Review Article

Comparison between Laparoscopic, Abdominal, and Vaginal Hysterectomy in the Treatment of Gynecological Disease: A Retrospective Review Over Five Years

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Abstract

Background: *Hysterectomy is one of the most common gynecological surgery worldwide. It is usually performed through the abdominal, vaginal or laparoscopic routes. The objective of this study was to evaluate the role of laparoscopic, vaginal and abdominal hysterectomy in the management of gynecological conditions in terms of operative outcomes, such as operating time and estimated blood loss, as well as complication rates.*

Methods: *This was a retrospective cohort study carried out over a 5-year period (2016-2020) at Zahraa University Hospital. Patients who underwent abdominal vaginal, and laparoscopic hysterectomies performed for the treatment of multiple gynecological disease during that period were included.*

Results: *A total of 222 patients were included in the study, 168 (75.7%) patients in the abdominal hysterectomy group, 7 (3.2%) in the vaginal group, and 47 (21.1%) in the laparoscopic group. The mean age was 49.83±9.28 years for the abdominal, 67.14±13.79 for the vaginal, and 47.26±6.77 years for the hysterectomy groups. The most common indication for hysterectomy was the presence of uterine fibroids in the abdominal and laparoscopic groups (47.6% vs. 31.9% respectively) whereas it was pelvic organ prolapse for all patients in the vaginal group. Around 18% in the abdominal group had abnormal uterine bleeding compared to 6.4% in the laparoscopic group. Endometrial hyperplasia was the indication for 9.5% of the patients in the abdominal group while it was 25.5% for the laparoscopic group. Surgery duration was significantly the shortest for abdominal hysterectomy (2.30±0.92 hours), followed by vaginal hysterectomy (2.86±0.24 hours), and the longest was for laparoscopic hysterectomy (4.14±0.90 hours) (p-value<0.0001). The size of the uterus was slightly larger in the abdominal hysterectomy group though the difference was not significantly different. There were no significant differences in pre- and post-operative hemoglobin, or in estimated blood loss among the groups. There were no complications in the vaginal group. The rate of complications was similar between the abdominal and laparoscopic groups (15.5% vs. 17.0% respectively). The most common type of intraoperative complication in the abdominal group was bleeding requiring transfusion (34.6%), followed by bladder injury (11.5%). Only one patient in the laparoscopic group had intra-operative complication (bladder injury). As for post-operative complications, urinary retention and pyrexia related to wound infection were the most common in the abdominal group (7.7%). Seven patients in the laparoscopic group had post-operative complications. Most patients were readmitted to the hospital (98.8% vs. 100.0% vs. 95.7% in the abdominal vs. vaginal vs. laparoscopic groups respectively).*

Conclusion: *Laparoscopic hysterectomy is associated with less morbidity, and shorter hospital stay than the other techniques, but it has longer operating time and requires laparoscopic instrument and surgical skills. Advances in equipment, surgical techniques, and training make laparoscopic hysterectomy an efficient and well-tolerated technique.*

Introduction

Hysterectomy is one of the most common gynecological surgery worldwide [1]. In the United States more than 433,000 hysterectomies were performed during 2010 [1]. Over 56,000 hysterectomies were done in the United Kingdom in 2012 and around 305,000 in Germany between 2005 and 2006 [2,3]. The decision for hysterectomy is based on several factors such as indications for surgery, surgeon's training and preference, uterine size, presence and absence of any associated pelvic pathologies, and patient's choice [4].

In spite of the advances in laparoscopic techniques for hysterectomy, total abdominal hysterectomy remains the most common surgical approach in many countries, and the laparoscopic hysterectomy rate is relatively low, ranging from 6% to 23% [1,2,5]. In the United States during 2010, the distribution of the surgical technique was 54.2% abdominal, 16.7% vaginal, and 8.6% laparoscopic hysterectomies [1]. Similarly, in the United Kingdom 62% of hysterectomies were abdominal, 32% vaginal, and 6% laparoscopic [2].

