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Evaluation of Preoperative and Postoperative Findings in Hysterectomy Cases for Benign Conditions

Hamit Caner Uzun, Veli Mihmanlı, Nur Çetinkaya, Yücel Kaya, Murat İbrahim Toplu

University of Health Sciences Turkey, İstanbul Okmeydanı Training and Research Hospital, Clinic Obstetrics and Gynecology, İstanbul, Turkey

Abstract

Objective: To evaluate the demographic patient characteristics, indications, operative findings, preoperative and postoperative histopathology reports in hysterectomies for benign conditions in our clinic.

Methods: One thousand four hundred seventeen patients who underwent hysterectomy for benign conditions were included in the study. Patient files and records from the Hospital Information Management system were reviewed. IBM SPSS Statistics 22 program was used for statistical analysis. Shapiro Wilks, One-way ANOVA, Tamhane's, Kruskal-Wallis, Mann-Whitney U, chi-square and Fisher's Exact test and Continuity (Yates) Correction were used as statistical tests. Statistical significance was defined as $p<0.05$.

Results: Mean age of the patients was 50.78±9.24, mean gravidity and parity were 4.09±2.56 and 3.06±1.96, respectively. History of gynecological surgery, cesarean section and non-gynecological abdominal surgery were 26.7%, 17.1%, and 11.2%, respectively. The most common indication was uterine myoma with 43%, 78.3% of the patients had abdominal, 14.3% had vaginal, 6.5% had laparoscopic hysterectomy. Complications occurred in 5.4% of the cases; major in 3.2% and minor in 2.2%. Patient age, gravidity and parity in vaginal hysterectomy cases were higher. The rate of cesarean section history (28.9%) in the group with subtotal hysterectomy was significantly higher than the rate of cesarean section history (16.3%) in the group with total hysterectomy. Postoperative histopathology results were reported as leiomyoma in 53.6% and adenomyosis in 23.1%.

Conclusion: Hysterectomy is the most commonly performed gynecological operation. It may be done abdominally, vaginally or laparoscopically. The most common indication for hysterectomy is symptomatic uterine myomas. The preferred route of operation should be based on the charecteristics and findings of the patient. If there is no contraindication, vaginal hysterectomy should be the preferred operation type.

Keywords: Hysterectomy, indications, histopathology, complications

INTRODUCTION

Removal of all or part of the uterus from the abdominal or vaginal way is called hysterectomy. Hysterectomy is the most commonly applied major gynecologic surgical operation (1).

Hysterectomy rates, indications, and mean ages show great differences among countries and even different regions of the same country. Up to sixfold differences can be seen between the United States, which has the highest rate of hysterectomy and Norway, Sweden and the UK with the lowest rate of hysterectomy (2,3).

Hysterectomies due to benign reasons are commonly performed with abdominal, vaginal, laparoscopic, and robotic methods. Vaginal hysterectomy has advantages because the surgical trauma rate is low, and healing is rapid. But only 25% of all hysterectomies can be performed vaginally (4).

The aim of this study is to retrospectively evaluate demographic features, indications, operation types, pathology results, and postoperative complications of cases who had hysterectomy between 1 January 2014 and 30 November 2017.

Address for Correspondence: Hamit Caner Uzun, University of Health Sciences Turkey, İstanbul Okmeydanı Training and Research Hospital, Clinic Obstetrics and Gynecology, İstanbul, Turkey
Phone: +90 505 902 35 82 **E-mail:** caner_uzun@yahoo.com **ORCID ID:** orcid.org/0000-0002-8090-2674

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METHODS

This study was initiated after approval was obtained from Okmeydanı Training and Research Hospital Ethics Committee with a date of 21.11.2017 and a number of 764. The study included 1417 patients who admitted to Gynecology and Obstetrics Clinic and had a hysterectomy for benign reasons. Patient files and the records obtained from the Hospital Data Management system were assessed. Operation date, age at operation date, menopausal status, gravity and parity, history of previous operations, Existing Medical diseases, preoperative indication for hysterectomy, operation technique, the performance of salpingo-oopherectomy, operative complications, and postoperative histopathology results were evaluated.

