

Gaining prowess in the art of hysterectomy, reflections and complications; a teaching hospital experience

Abstract

Objective: The purpose of this audit is to analyze the indications, 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 is to clarify the importance of acquiring brain surgical skills during practice and follow-up. It should be a target present in teaching hospitals that adopt educational residency programs.

Methods: This is a retrospective study involving all patients who underwent hysterectomy from January 2017 till January 2020.

Results: a total of 245 patients underwent hysterectomy (regardless of the type) during the study period. The most common indication was abnormal vaginal bleeding followed by malignancy. The most common intraoperative complication was bladder injury followed by bleeding. The most common postoperative complication was wound infection followed by hematoma. The most common histopathology was benignly followed by malignancy.

Conclusion: hysterectomy is a surgical procedure commonly performed to alleviate health welfare; nevertheless, in some situ, actions it is portrayed as a lifesaving procedure. Unsurprisingly, the significance and consequences of related complications mandate for patients planned for the procedure to be appraised thoroughly and adequately before surgery. The aim and art of refining and improving acquired surgical skills and experience portrayed intraoperatively errors a decline in complications rate. Time and practice aid to the ascending linear curve of gained surgical skills, which mirrors a gradual drop in the complications rate.

Keywords: hysterectomy, perioperative complications, blood transfusion, histopathology

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Introduction

For some, pregnancy and menstruation are crucial aspects of femininity. Losing the capacity for both in a single procedure can be a lot to process for some people. Even if you're excited by the prospect of not having to worry about pregnancy or menstruation, conflicting feelings can come up after the procedure. Hysterectomy is the cardinal remedy for many benign and malignant gynecological and obstetric conditions; thus, it is arguably the most common gynecological procedure among women of reproductive age following cesarean section.¹ It can be a life-sustaining and resuscitative procedure.² Nevertheless, individual patient attributes and case interrelated risk factors are essential in deciding the optimal approach that offers a minuscule probability of complications.

Globally, approximately 600,000 hysterectomies are performed in the United States annually,³ 72,000 in France 80,000 in the UK, and 75,000 in Germany.⁴ At the same time, about 300 hysterectomies are carried out in our hospital every year.⁵ Reported indications of scheduled hysterectomies vary from benign conditions to gynecological malignancies. Despite being a less frequently reported indication, lifesaving cases of postpartum hemorrhage are the category of much consideration and scrutiny. Hysterectomy is surgery, like any other, associated with intraoperative and postoperative complications. Unexpectedly, data on determinants of complications in women undergoing hysterectomy is scarce. However, the rates of complications have been reported in an extensively wide range from 0.5% to 43%.⁶

Patient characteristic features that aid to govern the choice of the surgical approach include, but are 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, the surgeon's preference is guided by their experience and training, and the patient's fondness is paramount in the decision-making process.

When considering the downsides of the traditional abdominal approach, including; lengthy hospital stays and recovery, more significant pain, and increased risk of infection, it is unsurprising that there has been a decline in reliance on the abdominal route of hysterectomy globally. Despite that, it is still the preferred approach by some surgeons. It is also the cornerstone of other approaches due to the high conversion rate from other modalities of hysterectomy to the abdominal one.⁷ The abdominal approach is the one most adopted in our hospital to allow the residents the chance and allow them to be trained in surgery's arts and refined skills. Proper Supervised practice is fundamental for obtaining any handsome skill. The decision is the crucial part as via the physiological functions, the female is given an exclusive function of pregnancy and childbirth through the uterus to maintain human offspring, and this is crucial and exclusive for femininity. In its actual meaning, the menstrual cycle means the failure of pregnancy. Therefore, it has no health value after the end of the reproductive age stage or the completion of the family members contract, and when there is a justification for hysterectomy as a curative treatment, feminine features speak of the hidden fear

of crucial aspects of femininity; Anxiety, turmoil, and conflicting accounts, although the uterus and the menstrual cycle are not a distinct female sign of a certain age.

This study's objective was to deduce the predictors of optimal hysterectomy care. Related complications with the classical open abdominal approach carried out during the study period when the decision for hysterectomy is the ideal solution for the medical complaint, keeping in mind the paramount goal is to accompany the medical care provided to patients as a priority and to allow acquiring surgical skills for new generations in residency programs.