Many studies comparing abdominal and vaginal hysterectomy concluded that the vaginal route was the preferred approach since it was associated with shorter hospitalization, less operative and post-operative complications, faster recovery, and early mobilization in comparison to abdominal hysterectomy [6-9]. Nevertheless, trends are changing and there is a growing acceptance of laparoscopic hysterectomy by many surgeons [10]. Several studies have shown that laparoscopic hysterectomy was a safe and effective technique associated with low complication rates, less blood loss and post-operative pain, as well as shorter hospital stay and quicker return to normal activities [11-13].

In light of the above, the aim of this study was to evaluate the role of total laparoscopic, vaginal and abdominal hysterectomy in the management of gynecological conditions in terms of operative outcomes, such as operating time and estimated blood loss, as well as complication rates.

Materials and Methods

This was a retrospective cohort study carried out over a 5-year period (2016-2020) at Zahraa University Hospital. Patients who underwent abdominal vaginal, and laparoscopic hysterectomies performed for the treatment of multiple gynecological disease during that period were included. Data were collected retrospectively from the patients' medical records. The abstracted data included the following: demographics, intra- and post- operative outcomes of patients such as age, body mass index (BMI), parity, mode of delivery (vaginal or cesarean section), indications for surgery, operative time, uterine size, post-operative hemoglobin levels, estimated blood loss and complications. Blood loss was measured by recording the contents of the fluid extraction device, which was used during the vaginal step, without any surgical pads.

All operations were performed in the lithotomy position. The drain was only used when indicated. The laparoscopic hysterectomies that were performed were according to the definitions by Reich and Roberts and modified by Johnson et al. [14,15].

Total Laparoscopic Hysterectomy
The uterus, including the cervix, was removed through the incisions or through the vagina.

Laparoscopic Supracervical Hysterectomy
The upper portion of the uterus was removed in pieces through the incisions, but the cervix remained in place.

Total Laparoscopic Hysterectomy with removal of ovaries
The uterus, ovaries, and fallopian tubes were removed through the vagina or the incisions.

During surgery, 10 mm laparoscope and advanced bipolar energy modalities were used. Including umbilicus 3 laparoscopic trocar were inserted. First, 10 mm trocar was inserted directly in 1 cm incision which was on sub umbilical area. The laparoscope was placed in abdomen after 3-4 L CO2 insufflation into the abdominal cavity. Second and third incisions were made on avascular right and left lower abdomen and two 5 mm trocars were placed in the abdomen.

Laparoscopic Hysterectomy Was Done Using Standard Technique with Few Specific Steps:
1. Mobilize the bladder: The anterior and posterior leaves of the broad ligament were separated with the help of Maryland forceps (Figure 1a).
2. The vesicouterine peritoneal fold was identified and hydro dissection was done in which 20-30 ml of saline was introduced with needle in the vesicouterine space for dissection of bladder (Figure 1b).
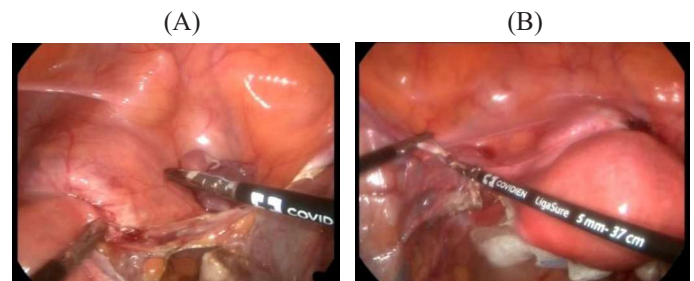
(A)   (B)

Figure 1: a) mobilizing the bladder, b) identifying vesicouterine peritoneal fold and performing hydro dissection

3. Identification of vesicouterine space and dissection of bladder with separation from uterus (Figure 2a).
4. we used LigaSure™ V 5 mm to seal and cut the uterine vessels and infundibulopelvic ligaments instead of using the bipolar cautery (Figure 2b).
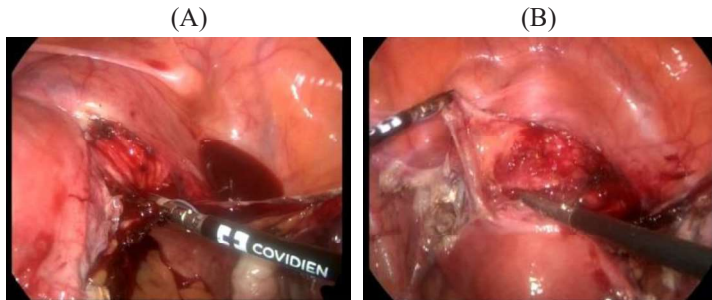

