

# LAPAROSCOPIC ASSISTED VAGINAL HYSTERECTOMY VERSUS ABDOMINAL HYSTERECTOMY FOR BENIGN GYNECOLOGICAL DISEASES

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## ABSTRACT

To determine the safety and effect on quality of life of Laparoscopic assisted vaginal hysterectomy (LAVH) compared with total abdominal hysterectomy (TAH) in the management of benign gynecological diseases. Randomized controlled trial in Misurata Cancer Institute. Ninety women scheduled for an abdominal hysterectomy for benign gynecological diseases. The overall incidence of operative complications was 13% in LAVH group and 22% in TAH group, with an 4.4% conversion rate. The mean length of the procedure was greater in women having LAVH (85 minutes) compared to TAH (35 minutes), there was a difference in post-operative analgesia requirements between the two groups; TAH needed more analgesics and needed more hospital stay than LAVH group. The rate of postoperative recovery, satisfaction with the operation, and quality of life at four weeks post-operative were more with LAVH GROUP than TAH group. LAVH compared to TAH has the advantages of faster return to normal activity, shorter duration of hospital stay, lower intra-operative blood loss and fewer wound or abdominal wall infections but it has longer operation time, higher rate of lower urinary tract (bladder and ureter) injures and needs more experience.

## INTRODUCTION

Hysterectomy is one of the most commonly performed operations in gynecology departments<sup>(1)</sup>. in the USA, during 2000-2004, approximately 3.1 million hysterectomies were performed (approximately 600,000 per year). The most common indications for hysterectomy are symptomatic uterine leiomyoma (40.7%), endometriosis (17.7%) and prolapse (14.5%) When choosing the route and method of hysterectomy, the physician should take into consideration how the procedure may be performed most safely to fulfill the medical needs of the patient. Most literature supports the opinion that, when feasible, vaginal hysterectomy is the safest route by which to remove the uterus<sup>(2,3)</sup>.

However analysis of U.S. surgical data shows that abdominal hysterectomy is performed in 66% of cases, vaginal hysterectomy in 22% of cases, and laparoscopic hysterectomy in 12% of cases<sup>(4)</sup>.

A narrow pubic arch (less than 90 degrees), a narrow vagina, an un-descended immobile uterus, Nulliparity, prior cesarean section, and enlarged uterus have been proposed as contraindications for vaginal hysterectomy. However, many nulliparous women and women who have not given birth vaginally have adequate vaginal caliber to allow successful completion of the vaginal hysterectomy<sup>(5)</sup>.

Factors that may influence the route of hysterectomy for benign causes include the size and shape of vagina and uterus, accessibility to the uterus, extent of extra-uterine disease, the need for concurrent procedures, surgeon training and experience, available hospital technology, devices, and preference of the patient. When the uterus is enlarged, vaginal hysterectomy often can be accomplished safely by using uterine size reduction techniques such as wedge morcellation, uterine bisection, and intra-myometrial coning.

Extra-uterine disease such as adnexal pathology, severe endometriosis or adhesions may preclude vaginal hysterectomy, in these cases it may be prudent to visualize the pelvis with laparoscopy before deciding on the route of hysterectomy<sup>(6,7,8,9)</sup>.

Until 1990s, there were two techniques for hysterectomy, abdominal and vaginal. Observational studies suggest lower morbidity and quicker recovery in women having vaginal hysterectomy<sup>(10,11,12)</sup>. However most surgeons perform 75% to 80% of procedures by the abdominal route particularly when dealing with pelvic pathology or carrying out oophorectomy<sup>(13)</sup>.

A Cochrane review of 34 randomized trials of abdominal hysterectomy, laparoscopic assisted vaginal hysterectomy and vaginal hysterectomy, including 4,495 patients, concluded that vaginal hysterectomy has the best outcomes of these three routes, the review also found that when a vaginal hysterectomy is not possible, laparoscopic hysterectomy has many advantages over the abdominal hysterectomy<sup>(14)</sup>.

Laparoscopic assisted vaginal hysterectomy (LAVH) has been developed to allow laparoscopic techniques to be used to separate the uterus from the surrounding pelvic structures, the uterus being removed through the vagina, allowing rapid recovery and enabling oophorectomy to be achieved more easily than at vaginal hysterectomy<sup>(15,16,17)</sup>.

