestinal (GI) tract injury, hemorrhage, nerve injury, and vaginal cuff dehiscence. Infectious complications after hysterectomy

are the most common, ranging from 10.5% for abdominal hysterectomy to 13.0% for vaginal hysterectomy and 9.0% for laparoscopic hysterectomy (2). Since the introduction of laparoscopic hysterectomy in 1989, the proportion of all hysterectomies performed by this minimally invasive route has increased from 0.3% to 14% in 2005 (5). This increase was accompanied by a decrease in both abdominal and vaginal hysterectomies, which were reported to be 64% and 22%, respectively. Abdominal hysterectomy remains the most common surgical method, although it is associated with a longer hospital stay, more severe postoperative pain, a higher rate of infection, and a slower return to normal activities (6). There are many ways to diagnose the complications of the pelvic floor. Cystoscopy during surgery and postoperative ultrasound evaluation are the most commonly used methods. The role of ultrasound evaluation in routine post-hysterectomy surgery has only recently been considered, and its clinical value has not yet been well defined. There are only scattered reports regarding the clinical effect of hematoma and pelvic free fluid (7-9).

Therefore, this study aimed at evaluating ultra-sonographic manifestations in the pelvic system following hysterectomy surgery.

Materials and Methods

This cross-sectional study examined women who



Key Messages

- ▶ Pelvic manifestations are a common complication after hysterectomy.
- ▶ Pelvic manifestations following hysterectomy usually resolve on their own and do not require therapeutic interventions.
- ▶ There is no relationship between posthysterectomy pelvic symptoms and febrile complications.

underwent hysterectomy and were referred to the Imam Khomeini Hospital, Ahvaz, Iran from June 2018 to May 2019. The study included a total of 80 women aged from 36 to 72 years. The subjects with a record of neoplastic diseases were excluded from the study.

The included women in the study underwent pelvic ultrasound examination at three different time points. These three time points were 3, 7, and 40 days after hysterectomy. All ultra-sonographic findings as well as women’s demographic data and clinical records were recorded in this study.

All variables were evaluated using descriptive statistics, including mean, standard deviation, frequency, and percentage. The mean comparison was performed by an independent t-student test. A comparison of the proportions was made by the chi-square test. All statistical analyses were performed using SPSS software. The $P < 0.05$ was considered significant.

Results

This study included a total of 80 women. The mean age of women was 53 years (36-72 years). The most common cause of hysterectomy in these women was AUB with a frequency of 52.4%, followed by uterine prolapse and uterine fibroids with 16%. Most women underwent abdominal hysterectomy (85.7%). The mean hemoglobin level decreased after the operation, except for women who had received a blood transfusion (19 cases, 23.8%). The summary of the descriptive findings of women is shown in Table 1.

Ultrasound evaluation on third day after surgery showed that 65 (81.2%) women had no pelvic symptoms, and 12 (16.25%) had free fluid. Out of the 12 cases, the pelvic symptoms persisted in 8 cases on the seventh day. However, by day 40, all subjects had recovered. In this study, 7 women showed pelvic fluid accumulation from seventh day. Of these 7 cases, all cases were improved by day 40.

Also 3 women (3.75%) had a hematoma on day 3, all of which decreased significantly on day 7 and recovered in day 40. Meanwhile, 3 women also showed hematoma from the seventh day. Furthermore 2 women showed a coincidence of hematoma and pelvic free fluid on the seventh day. In both cases, the hematoma improved by day 40, while pelvic free fluid persisted.

In general, 9 women were hospitalized for fever

complications (Table 2). The regression modeling was performed to find out the effect of different variables, including patient’s age, weight, surgical indications, uterine size, and hemoglobin level, on the incidence of post-hysterectomy pelvic presentations on day 40. Accordingly, none of the studied factors had a significant effect on the incidence of postoperative pelvic manifestations ($p > 0.05$, Table 3).

Discussion

Hysterectomy is the most commonly used surgical procedure in gynecology. One of the most common complications associated with hysteroscopy is the accumulation of pelvic free fluid. This complication can usually be detected by endovaginal or transabdominal ultrasound assessment. This complication can also cause clinical symptoms such as fever in the patient. In this study, women who underwent hysterectomy were evaluated ultrasonically three days, one week, and 40 days after hysterectomy to identify pelvic changes.

