Jordan Medical Journal

ORIGINAL ARTICLE

# When Hysterectomy is the Best Solution: How do we improve its outcome? A Teaching Hospital Experience

Ayman Qatawneh[1], Kamil M. Fram[1]*, Shawqi Saleh[1], Farah Fram[1], Rand Fram[1], Nada Abu Heijleh[1], Farah Abu Shaikha[1], Amwaj Farajat[1], Banan Tarawneh[1], Rola Baydoon[1], Mosa Fram[1], Rosul Mulla[1], Amira Hamdan[1], Nour Abumurra[1], Ghadeer Sabateen[1], Layan Attili[1], Saja Khalaylih[1], Jood Al-Adwan[1], Tamara Alazzah[1].

[1] Department of Obstetrics and Gynecology, School of Medicine, Jordan University Hospital, The University of Jordan

*Corresponding author:

kamilfram@gmail.com

**Received:** February 10, 2024

**Accepted:** August 20, 2024

**DOI:**
https://doi.org/10.35516/jmj.v59i1.2366

## Abstract

**Objective**: This audit aimed to analyze the indications, intraoperative complications, and the final histopathology reports of all hysterectomies done under our care during the study period at Jordan University Hospital. The ultimate goal of the study was to shed light on how the outcome of surgeries as major as hysterectomies was improved when the surgical practice of such complex surgeries was effectively implanted and correctly taught so that the steps of the procedure became like second nature and part of the muscle memory of the operation during practice and follow-up. It should be located as the first goal of the tutorial in teaching hospitals that implement scholastic residency curricula.

**Methods**: This study includes all patients who underwent hysterectomy from January 2020 until July 2023.

**Results**: A total of 423 patients underwent hysterectomy throughout the study period. Abnormal vaginal bleeding was reported as the most common reason, whereas malignancy was the next. Bladder injury was reported to be the most common intraoperative complication, where bleeding was the next. Wound infection was at the top of the list of late postoperative complications. Benign conditions, mainly fibroids, and adenomyosis, were reported to be the most common histopathologic finding, followed by malignancy.

**Conclusion**: Hysterectomy remains an accurate indicator of surgical skills. Acquiring the skill of hysterectomy in various ways and whatever the justifications within a tight training program gives the surgeon a medal of confidence within a clear and programmed training program. We can measure efficacy through reduction in the time factor and the decline in the rate of surgical complications. Time and practice aid the ascending linear curve of gained surgical skills, which mirrors a gradual drop in the complication rate.

**Keywords:** hysterectomy, indications, perioperative complications, blood transfusion, histopathology.

## INTRODUCTION

Over decades, hysterectomy has taken on the sovereignty of gynecological surgeries. By no means feminization is markedly linked to menstruation and pregnancy, and not surprisingly, there is a common theme in female imagination that future and life stability are related to the presence or absence of her uterus; an idea that needs a radical review to correct its components. Pregnancy and menstruation are decisive facets of femininity [1]. Losing the capacity for both in a single procedure can be a lot of work for some people. Even if you are excited by the prospect of not having to worry about pregnancy or menstruation, conflicting feelings can come up after the procedure. By any means, hysterectomy remains the cornerstone of surgical gynecological procedures, commonly performed to assuage health prosperity; nevertheless, in some situations it is performed as a lifesaving procedure. Unsurprisingly, the significance and consequences of related complications mandate that patients planning the procedure be judged thoroughly and adequately before surgery [2, 3].

Hysterectomy is the cardinal remedy for many benign and malignant gynecological and obstetric conditions; thus, it is undoubtfully the most common elective gynecological procedure among women [4], even though it can be an emergency surgery to save life [5]. This surgery can be completed using different existing approaches. Nonetheless, surgeon preference, risk factors that are individually taken into account for each patient, and other aspects related to all surgeries that have not changed over time cannot be overlooked when taking into account both what might promote a good outcome of surgery or what stands in the way of that [6]. Hysterectomy is the most commonly practiced surgical gynecologic procedure globally and locally [7, 8]. The universal indications for scheduled hysterectomies vary from benign conditions to gynecological malignancies. A less frequently reported indication in lifesaving cases of postpartum hemorrhage is the category of much consideration and scrutiny [9, 10]. The highest wisdom in work is to choose the best method for performing the surgical operation with the least complications, which the surgeon masters according to his experience and taking into account the patient's medical conditions. Every gynecological surgeon must have surgical skills to perform a hysterectomy appropriate to the patient's condition.

Hysterectomy, like any other surgical operation, is associated with intraoperative and postoperative complications. Unpredictably, figures on determinants of complications in women undergoing hysterectomy are defenseless. Nonetheless, the complication rates have been stated in a lengthily eclectic range from 0.5% to 43% [11]. The choice of surgical approach is linked to many factors, including but not limited to; accessibility of the uterus, anatomical features (size and shape) of the pelvis, uterus, and vagina, level of extrauterine disease involvement, the probability of the need for the adnexal procedure. Nevertheless, experience and training guide the surgeon's preference, and the patient's keenness is supreme in the decision-making process, with the know-how that assists the procedure in mind [12]. The main source of concern for the patient and her husband and her reluctance to undergo surgery in our societies, whether outwardly or inwardly, is her keenness to preserve her femininity and her marital relationship due to the inheritance of traditional ideas about the womb's contribution to sexual activity [13].