Materials and methods

We carried out an inquiry into the records of patients who underwent hysterectomy during the study period. A total of 245 consecutive hysterectomies were performed under our care in our institution at JUH, the only tertiary hospital in our capital Amman, from January 2017 to June 2020. Those were deemed eligible to be enrolled and reviewed in this study. The demographic data of patients the information regarding the indications for surgery, intra, and post-operative complications, were used to outline the detailed analysis of the surgical procedure and the curve of complications occurrence and prevalence over time. We also reviewed the histopathology reports.

For this study, the complications were categorized as defined by Decker et al.⁸ They included intraoperative bleeding or organ injury, infection, fever, hemorrhage requiring transfusion (any operative and post-operative bleeding), and coagulation disorders. The study was conducted after sanctioned by Institutional Review Board (IRB), the Ethics Committee, and the Scientific Research Committee (SRC) at our hospital. We employed the SPSS (Statistical Package for the Social Sciences) for data analysis. The essential statistical analysis values of the study were calculated using Chi-square and Wallis test. A written consent signed by 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; they were also assessed by the same surgeons (K.F, N.M). The procedure, routine of care, patient's concerns, and path to recovery were all discussed in-depth. Mainly, all patients underwent diagnostic hysteroscopy D&C before the planned procedure. Customarily, patients were admitted one day before the surgery unless medical evaluation was needed preoperatively,

including respiratory, cardiac, and anesthetic evaluation. A detailed history with a complete physical examination was performed on admission. The investigations included a total blood count, 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 cogency 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 to post-operative care and follow up.

Results

A total of 245 women who underwent hysterectomy during the study period extended from 2017 to 2020 were suitable to be included in the study. Records were obtained, and information was analyzed. The most common surgical approach was an abdominal one. Regarding the demographic data for all cases, the mean age was 50 years; the mean age was 77.77kg, the body mass index (BMI) was 30.14 with gravidity mean 5.44 and parity mean 4.4 as illustrated in Table 1. Abnormal vaginal bleeding was the main indication for hysterectomy in 109 women (44.5%), followed by malignancy in 54 women (22%), while the least indication was due to fibroids in 3 women (1.2%), as seen in Table 2. Simple hysterectomy was the most common type as performed in 130 women (53.06%), followed by radical hysterectomy in 59 women (24.1%), as illustrated in Table 3. The mean operative time was 1.02 hours in cases of abnormal vaginal bleeding with a standard deviation of 0.12. The maximal time consumed in the morbid adherent placenta with a mean of 1.35 hours, standard deviation 0.28, as clarified in Table 4. Table 5 included the operative time related to the type of hysterectomy, where the mean was 1.07 hours for simple hysterectomy and 1.23 hours for radical hysterectomy. In Table 6, it illustrated that a total number of 43 women (17.5%) received blood transfusion preoperatively due to anemia, while six women (2.4%) received blood intraoperatively and 14 women (5.7%) received the blood postoperatively. The final histopathology report for the studied group revealed that 182 women (74.3%) had benign disorders. In comparison, 31 women (12.7%) had endometrial malignancy, 15 women (6.1%) had ovarian malignancy, and six women (2.4%) women were having cervical malignancy, as clarified in Table 7.

Table 1 Demographic data for hysterectomy cases during the study period: 2017-2019

Parameter	2017	2018	2019	Total
Number, Patients: (%)	68 (27.8%)	85 (34.7%)	92 (37.6%)	245 (100%)
Age (mean) years: (SD)	51.47 (9.48)	49.09 (9.2)	50.1 (7.85)	50.13 (8.81)
Weight(mean) kg: (SD)	76.95 (17)	77.28 (15.1)	78.85 (15.9)	77.77 (15.6)
Height(mean) cm: (SD)	161.1 (7)	160.16 (7)	161.38 (5)	160.8 (6.3)
BMI (mean) Kg/M2 : (SD)	29.69 (6.3)	30.33 (7.3)	30.30 (5.1)	30.14 (6.3)
Gravidity (mean): (SD)	5.6 (4.3)	3.1 (5.52)	5.25 (2.8)	5.44 (3.4)
Parity (mean): (SD)	4.5 (2.9)	4.5 (2.60)	4.1 (2.10)	4.4 (2.5)

