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Original Research Article

A pilot study evaluating the feasibility of non-descent vaginal hysterectomy for benign gynecological indications in women in rural India

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ABSTRACT

Background: Hysterectomy for benign indications is one of the common surgical procedures performed on women worldwide. Despite the available evidence favouring vaginal surgery still abdominal route is preferred in majority of women in rural India. Hence, this pilot study was done to determine the feasibility of Non-descent vaginal hysterectomy (NDVH) in rural India.
Methods: All women planned for hysterectomy for benign indications (with no or minimal pelvic organ prolapse) during a period of six months were enrolled after taking informed consent and subsequently, underwent NDVH. Data was analyzed retrospectively with respect to duration of surgery, average blood loss, complications of surgery and duration of stay in the hospital.
Results: All except one woman out of 37 women enrolled for the study had an un-eventful surgery with median duration of surgery [median 30 minutes; (range 30-55 minutes)], median hospital stay [(median 2 days) range 2-7 days], and minimal blood loss [median 50 ml (range 50-200 ml)]. There was one case of inadvertent cystotomy (diagnosed and repaired intra-operatively), and discharged in healthy condition on seventh post-operative day.
Conclusions: NDVH is a safe option for hysterectomy (in women without pelvic organ prolapse) for benign indications even in rural India. It has been found to be associated with short hospital stay, minimal blood loss and short recovery time.

Keywords: Benign indications, Hysterectomy, Non-descent vaginal hysterectomy, Rural India

INTRODUCTION

Hysterectomy is one of the most commonly performed surgeries in gynecology worldwide.[1] There are various routes for performing hysterectomy e.g. abdominal, vaginal, and laparoscopic or combination of these. Despite the definite advantage of vaginal route of surgery still abdominal route is being preferred in majority of women.[2-5] One of the major reason for preferring abdominal route is lack of technical expertise or non-availability of advanced equipment (as required for laparoscopic procedures).[1]

In developed world, less invasive treatment options such as endometrial ablation, thermal balloon therapy, uterine artery embolization or levonorgestrel releasing intrauterine system, laparoscopic hysterectomy, or robotic surgery, are leading to fall in the trends for total abdominal hysterectomy (TAH) with or without salpingo-oopherectomy. In developed world focus is increasing on

minimally invasive management options for benign gynecological diseases.[6]

However, the condition in developing countries is diametrically opposite, especially in rural areas. Women usually present very late to health care facility and desire a permanent cure to their disease at the cheapest rates available.[7,8] Further there are limited resources available in rural areas. The newer and lesser radical treatment options for gynecological conditions like laparoscopic hysterectomy and robotic surgery are not available in remote areas. Due to restricted availability, poor knowledge and higher costs, minimally invasive surgical options for hysterectomy like endometrial ablation, thermal balloon therapy and uterine artery embolization, are not practically feasible in rural areas. Therefore, hysterectomy; abdominal or vaginal, still remains the widely accepted and practiced treatment of choice for majority of gynecological diseases in rural areas.[1]

In recent times, there has been clear evidence in the favor of vaginal route over abdominal and laparoscopic route of hysterectomy.[9,10] However, still vaginal route is not the preferred by majority of the gynecologists. The primary reason for same is lack of technical expertise for vaginal route of hysterectomy. It is technically difficult to remove non-descent uterus vaginally. It was observed that gynecologists who include vaginal surgery in their armamentarium are better equipped to serve their patients.[11]

Hence, in order to ease the vaginal route of surgery for benign indications of hysterectomy, a new device Bi polar vessel sealer (BPVS) was used by our department of OBG. This device facilitated the vaginal route by providing better hemostatsis and lesser need of suture application.[12-17] Hence, to disseminate our experience of use of this instrument in facilitating vaginal surgery we conducted this retrospective study to assess the feasibility and advantages of vaginal surgery in rural tertiary care centre in north India.

METHODS

This retrospective study was performed in the Department of Obstetrics and Gynecology, at Dr. Rajendra Prasad Government Medical College Kangra at Tanda, Himachal Pradesh, India. This is a tertiary level teaching institute catering to the needs of adjoining rural and tribal population. In between October 2015 to March 2016, all women who underwent NDVH for benign gynecological indications in this institute were retrospectively evaluated with respect to feasibility of NDVH in rural setting.

Data of these women was retrospectively evaluated with respect to characteristics of the women. Additionally, outcomes assessed were duration of surgery, intra-operative complications, average blood loss and duration of hospital stay.