Figure 2: a) dissection of bladder with separation from uterus, b) sealing and cutting the uterine vessels

5. In the vaginal step of the laparoscopic procedure, Ligasure Vmax was used. In total laparospic hysterectomy uterosacral and cardinal ligaments were also sealed and cut with the Ligasure followed by a circular incision of the vagina using the hook unipolar cautery and the uterus was removed (Figure 3 a, b, c)
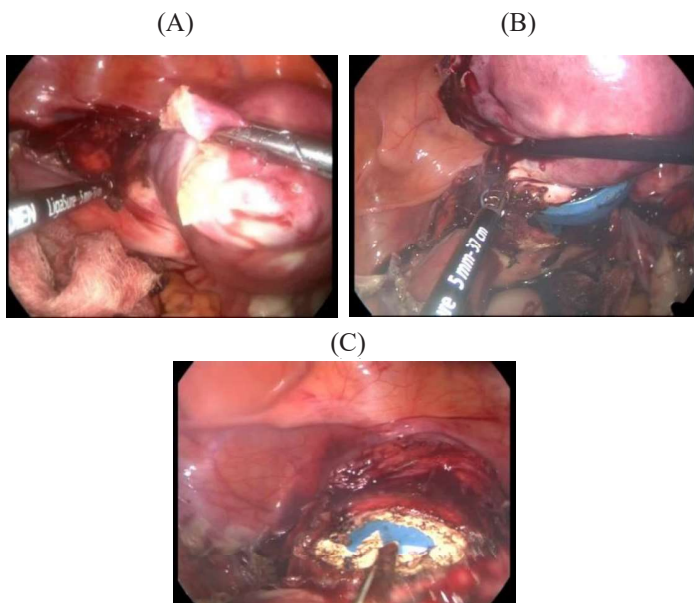

Figure 3: Uterosacral and cardinal ligaments were sealed and cut with the Ligasure followed by a circular incision of the vagina using the hook unipolar cautery

The vagina was also sutured laparoscopically. Vaginal cuff closure was done with the help of vicryl no 1 taking eight stitches one at each angle and one at the center.

As for vaginal surgery, it was performed to patients with uterine prolapse, unenlarged uterus, at least one vaginal birth, and without prior abdominal surgery. For large uteri, total abdominal hysterectomy was used. The techniques of total abdominal and vaginal procedures were similar to those described in TeLinde's Operative Gynecology [16]. All surgeries were performed by attending and senior gynecologists. All cases were operated under spinal and epidural or general anesthesia as decided by the anesthetist whichever was best for individual case. Post-operative management included IV fluids for 24-36 hours to maintain hydration. Catheter was kept in situ for 24 hours in the majority of patients. Antibiotics were given parenterally for 2 days and then orally for 5 days to prevent infection. Adequate analgesics were given. Patients who underwent laparoscopic hysterectomy were discharged from the hospital after 24 hours, while those who had vaginal hysterectomy were discharged after 48 hours and those with abdominal hysterectomy after 72 hours.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS, version 24) was used for analysis. Bivariate analysis was carried out by using the Chi square test for comparing categorical variables. Continuous variables were compared using One-way Anova. Categorical variables were presented as number and percent, whereas continuous variables were presented as mean and standard deviation. P-value of <0.05 was used to indicate statistical significance.

Results

A total of 222 patients were included in the study, 168 (75.7%) patients in the abdominal hysterectomy group, 7 (3.2%) in the vaginal group, and 47 (21.1%) in the laparoscopic group. Patients' characteristics are presented in Table 1. The mean age was significantly higher in the vaginal group compared to the other two groups (49.83±9.28 years for the abdominal, 67.14±13.79 for the vaginal, and 47.26±6.77 years for the hysterectomy groups, p-value<0.0001). There were no significant differences in the parity and BMI between the groups. The majority of women were multiparous and were Lebanese. Around 49% had all previous delivery by NVD in the abdominal group, 85.7% in the vaginal group, and 68.1% in the laparoscopic group (p-value=0.09) (Table 1).