Table 2 Indications for hysterectomy cases during the study period: 2017-2019

Indication/ percent (%)	2017	2018	2019	Total
Abnormal vaginal bleeding	27 (39.7%)	41 (48.2%)	41 (44.6%)	109 (44.5%)
Malignancy	15 (22.1%)	18 (21.9%)	21 (22.8%)	54 (22%)
Fibroids	12 (17.6%)	11 (12.9%)	12 (13%)	35 (14.3%)
Morbid adherent placenta	5 (5.7%)	8 (9.4%)	8 (8.7%)	21 (8.6%)
Postmenopausal bleeding	2 (2.9%)	5 (5.9%)	3 (4.3%)	10 (4.1%)
Abdominal pain	5 (4.7%)	0 (0%)	4 (4.3%)	9 (3.7%)
Uterine prolapse	2 (2.9%)	1 (1.2%)	10(1.1%)	4 (1.6%)
Adenomyosis	0 (0%)	1 (1.2%)	2 (2.2%)	3 (1.2%)
Total	68 (27.76%)	85 (34.69%)	92 (37.55%)	245 (100%)

Table 3 Types of hysterectomy operations performed

Type		2017	2018	2019	Total
Simple	Number	30 (44.1%)	49 (57.6%)	51 (55.4%)	130
Radical	Number	14 (20.6%)	18 (21.2%)	27 (29.3%)	59 (24.1%)
Modified Radical	Number	2 (2.9%)	2 (2.4%)	0 (0.0%)	4 (1.6%)
Simple with BSO*	Number	12 (17.6%)	6 (7.1%)	13 (14.1%)	31 (12.7%)
Simple with PLA**	Number	2 (2.9%)	5 (5.9%)	1 (1.1%)	8 (3.3%)
Simple with BSO and PLA	Number	8 (11.8%)	5 (5.9%)	0 (0.0%)	13 (5.3%)
Total	Number	68	85	92	245

*BSO, bilateral salpingo-oophorectomy; **PLA, pelvic lymphadenectomy

Table 4 Operative time according to the indication

Indication/ Time (hours: minutes)	Number	Mean	St. Deviation	Minimum	Maximum
Abnormal vaginal bleeding	109	1.02	0.12	0.45	1.3
Malignancy	54	1.27	0.18	1	2
Fibroids	35	1.13	0.17	0.5	2
Morbid adherent placenta	21	1.35	0.28	1	2.3
Postmenopausal bleeding	10	1.03	0.16	0.45	1.3
Abdominal pain	9	1.05	0.15	0.45	1.3
Uterine prolapse	4	1.03	0.3	0.3	1.45
Adenomyosis	3	1.2	0.17	1	1.3
Total	245	1.12	0.2	30	2.3

Table 5 Operative time according to the type of hysterectomy

Indication	Number	Mean	Std. Deviation	Minimum	Maximum
Simple	130	1:07	0:19	0:30	2:30
Radical	59	1:26	0:20	1:00	2:00
Modified	4	1:23	0:13	1:10	1:40
Simple with BSO*	31	1:09	0:15	0:50	1:50
Simple with PLA **	8	1:03	0:13	0:45	1:30
Simple with BSO + PLA	13	1:15	0:22	0:45	2:00
Total	245	1:12	0:20	0:30	2:30

ANOVA, Significance between groups 0.000; * BSO, bilateral salpingo-oophorectomy; **PLA, pelvic lymphadenectomy

Table 6 Blood transfusion and its time

Indication		2017	2018	2019	Total
Pre-operative Anemia	Number	6 (8.8%)	15 (17.7%)	22 (23.9%)	43 (17.5%)
Intra- operative	Number	2 (2.9%)	3 (3.5%)	1 (1.1%)	6 (2.4%)
Post- operative	Number	8 (11.8%)	2 (2.4%)	4 (4.3%)	14 (5.7%)
Total	Number	68	85	92	245