Patients who were operated due to gynecologic malignancies, who were diagnosed as malignant during operation, whose results came to be malignant although the operation was for a benign reason, and who had hysterectomy due to an urgent obstetric reason were excluded.

The indications for the operation were adnexal mass, the descent of uterus, myoma uteri, endometrial hyperplasia, treatment-resistant abnormal uterus bleeding, peristent postmenopausal bleeding, cervical intraepithelial neoplasia, chronic pelvic pain, tuboovarian abscess, and breast cancer.

The operation techniques were grouped as abdominal hysterectomy, vaginal hysterectomy, laparoscopic hysterectomy, and laparoscopic assisted vaginal hysterectomy. In addition, subtotal hysterectomies were determined. Patients who had bilateral and unilateral salpingo-oopherectomy were grouped.

The operative complications were grouped into two: major and minor complications. Complications such as wound infection treated with antibiotics, cuff hematoma, which was followed and treated without surgical intervention, and subileus were called as minor complications. Urinary system injuries, gastrointestinal system injuries, peritonitis, fistula, intraabdominal hemorrhage, and abscess requiring relaparatomy, debrided wound infection, dehiscence, and pulmonary embolism were called as major complications.

Statistical Analysis

IBM SPSS 22 package program was used to analyze the data obtained in the study. Normality of the distribution of study parameters was evaluated with Shapiro-Wilks test. Mean, standard deviation, and frequency were used as descriptive statistics. To analyze quantitative data, One-way ANOVA was used to compare the groups for normally distributed parameters, and Tamhane's T2 test was used to detect the group which was responsible for the difference. The Kruskal-Wallis test was used to compare the groups for non-normally distributed parameters, and the Mann-Whitney U test was used to detect the group which was responsible for the difference. The chi-square test, Fisher's Exact test, and Continuity (Yates) Correction, were used to compare qualitative data. The significance level was accepted as $p<0.05$.

RESULTS

This study included 1417 women who had a hysterectomy due to benign causes. The mean age was 50.78±9.24. 27.7% of the women were operated in 2015, 27.2% were operated in 2014, 25.9% were operated in 2016, and 19.2% were operated in 2017.

Obstetric histories of women revealed that the number of parities was between 0 and 16, and the mean number was 3.06±1.96. Gravidity numbers ranged from 0 to 22, with a mean number of 4.09±2.56.

In 62.1% of the cases, there wasn't a history of previous abdominal surgery. 26.7% had a history of gynecological surgery, and 11.2% had a history of nongynecological abdominal surgery. 17.1% of the women had a history of caesarean section.

In 47% of the cases, there were accompanying medical diseases. 34.9% of all cases were at the postmenopausal period (Table 1).

Preoperative indications of the patients were myoma uteri (43%), adnexal mass (15.9%), descent of uterus (15.3%), treatment-resistant abnormal uterus bleeding (12.8%), endometrial hyperplasia (6.1%), persistent menopausal hemorrhage (2.6%), cervical intraepithelial neoplasia (2.5%), breast cancer (0.7%), tuboovarian abscess (0.6%), and chronic pelvic pain (0.4%) (Table 2).

The comparison of hysterectomy techniques revealed that 78.3% of the patients had abdominal hysterectomy, 14.3% had vaginal hysterectomy, 6.5% had laparoscopic hysterectomy, and 0.8% had laparoscopic assisted vaginal hysterectomy. The operation type was total hysterectomy in 94.1% of the patients and subtotal hysterectomy in 5.9%. Bilateral salpingo-oophorectom (BSO) was performed in 69.5% of the patients in addition to hysterectomy, and unilateral salpingo-oophorectomy (USO) was performed in 6.3% (Table 3).