NDVH was performed with the help of bipolar vessel sealer (BPVS) [as shown in figure 1]. With the patient in the lithotomy position, para-cervical tissue was infiltrated with diluted epinephrine in normal saline (1:200,000). Then a circular incision was made around the cervix, the urinary bladder (UB) was separated anteriorly from uterus after opening the utero-vesical pouch and posteriorly pouch of douglas was opened. A vaginal wall retractor was inserted between uterus and UB anteriorly and uterus and rectum posteriorly. Afterwards, NDVH was done in three steps.

- Bilateral utero-sacral Mackenrodt's ligament complex was clamped and sealed by BPVS, and was subsequently cut by scissors.
- Then bilateral uterine arteries were sealed by BPVS and cut by scissors.
- Finally, uterus was bisected and each cornual end (consisting of ovarian ligament, fallopian tube and broad ligament) was sealed by BPVS and cut by scissors.

After delivery of the uterus, UB was catheterized to check for clear urine draining. Subsequently, vagina was closed by absorbable interrupted sutures (Vicryl No.1). All the women required only one suture for closure of vaginal vault.

The BPVS device consisted of a standard-size Heany-type clamp (as shown in figure 1) modified to accept a disposable bipolar electrode on the inner surface of its jaws. The clamp was used in exactly the same fashion as standard hysterectomy clamps. Pedicles were clamped and sealed, to be subsequently cut by scissor on the uterine side before the clamp was released and advanced to the next pedicle. Procedure time was measured from initial mucosal infiltration to complete closure of the vaginal cuff with satisfactory hemostasis. Blood loss was estimated. Additional data collected was size of uterine mass and postoperative morbidity. All women were requested to report immediately after discharge in the event of any un-usual symptom or at least after a period of four weeks. Postoperative complications were assessed via patient interview done on post operative visit.

Statistical analysis

Statistical analysis was performed using Microsoft Office excel 2007. Statistical analysis consisted of descriptive statistics. The normality of the distribution was assessed by the Kolmogorov-Smirnov test. Normally distributed data was presented as mean±standard deviation and non-normally distributed data was assessed as median and range.

RESULTS

There was a total of 37 patients in the study group. The demographic profile of women who underwent NDVH is shown in Table 1.

Table 1: Demographic profile of women who underwent NDVH.

Demographic Factor	Measurement
Age (in years)*	42 (36-51)
Parity*	2 (0-5)
• Multiparous (n)	33
• Nulligravida (n)	2
• Previous Cesarean section	2
BMI (in Kg/m^2)$\$\#$	23.4±0.84
Indications for surgery (n)	
• Symptomatic fibroid uterus	21
• Dysfunctional uterine bleeding	9
• Adenomyosis	7
Endometrial Biopsy (n)	
• Normal secretory endometrium	32
• Simple hyperplasia without atypia	4
• Complex hyperplasia without atypia	1
Size of uterus	
in weeks*	8 (6-16)
in grams$	244±186

*: Median (interquartile range), $: Mean±SD, #: BMI; body mass index

The median age of women undergoing NDVH was 42 years (range, 36 - 51 years). The mean BMI of women undergoing NDVH was 23.4±0.84 kg/m$^{2.}$ Of all the women who underwent NDVH there were two women with previous one cesarean each and two were nulliparous women. The median parity of the women was 2 (range [0-5]). Majority of the women underwent hysterectomy for symptomatic fibroid uterus not responding to medical management (n=21 [57%]).

Seven women (18%) had hysterectomy for adenomyosis not responding to medical management and nine women (24%) had hysterectomy for dysfunctional uterine bleeding not responding to medical management. Pre-operative endometrial biopsy revealed secretory endometrium in 32 (86%), simple hyperplasia without atypia in 4 (10%) and complex hyperplasia without atypia in one women (3%). The median size of uterus as measured in weeks was 8 weeks (range 6-16 weeks) and mean total uterine weight as assessed post operative was 244±186 grams.

The major outcomes assessed are shown in table 2. Median duration of surgery was 30 minutes (range 30-55 minutes), average blood loss was 50 ml (range 50-200) and average hospital stay was 2 days (range 2-7 days).

One nulliparous woman had inadvertent cystotomy which was diagnosed and repaired intra-operatively. Subsequently she was kept catheterized for seven days and had an uneventful recovery. There was no other intra-operative complication of the procedure. None of the women when interviewed (after a minimum period of four weeks) reported any major post-operative complication. All women are on regular follow up till date.

