

## COMPARISON OF COMPLICATIONS BETWEEN TOTAL ABDOMINAL AND VAGINAL HYSTERECTOMY

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### ABSTRACT

**Background:** Hysterectomy is considered one of the major operations in the field of obstetrics and gynecology, and it ranks second after caesarean section.

Hysterectomy is performed in three ways:

1-Transvaginal hysterectomy: a surgical incision is made in the dome of vagina

2-Transabdominal hysterectomy: a surgical incision is made across the abdomen and can be:

A-Total hysterectomy: include complete hysterectomy with the cervix

B-Subtotal hysterectomy: include hysterectomy while preserving the cervix

C-Radial hysterectomy: include removal of the uterus and cervix with tissue around the uterus and tissue around the cervix with the upper third of vagina and scraping of pelvic nodes

3-Endoscopic hysterectomy

**Objective:** Main objective: This was a prospective study, conducted to analyze the intraoperative and postoperative complication between abdominal and vaginal hysterectomy. Second objective: Determine the best method of hysterectomy.

**Methods:** One hundred women scheduled for hysterectomy were randomised to either abdominal hysterectomy (n=50) or vaginal hysterectomy (=50).

**Design:** Randomised controlled trial. **Results:** The mean duration of surgery was shorter in vaginal hysterectomy group than in abdominal hysterectomy group (p-value=0.0001). Postoperative haemoglobin decline was evident in abdominal hysterectomy group (p-value 0.001), and there was no statistically significant difference in postoperative haemoglobin decline in vaginal hysterectomy group (p-value 0.09). The need for blood transfusion was higher in the abdominal hysterectomy group than in the vaginal hysterectomy group (p-value=0.04). Urinary infections were more common in the vaginal hysterectomy group than in the abdominal hysterectomy group (p-value 0.02). Incisional infections were more common in the abdominal hysterectomy group than in the vaginal hysterectomy group (p-value=0.04). The hospital stay was shorter in vaginal hysterectomy group than in abdominal hysterectomy group (p-value=0.0001). Bladder injury, ureteric injury, secondary haemorrhage and paralytic ileus were similar between the two techniques.

**Conclusion:** This study showed that vaginal hysterectomy was associated with less intraoperative complication and postoperative complications as compared to abdominal hysterectomy.

**KEYWORD:** Abdominal, hysterectomy, vaginal, haemoglobin, bladder, ureteric, surgery, infection, haemorrhage.

### INTRODUCTION

Hysterectomy is considered one of the major operations in the field of obstetrics and gynecology, and it ranks second after Caesarean section.

Hysterectomy is performed in three ways:

1-Transvaginal hysterectomy: a surgical incision is made in the dome of vagina.

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3-Endoscopic hysterectomy

Abdominal hysterectomy is still the most common method of hysterectomy

There are alternative ways to reduce this major surgery:

1. Endometrial ablation
2. Design of the uterine artery

Hysterectomy remains the best option if these procedures fail. There are many studies worldwide about complication of hysterectomy. There are few studies compared vaginal hysterectomy and abdominal hysterectomy and thus we made this study

## MATERIAL AND METHODS

The study was conducted at the labor ward of Tishreen University Hospital in Lattakia-Syria for one year(2021-2022).

### Study design

It was randomized control trial.

### Inclusion criteria

- 1-total hysterectomy
- 2-BMI less than30
- 3-Absence of cardiovascular,hepatic and renal diseases
- 4-Absence of previous uterine surgeries

### Exclusion criteria

- 1-Hysterectomy due to malignancy
- 2-Obstetric hysterectomy
- 3-Patients with cardiovascular,hepatic and renal diseases
- 4-Subtotal hysterectomy
- 5-BMI over 30

### Methods

One hundred women, who were to undergo hysterectomy and who had no history of uterine surgery, were randomly assigned to abdominal hysterectomy (n=50) and vaginal hysterectomy (n=50). The randomisation was by computer-generated, sealed envelopes that were opened by the physician just before surgery, and the results of the randomisation were known only to the single surgeon (O. F.) who performed all surgery. The envelopes were balanced in four blocks of 18 operations in each block. Using such large blocks diminished the risk that the operator could guess the next treatment allocation. Neither the physicians at the department, the nursing staff nor the women themselves were aware of the randomisation results.

