ORIGINAL ARTICLE

A Journey from Lap-Assisted Vaginal Hysterectomy (LAVH) to Total Laparoscopic Hysterectomy (TLH)

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ABSTRACT

Objective: Purpose of the study was to determine the challenges, complications and outcome of laparoscopic hysterectomy (LAVH & TLH).

Study Design: Case series study.

Place and Duration of Study: The study was conducted in Civil Hospital Bahawalpur from 1st October 2016 to 30th September 2017.

Materials and Methods: Patient presenting with DUB (Dysfunctional Uterine Bleeding) and small fibroid were included. Parameters studied were duration of surgery, complications, conversion to open, patient satisfaction and hospital stay. Data was collected on performa and shifted to SPSS version 20.

Results: Out of 11 patients included, 3 patient underwent Lap-assisted vaginal hysterectomy and in 8 patient TLH was performed. One patient was converted to open due to uncontrolled bleeding. One patient developed vesico-vaginal fistula. Minor postoperative wound infection (2 Patients) and wound infection (1 Patient) was managed conservatively.

Conclusion: The challenges/complications of TLH are its technique, training, use of gadgetry, unfamiliar anatomy, bleeding and gas leakage. Proper training, use of uterine manipulator, best assisting technique and use of energy devices make outcome acceptable, easy and achievable.

Key Words: *Hysterectomy, Lap-Assisted Vaginal Hysterectomy (LAVH), Total Laparoscopic Hysterectomy (TLH), Uterine Manipulator.*

Introduction

Abdominal hysterectomy is a procedure which is done, when health of the female patient becomes compromised, due to dysfunctional uterine bleeding or symptomatic fibroids.[1] If medical management fails and health is at risk, hysterectomy may be treatment of choice if family of the patient is complete. It needs initial management of pain, anemia and vaginal bleeding. Treatment options are open TAH, partial laparoscopic hysterectomy, Lap assisted vaginal hysterectomy, total laparoscopic hysterectomy, and vaginal hysterectomy.[2] The decision, regarding which operative technique is to be used depends on many factors. The important factors are disease process and extent, experience of the surgeon, availability of multidisciplinary approach, gadgets, size of the fibroid and size of uterus.

The history of vaginal hysterectomy dates back to 120 A.D. The first hysterectomy was claimed by Charles Clay in 1943 in Manchester. Procedures done were without anesthesia and mortality up to 70%.[3] In 1930s Richardson started Total abdominal hysterectomy with acceptable results.[3] First laparoscopic hysterectomy was done in 1988 by Harry Rich in Pennsylvania.[3]

Minimal access laparoscopic surgery has become a normal nowadays in most fields of surgery. Namely Lap-assisted vaginal hysterectomy (LAVH) and Total laparoscopic Hysterectomy (TLH) are mostly performed in different centers. What is difference between LAVH and TLH? In LAVH the fallopian tubes, ovarian vessels, round and broad ligament are ligated and cut laparoscopically. Calpotomy and ligation of uterine vessel is secured trans-vaginally. In TLH all these steps are performed laparoscopically. LAVH is a popular approach as it can be performed with limited experience. Total laparoscopic

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hysterectomy (TLH) has become possible in some centers by use of uterine manipulator, Colpotomizer and energy source (thunder beat, ligasure & bipolar cautery).[4]

The Journey from LAVH to TLH is demanding. It needs training, patience, careful selection of the patients, energy devices and a multidisciplinary approach. Selection of patient i.e. small fibroids, non-hyperemic uterus facilitated to prevent preoperative complication and post-operative minor complications for example blood loss, pain and fever due to infection.

This study will be helpful for the surgeons/ gynecologists committed to advance laparoscopic procedures. Purpose of the study was to determine the challenges, complications and outcome of laparoscopic hysterectomy (LAVH & TLH).

Materials and Methods

This was a case series prospective study. The study was conducted as a joint venture of surgery and gynecological departments of Civil Hospital, Bahawalpur. Duration was from 1st October 2016 to 30th September 2017. A total 11 patients were selected. A non-randomized convenient sampling was done. Selection criteria was patients having Dysfunctional uterine bleeding or symptomatic fibroids measuring up to 7 cm. Patients with comorbidities, previous abdominal surgeries, large fibroids and large sized uterus were excluded.

Data was collected on a predesigned Performa by one of author. The variables included were age, duration of symptom, operative procedures (laparoscopic vaginal assisted hysterectomy or Total laparoscopic hysterectomy), operative details (duration of surgery, energy sources and extra devices used, per-operative complication and conversion), Post-operative details (complications and hospital stay) and patient satisfaction. This data was shifted to SPSS version 20 for statistical analysis.

Preoperative data analyzed to conclude what is common age, presenting symptom and reason to do the surgery in our institute? The selection of operative procedure LAVH & TLH was dependent on improvement in expertise, size of the fibroid, anatomical difficulties and availability of energy sources. Mean hospital stay was noted in each patient. Post-operative complications were noted at each follow up. Patient satisfaction level was noted. Also the details of post-operative complication management analyzed. These variables are good guide for success of surgery.

Consent was signed by the patient after sufficient details of procedures and their ethical rights were discussed. Anonymity was observed in all cases.