Open and see is a golden surgical role of prestige and presence that cannot be ignored, stored on top of a shelf, or overcome. Up-to-date, this role is valid and is the backbone for

any surgical procedure, which mandates the surgeon to master the surgical skills via a linear curve of obtaining and training. Nevertheless, every surgeon must pass three phases of training, one-year duration each, to be distinguished in his work respectively: an excellent observer, a professional assistant, and a tremendous surgeon. Surgery is an art and the father of medicine; it possesses the magic of the last and decisive word. This study was designed to answer the question about the best approach when a hysterectomy is an ideal and best solution, which is hardly indicated for any reason; custody in mind, the paramount goal is to accompany the medical care provided to patients as a priority.

## MATERIALS AND METHODS

This retrospective study was conducted after reviewing the medical records of patients who underwent hysterectomy during the study period. A total of 447 consecutive hysterectomies were performed under our care in our institution at JUH, a tertiary hospital in our capital, Amman, from January 2020 to July 2023. The study was conducted after being authorized by Institutional Review Board- (IRB-JUH) number 10202328262 and the Scientific Research Committee (SRC) at our Faculty of Medicine number 662202187, dated 11/02/2021. Those cases were deemed eligible to be enrolled and reviewed in this study. The demographic data of the eligible patients and the information regarding the indications for surgery intra- and postoperative complications were used to outline a detailed analysis of the surgical procedure and the curve of complications' occurrence and prevalence over time. Finally, we reviewed the histopathology reports for each surgery. For this study, the complications were categorized as defined by Decker et al. [14]. They included intraoperative bleeding or organ injury, infection, fever, hemorrhage requiring transfusion (any operative and post-operative bleeding), and coagulation disorders. The SPSS software (Statistical Package for the Social Sciences) (Version 22.0, IBM Company, USA) was used for data analysis. Data is shown as mean standard deviation. The essential statistical analysis values of the study were calculated using the Chi-square and Wallis test. A verbal personal consent from the patient herself for the agreement to be involved in this study has also been obtained. All patients received the same standard of care and attention; the same surgeons also assessed them. The procedure, care routine, patient concerns, and path to recovery were all discussed in-depth. All patients mainly underwent diagnostic hysteroscopy D&C before the planned procedure. Patients were usually admitted one day before surgery unless medical evaluation was needed, including respiratory, cardiac, and anesthetic assessment. A detailed history with a complete physical examination was performed on admission. The investigations included a total blood count, a kidney function test, a cross-match, ECG, and a chest x-ray. Other more extensive radiological and blood investigations were performed according to the patient’s case specifics and medical condition. The dynamism of our study stems from the fact that the same consultants performed all procedures. However, it does not evade us that the limitations of this study reside in the fact that our hospital is a teaching one with a resident teaching program, which affects the duration of surgery, the limited number of patients, and patient compliance with post-operative care and follow-up. This study was conducted at a single center, limiting the findings' generalizability. However, including a large number of patients in the analysis helps minimize this limitation.

In addition, possible bias in recording surgical complications was avoided by having an advanced medical student (rather than a layperson) perform data acquisition using a standardized classification system. In addition, although many studies have revealed a significant correlation between surgeon expertise and the occurrence of complications, we did not consider this variable as a possible risk factor in our analysis. However, highly qualified and experienced surgeons perform all laparoscopic procedures at our institution, but we did not include them in our study.

## RESULTS

A total of 423 women who underwent hysterectomy during the study period from January 2020 to July 2023 were suitable to be included. Records were obtained, and information was analyzed. Regarding the demographic data for all cases, there were 109, 114, 128, and 72 patients in 2020, 2021, 2022, and 2023 respectively. The mean age was 50.97 years; the mean body weight was 77.93kg; the mean body mass index (BMI) was 3 0.5 with a gravidity mean of 5.74 and a parity mean of 4.63, as illustrated in Table 1. Abnormal vaginal bleeding was the main indication for hysterectomy during the study period, as seen in 143 women (33%), followed by malignancy in 122 women (28.84%), while the least indication was due to abdominal pain in 17 women (4.01%), as seen in Table 2. Simple hysterectomy ± BSO was the most common type as performed in 281 women (66.43%), followed by modified radical and radical hysterectomy in 70 women (16.54%), while the least common type performed was modified radical hysterectomy with PLA and simple hysterectomy with PLA in 1 woman each (00.94%) as illustrated in Table 3. Regarding the mean operative time according to the indication, the values ranged between a mean operative time of 1.81 in morbidly adherent placenta with SD (0.21) to 0.45 hours in uterine prolapse and SD (0.17), and between 1.07 hours in cases of post-menopausal bleeding with a standard deviation of (0.12) as illustrated in Table 4. An important finding was the decrease in the rate of surgical complications during the study period and a decrease in the period required to complete the surgical procedure. The final histopathology report for the studied group revealed that 301 women (74.3%) had benign disorders. In comparison, 55 women (13%) had endometrial malignancy, 36 women (8.52%) had ovarian malignancy, and 22 women (5.21%) had primary cervical malignancy, as reported in Table 5.