The wound was dressed pre-operatively in plastic drapes in which drainage pockets were incorporated for collecting all fluids. By the end of the operation, the

operating sponges were wrung out before the pockets were evacuated into the suction bottle.

The individual providing anaesthesia recorded the duration of surgery, as well as the volume of fluids given intravenously and blood transfusion, if given. The women scored their post-operative pain every three hours, when awake, on a ten centimetre visual analogue scale. The post-operative hospital stay was defined as the duration from the day of surgery to the day of discharge. Haemoglobin analysis was performed for all women 6 hours after surgery.

Written informed consent, as approved by the ethics committee at Gothenburg University, was obtained from each participant.

Women in both groups scrubbed their abdomens the evening before surgery with a 4% chlorhexidine sponge for at least two minutes just before showering. The same procedure was repeated the next morning. Before surgery the pubic hair was removed from the operative field using a disposable razor and the abdomen was scrubbed with a solution of 0.5% chlorhexidine in alcohol. A urinary catheter was introduced before surgery and removed the same evening. Women received five 2g ceftriaxone one hour before surgery.

The incision was dressed with a sterile bandage that was removed on the second postoperative day. The temperature was recorded every 4 hours, and in cases where hyperthermia occurred after the first day of surgery, the necessary investigations were carried out to find out the cause such as urinary, respiratory, and surgical incision infections.

### Data analysis

Before beginning the study, a power analysis was performed, indicating that 31 women would be required in each study arm to demonstrate an intra-operative blood loss reduction from 500 to 375 mL with a standard deviation of 125 mL. This yields a level of statistical significance of  $< 0.01$  with a power of 80%. The estimated reduction of intra-operative blood loss was based on a minor pilot study. Continuous data were analysed with a nonparametric test (Mann-Whitney U test), and data were presented as median [25th, 75th centiles]. Categorical data were analysed with Fisher's exact test (two-tailed). P values  $< 0.05$  indicated a significant difference. Odds ratios (OR) and 95% confidence intervals (95% CI) were calculated for categorical data.

## RESULTS

One hundred women scheduled for hysterectomy were randomised to either abdominal hysterectomy (n=50) or vaginal hysterectomy (=50).The mean duration of surgery of abdominal hysterectomy was  $107 \pm 15$  min and that of vaginal was  $88 \pm 12$  min ( $p=0.001$ ). Postoperative haemoglobin decline was evident in abdominal

hysterectomy group(p-value0.001),and there was no statistically significant difference in postoperative haemoglobin decline in vaginal hysterectomy group(p-value0.09). The need for blood transfusion was higher in the abdominal hysterectomy group than in the vaginal hysterectomy group(p-value=0.04).There was 1(2%) case of bladder injury and 1(2%) case of ureteric injury in abdominal hysterectomy group and that of vaginal was0(0%) case of bladder and ureteric injury (p-value>0.05). Postoperatively there was 2(4%) cases of secondary haemorrhage in TAH group while1(2%) case

in vaginal hysterectomy(p-value=0.9).There were 5(10%) cases of paralytic ileus in abdominal hysterectomy and that of vaginal was 0(0%(p-value=0.4). There was 2(4%) cases of urinary infections in abdominal hysterectomy group while6(12%) case in vaginal hysterectomy(p-value=0.02). There was 5(10%) cases of incisional infections in abdominal hysterectomy group while2(4%) case in vaginal hysterectomy(p-value=0.04)... The hospital stay was shorter in vaginal hysterectomy group(1.5±1.3) than in abdominal hysterectomy group(6.7±1.5) (p-value=0.0001).