In this study, 20% of women showed abnormal ultrasound manifestations, including pelvic free fluid and hematoma, three days after hysterectomy. In comparison, 28.7% of women showed pelvic presentations seven days after the surgery. Therefore, some pelvic manifestations do not occur immediately after hysterectomy. Interestingly, 40 days after hysterectomy, the hematoma and pelvic

Table 1. Women Characteristics

Variables	Value
Age ^a (y)	53.7±9.7 (36-72)
BMI ^a (kg/m2)	25.06±6.7 (11.3-33.2)
Hemoglobin ^a	
Before procedure (g/dL)	10.9±1.99 (5.2-13.5)
After procedure (g/dL)	10.7±1.07 (8.7-12.5)
Transfusion ^b	
Yes	19 (23.8)
No	61 (76.3)
Indication ^b	
AUB	33 (52.4)
Uterine prolapse	11 (17.5)
Ovarian cyst	6 (9.5)
Uterus fibromatosis	10 (15.9)
Myoma	3 (4.8)
Hysterectomy procedure ^b	
Abdominal	66 (85.7)
Vaginal	11 (14.3)
Uterine size ^b	
Normal	35 (43.8)
8 wk	8 (16.3)
12 wk	28 (35)

BMI, body mass index; AUB, abnormal uterine bleeding.

^aData are expressed as mean ± SD (range).

^bData are expressed as No. (%).

Table 2. Periodic ultrasound assessments of pelvic presentation following hysterectomy

Variables	After 3 Days	After 7 Days	After 40 Days
Not seen	65 (81.2)	55 (68.7)	78 (97.5)
Pelvic hematoma	3 (3.75)	6 (7.5)	0 (0)
Pelvic free fluid	12 (16.25)	17 (21.25)	2 (2.5)
Hematoma & free fluid	-	2 (2.5)	-

Table 3. Regression Model of Studied Variables

Variables	Univariate	
	OR (95% CI)	P Value
Age (y)	0.79 (0.66-0.94)	0.09
Weight (kg)	1.03 (0.93-1.14)	0.52
Indications (n)	1.18 (0.55-2.51)	0.14
Uterine size (cm)	1.05 (0.8-1.38)	0.67
Hemoglobin (g/dL)	0.94 (0.59-1.5)	0.82

fluid were 0 and 2 (2.5%), respectively. Accordingly, it can be concluded that pelvic manifestations are often self-limiting. Also, none of the women had hysterectomy-associated febrile complications. These findings were in line with previous studies. Hasson et al (1) examined the incidence rate and clinical significance of pelvic free fluid accumulation following hysterectomy. It found that 64% of women had pelvic symptoms on day 2, 35% on day 7, and 12% at weeks 4-5. In contrast to our results, it was shown that approximately 70% of women who had pelvic fluid accumulation on day seven were improved entirely on days 20-30 after surgery. Unlike the current study, that study did not classified the types of pelvic symptoms (hematoma or pelvic free fluid). Another study by Antonelli et al (2) examined the clinical value of sonographic-identified pelvic free fluid accumulation following cesarean section and hysterectomy and the associated risk factors. It showed that almost 44% of women undergoing hysterectomy present pelvic complications. However, they could not find any associated risk factors. In a study Eason et al (3), the incidence of pelvic free fluid accumulation following hysterectomy was approximately 60%. In contrast to the current study, they have also assessed the volume of the free fluid (from 0.2 to 76.3 mL). Another study by Choi et al showed that there is no significant difference in blood loss when comparing total laparoscopic hysterectomy (TLH) with vaginal hysterectomy (VH) (314.3 vs. 329.5 mL). In the same study, the rate of blood transfusion was similar when comparing TLH to VH (3% vs. 4%) (10). However, in study by Panda et al blood transfusion was less with the vaginal hysterectomy group compared to the abdominal and laparoscopy route (2.5% vs. 14%) (11).

In a retrospective review, Fanning et al (6) found that nearly 40% of 537 patients who underwent major gynecologic surgery developed postoperative fever, but an infectious etiology was identified in <10% of patients.

Results of another study by McPherson et al (7) showed that women with symptomatic fibroids (4.4%, 95% CI 3.9-4.9) had more complications than women with dysfunctional uterine bleeding (3.6%, 3.2-3.8), adjusted odds ratio (OR)=1.3 (95% CI 1.1-1.6). Also, Postoperative complications occurred in approximately 1% of women, decreasing slightly with age, and the strongest risk factor was a history of surgical complications.

According to the study conducted by Davies et al in the UK (8), the overall complication rate among those who underwent hysterectomy was 33.1, 30.1 and 23.8 for abdominal, vaginal, and laparoscopic hysterectomies for benign disease, respectively, and 45.3% for hysterectomies for malignant disease. Fever was the most common complication.

To determine the effect of several variables, including age, weight, surgical indications, uterine size, and hemoglobin, on the incidence of post-hysterectomy pelvic complications on day 40 after hysterectomy, regression modeling was performed. We have failed to find any associated risk factors that none of the factors. These findings were in line with previous studies (1,2).