**Table 1: Demographic data**

| Parameter/ year | 2020 | 2021 | 2022 | 2023 | Mean/ SD |
|---|---|---|---|---|---|
| Number, patients/ year | 109 | 114 | 128 | 072 | 423 |
| Age (mean)/ years: (SD) | 49.8(9.38) | 52.02 (9.22) | 51.37 (8.89) | 50.21 (8.99) | 50.97 (9.12) |
| Gravidity (mean): (SD) | 6.2 (4.3) | 5.8 (5.52) | 5.25 (2.8) | 5.7 (4.1) | 5.74 (4.08) |
| Parity (mean): (SD)) | 5.1 (2.9) | 4.7 (4.41) | 3.9 (2.5) | 4.8 (3.7) | 4.63 (3.38) |
| Weight (mean) kg: (SD) | 79.8 (11.9) | 78.35 (15.1) | 75.85 (14.2) | 77.72 (13.2) | 77.93 (13.6) |
| Height (mean) cm: (SD) | 158.3 (6) | 161.5 (6) | 161.38 (5) | 160.5 (7) | 160.04 (6) |
| BMI (mean) kg/$M^2$: (SD) | 29.69 (6.3) | 30.33 (5.52) | 30.42 (2.9) | 31.56 (3.27) | 30.5 (4.49) |

SD: Standard deviation.

**Table 2: Indications of Hysterectomy**

| Parameter/ % year | 2020 | 2021 | 2022 | 2023 | Total/ mean |
|---|---|---|---|---|---|
| AVB * | 37 (33.94) | 41 (35.96) | 39 (30.46) | 26 (36.11) | 143 (33.80) |
| Fibroids | 21 (19.26) | 20 (17.54) | 23 (17.96) | 12 (16.66) | 076 (17.96) |
| Malignancy | 33 (30.27) | 35 (30.70) | 38 (29.68) | 16 (22.22) | 122 (28.84) |
| MAP[#] | 03 (02.75) | 02 (01.75) | 03 (02.34) | 03 (04.16) | 011 (02.60) |
| PMB[$] | 07 (06.42) | 06 (05.26) | 09 (07.03) | 05 (6.94) | 027 (06.38) |
| Uterine prolapse | 04 (03.66) | 05 (04.37) | 06 (04.46) | 04 (05.55) | 019 (04.49) |
| Abdominal Pain | 04 (03.66) | 03 (02.63 | 06 (04.46) | 04 (05.55) | 017 (04.01) |
| Others | 00 (00.00) | 02 (01.75) | 04 (03.12) | 02 (02.77) | 008 (01.91) |
| Total | 109 (100%) | 114 (100%) | 128 (100%) | 72 (100%) | 423 (100%) |

AVB *: Abnormal vaginal bleeding, MAP[#]: Morbid adherent placenta, PMB[$]: Postmenopausal bleeding

**Table 3: Types of Hysterectomy**

| Type (no.): %/ year | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|
| Type I: simple, ±BSO | 72 (66.05) | 73 (64.03) | 84 (65.62) | 52 (72.22) | 281 (66.43%) |
| Type II: MRH*, ±BSO | 19 (17.43) | 23 (20.17) | 21 (16.41) | 07 (09.72) | 070 (16.54%) |
| Type III: RH[&], ±BSO | 08 (07.33) | 07 (06.14) | 11 (08.59) | 05 (06.94) | 031 (07.32%) |
| Type I: simple + PLA[$], | 03 (02.75) | 03 (02.63) | 03 (02.34) | 01 (01.38) | 010 (02.36%) |
| Type II: MRH* + PLA, | 01 (00.91) | 01 (00.87) | 01 (00.78) | 01 (01.38) | 004 (00.94%) |
| Type III: RH[&] + PLA, | 01 (00.91) | 01 (00.87) | 02 (01.56) | 02 (2.78) | 006 (01.41%) |
| Vaginal, ±BSO | 05 (04.58) | 06 (05.26) | 06 (04.69) | 04 (5.56) | 021 (04.96%) |
| Total | 109 (100%) | 114 (100%) | 128 (100%) | 72 (100%) | 423 (100%) |

MRH*: Modified Radical Hysterectomy, RH[&]: Radical Hysterectomy, PLA[$]: Pelvic Lymphadenectomy ±BSO: Bilateral salpingo-oophorectomy