Table 2: Major outcomes observed in the study.

Outcome	Measurement
Duration of surgery*(in minutes)	30 (30-55)
Average blood loss*(in milliliters)	50 (50-200)
Average hospital stay* (in days)	2 (2-7)

*: Median (interquartile range)

DISCUSSION

Hysterectomy is one of the most commonly performed major surgical procedure in gynecology.[1] There are multiple routes for performing hysterectomy for benign indications (in a woman with non- prolapse uterus); abdominal hysterectomy, total laparoscopic hysterectomy, laparoscopically assisted vaginal hysterectomy, vaginally assisted laparoscopic hysterectomy, vaginal hysterectomy (also called NDVH in women with non prolpase uterus), and Robotic hysterectomy. According to the latest Cochrane review, vaginal hysterectomy (or NDVH) is the procedure of choice from all these options as it is associated with rapid recovery, faster return to routine activities, and fewer febrile episodes.[2]

Vaginal hysterectomy has been associated with decreased costs, shorter lengths of stay, and lower complication rates relative to abdominal hysterectomy and laparoscopically assisted vaginal hysterectomy.[3-5] It has been demonstrated that vaginal hysterectomy can be done in as many as 95% of patients presenting for surgery for benign indications.[3-5] Despite the available evidence in its favor, vaginal hysterectomy (in women with non-prolapse uterus) is not being commonly done.[3,5]

Additionally, in developing countries especially in rural areas two major factors are limiting in following minimal invasive approaches for hysterectomy for benign indications. First and foremost is availability of resources for advanced technology in terms of finances involved and secondly lack of technical expertise. With more stress being laid on maternal and child health, limited resources are available for catering to women in mid life especially in rural areas who suffer silently due to non-availability of these approaches at cheap rates.[1]

The primary reason for doing this pilot study was to assess the feasibility of this technique in our setting of rural India. Our institute caters mainly to obstetric population of adjoining six districts with an average annual load of 8,000 deliveries. With such a heavy load of obstetric patients, the gynecological patients especially with benign problems are often neglected. Hence this pilot study was planned to assess feasibility of NDVH as a gynecological surgery which is presumed to be associated with short duration of surgery, even patients

have a short hospital stay; thereby providing quality of care to women in middle life. We also used BPVS system for NDVH as it was shown to be associated with lesser expertise technically and is presumed to be a safe tool in the hands of not very experienced operators.[8] However, utmost care was used during its use so as to prevent any major injury to adjoining bowel or bladder. Even patients also feel better satisfied with this technique as it was associated with shorter hospital stay. The observed effects of short duration of surgery, less blood loss, short duration of hospital stay is consistent with the available literature.[2-7]

The cost effectiveness of this study could not be assessed as majority of women presenting to rural government institutes are below poverty line (BPL) and are covered by government benefit schemes. However, there is definite advantage with respect to cost effectiveness in terms of short duration of surgery and short hospital stay. Also, women who paid for items required during surgery had to mainly pay for disposable gloves, spinal needle and only one vicryl No.-1 [costing less than 1,000 rupees] (clamp of BPVS has been made available by the government, hence not being charged from the patient).

We agree with the opinion of Levy B et al, that adequate training for vaginal surgery should be offered to gynecological surgeons so as to decrease the incidence of abdominal or laparoscopic approach for hysterectomy in women with benign indications.[7]

The specific BPVS has an added advantage of usage in hands of even un-experienced surgeon who finds it really challenging to opt for vaginal route in women with morbid obesity, significantly enlarged uteri, narrow vaginal canals, and contracted pelvis.[7] BPVS even permit the less experienced vaginal surgeon an opportunity to expand the indications for vaginal hysterectomy.[7]

The BPVS device generates heat and has potential to cause extensive damage to adjoining structures, hence utmost care should be used while using this instrument near bowel or vagina.[7,8] However, no such injury was encountered in our experience.

NDVH is the preferred route of hysterectomy for benign indications. It is associated with short duration of surgery; less blood loss and short hospital stay. Additionally, use of BPVS for NDVH can help even relatively lesser experienced surgeons perform this technically demanding procedure with relative ease even in rural setting of developing countries.

This route of surgery (NDVH) should be actively promoted for providing better services to women requiring hysterectomy for benign indications especially in rural settings.

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