Perioperative and postoperative complications were detected in 5.4% of the patients. 3.2% of the complications were major, and 2.2% were minor complications (Table 4).

There was a statistically significant difference in the distribution of surgery techniques among study years ($p=0.008$; $p<0.05$).

Binary comparisons to detect the cause of the difference revealed that the rate of patients who were operated with abdominal hysterectomy in 2014 (83.6%) was higher than 2015 (p=0.029; %79.6), 2016 (p=0.001; %74.1), and 2017 (p=0.006; %74.6). There was no statistically significant difference in terms of the distribution of surgical techniques among other years (p>0.05) (Table 5).

There was a significant difference in surgical technique in terms of mean age (p=0.000; p<0.05). Binary comparisons to detect the cause of the difference revealed that the mean age of the patients who had vaginal hysterectomy was higher than the mean ages of the patients who had an abdominal or laparoscopic hysterectomy (p=0.000; p<0.05). No statistically significant difference was found in the mean ages of the patients between abdominal hysterectomy and laparoscopic hysterectomy (p>0.05).

There was a statistically significant difference in surgery technique according to the number of gravidities (p=0.000; p<0.05). Binary comparisons to detect the difference revealed that the number of gravidities was higher in patients who had vaginal hysterectomy compared with abdominal and laparoscopic hysterectomy (p=0.000; p<0.05). There was no statistically significant difference between patient groups who had an abdominal or laparoscopic hysterectomy in terms of gravidity (p>0.05).

There was a statistically significant difference among surgery techniques with regards to numbers of parity (p=0.000; p<0.05). Binary comparisons to establish the group responsible from the difference demonstrated that the number of parity in the vaginal hysterectomy group was statistically significantly higher than the groups who had abdominal and vaginal hysterectomies (p=0.000; p<0.05). There was no statistically significant difference between the patient group who had an abdominal or laparoscopic hysterectomy in terms of parity numbers (p>0.05).

Table 1. General features of the patients

		n	%
Age (Min-Max, Mean ± SD)		34-85	50.78±9.2
Number of operations according to years	**2014**	385	27.2
	2015	393	27.7
	2016	367	25.9
	2017	272	19.2
Gravida (Min-Max, Mean ± SD)		0-22	4.09±2.56
Parity (Min-Max, Mean ± SD)		0-16	3.06±1.96
Previous surgery	**No history of surgery**	880	62.1
	Gynecologic surgery	379	26.7
	Non-gynecologic surgery	158	11.2
Previous cesarean	**No**	1175	82.9
	Yes	242	17.1
Accompanying disease	**Yes**	666	47
	No	751	53

Min: Minimum, Max: Maximum, SD: Standard deviation

Table 2. Hysterectomy technique

		n	%
Operation technique	**Abdominal**	1110	78.3
	Vaginal	203	14.3
	Laparoscopic	92	6.5
	Laparoscopic-assisted vaginal	12	0.8
Total-subtotal hysterectomy	**Total**	1334	94.1
	Subtotal	83	5.9
Removal of ovaries in addition to hysterectomy	**Not removed**	343	24.2
	BSO	985	69.5
	USO	89	6.3

BSO: Bilateral salpingo-oophorectom, USO: Unilateral salpingo-oophorectomy

Table 3. Preoperative indications for surgery

		n	%
Indication for surgery	**Myoma uteri**	609	43
	Adnexal mass	225	15.9
	Descent of uterus	217	15.3
	Treatment-resistant hemorrhage	182	12.8
	Endometrial hyperplasia	87	6.1
	Persistent postmenopausal hemorrhage	37	2.6
	Cervical intraepithelial neoplasia	36	2.5
	Breast cancer	10	0.7
	Tubo-ovarian abscess	9	0.6
	Chronic pelvic pain	5	0.4

