



Evaluation of 436 cases of vaginal hysterectomy for benign indications: Experience from a tertiary hospital

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Abstract

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Aim: Though vaginal hysterectomy could be a minimally invasive type of hysterectomy, its preference has recently attenuated. We tend to aim to gauge the results of vaginal hysterectomies performed in our clinic for benign indications.

Materials and Methods: This retrospective study was conducted on 436 Women who underwent vaginal hysterectomy for benign indications at Kanuni Sultan Suleyman Training and Research Hospital. Between January 01, 2017, and December 31, 2020. Female patients aged between 40 and 85 who underwent vaginal hysterectomy for benign indications was enclosed within the study. The patients with malignancy; or missing records were excluded from the study. Common indications for hysterectomy consisted of pelvic organ prolapse 385 (88.30%) and stress urinary incontinence 22(5.50%). SPSS version 24.0 was used to conduct all data analysis.

Results: The four hundred thirty-six patients had a mean age of 61.07 ± 10.0 years. The mean parity was 4.40 ± 2.60 , and the mean BMI was 31.37 ± 1.74 kg/m². Eighty-percent of the patients were menopausal, and 19% were of reproductive age. In our study, pelvic organ prolapse (67.88%) and abnormal uterine bleeding (18.73%) were the most common causes of hysterectomy. The major and minor complication rates were 8.02%, and 9.40%, respectively, with an overall rate of 17.42%.

Conclusion: Though vaginal hysterectomy could be a minimally invasive sort of hysterectomy; surgeons should remember complications throughout the surgery; recognizing and managing complications is crucial in VAH because it can be fatal.



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Introduction

Hysterectomy is the foremost and most well-liked gynecological surgical procedure worldwide [1] Recamier performed the first successful vaginal hysterectomy in 1829, and Charles Clay performed the first successful abdominal hysterectomy in 1843 [2]. Reich et al. first performed a laparoscopic hysterectomy in 1989 [3]. Currently, minimally invasive methods are suggested in hysterectomies performed for benign reasons [4]. According to a 2015 Cochrane review [5], which evaluated the most appropriate hysterectomy technique for benign indications, vaginal hysterectomy was considered superior to the abdominal and laparoscopic approaches and was suggested as the first-choice modality. However, an adnexal mass, absence of uterine prolapse, a large uterus, or previous abdominal surgical operations limit the feasibility of a vaginal hysterectomy [6]. Vaginal hysterectomy has many advantages, including postoperative patient satisfaction, quick

recovery, less analgesic demand, higher cosmetic results of the incision site, and earlier discharge.

Although vaginal hysterectomy is a minimally invasive form of hysterectomy, surgeons ought to remember complications throughout the surgery; recognizing and managing complications are crucial in vaginal hysterectomy because they can be fatal. We aimed to appraise the results of vaginal hysterectomies performed in our clinic for benign indications.

Materials and Methods

This retrospective study was performed on 436 women who underwent vaginal hysterectomy for benign indications at Kanuni Sultan Suleyman Training and Research Hospital between January 01, 2017 and December 31, 2020. The Istanbul Kanuni Sultan Süleyman Training and Research Hospital's ethics committee gave its approval to this study, which complied with the 2013 edition of the Declaration of Helsinki (KAEK/2021.12.323). Female patients aged between forty and eighty-five years who un-