The most common indication for hysterectomy was the presence of uterine fibroids in the abdominal and laparoscopic groups (47.6% vs. 31.9% respectively). On the other hand, the indication for hysterectomy for all patients in the vaginal group was pelvic organ prolapse. Around 18% in the abdominal group had abnormal uterine bleeding compared to 6.4% in the laparoscopic group. Endometrial hyperplasia was the indication for 9.5% of the patients in the abdominal group whereas it was 25.5% for the laparoscopic group (Table 2).

Table 1: Patients' characteristics

		Abdominal (n=168)	Vaginal (n=7)	Laparoscopic (n=47)	p-value
Age	Years	49.83±9.28	67.14±13.79	47.26±6.77	<0.0001
BMI	Kg/m2	29.85±7.37	29.10±2.94	31.07±7.92	0.57
Parity	Nulli parous	27 (16.1%)	0 (0.0%)	2 (4.3%)	0.06
	Multi parous	141 (83.9%)	7 (100.0%)	45 (95.7%)	
Gravida	0	27 (16.1%)	0 (0.0%)	2 (4.3%)	0.07
	1	10 (6.0%)	0 (0.0%)	2 (4.3%)	
	2	16 (9.5%)	0 (0.0%)	8 (17.0%)	
	3	29 (17.3%)	0 (0.0%)	7 (14.9%)	
	4	28 (16.7%)	2 (28.6%)	9 (19.1%)	
	5	24 (14.3%)	0 (0.0%)	9 (19.1%)	
	≥6	34 (20.2%)	5 (71.4%)	10 (21.3%)	
Para	0	29 (17.3%)	0 (0.0%)	2 (4.3%)	0.17
	1	12 (7.1%)	0 (0.0%)	3 (6.4%)	
	2	27 (16.1%)	0 (0.0%)	9 (19.1%)	
	3	32 (19.0%)	1 (14.3%)	14 (29.8%)	
	4	34 (20.2%)	2 (28.6%)	11 (23.4%)	
	5	16 (9.5%)	1 (14.3%)	3 (6.4%)	
	≥6	18 (10.7%)	3 (42.9%)	5 (10.6%)	
Abortion	0	112 (66.7%)	3 (42.9%)	29 (61.7%)	0.47
	1	29 (17.3%)	1 (14.3%)	2 (4.3%)	
	2	14 (8.3%)	2 (28.6%)	9 (19.1%)	
	3	6 (3.6%)	1 (14.3%)	2 (4.3%)	
	4	1 (0.6%)	0 (0.0%)	1 (2.1%)	
	5	3 (1.8%)	0 (0.0%)	0 (0.0%)	
	≥6	3 (1.8%)	0 (0.0%)	0 (0.0%)	
Nationality	Lebanese	168 (100.0%)	7 (100.0%)	44 (93.6%)	0.003
	Iraqi	0 (0.0%)	0 (0.0%)	3 (6.4%)	
Previous delivery	None	29 (17.3%)	0 (0.0%)	2 (4.3%)	0.09
	NVD	83 (49.4%)	6 (85.7%)	32 (68.1%)	
	CS	36 (21.4%)	1 (14.3%)	10 (21.3%)	
	NVD & CS	20 (11.9%)	0 (0.0%)	3 (6.4%)	

Table 2: Indications for hysterectomy

	Abdominal (n=168)	Vaginal (n=7)	Laparoscopic (n=47)	p-value
Uterine fibroids	80 (47.6%)	0 (0.0%)	15 (31.9%)	<0.0001
Endometrial cancer	9 (5.4%)	0 (0.0%)	1 (2.1%)	
Ovarian cancer	5 (3.0%)	0 (0.0%)	1 (2.1%)	
BRCA 1 & 2 +	1 (0.6%)	0 (0.0%)	0 (0.0%)	
Cervical cancer	4 (2.4%)	0 (0.0%)	0 (0.0%)	
Cervical high grade lesion	1 (0.6%)	0 (0.0%)	2 (4.3%)	
Pelvic organ prolapse	2 (1.2%)	7 (100.0%)	2 (4.3%)	
Endometrial hyperplasia	16 (9.5%)	0 (0.0%)	12 (25.5%)	
Abnormal uterine bleeding	30 (17.9%)	0 (0.0%)	3 (6.4%)	
Adenomyosis	11 (6.5%)	0 (0.0%)	7 (14.9%)	
Adnexal mass	5 (3.0%)	0 (0.0%)	0 (0.0%)	
Endometrial polyp	2 (1.2%)	0 (0.0%)	4 (8.5%)	
Abnormally adherent placenta	2 (1.2%)	0 (0.0%)	0 (0.0%)	