Table 4. Distribution of complications

		n	%
Complication	**No**	1341	94.6
	Minor	31	2.2
	Major	45	3.2
Presence of complication	**No**	1341	94.6
	Yes	76	5.4

There was a statistically significant difference in surgery techniques according to the rate of previous abdominal surgery groups (p=0.000; p<0.05). Binary comparisons to detect the group which was responsible from the difference revealed that in the vaginal hysterectomy group the rate of the patients who had a history of gynecological surgery (10.3%) was higher than those who had abdominal hysterectomy (p=0.000; 30.2%), and laparoscopic hysterectomy (p=0.019; 22.1%). No statistically significant difference could be found in abdominal and laparoscopic hysterectomy groups according to the rates of distribution of abdominal surgeries (p>0.05).

No statistically significant difference could be found in complication rates according to surgery techniques (p>0.05) (Table 6).

The evaluation of perioperative and postoperative complications and their management revealed that 34 patients had wound infection. In 25 of these patients, remission was achieved with antibiotics, and in 9 patients, debridement was performed. Laparotomy was performed to 10 patients for intraabdominal hemorrhage. In 4 patients, hematomas were detected at the vaginal cuff. In 9 patients, urinary tract injury (bladder, ureter) was detected. Two of the 8 patients who had bladder injury were detected at the postoperative period, and therefore, the repairment was performed at the postoperative period. In the other 6 patients, intraoperative repair was performed. Four patients were detected to have bowel injury, and primary repair was performed. Five patients had a postoperative pelvic abscess, and peritonitis and laparotomy were performed. One patient had a pulmonary embolus and cardiopulmonary arrest on the 4th postoperative day and died (Table 7).

In patients who had BSO and USO in addition to hysterectomy, a statistically significant difference was detected in mean age (p=0.000; p<0.05). In binary comparisons to detect the group responsible for the difference, the mean age of the group who had BSO was higher than the group who had hysterectomy or USO (p=0.000; p<0.05). No statistically significant difference could be detected in the mean ages of the groups who had only hysterectomy and hysterectomy plus USO (p>0.05). Because generally, oophorectomy is not performed during vaginal

Table 5. Evaluation of the operation technique in years

Operation technique	Year				p
	2014	2015	2016	2017	
	n (%)	n (%)	n (%)	n (%)	
Abdominal hysterectomy	322 (83.6%)	313 (79.6%)	272 (74.1%)	203 (74.6%)	**0.008***
Vaginal hysterectomy	49 (12.7%)	48 (12.2%)	60 (16.3%)	46 (16.9%)	
Laparoscopic hysterectomy	14 (3.6%)	32 (8.1%)	35 (9.5%)	23 (8.5%)	

Laparoscopic-assisted vaginal hysterectomy was analyzed by combining with laparoscopy due to a low number of cases, *p<0.05 chi-square test

Table 6. Evaluation of age, gravidity, parity, history of abdominal surgery, and presence of complications according to the operation technique

	Operation technique			p
	Abdominal	Vaginal	Laparoscopic	
	Mean ± SD	Mean ± SD	Mean ± SD	
Age	49.06±7.91	60.99±10.1	49.19±7.72	[1]**0.000***
Gravidity (median)	3.79±2.41 (3)	5.79±2.76 (5)	3.92±2.44 (3.5)	[2]**0.000***
Parity (median)	2.83±1.75 (2)	4.4±2.38 (4)	2.96±2.12 (3)	[2]**0.000***
History of abdominal surgery n (%)				
No	660 (59.5%)	151 (74.4%)	69 (66.3%)	[3]**0.000***
Gynecological surgery	335 (30.2%)	21 (10.3%)	23 (22.1%)	
Nongynecological surgery	115 (10.4%)	31 (15.3%)	12 (11.5%)	
Presence of a complication n (%)				
No	1043 (94%)	199 (98%)	99 (95.2%)	[3]**0.059**
Yes	67 (6%)	4 (2%)	5 (4.8%)	

[1]One-way ANOVA test, [2]Kruskal-Wallis test, [3]Chi-square test. *p<0.05, Laparoscopic-assisted vaginal hysterectomy was analyzed by combining with laparoscopy due to low number of cases

hysterectomy, the patients who had vaginal hysterectomy were not included in the comparisons (Table 8).