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derwent vaginal hysterectomy for benign indications were enclosed within the study. The patients with malignancy; or missing records were excluded from the study. Routine laboratory tests and systemic, gynecological, and cervical cytological examinations were performed for all patients who underwent total hysterectomies. The demographic characteristics of the patients were assessed, such as mean age, mean parity, body mass index (BMI), current medical diseases, previous surgeries, hysterectomy indications, operation time, uterus weights, calculable blood loss, length of hospital stay, and major and minor intraoperative and postoperative complications. In addition, preoperative and postoperative hemoglobin variations were measured. Patients discharged with postoperative spontaneous micturition. Furthermore, defecation was mobilized speedily and had no critical complaints. The patients underwent mechanical bowel cleansing with rectal enema the evening before the procedure. Cefazolin at a dose of one g was administered intravenously to all patients 1 hour preoperatively and 6 hours postoperatively. For thromboembolism prevention, enoxaparin at a dose of 0.4 mL was administered subcutaneously eight hours before the procedure and continued at 24-hour intervals throughout the hospitalization. The surgical technique is summarized in a published study as the following. “The mucous membranes were circumcised to the cervical connective tissue at the junction of the cervix and vagina. Vaginal tissue was lifted by the grasper. Douglas’s pouch was opened posteriorly close to the cervical connective tissue, then the bladder was gently dissected from the vagina anteriorly, and the uterine vesical pouch was opened. Bilateral uterosacral, cardinal ligaments and uterine vessels were cut and sutured. The anterior and posterior parts of the visceral peritoneum were opened. The ovarian ligament, round ligament, and fallopian tube were cut and sutured. The uterus was removed entirely. The vaginal stump, the pelvic peritoneum, and the vaginal anterior and posterior walls of the stump were sutured with absorbable sutures [7].

Informed consent

Patient permission was not required for participation in the study or publication because it was retrospective in nature. Before surgery, each patient gave their signed, informed consent.

Statistical analysis

SPSS Statistics for Windows, Version 24.0 (SPSS Inc., Chicago, IL, USA) was used for the statistical analysis. Means standard deviations, and ratio values were used. Statistical significance was set at $P < 0.05$. The Kolmogorov–Smirnov test was used to assess the normality of the distribution of continuous variables. A paired t-test was used to evaluate preoperative and postoperative variables.

Results

The 436 patients had a mean age of 61.07 ± 10.0 years. The mean parity was 4.40 ± 2.60 , and the mean BMI was 31.37 ± 1.74 kg/m². Eighty percent of the patients were menopausal, and 19% were of reproductive age. The proportion of patients who had undergone abdominal surgery

Table 1. Selected demographic and clinical characteristics.

	Mean±SD	Range
Age (years)	61.07±10.20	(40–85)
Parity (number)	4.4±2.60	(0–15)
BMI (kg/m ²)	26.33±1.74	(21–43)
	n	%
Menopause	357	(81.70%)
Premenopause	79	(18.30%)
Previous pelvic surgery	9	(2.10%)
Simultaneous surgery	126	(28.89%)
Colporrhaphy Ant/Post	51	(11.69%)
TOT/TVT	22	(5.04%)
Sacrospinous ligament fixation	20	(4.59%)
Salpingectomy	13	(2.98%)
Salpingo-oophorectomy	10	(2.29%)
Colpocleisis	10	(2.29%)

Values are presented as mean±SD or n (%). BMI: body mass index TOT: transobturator tape procedure TVT: tension free vaginal tape.

Table 2. Operative indications for vaginal hysterectomy.

Indications	n	%
Pelvic organ prolapse	363	83.25
Pelvic organ prolapse + stress incontinence	22	5.50
Cervical intraepithelial neoplasia	12	2.75
Uterine myoma	9	2.06
Abnormal uterine bleeding	7	1.60
Endometrial polyp	7	1.60
Endometrial hyperplasia without atypia	7	1.60
Postmenopausal bleeding	5	1.15
Adenomyosis	4	0.92

Table 3. Results of vaginal hysterectomy.

	Mean±SD	Range
Operative time (min)	92.62±17.31	46–165
Mean pre- and postoperative hemoglobin loss (g/dL)	1.90±1.25	1–4
Length of hospital stay (days)	4.10±0.72	1–10
Weight of uterus (g)	110.37±21.07	75–220

Table 4. Histopathological results of vaginal hysterectomy.

	n=436 (%)
Atrophic endometrium	255 (58.48)
Proliferatif endometrium	71(16.28)
Endometrial polyp	45 (10.32)
Adenomyosis	23 (5.27)
Endometrial hyperplasia without atypia	16 (3.67)
Cervical İntra epithelial neoplasia	14 (3.21)
Uterine myoma	12 (2.75)

Table 5. Complications of vaginal hysterectomy.