Table 7 Histopathology results

Histopathology		2017	2018	2019	Total
Benign	Number	47 (69.1%)	65 (76.5%)	70 (76.1%)	182 (74.3%)
Endometrial cancer	Number	12 (17.6%)	11 (12.9%)	8 (8.7%)	31 (12.7%)
Ovarian cancer	Number	2 (2.9%)	5 (5.9%)	8 (8.7%)	15 (6.1%)
Cervical cancer	Number	2 (2.9%)	2 (2.4%)	2 (2.2%)	6 (2.4%)
Others	Number	5 (7.4%)	2 (2.4%)	4 (4.3%)	11 (4.5%)
Total	Number	68	85	92	245

Discussion

Hysterectomy remains a matter of diverse debate owing to its physical, emotional, economic, sexual, and medical significance to women. Being the most common gynecological surgery, Hysterectomy, selection of the most appropriate route is of paramount importance. The focus point of this study was abdominal hysterectomies performed in Jordan University Hospital over three years extending from January 2017 to January 2020, reporting the main parameters and surgical skills to improve the outcome of surgical measures. For some, pregnancy and menstruation are crucial aspects of femininity. Losing the capacity for both in a single procedure can be a lot to process for some people. Even if you're excited by the prospect of not having to worry about pregnancy or menstruation, conflicting feelings can come up after the procedure. Via the physiological functions, the female is given an exclusive function of pregnancy and childbirth through the uterus to maintain human offspring and this is crucial and exclusive for femininity. The menstrual cycle in its actual meaning means the failure of pregnancy. Therefore, it has no health value after the end of the reproductive age stage or the completion of the family members contract, and when there is a justification for hysterectomy as a curative treatment, feminine features speak of the hidden fear of crucial aspects of femininity; Anxiety, turmoil, and conflicting accounts, although the uterus and the menstrual cycle are not a distinct female sign of a certain age.

In our institution, in three years, a total number of 245 hysterectomies were performed by my team, most of which were via the abdominal approach as the preferable method in the teaching hospitals. Most of these were abdominal (75.5%), followed by vaginal (17.8%) and laparoscopic (6.6%). Almost the same observations come from Canada (abdominal 78%, vaginal 14%, and laparoscopic 5.9%).⁹ It's worthy of mentioning an important and distinguished fact about this surgical issue that surgeons must choose and prefer their surgical approach that matches their surgical skills, personal experience, or their surgical training. Additionally, surgeons with TAH as their most preferred surgical approach were also concerned about the surgical training of trainees and medico-legal pressures but less concerned than other surgeons about research evidence or best patient outcomes. The opportunity for surgeons to gain new procedural skills is an international, systematic training and mentoring programs applications

that need to be reviewed. It's worthy of mentioning that we at Jordan University Hospital have residency programs for medical specialties to take care of the new generations of specialist doctors, especially in the circumstances of limited training opportunities abroad.

In our study, the most common indication for hysterectomy was abnormal vaginal bleeding in 109 cases (44.5%) followed by malignancy in 54 patients (22%), and fibroids purse was the indication in 35 patients (14.3%). A study carried out by Broder et al. evaluating the appropriateness of recommendation for hysterectomy in the USA also found fibroid (60%) to be the most common indication followed by prolapse (11%).¹⁰ In a study from Canada, however, the most typical indication of hysterectomy was DUB (26.4%), followed by fibroid uterus (16.0%).⁹

We managed to operate in the different types of hysterectomies, that ranged from the simple type; type I, which was performed in more than half of the studied cases; 130 cases (53.06%), followed by radical hysterectomy; Meigs hysterectomy in 59 patients (24.1%), were modified radical hysterectomy, Wertheim's operation performed in 4 cases (1.6%). The same results were reported in a study carried out by Hodges et al. in 2014.¹¹

The results noticed our consuming time of the linear curve to gain skills was markedly improved over time. The operative time became shorter in the third year than the first year for the same indication and procedure, even for the type of hysterectomy, whether the abdominal or vaginal approach. The mean least operative time recorded when the indication was abnormal vaginal bleeding as recorded to 62 minutes (ranging from 45 to 90 minutes), while the mean least operative time reported in relation to the type of hysterectomy was in simple hysterectomy with bilateral salpingo-oophorectomy as recorded 63 minutes with a range-extended from 50 to 110 minutes. These results were parallel to those noticed by Bartels HC et al. and Aarts JW et al in sequence 12, 13. Perhaps the enthusiasm of the medical-surgical team and the persistence of its members at work was a good reason for these results.