Total hysterectomy and subtotal hysterectomy groups were compared for caesarean history; a caesarean history was present in 16.3% of total hysterectomy group and in 28.9% of subtotal hysterectomy group. In the total hysterectomy group, the caesarean rate was statistically significantly low. In the total hysterectomy group, the rate of caesarean history was statistically significantly lower ($p=0.003$; $p<0.05$) (Table 9).

Pathology results demonstrated that 53.6% had leiomyoma, 23.1% had adenomyosis, 12.9% had ovarian/paraovarian cyst, 9.3% had atrophic endometrium, 6.8% had endometrial polyp, 5.6% had proliferative endometrium, 3.7% had endometriosis/endometriotic cyst, 2.8% had endometrial hyperplasia, 2.3% had cervical intraepithelial neoplasia, and 1.2% had salpingo-oophoritis (Table 10).

DISCUSSION

Hysterectomy is the most commonly performed operation in gynecology, and its indications are very wide. Hysterectomy is used as a treatment option in gynecologic pathologies such as gynecological cancers, leiomyomas, endometriosis, adenomyosis, uterovaginal prolapsus, abnormal uterus bleeding, and pelvic pain (5).

Dinçgez et al. (6) included 949 patients and found the mean age as 50.54. The mean age of the patients who had only vaginal hysterectomies was 60.10.

Seçkin et al. (7) included 828 patients and found the mean age as 48.1.

In our study, similar to the literature, the mean age of the patients was 50.78. The mean age of the vaginal hysterectomy group was 60.99, similar to the previous studies.

Süer et al. (8) included 312 hysterectomy cases and found that in the vaginal hysterectomy group, age, gravidity, and parity were significantly higher than the other groups. Similarly, Sağlam et al. (9) included 245 hysterectomy cases and found that gravidity and parity values of the vaginal hysterectomy group were significantly higher than the abdominal hysterectomy group.

In our study, gravidity (5.79) and parity (4.40) values of vaginal hysterectomies were higher than the abdominal hysterectomy group (3.79, 2.83; respectively). Increased gravidity and parity were associated with uterus descend and vaginal hysterectomy secondary to it.

Lynne et al. (10) retrospectively evaluated 1.7 million hysterectomies and demonstrated that 30% of the cases were due to myoma uteri, 20% were due to endometriosis, 18.2% were due to cancer or endometrial hyperplasia, and 17.5% were due to uterine prolapse.

Vessey et al. (11) included 1885 cases in their study and found that 38.5% of the hysterectomies were due to myoma uteri, 35.3% were due to dysfunctional uterine bleeding, 6.5% were due to uterine prolapse, and 5.6% were due to invasive and preinvasive malignancies.

Table 7. The distribution of operation techniques according to the operation technique

	Minor complication	Number	Major complication	Number
Abdominal Hysterectomy	Wound infection	24	Wound infection (debridement)	9
	Vaginal cuff hematoma	4	Postoperative bleeding (relaparotomy)	8
	Subileus	1	Bowel injury	4
			Abscess, peritonitis	5
			Urinary tract injury (bladder, ureter)	7
			Vesicovaginal fistula	1
			Pulmonary embolus (exitus)	1
			Wound dehiscence	3
Vaginal Hysterectomy	-	0	Postoperative bleeding (relaparotomy)	2
			Vesicovaginal fistula	1
			Bladder injury	1
Laparoscopic hysterectomy	Wound infection	1	Ureteral injury	2
	Vaginal cuff hematoma	1	Bladder injury	1
Total		31		45