Regarding the outcomes, surgery duration was significantly the shortest for abdominal hysterectomy (2.30±0.92 hours), followed by vaginal hysterectomy (2.86±0.24 hours), and the longest was for laparoscopic hysterectomy (4.14±0.90 hours) (p-value<0.0001) (Table 3). The size of the uterus was slightly larger in the abdominal hysterectomy group though the difference was not significantly different. There were no significant differences in pre- and post-operative hemoglobin, or in estimated blood loss among the groups (Table 3).

There were no complications in the vaginal group. The rate of complications was similar between the abdominal and laparoscopic groups (15.5% vs. 17.0% respectively) (Table 3). The most common type of intraoperative complication in the abdominal group was bleeding requiring transfusion (34.6%), followed by bladder injury (11.5%), ovarian torsion (3.8%), sigmoid injury (3.8%), rectal injury (3.8%) requiring surgeon intervention and treatment with appendectomy. On the other hand, only one patient in the laparoscopic group had intra-operative complication (bladder injury) (Table 3).

As for post-operative complications, urinary retention and pyrexia related to wound infection were the most common in the abdominal hysterectomy group (7.7%), followed by ilius (3.8%), oliguria (3.8%), subcutaneous hematoma (3.8%), vault hematoma (3.8%), vesicovaginal fistula (3.8%), and intestinal perforation (3.8%). Subcutaneous hematoma was conservatively managed with anti-inflammatory drugs while vault hematoma required surgical intervention (suturing the vaginal route). On the other hand, 7 patients in the laparoscopic group had post-operative complications. These were ileus (25.0%), oliguria (25.0%), pyrexia (12.5%), atonic bladder (12.5%), and vesicovaginal fistula (12.5%) (Table 3). Most patients were readmitted to the hospital (98.8% vs. 100.0% vs. 95.7% in the abdominal vs. vaginal vs. laparoscopic groups respectively) (Table 3).

Table 3: Patients' outcomes

		Abdominal (n=168)	Vaginal (n=7)	Laparoscopic(n=47)	p-value
Surgery duration	Hours	2.30±0.92	2.86±0.24	4.14±0.90	<0.0001
Size of uterus	cm	11.88±3.14	10.14±1.07	10.94±1.22	0.05
Pre-operative hemoglobin	g/dl	11.80±2.24	12.60±1.65	12.40±1.87	0.17
Post-operative hemoglobin	g/dl	10.82±1.47	11.00±2.02	10.90±1.41	0.90
Estimated blood loss	ml	199.70±206.88	135.71±80.18	174.47±131.41	0.53
Complications	No	142 (84.5%)	7 (100.0%)	39 (83.0%)	0.50
	Yes	26 (15.5%)	0 (0.0%)	8 (17.0%)	

Intra-operative complication type	Bleeding/transfusion	9 (34.6%)	0 (0.0%)	0 (0.0%)	0.23
	Bladder injury	3 (11.5%)	0 (0.0%)	1 (12.5%)	
	Ovarian torsion	1 (3.8%)	0 (0.0%)	0 (0.0%)	
	Appendicitis	1 (3.8%)	0 (0.0%)	0 (0.0%)	
	Sigmoid injury	1 (3.8%)	0 (0.0%)	0 (0.0%)	
	Rectal injury	1 (3.8%)	0 (0.0%)	0 (0.0%)	
	Hypertensive crisis needed ICU	1 (3.8%)	0 (0.0%)	0 (0.0%)	
Post-operative complication type	Urinary retention	2 (7.7%)	0 (0.0%)	0 (0.0%)	
	Ileus	1 (3.8%)	0 (0.0%)	2 (25.0%)	
	Oliguria	1 (3.8%)	0 (0.0%)	2 (25.0%)	
	Pyrexia (>380C) related to wound infection	2 (7.7%)	0 (0.0%)	1 (12.5%)	
	Subcutaneous hematoma	1 (3.8%)	0 (0.0%)	0 (0.0%)	
	Vault hematoma	1 (3.8%)	0 (0.0%)	0 (0.0%)	
	Atonic bladder	0 (0.0%)	0 (0.0%)	1 (12.5%)	
	Vesicovaginal fistula	0 (0.0%)	0 (0.0%)	1 (12.5%)	
	Intestinal perforation	1 (3.8%)	0 (0.0%)	0 (0.0%)	
Admission	Once	166 (98.8%)	7 (100.0%)	45 (95.7%)	0.35
	Twice	2 (1.2%)	0 (0.0%)	2 (4.3%)	