**Table 4: Mean operative time according to the indication**

| Parameter/ year: (H:M) | 2020 | 2021 | 2022 | 2023 | Total/ mean |
|---|---|---|---|---|---|
| AVB * (M: SD) | 1.35 (0.12) | 1.31 (0.14) | 1.29 (0.15) | 1.15 (0.11) | 1.27 (0.11) |
| Fibroids | 1.40 (0.27) | 1.34 (0.27) | 1.31 (0.22) | 1.25 (0.15) | 1.32 (0.22) |
| Malignancy | 2.00 (0.12) | 1.47 (0.12) | 1.55 (0.14) | 1.30 (0.10) | 1.58 (0.12) |
| MAP[#] | 2.15 (0.27) | 1.58 (0.27) | 2.00 (0.22) | 1.52 (0.09) | 1.81 (0.21) |
| PMB[$] | 1.20 (0.19) | 1.10 (0.19) | 1.00 (0.16) | 1.00 (0.14) | 1.07 (0.17) |
| Uterine Prolapse | 0.58 (0.08) | 0.45 (0.08) | 0.45 (0.07) | 0.40 (0.05) | 0.45 (0.07) |
| Abdominal Pain | 1.32 (0.22) | 1.32 (0.22) | 1.10 (0.18) | 1.00 (0.11) | 1.18 (0.18) |

(H.M): Hour. Minute, (M: SD): mean: standard deviation

**Table 5: Final Histopathology Results**

| Histopathology | 2020 | 2021 | 2022 | 2023 | Total/ % |
|---|---|---|---|---|---|
| Benign | 76 (69.72%) | 79 (69.21%) | 93 (72.66%) | 56 (77.78%) | 301 (71.15%) |
| Endometrial cancer | 16 (14.66%) | 15 (13.25%) | 18 (10.94%) | 06 (08.33%) | 055 (13.00%) |
| Ovarian cancer | 09 (08.25%) | 12 (10.52%) | 11 (08.59%) | 04 (05.55%) | 036 (08.52%) |
| Cervical cancer | 05 (04.85%) | 06 (05.27%) | 07 (05.47%) | 04 (05.55%) | 022 (05.21%) |
| Others | 03 (02.75%) | 02 (01.75%) | 02 (01.56%) | 02 (02.78%) | 009 (02.12%) |
| Total | 109 (100%) | 114 (100%) | 128 (100%) | 72 (100%) | 423 (100%) |

## DISCUSSION

Surgical removal of the uterus is a cornerstone of gynecologic surgery, having irrefutable impact on a woman's physical, emotional, sexual, financial, and economic status. It persists to be the most prevalent gynecologic surgery [15, 16]. With that fact established, the determination of how the surgery is conducted has risen to the surface. Over the three years and a half in which this study was conducted (2020-2023) in our institution, Jordan University Hospital, the aim was to bring into scope the role played by surgical skills, among other parameters, that could improve the satisfaction rates and outcomes of this surgery, taking into account the perspective with which women view this procedure's aftermath when it comes to their sexual life, and their ability to reproduce. Women, having the unique physiological functions necessary for the process of pregnancy and childbirth, are the sole key to ensuring the perseverance of the human race; with that in mind, a considerable number of women express their anxiety and apprehension about a procedure that would guarantee the loss of their ability to retain what might be a pillar of their femininity and significant role in society; both the ability to menstruate and to give birth, although this might very easily be disproven with the correct evidence and pre-operative counseling of the patients undergoing hysterectomies, as menstruation – the process through which the failure of pregnancy is registered - loses its significance once a woman is no longer willing to expand her family or is close to the end of her reproductive years [17, 18].

In our institution, Jordan University Hospital, over the study period, a total number of 423 hysterectomies were conducted, by our team, with the following distribution in terms of the route through which the hysterectomy was performed: 402 women (95.03%) underwent abdominal hysterectomies, 21 women (4.97%) underwent vaginal hysterectomies. Multiple Canadian institutions reported similar distributions: 78% being abdominal hysterectomies, 14% vaginal hysterectomies, and about 5.9% laparoscopic [19]. It is worth noting that the distribution being in favor of abdominal hysterectomies might be attributable to these statistics being provided by teaching hospitals, where surgeons are more likely to be concerned with the surgical training of the medical trainees and medico-legal issues than they are with the possibility of other more preferable outcomes, that and the fact that a chosen approach to conducting the surgery is also highly influenced by the

preference, expertise and surgical skills of the operating surgeon.

It is important to acknowledge that this study has been done in a teaching hospital with a certified residency program that prioritizes the sustainability and continuous flow of skilled surgeons among the newer generations of doctors, especially with the limited opportunities of residency programs abroad. Among the total number of cases of TAH that were recruited for this study, 291 (68.79%) had been indicated by abnormal vaginal bleeding, primarily due to fibroids in 76 women (17.96%) followed by malignancy in 122 patients (28.84%). In a similar study carried out by Broder et al. in the USA, the indications for hysterectomy were as follows: fibroid (60%), followed by prolapse (11%) [20], while another study from Canada showed that the most common indication for hysterectomies had been DUB (26.4 %), followed by fibroids (16%) [21].

Throughout the study it was noted that the time needed for all types of hysterectomies performed by our team had diminished over time, be it for simple hysterectomies (performed in 291 of the cases (68.79%), modified radical hysterectomy in 74 patients (17.79%), radical hysterectomy; done for 37 patients (8.74%), and vaginal hysterectomy in 21 (04.96%), where similar results were reported in a study conducted by Hodges et al. in 2014 [22].