Major complications	n=35 (8.02%)
Vaginal cuff dehiscence	1 (0.22)
Bleeding requiring blood transfusion	13 (2.98)
Conversion to laparotomy	2 (0.45)
Bladder injury	8 (1.83)
Ureteral injury	1 (0.22)
Bowel injury	1 (0.22)
Reoperation	1 (0.22)
Vascular injury	1 (0.22)
Intra-abdominal hematoma	1 (0.22)
Cuff prolapse	6 (1.37)
Minor complications	n= 41 (9.40%)
Fever	14 (3.21)
Vaginal cuff infection	10 (2.29)
Vaginal cuff bleeding	3 (0.68)
Urinary infection	3 (0.68)
Mild ileus	3 (0.68)
Stress incontinence	8 (1.83)

was 2.10%. Of the study population, 126 (28.89%), patients had simultaneous surgeries enclosed sacrospinous ligament fixation 20 (4.59%), salpingectomy 13 (2.18%), salpingo-oophorectomy 10 (2.29%), and mid-urethral sling 22 (5.04 %), Colporrhaphy anterior-posterior 51 (11.69%), and colpocleisis 10 (2.29%). The demographic characteristics of the patients are given in Table 1. Indications are shown in Table 2 as the following: 385 (88.30 %) of the patients had pelvic organ prolapse, 4 (0.92%) had adenomyosis, 9 (2.06%) had uterine myoma, 12 (2.75%) had cervical intraepithelial neoplasia, 7 (1.60%) had endometrial hyperplasia without atypia, 5 (1.15%) had postmenopausal bleeding, and 7 (1.60%) had an endometrial polyp. The operative time was 92.62 ± 17.31 min, and the mean hemoglobin loss was 1.90 ± 1.25 g/dL. The period of hospitalization was 4.10 ± 0.72 days, and the uterus weight was 92.57 ± 31.07 g Table 3. Histopathology results Table 4 showed that 58.48% of the patients had atrophic endometrium, 16.28% had proliferative endometrium, 2.75% had myoma, 5.27% had adenomyosis and 3.66% had cervical intraepithelial neoplasia, 10.32% had an endometrial polyp, and 3.66% had endometrial hyperplasia without atypia. Major complications were discovered in 8.02% of patients Table 5. These complications enclosed bleeding requiring blood transfusion 2.98%, conversion to laparotomy 0.45%, bladder injury 1.83%, ureteral injury 0.22%, vaginal cuff dehiscence 0.22%, bowel injury 0.22%, reoperation 0.22%, vascular injury 0.22%, intra-abdominal hematoma 0.45%, and among the minor complications 9.40%, post-operative fever 3.21%, and vaginal cuff infection 2.29% were the foremost distinguished minor complications

Discussion

Although vaginal hysterectomy is a minimally invasive type of hysterectomy, surgeons should be aware of complications during surgery; recognizing and managing complications is crucial in VAH because they can be fatal. A vagi-

nal hysterectomy should be performed with as few complications as possible [8]. Different complication rates related to VAH have been reported in the literature. Vaginal hysterectomies for different patient groups, overall complication rates were found between 4.1% and 44.8% [9, 10]. Lee SH et. [11] did 'not discover any difference in complication rates in the meta-analysis outcomes comparing VH and total laparoscopic hysterectomy. Allam et al. [12] reported fewer complications in the TLH group using the electrosurgical bipolar vessel sealing technique than in the TAH and VH groups.