There was a noteworthy discrepancy in estimated blood loss in relation to the indication of hysterectomy, with the most significant estimated blood loss in hysterectomy cases due to morbidly adherent placenta, 21 cases in which the mean estimated blood loss was 1488

ml, followed by malignancy cases, 54 cases which had a mean estimated blood loss of 335 ml. On the other hand, the indications with the least mean estimated blood losses were uterine prolapse and post-menopausal bleeding. The mean estimated blood loss for each was 200 and 205 ml, respectively. The mean estimated blood loss for other indications was between 229 ml for abnormal vaginal bleeding and 297 ml for fibroid. These results are relatively better than the previous results of such surgeries as mentioned by Sallam et al and Conner et al (14, 15 respectively). The blood transfusion and its time in relation to surgery is a crucial point in our study, where only 6 patients (2.4%) were transfused intra-operatively and all of them were from the placenta accreta group. We do not routinely prepare blood before this type of elective surgery if the hemoglobin level is more than 11 gm/dl. For the anemic or bleeding patients, we give the blood in the day before surgery as in total 43 patients (17.5%) received blood, as illustrated in Table 6.^{16,17} When Reviewing intraoperative complications, our study reported that 96.3% of all cases were not associated with any intraoperative complications. As for the rest of the issues, the most common intra-operative complication was bladder injury which occurred in 2% of all cases (5/245) over the three years. Similarly, Garry R et al.¹⁸ The least common complication to occur in this study was bleeding/hematoma formation which happened only in one case (0.4%), which is considered to be a landmark titled this study, in contrast to reports from Chill HH et al.¹⁹ The final histopathology results for the studies group were benign disorders in 182 women (74.3%), followed by malignancy in 52 women (21.2%) as seen in Table 7. The pathologic reports are similar to those published by other institutes.²⁰⁻²² According to Magon et al. hysterectomy is a surgery that has been used and misused, underused, and abused at different times in gynecology.²³ Hysterectomy is used commonly to improve the quality of life; however, at sometimes it is a lifesaving procedure.² As any surgical procedure is associated with a risk of complications, the indication should be carefully evaluated. Choosing a safe surgical method is one of the skills that can be improved in its practices, and its choice is left to the treating physician, which made the preferred surgical method in this study by opening the abdomen, which is what similar studies have shown.²⁴

Conclusion

Creative skills and surgical arts can only be acquired and improved upon by actual practice within the educational and scientific assets, which will contribute to growth in the level of performance and a decrease in the rate of surgical complications, provided that the surgical alphabet and ground rules are preserved, respected and developed. Proper patient selection is pivotal for a successful uncomplicated outcome for the hysterectomy procedure due to its major and significant effect on women undergoing surgery and their families, employers, and treating physicians. As surgeons, we cannot escape all surgical complications, we all out to abate the jeopardies for women going through hysterectomy. Every surgeon will experience a learning curve while performing a surgical procedure. Surgical outcome related to the procedure, surgical expertise can be judged by operative duration, complication rates, and various other outcome measures where proved techniques can be reflected and implemented for benign and malignant situations. The expansion of surgical skills and the steadfastness of the medical team was a direct cause of these results. Operative duration, complication rates can judge depending on surgical experts, and other outcome measures depending on the system e improved techniques can be reflected and implemented for benign and malignant situations. The expansion of surgical skills and the steadfastness of the medical team was a direct cause of these results.

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Authors' contributions

FRAM K: Protocol/ project development, Data collection, management, writing/editing, and language reviewing. Shawqi S: Protocol/ project development, writing/editing. Fram F: Data collection/ analysis. Manuscript and language reviewing. Fram R.: Data collection/analysis. Manuscript and language reviewing. All other authors had the same contribution in collecting the data, reviewing the files, and participating in the literature review. In the end, all researchers agreed with the content and the result.

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Conflicts of interest

The authors report no conflict of interest.

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