Clampless vaginal hysterectomy in women with nonprolapse: evaluation of a new technique

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ABSTRACT

Background: Vaginal hysterectomy is the least invasive method of removal of uterus. Most of hysterectomies can be performed vaginally. The lower rate of vaginal hysterectomy is not only due to the relative contraindications to the vaginal route of hysterectomy but also due to the technical barriers in the mind of most surgeons to deal with inadequate accessibility, poor visibility and effective hemostasis even after considerable experiences. I aim to evaluate a clampless technique for vaginal hysterectomy in comparison to the standard technique in patients without genital prolapsed.

Methods: After ethical approval, 46 women admitted to Gynecology Department, Mansura University Hospital for hysterectomy for benign lesions during the period from May 2009 to November 2011 had been divided to 2 groups; group (A): comprised 21 women in whom a clampless technique used, and group (B) comprised 25 women in whom the standard technique using clamps has been used.

Results: The study comprised 46 women assigned for vaginal hysterectomy for benign indication mostly abnormal uterine bleeding. They were divided randomly into 2 groups; group- A (21 women), for whom a clampless vaginal hysterectomy was performed, while the other group- B (25 women) used as a control (standard) group for whom the standard technique for vaginal hysterectomy was performed.

There were no statistically significant difference between both groups regarding the demographic data (p- value > 0. 05) in all. The mean age for both groups was 51.7 and 52.0 years respectively. The mean gravidity was 4.14 and 4.92 respectively. Mean parity for group A was 3.47 and that for group B was 3.16. T he BMI was 29.28 kg/m2 for group A while 29.16 kg/m2 for group B.

No statistically significant differences were found between both groups as regards the preoperative uterine volumes 232.8 mL vs. 213.0 mL respectively. The mean operative time (in minutes) for vaginal hysterectomy in group A was 92.3±7.45 while it was 94.0± 5.86 with no significant difference between both groups. The mean values of pre and postoperative hemoglobin concentrations were not significantly different in the two study groups (Figure 1).

Conclusion: Finally we can conclude that clampless vaginal hysterectomy is a technique that can be practiced as alternative to traditional technique using clamps.
Keywords: clampless, vaginal, hysterectomy

INTRODUCTION

Vaginal hysterectomy is the least invasive method of removal of uterus. Most of hysterectomies can be performed vaginally. The lower rate of vaginal hysterectomy is not only due to the relative contraindications to the vaginal route of hysterectomy but also due to the technical barriers in the mind of most surgeons to deal with inadequate accessibility, poor visibility and effective hemostasis even after considerable experiences (1).

There is considerable evidence from observational and uncontrolled studies showing that vaginal hysterectomy is associated with several advantages over abdominal hysterectomy . Apart from the cosmetic benefit , complications are less frequent , recovery is faster and overall treatment costs are reduced (2). The advent of laparoscopic hysterectomy has not altered these conclusions (3).

Non-descent vaginal hysterectomy is a more skilled procedure and has a learning curve; however, it can be mastered provided the correct approach and technique is adopted (4). In this study, I tried to evaluate a new technique in which I ligate the uterine pedicle without clamping them first using a pair of aneurysm needles a right and a left aneurysm needles.

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Patients & Methods

The study was approved by Mansura medical research ethics committee. Women admitted to Gynecology Department, Mansura University Hospital for hysterectomy for benign lesions during the period from May 2009 to November 2011 had been divided to 2 groups; group (A): comprised 21 women in whom a clampless technique used, and group (B) comprised 25 women in whom the standard technique using clamps has been used.

For all women included, complete physical examination was performed to exclude the non appropriate cases included in the exclusion criteria. Trans vaginal ultrasound was performed to each woman to confirm the data of local gynecologic examination and to estimate the uterine volume using the formula (uterine volume= length x width x depth x 0.542) . These measurements excluded the cervix. Cases with uterine volumes more than 400cm3 were excluded from the study. An informed consent was taken from each woman included.