The total complication rate in our study was 17.42%. In a vaginal hysterectomy, bladder and ureteral injuries are common complications [13]. Rates of urethral and bladder injuries during VAH were 0.88% and 1.76%, respectively [14]. They were related to adhesions. Bladder injury occurred in 8 (1.83%) patients in our study. All of those patients had a history of previous abdominal surgery. The patients were repaired with primary sutured without the need for laparotomy. Bladder catheterization was continued for additional fifteen days. No fistula-like complications were ascertained. While attempting to cut and suture the uterine arteries and control bleeding, 1(0.22%) ureteral injury occurred. The ureteral injury was noticed during the operation, and a urologist was called to the operating room for assistance. A double J catheter was inserted into the ureter, and conversion to laparotomy was required for the ureter to be repaired. Double J catheterization was continued for additional days after the surgery. No vesicovaginal or ureteral vaginal fistulas were observed during postoperative follow-up. The incidence of bowel injury is low in VAH operations [15]. In the present study, one (0.22%) bowel injury was noticed throughout the operation, and a general surgeon was called to the operating room for assistance. Furthermore, conversion to laparotomy was required for the bowel to be repaired. No fistula-like complications were ascertained during postoperative follow-up. In a retrospective review of 220 patients, conversion rates from vaginal to laparotomy were reported as 0.4% [16, 17]. In our study, 2 (0.45%) patients were converted from vaginal to laparotomy for urethral and bowel injuries. In vaginal hysterectomies, blood transfusion rates are between 2.5-4.3 % and they are due to pedicle or internal organ injuries [18, 19]. In the present study, 13 (2.98%) patients were transferred blood. Postoperative febrile morbidity is seen at a rate of 5-20% [20, 21]. The reason is usually urinary tract and vaginal cuff infections. Postoperative febrile morbidity in our study is lower than in the literature 2.98%. This may be because all patients were given prophylactic antibiotics before the operation. It has been reported that vaginal vault prolapse risk is 5.5 times higher in patients who performed a hysterectomy for pelvic organ prolapse[22]. In our study; cuff prolapse developed in 6 (1.37%) patients and sacrospinous ligament fixations were performed. The effect of vaginal hysterectomy is unclear on urinary incontinence in the literature [23, 24]. 8(2%) patients developed postoperative urinary incontinence, while surgical treatment was chosen in 2(0.5%) patients, and other patients were treated with medical therapy. It has been reported that patients who have undergone vaginal hysterectomy have a shorter re-

turn to normal activities, fewer febrile episodes or nonspecific infections, shorter hospital stays, lower intraoperative blood loss, and fewer wound infections compared to patients who have undergone abdominal hysterectomy [25]. Garry R et al. [26] reported that the length of hospital stay was shorter in TLH than in TAH, but they could not find any difference compared to VH. Gendy et al. [27] Compared to the other VH and TAH groups, the TLH group had the longest operation time. Leung et al. [28] reported that TLH requires a longer surgical time than other abdominal and vaginal hysterectomy techniques.

VAH is commonly applied in benign causes with uterine prolapse, uterine size less than twelve weeks of gestation, endometrial polyp, normal adnexa, wide maternal pelvis, abnormal uterine bleeding, and no anesthetic or surgical contraindications. A vaginal hysterectomy is a standard gynecological procedure used to treat various gynecological pathologies. Morton M et al. [29] reported similar complication rates comparing VH and TLH for a uterus weighing up to 300g.

Pelvic organ prolapse is a condition that adversely affects the quality of life of women [30, 31]. Therefore, the most common indication is pelvic organ prolapse for vaginal hysterectomy. In the current study, pelvic organ prolapse 67.88% and abnormal uterine bleeding 18.73% were the most common causes of hysterectomy. The data were meticulously collected, and the sample size was deemed sufficient for the estimation. However, the effects of surgical experience may impact determining every parameter. The limitations included a short-term follow-up. Moreover, the study was descriptive and retrospective and was conducted in a tertiary hospital; these factors may have limited the ability to draw causal relationships and the generalizability of the study findings.