Discussion

The results of the present study showed that during the past five years, 222 patients underwent hysterectomy at our institution. Of those, 75.7% had abdominal, 21.1% had laparoscopic and 3.2% had vaginal hysterectomy. Studies have shown that there are differences in the medical and economic outcomes of abdominal, vaginal, and laparoscopic hysterectomies [4,15]. Usually, the type of surgery depends on the experience of the operating surgeon and on underlying pathology [12]. The decision should be the optimal one for a given patient under specific circumstances [17].

In the present study the mean age was significantly the highest in the vaginal group (67.14±13.79 years), followed by 49.83±9.28 years in the abdominal, and 47.26±6.77 years in the hysterectomy groups (p-value<0.0001). Nevertheless, most hysterectomies are done in peri-menopausal age group. In a study conducted by Panda et al, the mean age for patients who underwent abdominal, vaginal and laparoscopic hysterectomy was 40.84 years, 41.44 years and 44.57 years respectively [18]. In the current study, parity and BMI were comparable in all three groups. In a study conducted by Ercan et al, the mean BMI was 26.1, 26.6 and 26.2 in the laparoscopic, abdominal, and vaginal groups respectively [19].

In the present study, the most common indication for hysterectomy was the presence of uterine fibroids in the abdominal and laparoscopic groups (47.6% vs. 31.9% respectively). Around 18% in the abdominal group had indication abnormal uterine bleeding com-pared to 6.4% in the laparoscopic group, while 9.5% had hyperplasia as an indication in the abdominal group compared to 25.5% in the laparoscopic group. A study by Aboulfotouh et al reported that the most frequent indications for hysterectomy in the laparoscopic group were endometrial hyperplasia (43.9%), fibroids (24.4%), and abnormal uterine bleeding (9.8%). While in the abdominal hysterectomy group, the most common indications were fibroids (62%), abnormal uterine bleeding (18.9%), and endometrial hyperplasia (6.3%) [12],

Regarding the outcomes, surgery duration was significantly the shortest for abdominal hysterectomy (2.30±0.92 hours), followed by vaginal hysterectomy (2.86±0.24 hours), and the longest was for laparoscopic hysterectomy (4.14±0.90 hours) (p-value<0.0001). Panda et al also reported that the mean operating time was the longest in the laparoscopic group (124.56±19.49 min), followed by (64.14±10.69 min) in the vaginal group, and (61.26±10.49 min) in the abdominal hysterectomy group [18]. Patel et al mentioned that surgery duration was 190 min for laparoscopic, 97.28 min for abdominal and 97.71 min for vaginal hysterectomy [20]. However, their surgery duration was shorter than the duration in our study.

In the current study, the size of the uterus was slightly larger in the abdominal hysterectomy group though the difference was not significantly different (11.88±3.14 cm vs. 10.14±1.07 cm vs. 10.94±1.22 cm for the abdominal, vaginal, and laparoscopic

groups respectively). In the study by Aboulfotouh et al, size of the uterus was significantly smaller in the laparoscopic group compared to the abdominal group (7.38 ± 1.92 vs 10.25 ± 3.84 cm, respectively). This could be due to selection bias by the gynecologists since many prefer performing laparoscopic hysterectomy on small uteri while those with larger uteri will be more likely to have their hysterectomies done via abdominal route [12].