Exclusion criteria included those with uteri larger than 12 weeks gestational size, uterine volume>400 cm3, presence of adnexal masses > 8cm, fixed uterus on bimanual examination, previous pelvic operations (including cesarean section), suspicion of malignancy, narrow sub-pubic angle : less than 2 finger breadth, presence of genital prolapse.

The technique:

For both groups; the patient is put in lithotomy position, with regional or general anesthesia according to the choice of the anesthetist, sterilization and draping with sterile towels. Vagina and cervix swapped with gauze soaked in 10% povidone iodine solution, insertion of urinary catheter, bimanual examination to confirm the uterine size, mobility, and presence of any adnexal or pelvic masses. Two of multi-toothed volsellum will be applied to the cervix one for each cervical lip for traction. Cervical circumcision performed with scalpel, then dissection of an area of 3cm all around the cervix. The volsellum applied the posterior cervical lip is lifted up to expose the posterior fornix. The cul-de-sac is opened with a scissors .The the right uterosacral ligament is palpated between the thumb and index of the right hand making sure the no adhesions in the vicinity.

In group A: A right aneurysm needle loaded with double strand polyglycolic acid suture number 1 is passed around the right uterosacral pedicle, after loosing the suture material each strand will make a ligature, thus we will have 2 proximal ligatures; the second should be cut long leaving an adequate length of suture material for the purpose of vault suspension. The same aneurysm needle with a single strand polyglycolic acid suture is re-inserted half a centimeter distal to the last knot to make a distal ligature. The pedicle is cut with a scissor between the proximal 2 ligature and the distal one. The same is done on the left side using a left aneurysm needle. The index finger is inserted adjacent to the cervix to get around the mackenrodt-uterine pedicle with anterior retractor to elevate the bladder. An ipsilateral aneurysm needle with double strand polyglycolic acid suture number 1 is passed through the course of the finger applying 2 proximal ligatures to the mackenrodt-uterine pedicle the 2nd ligature is left long for vault suspension. A distal ligature is placed a centimeter distal by reinsertion of the appropriate aneurysm needle. The pedicle is divided between the 2 proximal and the distal ligature.
The peritoneum of the uterovesical pouch is opened over the uter-

ine fundus after pushing the fundus anteriorly by 2 fingers in the cul-de-sac, then the infundibulopelvic pedicle is ligated & divided using the same technique as with the other 2 pedicles. The uterus is removed, pedicles checked up for bleeding, ovaries inspected, then the peritoneum closed, and suspension suture tied in a criss-cross pattern, the vaginal vault closed.

In group B: the pedicles are divided between two proximal and one distal clamps, the ligature is applied; the first (most proximal) is simple ligature, the second is transfixation with round needle. The other steps are the same.

Both techniques are compared regarding operative time, exposure during operation, suture material consumption, intra-operative bleeding, post-operative bleeding, bladder injury, ureteric injury, postoperative pain

Statistical analysis

Data was tested for normality using Kolmogorov-Smirnov test. An unpaired Student's t test was used to compare the parametric values of the two groups; Mann-Whitney U test was performed to compare the non-parametric values of the two groups. Serial changes in data were analysed with repeated measures analysis of variance. Chi square test was used to compare categorical data in the studied groups. Data was expressed as mean (SD) or numbers (percent). A value of $P<0.05$ was considered to represent statistical significance.

Results

There was no significant difference regarding the patients' demographic data (table-1). There were no significant differences in the preoperative data between both groups regarding the uterine volume, type of anesthesia, indication for hysterectomy, pre-operative hemoglobin concentration and preoperative endometrial histology (table-2, figure-1).
Regarding the postoperative (outcome) data, there was no significant difference between both groups in duration of surgery, postoperative uterine weight or postoperative hospital stay (table-3)

Table (1): Patients' demographics.