Several small randomized controlled trials have compared laparoscopic assisted vaginal hysterectomy (LAVH) and total abdominal hysterectomy (TAH)<sup>(18,19,20,21)</sup>. These concluded that LAVH usually took longer time but involved shorter hospital stay and convalescence with an incidence of major complications of 3% to 5%<sup>(22,23)</sup>. Studies have found higher costs for LAVH than TAH due to longer operation times and the use of disposable equipments<sup>(24,25)</sup>. We hypothesized that the laparo-

scopic approach would be associated with significantly greater patient satisfaction and more rapid recovery .

### METHODS

Ninety patients were recruited over a two year period (from January 2009 till December 2010) from gynecological outpatient clinics of Misurata Cancer Institute, They were divided into two groups, forty five patient had underwent LAVH while the other forty five had TAH, these patients were scheduled for hysterectomy for benign gynecological disease.

Informed consent was obtained by the medical staff and the randomization was performed excluding those who had previous pelvi-abdominal surgery with suspected pelvic adhesion, a uterine size in excess of 14 weeks or a requirements for oophorectomy, all operations were performed in Misurata Cancer Institute, Olympic laparoscopy with LigaSure or Ervavio 300D biclamp electrocautery were used, information was collected at the time of operation on anesthesia and details of operation, including the presence of pathology, complication, duration, and extra-surgery required.

Immediate post-operative progress was recorded including the time the patient spent in the gynecological ward and analgesia requirements, assessment was made of bladder function, pyrexia, urinary tract infection with positive culture, wound infection and superficial wound break down, blood was taken to measure hemoglobin concentration on the day before operation and 48 hours post-operatively, patients were discharged after they passed urine, flatus and felt able to cope at home, the patients were reviewed a week after discharge and four weeks after surgery.

### RESULTS

Ninety women were recruited to the study, forty five in each group (45 patients underwent LAVH and 45 patients underwent TAH), there was no significant difference in the general demographic characteristics of the patients or in the presence of pelvic pathology associated with the hysterectomy (table 1).

(Table 1) The demographic characteristics, the incidence of previous surgery and the presence of intra-abdominal pathology in the study groups, values are given as %.

Demographic & clinical features	LAVH	TAH
Mean Age ( years )	43	44.6
Body mass index (kg/m <sup>2</sup> )	24.4	26.8
Parity	78%	85%
Previous significant vaginal surgery	2%	2%
Previous abdominal surgery	0	4%
Previous caesarean section	2%	6%
Significant adhesion	0	6%
Uterine fibroids	0	2%
Sever endometriosis	0	2%

The principal indications for operation are illustrated in the (table 2), the menstrual problems were the most common indications in both groups (34 pa-

tients 75.5 % in TAH group and 39 patients 86.6 % in LAVH group), and pelvic pain (TAH =9 patients 20 %, LAVH = 2 patients 4.4 %), uterine prolapse 4 patients in LAVH group, one patient with uterine fibroids in TAH group and one patient had Dawn syndrome requested by her family to have abdominal hysterectomy for hygienic purpose .

Two patients (4.4 %) from LAVH group converted to abdominal hysterectomy because at diagnostic laparoscopy a very difficult LAVH was anticipated due to excessive pelvic adhesions (2 patients who were presented with pelvic pain).

(Table 2) Shows the principal indications for both study groups

INDICATION	LAVH	TAH
Menstrual problems	39 (86.5 % )	34 ( 75.5 % )
Pelvic pain	2 ( 4.5 % )	9 ( 20 % )
Uterine prolapse	4 ( 9 % )	0
Uterine fibroids	0	1 ( 2.25 % )
others	0	1 ( 2.25 % )

The duration of operation was significantly less for TAH group compared with LAVH group (table 3), the hospital stay is less in LAVH than TAH due to less pain and quick recovery which are the advantages of laparoscopic surgery compared to open laparotomy.

(Table 3)

	LAVH	TAH
Mean Length of operation ( min )	85	35
Total length of stay ( days )	3	6
Patients requiring additional surgery	3	2
Readmission	3	2
Blood transfusion	1	3

The overall complication rate, was 13% in the LAVH group, and 22 % in TAH group (table 4), major complications defined as those which were life threatening, occurred in four patients, these were two patients from TAH group complicated by severe bleeding due to extensive adhesions necessitating internal iliac artery ligation and one patient from LAVH group complicated also by severe bleeding, re-operated six hours later by laparotomy to stop bleeding from left uterine artery, all the three women made a full recovery. The fourth case was from LAVH group, she was a 67 years old lady re-admitted one month after the primary surgery to the intensive care unit because of severe pneumonia expired after few days unrelated to the primary surgery.

Three cases of urinary tract damage, one case of TAH group had bladder injury repaired at the same sitting and two patients of LAVH group had also urinary tract damage, one of them developed retro-vaginal fistula which required laparotomy and surgical repair and another case had uretric injury that diagnosed and treated during the same primary surgery.