**Table 1: Demographic variables.**

Demographic variables	The research sample		P-value
	Abdominal hysterectomy	Vaginal hysterectomy	
(year)Maternal age	52.2±6.5	50.9±7.1	0.4
(m <sup>2</sup> /kg)BMI	26.3±1.9	25.5±1.7	0.1
Number of births	3.8±1.2	3.4±1.6	0.8

**Table 2: Duration of surgery.**

Duration of surgery (minute)	The research sample		P-value
	Abdominal hysterectomy	Vaginal hysterectomy	
	107±15	88±12	0.0001

**Table 3: Postoperative haemoglobin decline.**

Haemoglobin	The research sample	
	Abdominal hysterectomy	Vaginal hysterectomy
Before surgery	11.7±1.3	12.3±1.2
After surgery	9.9±0.8	11.4±1.2
P-value	0.001	0.09

**Table 4: Complication during surgery.**

Complication during surgery	The research sample		P-value
	Abdominal hysterectomy	Vaginal hysterectomy	
The need for a blood transfusion	9(18%)	2(4%)	0.04
Bladder injury	1(2%)	0(0%)	0.1
Ureteric injury	1(2%)	0(0%)	0.5

**Table 5: Non infective complications after surgery.**

Non infective complications after surgery	The research sample		P-value
	Abdominal hysterectomy	Vaginal hysterectomy	
secondary haemorrhage	2(4%)	1(2%)	0.9
paralytic ileus	5(10%)	0(0%)	0.4

**Table 6: Infective Complications After Surgery.**

Infective complications after surgery	The research sample		P-value
	Abdominal hysterectomy	Vaginal hysterectomy	
urinary infections	2(4%)	6(12%)	0.02
Incisional infections	5(10%)	2(4%)	0.04

**Table 7: The Length of Stay in the Hospital.**

The length of stay in the hospital (day)	The research sample		P-value
	Abdominal hysterectomy	Vaginal hysterectomy	
	6.7±1.5	1.5±1.3	0.0001

## DISCUSSION

The present study is a controlled prospective study involving only one surgeon. This design guarantees a highly standardised operating technique. The randomized prospective design lowers the risk of bias regarding background factors. One major finding of the present study was vaginal hysterectomy resulted in lower blood loss during surgery compared with abdominal hysterectomy. The intra-operative blood loss was measured using a sensitive sampling method. One other major finding of the present study was vaginal hysterectomy resulted in reduced operating time compared with abdominal hysterectomy. Jomard and masri<sup>[14]</sup>, in a retrospective study, also found an operating time reduction with vaginal hysterectomy.. In a recent prospective study, Irion et al<sup>[16]</sup> presented a reduction in operating time as well as a shorter time for return of bowel sounds when the visceral and parietal peritoneum were left unsutured compared with when they were sutured after hysterectomy.

In the present study only women scheduled for elective hysterectomy were included. The objective, as well as of having only one surgeon performing the surgery and only one other surgeon performing all the follow up, was to standardise the study conditions. In order to control study conditions, only women with no former uterine surgery were included because of adhesions in different layers will increase the operating time somewhat.<sup>[9]</sup> In some cases it is necessary to use scissors to enlarge the fasciae opening.

The primary outcome of the present study is that caesarean vaginal hysterectomy reduces operating time, blood loss and other complications during surgery. The operations in this study were performed by a very experienced senior surgeon which makes the operating times short in both groups. In clinical practice many hysterectomies are performed not by senior surgeon, but by residents. The operating time might then be considerably longer and blood loss during surgery might be greater<sup>[19]</sup>, and it remains to be seen whether the advantages found in this study are sustained.

## CONCLUSION

We conclude that vaginal hysterectomy was associated with less intraoperative complication and postoperative complications as compared to abdominal hysterectomy.

## RECOMMENDATION

1. It is recommended to use the vaginal route of hysterectomy because its superiority in multiple advantages that lead to reducing the morbidity associated with abdominal hysterectomy, in the absence of any contraindications to vaginal hysterectomy.
2. Further studies should be conducted to investigate long-term morbidity, including a large number of patients with a better follow-up period.

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