	Clampless vaginal delivery (n = 21)	Standard vaginal hysterectomy (n = 25)
Age (yrs.)	51.7 ± 3.22	52.0 ± 2.87
Gravidity	4.14 ± 1.19	4.92 ± 1.18
Parity	3.47 ± 1.07	3.16 ± 0.74
BMI (kg/m²)	29.28 ± 2.96	29.16 ± 1.84

Data are presented as mean ± SD. Abbreviation: BMI; body mass index. Significant when P <0.05

Table (2) Preoperative data:

	Clampless VH (n = 21)	Standard VH (n = 25)
Preoperative uterine volume (mL) Type of anesthesia	232.8 ± 43.56	213.0 ± 36.74
Spinal	13 (61.9%)	17 (68%)
General	8 (38.1%)	4 (1.6%)
Indications of hysterectomy		
Peri-menopausal bleeding	20 (95.2%)	19 (76%)
Post-menopausal bleeding	1 (4.8%)	3 (1.2%)
Preoperative endometrial histology		
Simple Endometrial Hyperplasia without atypia	13 (61.9%)	11 (44%)
Regressive endometrium under hormonal therapy	2 (9.5%)	3 (1.2%)
Secretory Endometrium	3 (14.3%)	4 (1.6%)
complex hyperplasia without atypia	2 (9.5%)	0 (0.0%)
Proliferative endometrium	1 (4.8%)	3 (1.2%)

Data are presented as mean ± SD. Abbreviation: BMI; body mass index. Significant when P <0.05.

Table (3) Outcome data

	Clampless vaginal delivery (n = 21)	Standard vaginal hysterectomy (n = 25)
Duration of surgery (min.)	92.3 ± 7.45	94.0 ± 5.86
Postoperative uterine weight (gm.)	202.1 ± 52.61	186.6 ± 43.61
Postoperative hospital stays (hrs.)	30.9 ± 5.61	28.9 ± 2.95

Data are presented as mean ± SD. Abbreviation: gm.; grams. Significant when P <0.05.

Disscussion

The study comprised 46 women assigned for vaginal hysterectomy for benign indication mostly abnormal uterine bleeding in Mansura university hospital. They were divided randomly into 2 groups; group- A (21 women) , for whom a clampless vaginal hysterectomy was performed, while the other group- B (25 women) used as a control (standard) group for whom the standard technique for vaginal hysterectomy was performed.

There were no statistically significant difference between both groups regarding the demographic data (p value > 0. 05) in all. The mean age for both groups was 51.7 and 52.0 years respectively. The mean gravidity was 4.14 and 4.92 respectively. Mean parity for group A was 3.47 and that for group B was 3.16. The BMI was 29.28 kg/m2 for group A while 29.16 kg/m2 for group B.

No statistically significant differences were found between both groups as regards the preoperative uterine volumes 232.8 mL vs. 213.0 mL respectively. Furthermore, there was no statistically significant difference between both groups regarding other preoperative data such as indication of hysterectomy, preoperative hemoglobin concentration, preoperative endometrial histology, type of anesthesia whether spinal or general.

The mean operative time (in minutes) for vaginal hysterectomy in group A was 92.3±7.45 while it was 94.0± 5.86 with no significant difference between both groups. The mean operative time was no much longer the reported by Ottosen et al 5 who reported a similar operative time for vaginal hysterectomy for non-prolapse in prospective study comparing three methods for hysterectomy. The mean values of pre and postoperative hemoglobin concentrations were not significantly different in the two study groups indicating insignificant difference in intra-operative blood loss. There was no need for blood transfusion in either group.

There were no intra-operative complications reported in either group. This may be explained by minimizing technical difficulties by proper selection of our cases according to the 1989 American College of Obstetrician and Gynecologists guidelines for hysterectomy route state that the choice "depends on the patient's anatomy and the surgeon's experience" and that it is usually accomplished in women with mobile uteri that are not larger than a uterus at 12 weeks of gestation (280 g.).

Finally It can be concluded that clampless vaginal hysterectomy is a technique that can be practiced with no disadvantages than the traditional technique using clamps. Moreover, placing of the ligature on the uterine pedicle seemed easier with the aneurysm needle than with the claps as it required less space so the clampless method may be beneficial with larger uteri and this may require another study to prove or disprove.

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