There were some variations in the mean operating time depending on the indication of the hysterectomy, with a range of about 60 minutes for hysterectomies done for abnormal vaginal bleeding and postmenopausal bleeding and a mean operating time of 67 minutes, while the mean operating time needed to perform a total abdominal hysterectomy in the morbidly adherent placenta was 135 minutes in the year 2020, this dropped to 111 minutes in the year 2023. These results might have been attributable to the consistent hard work of the operating team, but similar results have also been noted in studies conducted by Bartels HC et al. and Aarts JW et al. [23, 24].

When it comes to estimated blood loss and the need for transfusion, a remarkable discrepancy in the blood loss was noted with the different indications for the hysterectomy, the highest estimated blood loss being with the hysterectomy done due to morbidly adherent placentae, with a mean estimated blood loss of 1488 ml for 11 cases, followed by that of the hysterectomies done to treat malignancy, with a mean estimated blood loss of 335ml for 122 cases. It was noted that the lowest means for estimated blood loss were recorded in hysterectomies done for prolapse and post-menopausal bleeding, being 200 and 205, respectively, while those for the hysterectomies done for abnormal vaginal bleeds and fibroids were 229 and 297, respectively, these results give us some optimism when compared to studies with similar results such as that done by Sallam et al and Conor et al. [25, 26].

In this study, only the anemic or those who suffered vaginal bleeding pre-operatively had blood transfused on the day before the surgery, while most blood transfusions were done intra-operatively for patients undergoing hysterectomy due to a morbidly adherent placenta (2.6% of the patients in our study).

As with any other surgical procedure, hysterectomies were carried out bearing in mind the possibility of complications; it was noted in our study that hysterectomies were conducted with a minimal rate of complication, with 96.3% of our hysterectomies not being associated with any complication. It was however noted that

when complications arose, bladder injury was the most prevalent (occurring in about 1.18% of the cases, 5 out of 423 patients), these results are similar to those of Garry et al. [27]. The least prevalent complication was the formation of a hematoma (occurring only in one case, 0.4%) [28, 29]. We noticed a gradual decrease in the operative time over time with fewer complications, including the blood transfusion rate. This reflects a growing curve of development in surgical skills through proper practice [18]. The histopathology results for our study were mostly benign disorders (this was recorded for 301 patients, 71.15% in our study). In contrast, the malignant ones were noted in 113 women (26.73 %), and similar results were recorded by other institutions and in other studies [30, 31].

While hysterectomy is a surgery that is done to improve the quality of life, it is not to be overlooked that it is also sometimes a lifesaving procedure with implications and complications; hence the indication for a hysterectomy should be evaluated, and the safest possible method should be carried out. This choice is often left to the performing operators, taking into account the technique they are most skilled at. We can improve the outcomes of the hysterectomy procedure by choosing the appropriate method from among the many known methods when this is necessary, taking into account the surgical skills capable of performing the surgical operation most appropriately, in addition, there is an educational residency program to train residents to provide a new generation of specialists trained to deal with the task. According to Magon et al. in their famous article review in the *Journal of Mid-life Health*, hysterectomy is a surgery used, misused, underused, and abused at different times in gynecology [32]. Hysterectomy is commonly used to improve the quality of life; however, sometimes, it is a lifesaving procedure. As any surgical procedure is associated with a risk of complications, the indications should be carefully evaluated. With the emergence of many conservative approaches to dealing with benign gynecological conditions, it is prudent to discuss available options with the patient before making a direct decision to remove her uterus. The history of hysterectomy is a captivating and, at times, a controversial account [33]. With the beginning of the world of specialization for each of us in the specialty of obstetrics and gynecology, the surgeon only needed to focus on learning vaginal and abdominal routes after being an outstanding anatomist. Then came the next step, the laparoscopic hysterectomy, a state-of-the-art approach meant to simplify exchanging laparotomies to minimally invasive procedures. More recently, robotic-assisted laparoscopy was introduced to "enable" surgeons to do more laparoscopically. Unfortunately, here and now, the surgeon is challenged with multiple itineraries to learn while the number of hysterectomy cases reduces.

## CONCLUSION

Surgery, like all other disciplines, thrives only with adequate practice supervised by skilled surgeons who follow educational and scientific guidelines when it comes to indications, types, and methods of any procedure to guarantee rigorous surgical training. The aim of this training is to guarantee a continuous flow of surgeons who can perform this procedure with the utmost precision and minimal rates of complications, to protect and ultimately help the women undergoing this surgery who undoubtedly have significant roles in their families and

their jobs. While every surgeon goes through a learning curve to acquire a surgical skill, they should remember that skill and the success of an operation are often judged by the complications, duration, and surgical skills implemented in the said procedure. There is always room for growth and the pursuit of improvement when it comes to progressing on the learning curve; this can be noted with the team that had been a part of this study, which may have contributed to the results we put forth.

**Author's contribution to the manuscript:** all authors have the same contribution in preparing, editing, and reviewing this manuscript.

**Conflict of interest**: the authors report no conflict of interest.

**AI Statement**

We confirm that the AI has not been used to prepare the manuscript, and all the listed authors have approved the final version.