There were no instances of bowel damage in both groups, minor problems also occurred like pyrexia and wound infection with no significant sequel.

Of those women readmitted, three patients from LAVH group, one case of urethro-vaginal fistula, a case of pneumonia and the third case was readmitted due to vaginal vault hematoma, among the TAH group, two patients were readmitted, one of them because of severe anemia required blood transfusion and another one with severe urinary tract infection and pyrexia.

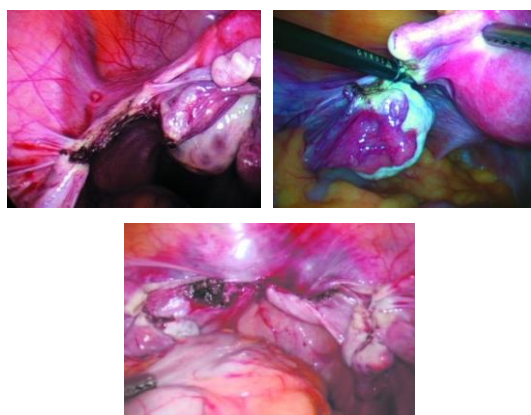
**(Table 4)** Complications of surgery encountered in the study groups, values are given as numbers.

Complications	LAVH (n=45)	TAH (n=45)
<b>Major complications:</b>		
Hemorrhage requiring transfusion	1	3
Urinary tract damage	2	1
Pneumonia	1	0
Bowel damage	0	0
Sever infection	0	1
<b>Minor complications :</b>		
Pyrexia	1	2
chest infection	0	1
wound infection	1	2

Duration of hospital stay was significantly less for women having LAVH (table3). However, the amount of opiate analgesia used in the immediate post-operative period is less in LAVH group (pethidine 100 mg), there was no difference in oral analgesic use between the treatment groups.

There were no differences in self-reported post-operative problems like fatigability, constipation, dysuria, fever, post-hysterectomy depression (occurs usually instantly post oestrogen depression) and oral analgesic use.

Patients having LAVH achieved post-operative milestones (household duties, work return, involvement in social activities and start of sexual activity) earlier than TAH group.



**(Figure 1)**

#### DISCUSSION

In this study we performed an analysis to assess the efficiency of both methods of hysterectomy (TAH

and LAVH), they were performed in gynecology department of Misurata Cancer Institute, LAVH was converted to TAH for per-operative difficulty on two cases only. The complication rate compared well with those with other studies from data published prior to 1994<sup>(26,27,28)</sup>, the difference in complication rate was due to sample size which is smaller in this study and criteria for patients selection, patients underwent LAVH selected to have very low possibility for pelvic adhesions which technically were more easy with minimal complications.

However, there was a difficulty to recruit patients for LAVH because it is a new procedure in the area of study, people are afraid to experience this type of operation with unknown success rate and complication rate. Consequently it was not possible to conduct a study with sufficient number to find out the complication rate compared with other studies.

LAVH took longer than TAH, when the duration of both operations was compared, the difference was about 50 minutes, this difference was not reduced during the study period, this suggested that although it is possible to reduce the time of surgery. LAVH is likely to take longer than TAH even with increased experience.

Length of hospital stay was of three days less in patients having LAVH, initial analgesic requirements differed between the two groups suggesting the superiority of LAVH over TAH for patient convenience and reduces the hospital stay because the wound for LAVH is about 3 cm in summation and the wound for TAH is about 10 cm causes more pain, movement limitation, more chance for infection and needs more care.

Of course, LAVH is more expensive than TAH due to longer duration time, the need for experience and the use of disposable equipments. The operation cost was not included in this study, in some communities, the cost effect can limit the popularity of laparoscopic procedures even with the advantages including the time taken to return to normal activity and patient's quality of life.

Regarding to the results of this study, the conversion rate and the complication rate were low, encourage the policy makers and health service manager in determining allocation of resources for development of laparoscopic surgery.

#### CONCLUSION

LAVH compared to TAH has the advantages of faster return to normal activity, shorter duration of hospital stay, Lower intra-operative blood loss that required transfusion and fewer wound or abdominal wall infections but it has longer operation time, higher rate of lower urinary tract (bladder and ureter) injures and needs more experience Laparoscopic assisted vaginal hysterectomy (LAVH) is an alternative to total abdominal hysterectomy (TAH) in selected patients.

When considering the results as a whole, we can advocate the wholesale replacement of TAH by LAVH for routine hysterectomy.

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