In the present study, there were no significant differences in the post-operative hemoglobin among the groups (10.82±1.47 g/dl, 11.00±2.02 g/dl, 10.90±1.41 g/dl for abdominal, vaginal and laparoscopic groups respectively). These results were similar to those reported by Aboulfotouh et al and Tomov et al. [12,21]. Moreover, there were no significant differences in estimated blood loss among the groups of our study though the loss was slightly higher in the abdominal group (199.70±206.88 ml) compared to the vaginal (135.71±80.18 ml) and laparoscopic group (174.47±131.41 ml). A study by Uikey and colleagues reported that the estimated blood loss was 328.0±70.1ml, 192.0±21.1 ml, and 120.5± 43.7 ml in the abdominal, vaginal and laparoscopic groups respectively, indicating that the blood loss was greater in the abdominal group than the other groups [22].

In the current study, some intraoperative complications occurred in the abdominal and laparoscopic hysterectomy groups. Nine (34.6%) patients in the abdominal group had bleeding requiring blood transfusion compared to none in the laparoscopic group, whereas 3 (11.5%) cases in the abdominal group had bladder injury compared to 1 case (12.5%) in the laparoscopic group. Other reported complications in the abdominal group were bowel injuries. In the study by Uikey et al, blood transfusion was required intraoperatively in 6 cases of the abdominal group, 1 case of the vaginal group, and 2 cases of the laparoscopic group. Unlike our study, they did not report bladder, bowel or ureteric injury [22]. In a study by Panda et al, 3 cases in the abdominal group had hemorrhage requiring blood transfusion compared to 2 cases in the laparoscopic group. A single case in the laparoscopic group had bowel injury while urinary tract injury occurred in one case in the abdominal group and another case in the vaginal group [18]. Tomov and colleagues described that 5 cases in the laparoscopic group had bladder injury and 9 cases had bleeding compared to 1 and 2 cases in the abdominal group respectively [21]. Karaman et el concluded that the laparoscopic route is safe and effective in the prevention of ureteral, vesical, and vascular injuries [23].

With regards to overall postoperative complications, in the abdominal group, 2 patients had urinary retention, 2 had pyrexia related to wound infection, 1 had ilius, 1 oliguria, 1 vault hematoma and 1 intestinal perforation. Whereas in the laparoscopic group, 2 cases had ilius, 2 had oliguria, 1 pyrexia, 1 atonic bladder and 1 vesicovaginal fistula. Tomov et al mentioned that 8 patients in the abdominal group had wound infection [21]. Uikey et al reported that fever and wound discharge were more common in the abdom-

inal group. None of their patients had urinary retention or vault hematoma [22]. Panda et al had 6 cases of wound sepsis and 2 cases of vault hematoma in the abdominal group [18]. Laparoscopic hysterectomy was found to be associated with a lower risk of vault dehiscence compared with abdominal hysterectomy [24].

With respect to hospital stay, patients who underwent laparoscopic hysterectomy had the least hospitalization duration since they were discharged after 24 hours while patients who had abdominal hysterectomy had the longest stay as they were discharged after 48 hours. Hospital stay would be shorter when surgery is performed by the minimally invasive route [11,25]. Pather et al. reported that hospital stay was shorter in the laparoscopic group versus the abdominal group (1.82 vs 2.62 days respectively) [25]. Aboulfotouh et al also concluded that laparoscopic hysterectomy group had significantly less length of stay compared to the abdominal group (3.63 ± 1.28 vs 5.22 ± 4 days, respectively) [12]. In the study by Panda et al, the mean duration of hospital stay was 4.78 days in the laparoscopic group, 5.08 days in the vaginal and 8 days in the abdominal group [18]. As for post-operative pain, although it was not assessed in this study, several studies have shown that laparoscopic hysterectomy was associated with lower pain and analgesic consumption compared to abdominal hysterectomy [12,13,26].

Conclusion

Laparoscopic hysterectomy is associated with small scar, less morbidity, and shorter hospital stay than the other techniques. It could be a better route of surgery in obese patients in whom vaginal hysterectomy may be difficult. It could be an alternative to abdominal hysterectomy for those in whom the vaginal route is not feasible. It may be comparable to vaginal hysterectomy in terms of post-operative parameters, but it has longer operating time and requires laparoscopic instrument and surgical skills. In order to increase the use of the laparoscopic route in Lebanon, improvement in terms of surgical training and mentorship is required. Advances in equipment, surgical techniques, and training make laparoscopic hysterectomy an efficient and well-tolerated technique.

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