## REFERENCES


1. McCammon E, Bansal S, Hebert LE, Yan S, Menendez A, Gilliam M. Exploring young women's menstruation-related challenges in Uttar Pradesh, India, using the socio-ecological framework. Sex Reprod Health Matters. 2020 Dec;28(1):1749342. doi: 10.1080/26410397.2020.1749342. PMID: 32308152; PMCID: PMC7175471.
2. Krentel H, De Wilde RL, Pados G. The Role of Hysterectomy in Modern Gynaecological Surgery. Biomed Res Int. 2022 Jun 24;2022:9847163. doi: 10.1155/2022/9847163. PMID: 35782083; PMCID: PMC9249513.
3. Meriwether KV, Antosh DD, Olivera CK, Kim-Fine S, Balk EM, Murphy M, Grimes CL, Sleemi A, Singh R, Dieter AA, Crisp CC, Rahn DD. Uterine preservation vs hysterectomy in pelvic organ prolapse surgery: a systematic review with meta-analysis and clinical practice guidelines. Am J Obstet Gynecol. 2018 Aug;219(2):129-146.e2. doi: 10.1016/j.ajog.2018.01.018. Epub 2018 Jan 17. PMID: 29353031.
4. Stoller N, Wertli MM, Zaugg TM, Haynes AG, Chiolero A, Rodondi N, et al. (2020) Regional iation of hysterectomy for benign uterine diseases in Switzerland. PLoS ONE 15(5): e0233082. https://doi.org/10.1371/journal. pone.0233082
5. Verma A, Sharma G, Kashyap M (October 09, 2023) A Retrospective Analysis of Emergency Obstetric Hysterectomy: A Life-Saving Intervention. Cureus 15(10): e46758. doi:10.7759/cureus.46758
6. John B. Gebhart. Route of Hysterectomy for Benign Indications. Journal of Gynecologic Surgery. Apr 2021.98-100. http://doi.org/10.1089/gyn.2021.0015
7. Madhvani K, Garcia SF, Fernandez-Felix BM, Zamora J, Carpenter T, Khan KS. Predicting major complications in patients undergoing laparoscopic and open hysterectomy for benign indications. CMAJ. 2022 Oct 3;194(38):E1306-E1317. doi: 10.1503/cmaj.220914. PMID: 36191941; PMCID: PMC9529570.
8. Emergency Peripartum Hysterectomy at Jordan University hospital; a teaching hospital experience. Ayman Qatawneh**,** Kamil Fram, Fida Thikerallah, Nadia Mhidat, Farah Fram, Rand Fram, Tamara Darwish, Tala Abdallat. Menopause Review. 2020; 19(2): 1-6. DOI: 10.5114/pm.2020.97840
9. Kallianidis, Athanasios F. MD, MSc; Rijntjes, Douwe BSc; Brobbel, Carolien MD, MSc; Dekkers, Olaf M. MD, PhD; Bloemenkamp, Kitty W. M. MD PhD; van den Akker, Thomas MD, PhD. Incidence, Indications, Risk Factors, and Outcomes of Emergency Peripartum

Hysterectomy Worldwide: A Systematic Review and Meta-analysis. Obstetrics & Gynecology 141(1):p 35-48, January 2023. | DOI: 10.1097/AOG.0000000000005022