Table 8. The evaluation of hysterectomy + USO/BSO according to age	
Removal of ovaries in addition to hysterectomy	**Age**
	Mean ± SD
No	42.50±4.22
BSO	50.54±7.76
USO	43.08±4.47
p	**0.000***

*p<0.05 One-way ANOVA test, Patients with vaginal hysterectomy were not included in the analysis, BSO: Bilateral salpingo-oophorectom, USO: Unilateral salpingo-oophorectomy

Table 9. The evaluation of caesarean history according to total-subtotal hysterectomy operation groups			
Caesarean History	**Operation**		**p**
	Total	**Subtotal**	
	n (%)	**n (%)**	
No	1116 (83.7%)	59 (71.1%)	**0.003***
Yes	218 (16.3%)	24 (28.9%)	

*p<0.05 chi-square test

Table 10. The distribution of postoperative histopathology results		
Pathology diagnostic groups	**n**	**%**
Leiomyoma	759	53.6
Adenomyosis	328	23.1
Ovarian/para ovarian cyst	183	12.9
Endometrial hyperplasia	40	2.8
Endometrial polyp	97	6.8
Atrophic endometrium	132	9.3
Proliferative endometrium	79	5.6
Cervical intraepithelial neoplasia	33	2.3
Salpingo-oophoritis	17	1.2
Endometriosis/endometriotic cyst	52	3.7

In our study, similar to the literature, myoma uteri had the first place (609; 43%). Adnexal mass was the second with 225 cases (15.9%), and descent of uterus was the third with 217 (15.3%) cases. In accordance with the literature, the most common indication for vaginal hysterectomy was a descent of uterus.

Karp et al. (12) studied the application of hysterectomy with BSO under 51 years of age and emphasized that BSO should not be applied, especially under 46 years of age, if there is no genetic mutation (BRCA1-2) or a pathology like endometriosis BSO should not be applied. They stated that unnecessary BSO might lead to sexual dysfunction, cardiac problems, diabetes, and early mortality. In our study, the mean age of patients who had BSO was 50.5.

In patients who had an abdominal hysterectomy, Tazegül et al. (13) found bladder injury in 4 (0.5%) patients, ureteral injury in 3 (0.37%), and bowel injury in 3 patients. Intraoperative bladder injury was observed in 1 (1.85%) patient who had a vaginal hysterectomy.

Dinçgez et al. (6) included 949 patients and bladder injury which required bladder repair in 2 patients, 1 (0.12%) in the vaginal hysterectomy group and 1 (0.12%) in the abdominal hysterectomy group. Bowel injury was observed in 0.52% of all cases.

In our study, in the abdominal hysterectomy group, one patient had ureteral injury, and six patients had bladder injury. In the laparoscopic hysterectomy group, two patients had ureteral injury, and one patient had bladder injury. The urinary complication rate was 0.6% in patients who had an abdominal hysterectomy, 0.4% in patients who had a vaginal hysterectomy, and 2.8% in patients with a laparoscopic hysterectomy. Bowel injury was seen only in 4 patients (0.28%) with abdominal hysterectomy.

CONCLUSION

Hysterectomy is the most common gynecological operation after caesarean. When choosing the operation technique, the clinical indication of the patient, previous surgeries, and the surgeon's experience should be taken into consideration. Vaginal hysterectomy should always be the first choice in cases with a decision of hysterectomy due to benign causes. In cases where vaginal hysterectomy cannot be performed, laparoscopic hysterectomy should be preferred.

Ethics

Ethics Committee Approval: This study was initiated after approval was obtained from Okmeydanı Training and Research Hospital Ethics Committee with a date of 21.11.2017 and a number of 764.

Informed Consent: Consent form was filled out by all participants.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: H.C.U., V.M., Data Collection or Processing: Y.K., M.İ.T., Analysis or Interpretation: H.C.U., N.Ç., Literature Search: M.İ.T., Writing: N.Ç., Y.Ç.

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