Conclusion

Though vaginal hysterectomy is a minimally invasive type of hysterectomy; surgeons should be aware of complications during surgery; recognizing and managing complications is crucial in VAH because they can be fatal.

Ethics approval

The Istanbul Kanuni Sultan Süleyman Training and Research Hospital's ethics committee gave its approval to this study, which complied with the 2013 edition of the Declaration of Helsinki (KA EK/2021.12.323).

References

1. ACOG, ACOG Committee Opinion No. 444: choosing the route of hysterectomy for benign disease. *Obstetrics and Gynecology*. 2009;114(5), 1156–1158.
2. Sutton, C. Hysterectomy: a historical perspective. *Baillière's clinical obstetrics and gynecology*. 1997; 11(1), 1–22.
3. Reich H, De Caprio J, McGlynn F. Laparoscopic hysterectomy. *J Gynecol Surg*. 1989;5(2), 213–216.
4. AAGL Advancing Minimally Invasive Gynecology Worldwide. AAGL position statement: route of hysterectomy to treat benign uterine disease. *Journal of minimally invasive gynecology*. 2011;18(1), 1–3.
5. Aarts JW, Nieboer TE, Johnson N, et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev*. 2015;2015(8):Cd003677.
6. David-Montefiore E, Rouzier R, Chapron C, Darai E, France CdOeGdP-Id. Surgical routes and complications of hysterectomy for benign disorders: a prospective observational study in French university hospitals. *Human Reproduction*. 2007;22(1):260–5.
7. Nieboer TE, Johnson N, Lethaby A, Tavender E, Curr E, Garry R, et al. Surgical approach to hysterectomy for benign gynecological disease. *Cochrane Database Syst Rev*. 2009;(3): CD003677. doi: 10.1002/14651858.CD003677.pub4.
8. Pillarisetty LS, Mahdy H. Vaginal Hysterectomy. [Updated 2022 May 8]. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan : <https://www.ncbi.nlm.nih.gov/books/NBK554482/>.
9. Dicker RC, Greenspan JR, Strauss LT, Cowart MR, Scally MJ, Peterson HB, et al. Complications of abdominal and vaginal hysterectomy among women of reproductive age in the United States: the collaborative review of sterilization. *Am J Obstet Gynecol* .1982; 144(7): 841–8.
10. Meltomaa SS, Makinen JI, Taalikka MO, Helenius HY. The one-year cohort of abdominal, vaginal, and laparoscopic hysterectomies: complications and subjective outcomes. *J Am Coll Surg* .1999; 189(4): 389–96.
11. Lee SH, Oh SR, Cho YJ, Han M, Park JW, Kim SJ, et al. Comparison of vaginal Hysterectomy and laparoscopic hysterectomy: a systematic review and meta-analysis. *BMC Women's Health* . 2019;19:83.
12. Allam IS, Makled AK, Gomaa IA, El Bishry GM, Bayoumy HA, Ali DF. Total laparoscopic hysterectomy, vaginal hysterectomy and total abdominal hysterectomy using electrosurgical bipolar vessel sealing technique: a randomized controlled trial. *Arch Gynecol Obstet*. 2015 ;291(6):1341–5. DOI: 10.1007/s00404-014-3571-3. Epub 2014 Dec 19. PMID: 25524534.
13. Falcone T, Walters MD. Hysterectomy for benign disease. *Obstet Gynecol*. 2008;111:753–767.
14. Ibeanu OA, Chesson RR, Echols KT, Nieves M, Busangu F, Nolan TE. Urinary tract injury during hysterectomy based on universal cystoscopy. *Obstet Gynecol*. 2009;113(1):6–10. doi: 10.1097/AOG.0b013e31818f6219.
15. Harris WJ. Early complications of abdominal and vaginal hysterectomy. *Obstet Gynecol Survey* .1995; 50(11): 795–805.