10. Jennifer J. Schmitt, Daniel A. Carranza Leon, John A. Occhino, Amy L. Weaver, Sean C. Dowdy, Jamie N. Bakkum-Gamez, Kalyan S. Pasupathy, John B. Gebhart. Determining Optimal Route of Hysterectomy for Benign Indications: Clinical Decision Tree Algorithm. Obstet Gynecol. 2017; 129(1): 130–138. doi:10.1097/AOG.0000000000001756.
11. Aarts JW, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BW, Kluivers KB. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev. 2015 Aug 12;2015(8):CD003677. doi: 10.1002/14651858.CD003677.pub5. Update in: Cochrane Database Syst Rev. 2023 Aug 29;8:CD003677. PMID: 26264829; PMCID: PMC6984437.
12. Committee Opinion No. 701 Summary: Choosing The Route of Hysterectomy for Benign Disease. Obstetrics & Gynecology 129(6): p 1149-1150, June 2017. | DOI: 10.1097/AOG.0000000000002108
13. Fram KM, Saleh SS, Sumrein IA. Sexuality after hysterectomy at University of Jordan Hospital: a teaching hospital experience. Arch Gynecol Obstet. 2013 Apr;287(4):703-8. doi: 10.1007/s00404-012-2601-2. Epub 2012 Nov 7. PMID: 23132049.
14. Dicker RC, Greenspan JR, Strauss LT, Cowart MR, Scally MJ, Peterson HB, DeStefano F, Rubin GL, Ory HW. 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 Dec 1;144(7):841-8. doi: 10.1016/0002-9378(82)90362-3. PMID: 7148906.
15. Sanei-Moghaddam A, Ma T, Goughnour SL, Edwards RP, Lounder PJ, Ismail N, Comerci JT, Mansuria SM, Linkov F. Changes in Hysterectomy Trends After the Implementation of a Clinical Pathway. Obstet Gynecol. 2016 Jan;127(1):139-147. doi: 10.1097/AOG.0000000000001185. PMID: 26646126.
16. Papalekas E, Fisher J. Trends in Route of Hysterectomy after the Implementation of a Comprehensive Robotic Training Program. Minim Invasive Surg. 2018 Sep 17;2018:7362489. doi: 10.1155/2018/7362489. PMID: 30310699; PMCID: PMC6166379.
17. Fram KM, Saleh S, Fram F, Fram R, Muhidat N, Abdaljaleel M, Sweis N, Khouri Z, Al-Qudah F. Subtotal hysterectomy reviewed: a stable or aperture for stump cervical malignancy. A referral hospital experience. Prz Menopauzalny. 2022 Dec;21(4):266-271. doi: 10.5114/pm.2022.124016. Epub 2022 Dec 30. PMID: 36704767; PMCID: PMC9871995.
18. Fram, Kamil, et al. "Impact of Surgical Experience on Hysterectomy Outcomes; A Venture to Improve the Linear Curve, Surgical Outcome, and Cost-Effectiveness: A Retrospective Study." International Journal of Women's Health & Reproduction Sciences 10.2 (2022).
19. Subrat Panda, Ananya Das, Rituparna Das, Nalini Sharma, Wansalan Shullai, Vinayak Jante, Anusuya Sharma, Kaushiki Singh, Prateeti Baruah, Ruksana Makakmayum, "Analysis of Different Routes of Hysterectomy Based on a Prospective Algorithm and Their Complications in a Tertiary Care Institute", *Minimally Invasive Surgery*, vol. 2022, Article ID 6034113, 7 pages, 2022. https://doi.org/10.1155/2022/6034113
20. Broder MS, Kanouse DE, Mittman BS, Bernstein SJ. The appropriateness of recommendations for hysterectomy. Obstet Gynecol 2000; 95:199-205. DOI: 10.1016/s0029-7844(99)00519-0
21. Pandey D, Sehgal K, Saxena A, Hebbar S, Nambiar J, Bhat RG. An audit of indications, complications, and justification of hysterectomies at a teaching hospital in India. Int J Reprod Med. 2014;2014:279273. doi: 10.1155/2014/279273. Epub 2014 Jan 2. PMID: 25763395; PMCID:

PMC4334049.

22. Hodges, Kelly R.; Davis, Beth R.; Swaim, Laurie S. (2014). Prevention and Management of Hysterectomy Complications. Clinical Obstetrics and Gynecology. 2014; 57(1), 43–57. doi:10.1097/GRF.0000000000000004.
23. Bartels HC, Rogers AC, Janda M, Obermair A, Brennan DJ. Quality of life following minimally invasive hysterectomy compared to abdominal hysterectomy: A metanalysis. Eur J Obstet Gynecol Reprod Biol. 2020 Sep; 252:206-212. doi: 10.1016/j.ejogrb.2020.06.055.
24. Aarts JW, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BW, Kluivers KB. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev. 2015 Aug 12;2015(8):CD003677. doi: 10.1002/14651858.CD003677.pub5. PMID: 26264829; PMCID: PMC6984437.
25. Hany F. Sallam, Nahla W. Shady. Reducing Blood Loss During Abdominal Hysterectomy with Intravenous Versus Topical Tranexamic Acid: A Double- Blind Randomized Controlled Trial. The Journal of Obstetrics and Gynecology of India (March–April 2019) 69(2):173–179. https://doi.org/10.1007/s13224-018-1149-x
26. Shayna N. Conner, Methodius G. Tuuli, Ryan Colvin, Anthony L. Shanks, George A. Macones, Alison G. Cahill. Accuracy of Estimated Blood Loss in Predicting Need for Transfusion after Delivery. Am J Perinatol. 2015 November; 32(13): 1225–1230. doi:10.1055/s-0035-1552940.
27. Garry R, Fountain J, Mason S, Hawe J, Napp V, Abbott J, Clayton R, Phillips G, Whittaker M, Lilford R, Bridgman S, Brown J. The eVALuate study: two parallel randomised trials, one comparing laparoscopic with abdominal hysterectomy, the other comparing laparoscopic with vaginal hysterectomy. BMJ. 2004 Jan 17;328(7432):129. doi: 10.1136/bmj.37984.623889.F6. Epub 2004 Jan 7. Erratum in: BMJ. 2004 Feb 28;328(7438):494. PMID: 14711749; PMCID: PMC314503.
28. Wenzel HHB, Kruitwagen RFPM, Nijman HW, et al. Short-term surgical complications after radical hysterectomy—A nationwide cohort study. Acta Obstet Gynecol Scand. 2020;99:925–932. https://doi.org/10.1111/aogs.13812
29. Bruno M, Legge F, Gentile C, Carone V, Stabile G, Di Leo F, Ludovisi M, Di Florio C, Guido M. Risk Assessment Model for Complications in Minimally Invasive Hysterectomy: A Pilot Study. International Journal of Environmental Research and Public Health. 2023; 20(1):234. https://doi.org/10.3390/ijerph20010234
30. Dr. Amita S. Patel, & Dr. Kamlesh J Shah. (2018). Histopathological analysis of hysterectomy specimens in tertiary care center: two year study. Tropical Journal of Pathology and Microbiology, 4(1), 34-39. https://doi.org/10.17511/jopm.2018.i01.06.
31. Rawat, N., Tignath, A., Jain, A., Soni, S., & Agrawal, M. (2022). Histopathological spectrum of uterine lesions in hysterectomy specimens. International Journal of Health Sciences, 6(S6), 11176–11180. https://doi.org/10.53730/ijhs.v6nS6.13085
32. N. Magon, H. Divakar, and A. Kriplani, "Editorial: the use, misuse, and abuse of hysterectomy," Journal of Mid-Life Health, vol. 4, no. 1, 2013.
33. Fram, K. M. ., Albasha, A. S. ., Fram, F. K. ., Fram, R. K. ., Bishara, S. ., Fram, M. K. ., Odetallah, F. R. ., Abdillat, L. I. ., & Alsbateen, G. Assessing the Patterns of Gynecological Cancers Treated at Jordan University Hospital: A Retrospective Study. Achievements and Challenges of Medicine and Medical Science Vol. 1, 155–165. https://doi.org/10.9734/bpi/acmms/v1/2861. 2024.