Conclusions

Overall, the findings of this study indicated that pelvic manifestations are a common hysterectomy-associated complication. Also, the study indicated that the pelvic manifestations usually resolve independently and do not require therapeutic interventions. Moreover, the study showed no relation between postoperative pelvic symptoms and febrile complications. Our study was carried out on a relatively small number of patients, which was the major limitation of the study. It is suggested that future study include more patients and compares the pelvic presentations of different hysterectomy procedures.

Authors' Contribution

- Conceptualization:** Raziye Mohammad Jafari, Mahin Najafan.
- Methodology:** Mahin Najafan, Maijgan Barati.
- Validation:** Maijgan Barati, Sara Masihi.
- Formal analysis:** Raziye Mohammad Jafari, Zahra Kazemi.
- Investigation:** Mahin Najafan, Sara Masihi, Zahra Kazemi.
- Resources:** Maijgan Barati, Sara Masihi.
- Data curation:** Mahin Najafan, Zahra Kazemi.
- Writing-original draft:** Maijgan Barati, Zahra Kazemi.
- Writing-review and editing:** Raziye Mohammad Jafari, Sara Masihi.
- Supervision:** Raziye Mohammad Jafari; Maijgan Barati.
- Project administration:** Raziye Mohammad Jafari; Mahin Najafan.
- Funding acquisition:** Raziye Mohammad Jafari.

Conflict of Interests

Authors have no conflict of interest.

Ethical Issues

This study was conducted according to the guidelines established by the Declaration of Helsinki. The research protocol was approved by the Ethics Committee of Ahvaz University of Medical Sciences, Ahvaz, Iran (ethical code: IR.AJUMS.REC.1398.150). In order to participate, verbal consent was obtained from all the participants,

and they participated in the study with full consent.

Financial Support

This research was financially supported by Jundishapur University of Medical Sciences, Ahvaz, Iran with Project number of FIRC-9801.

Acknowledgments

We appreciate the members of the Ahvaz Imam Khomeini Hospital Clinical Research Development Unit.

References

- Hasson J, Maslovich S, Har-Toov J, Lessing JB, Grisaru D. Post-hysterectomy pelvic fluid collection: is it associated with febrile morbidity? *BJOG*. 2007;114(12):1566-1568. doi:10.1111/j.1471-0528.2007.01543.x
- Antonelli E, Morales MA, Dumps P, Boulvain M, Weil A. Sonographic detection of fluid collections and postoperative morbidity following cesarean section and hysterectomy. *Ultrasound Obstet Gynecol*. 2004;23:388-392. doi:10.1002/uog.1023
- Eason E, Aldis A, Seymour RJ. Pelvic fluid collections by sonography and febrile morbidity after abdominal hysterectomy. *Obstet Gynecol*. 1997;90:58-62. doi:10.1016/s0029-7844(97)00208-1
- Hodges KR, Davis BR, Swaim LS. Prevention and management of hysterectomy complications. *Clin Obstet Gynecol*. 2014; 57(1):43-57. doi:10.1097/grf.0000000000000004
- Ali SA, Farahat MM, ElShafei MA. Surgical approach to hysterectomy for benign gynecological diseases. *Egypt J Hosp Med*. 2019;77(3):5279-5286. doi:10.21608/ejhm.2019.55490
- Fanning J, Neuhoff RA, Brewer JE, Castaneda T, Marcotte MP, Jacobson RL. Frequency and yield of postoperative fever evaluation. *Infect Dis Obstet Gynecol*. 1998;6:252-255. doi:10.1002/(sici)1098-0997(1998)6:6<252::aid-idog6>3.0.co;2-4
- McPherson K, Metcalfe MA, Herbert A, et al. Severe complications of hysterectomy: the VALUE study. *BJOG*. 2004;111:688-694. doi:10.1111/j.1471-0528.2004.00174.x
- Davies A, Hart R, Magos A, Hadad E, Morris R. Hysterectomy: surgical route and complications. *Eur J Obstet Gynecol Reprod Biol*. 2002;104(2):148-151. doi:10.1016/s0301-2115(02)00068-4
- Dane C, Dane B, Cetin A, Yayla M. Sonographically diagnosed vault hematomas following vaginal hysterectomy and its correlation with postoperative morbidity. *Infect Dis Obstet Gynecol*. 2009;2009:91708. doi: 10.1155/2007/91708.
- Choi K-J, Kim H-B, Park S-H. The comparison of postoperative pain: total laparoscopic hysterectomy versus vaginal hysterectomy. *Korean J Obstet Gynecol*. 2012;55(6):384-91. doi:10.5468/KJOG.2012.55.6.384
- Panda S, Das A, Das R, et al. Analysis of different routes of hysterectomy based on a prospective algorithm and their complications in a tertiary care institute. *Minimally Invasive Surgery*. 2022;2022:6034113. doi:10.1155/2022/6034113.

Copyright © 2025 The Author(s); This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.