16. Katy S, Huang JY, Al-Sunaidi M, Wiener D, Tulandi T. Audit of morbidity and mortality rates of 1792 hysterectomies. *J Minim Invasive Gynecol*. 2006;13(1):55–59.
17. Kriplani A, Garg P, Sharma M, Lal S, Agarwal N. A review of total laparoscopic hysterectomy using LigaSure™ uterine artery sealing device: AIIMS experience. *J Laparoendosc Adv Surg Tech A*. 2008;18(6):825–829. doi: 10.1089/lap.2008.0034.
18. Clarke-Pearson DL, Geller EJ. Complications of hysterectomy. *Obstet Gynecol* .2013; 121(3): 654–7.
19. Barber EL, Harris B, Gehrig PA. Trainee participation and perioperative complications in benign hysterectomy: the effect of route of surgery. *Am J Obstet Gynecol* .2016; 215(2): 215.e1–7.
20. Akyol D, Esinler I, Guven S, Salman MC, Ayhan A. Vaginal hysterectomy: results and complications of 886 patients. *J Obstet Gynaecol* .2006; 26(8): 777–81.
21. Pakbaz M, Mogren I, Löfgren M. Outcomes of vaginal hysterectomy for uterovaginal prolapse: a population-based, retrospective, cross-sectional study of patient perceptions of results including sexual activity, urinary symptoms, and provided care. *BMC Women's Health*. 2009; 9: 9.
22. DeLancey JO. Anatomic aspects of vaginal eversion after hysterectomy. *Am J Obstet Gynecol* .1992; 166(6 Pt 1): 1717–24; discussion 24–8.
23. De Tayrac R, Chevalier N, Chauveaud-Lambling A, Gervaise A, Fernandez H. Is vaginal hysterectomy a risk factor for urinary incontinence at long-term follow-up? *Eur J Obstet Gynecol Reprod Biol* .2007; 130(2): 258–61.
24. Brown JS, Sawaya G, Thom DH, Grady D. Hysterectomy and urinary incontinence: a systematic review. *Lancet*. 2000;356(9229): 535–9.
25. Chen B, Ren DP, Li JX, Li CD. Comparison of vaginal and abdominal hysterectomy: A prospective non-randomized trial. *Pak J Med Sci*. 2014;30(4):875–879. DOI: <http://dx.doi.org/10.12669/pjms.304.4436>.
26. Garry R, Fountain J, Mason S, et al. The evaluation study: two parallel randomized trials, one comparing laparoscopic with abdominal hysterectomy, the other comparing laparoscopic with vaginal hysterectomy. *BMJ* .2004;328:129.
27. Gendy R, Walsh CA, Walsh SR, Karantanis E. Vaginal hysterectomy versus total laparoscopic hysterectomy for benign disease: a meta-analysis of randomized controlled trials. *Am J Obstet Gynecol* .2011; 204(5):388.e1–388.e8.

28. Leung SW, Chan SC, Lo SF, Pang CP, Pun TC, Yuen PM. Comparison of the different types of laparoscopic total hysterectomy. *J Minim Invasive Gynecol* .2007; 12: 91-6.
29. Morton M, Cheung VYT, Rosenthal DM. Total laparoscopic versus vaginal hysterectomy: a retrospective comparison. *J Obstet Gynaecol Can*. 2008 ;30(11):1039-1044.
30. Doaee M, Moradi-Lakeh M, Nourmohammadi A, Razavi-Ratki SK, Nojomi M. Management of pelvic organ prolapse and quality of life: a systematic review and meta-analysis. *International urogynecology journal*. 2014; 25, 153-163.
31. Schulten SF, Detollenaere RJ, IntHout J, Kluivers KB, Van Eindhoven HW. Risk factors for pelvic organ prolapse recurrence after sacrospinous hysteropexy or vaginal hysterectomy with uterosacral ligament suspension. *Am J Obstet Gynecol*. 2022 ;227(2):252.e1-252.e9. doi: 10.1016/j.ajog.2022.04.017.