# عندما يكون استئصال الرحم هو الحل الأفضل: كيف يمكننا تحسين نتائجه؟ تجربة مستشفى تعليمي

***أيمن القطاونة[1]، كميل فرام[1]، شوقي صالح[1]، فرح فرام[1]، رند فرام[1]، ندى أبو حجله[1]، فرح أبو شيخة[1]، أمواج فرجات[1]، بنان الطراونة[1]، رولا بيضون[1]، موسى فرام[1]، رسل المعلا[1]، أميرة حمدان[1]، نور أبو مرة[1]، غدير السباتين[1]، ليان العتيلي[1]، سجى الخلايلة[1]، جود العدوان[1]، تمارا العزة[1]***

[1] قسم النسائية والتوليد– مستشفى الجامعة الأردنية، الجامعة الأردنية/ عمان– الأردن

**Received:** February 10, 2024

**Accepted:** August 20, 2024

**DOI:** https://doi.org/10.35516/jmj.v59i1.2366

**الملخص**

**الخلفية والاهداف:** الغرض من هذه الدراسة والمراجعة لتحليل المؤشرات والمضاعفات أثناء العملية والتقارير التشريحية النهائية لجميع عمليات استئصال الرحم التي أجريت تحت رعايتنا خلال فترة الدراسة في مستشفى الجامعة الأردنية. الهدف النهائي للدراسة هو تسليط الضوء على كيفية تحسين نتائج العمليات الجراحية الكبرى بكل معطياتها مثل استئصال الرحم عندما يتم تدريب الطواقم الطبية وتحسين مهاراتها الجراحية بروح الفريق الواحد والممارسة الجراحية لمثل هذه العمليات الجراحية المعقدة بشكل فعال وتعليمها بشكل صحيح. أن استيعاب خطوات الإجراء تصبح مثل الطبيعة الثانية وجزء من الذاكرة العضلية للعملية أثناء الممارسة والمتابعة، ويجب أن يكون الهدف الأول للتعليم في المستشفيات التعليمية التي تطبق مناهج الإقامة التدريبية الممنهجة.

**منهجية الدراسة:** هذه دراسة مراجعة تشمل جميع المرضى الذين خضعوا لعملية استئصال الرحم من يناير 2020 حتى يوليو 2023.

**النتائج:** خضع ما مجموعه 423 مريضة لعملية استئصال الرحم طوال فترة الدراسة. تبين أن النزيف المهبلي غير الطبيعي باعتباره السبب الأكثر شيوعًا، في حين أن الورم الخبيث هو السبب التالي. تشير نتائ الدراسة أن إصابة المثانة هي المضاعفات الأكثر شيوعًا أثناء العملية، حيث يكون النزيف هو المضاعف التالي، بينما تقع عدوى التهاب جرح العملية على رأس قائمة المضاعفات المتأخرة بعد العملية الجراحية. تشير نتائج فحص الأنسجة أن الحالات الحميدة هي الأكثر شيوعاً وبشكل رئيسي الأورام الليفية والعضال الغدي فهي أكثر النتائج التشريحية المرضية شيوعًا تليها الأورام الخبيثة.

**الاستنتاج:** يبقى استئصال الرحم مؤشرا دقيقا وعلامة مميزة للمهارات الجراحية، وإن اكتساب مهارة استئصال الرحم بمختلف الطرق ومهما كانت المبررات ضمن برنامج تدريبي محكم يمنح الجراح وسام الثقة ضمن برنامج تدريبي واضح ومبرمج، ويمكننا الحكم عليه من خلال اختصار عامل الوقت وتراجع معدل مضاعفات العمليات الجراحية. يساعد عامل الوقت والممارسة الصحيحة في المنحنى الخطي الصاعد للمهارات الجراحية المكتسبة، مما يعكس انخفاضًا تدريجيًا في معدل المضاعفات الجراحية بشكل عام.

**الكلمات الدالة:** استئصال الرحم، المبررات، المضاعفات المحيطة بالجراحة، نقل الدم، فحص زراعة الأنسجة.