A workshop was arranged with hands on training. All surgical procedures were performed by the same surgeons in both surgical and gynecological departments. Position of the patient was dorsal lithotomy with pneumoboots. Three ports used were umbilical 10 mm for camera, 10mm port on right flank at the same level and 5 mm port in left flank. The cuffed nob of uterine manipulator was inserted in cervical canal and cuff inflated. The Colpotomizer was moved forward until it fits on the cervix. The formal inspection of abdomen and pelvis was done. Dissection was started by cutting fallopian tubes, ovarian vessels, broad and round ligament with ultrasonic dissector after coagulation with bipolar. Two leafs of peritoneum were dissected until uterine vessels was visible. Vessels were ligated by extra corporeal knots and cut by ultrasonic dissector. Bladder was pushed with peritoneum. Now Colpotomizer can be felt and Calpotomy was done with hook. Uterus was removed from vagina. And cuff closed laparoscopically or vaginally. The uterine manipulator used was made locally (fig 1).

Fig 1: Uterine Manipulator with Colpotomizer

Uterine manipulator with colpotomizer made at Civil Hospital Bahawalpur. How it is used can be seen by visiting (https://youtu.be/8AuKsq-wLHs).

Results

During study period 11 patients fulfilled criteria and were included in the study. Age range was 35-60

years & mean age was 48 years. All patients presented with per vaginal bleeding refractory to medical treatment. Lower abdominal pain was in three patients. Four patients were severely anemic having hemoglobin level less than 7 gm. /dl. Seven patients presented with DUB, while 4 patients presented with fibroids 2-5 cm.

In 3 patients LAVH was done and in 8 patients TLH was done. LAVH was done in patient having bigger fibroid (more than 5 Cm) and difficult to deal by TLH. In patients having smaller fibroid (less than 5 cm) TLH was done. However in 2 out of 8 patients undergone TLH bleeding was controlled by vaginal approach. One patient was converted to open surgery due to uncontrolled bleeding. Duration of surgery was 4 hours and 30 minutes; which improved to 3 hours. Average time for surgery was 3 hours and 30 minutes. We used of different energy sources. In 7 patients thunder beat and in 4 patients ultrasonic dissector & bipolar cautery was used. A Uterine manipulator with colpotomizer was used in all patients undergone TLH.

Post-operative course was uneventful in 7 patients. Early complications in 1 patient was portside infection & in two patients were mild P/V bleeding which were managed conservatively. One patient developed vesico-vaginal fistula repair was done after three months (table I). Intravenous antibiotic prophylaxis with ceftriaxone 1 gram was administered at the time of induction of anesthesia & post operatively for 72 hours. Hospital stay was 3-7 days postoperatively. Foley's catheter was left for 1 week. First follow up was after 1 week, later after 15 days and then monthly for 3 months. Eight patients were well satisfied while 2 patients were equivocal and one patient was unsatisfied with this modality of treatment.

Table I: Post-operative course of TLH at Civil Hospital

No	Detail	Number	%age
1	Uneventful	7	63.64 %
2	Post-operative bleeding (mild)	2	18.18 %
3	Wound infection	1	9.09 %
4	Vesico- vaginal fistula	1	9.09 %
5	Peroperative Bleeding (Converted to open)	1	9.09 %

Discussion

The current study highlights different challenges and complication of laparoscopic Hysterectomy and their practical solutions. Total laparoscopic hysterectomy is defined by laparoscopic ligation of Uterine/ovarian vessels with removal of uterus, vaginally or abdominally with closure of vaginal cuff.[5]During this study period some important facts were understood. Multidisciplinary approach by involvement of surgeon, gynecologist and urologist had made TLH easy and doable. It is worth mentioning that TLH is different in many aspects from other modalities. Practical problems, Logistics (energy sources, gadgetry), pelvic anatomy, learning curve[6], operative time[7] and expertise are different from other type of surgery.

Surgery in our cases was done for DUB and small fibroids. There are studies in which TLH done for benign and malignant disease.[8] Some surgeons did LAVH in big fibroids and difficult anatomy but in routine they did TLH.[9] For case selection history, clinical examination, USG, and special cases CT scan was used as diagnostic tool.[10]

Uterine manipulator & energy sources (thunder beat (Olympus), bipolar and harmonic (Ethicon)) has key role in total laparoscopic hysterectomy. To get familiarity with energy devices we used thunder beat and bipolar for other procedures initially. We started with laparoscopic assisted vaginal hysterectomy (LAVH) due to larger fibroid unfamiliarity with anatomy and time factor but with passage of time we shifted to total laparoscopic hysterectomy (TLH).

Authors did not find any research in which energy devices are not used. Surgeons usually use bipolar energy source but in difficult anatomy harmonic/ thunder beat. They also used bipolar before harmonic.[11] We in our setup started with thunder beat and extra corporeal knotting for uterine vessels. But in later cases we used both bipolar and harmonic according to anatomy and size of the fibroid. In most cases associated extra corporeal knots were applied. For gas leakage we used strategy used by RK Mishra by placing gauze pack and inflated gloves initially. Later we used inflated cuff. Different type of vaginal manipulator are used by different surgeons. Initially we used fan liver retractor to manipulate uterus per vaginum. A uterine manipulator was devised locally fig 1 (based on RUMI-2 manipulator) and used. The benefits are visualization of pelvis anatomy, minimal

blood loss, dynamic access to pelvic structures, uterine vessels and vagina due to access on many angles.

Vault closure can be done laparoscopically or per vaginally. In a case series study by Gimbel and Zobbe cuff closure was done laparoscopically but in a few cases where tissue edema was moderate, per vaginal cuff closure was done.[12] We in our first 9 cases did per vaginal cuff closure but in succeeding cases cuff closed laparoscopically. Per-operative detail can be a good guide of improvement in expertise. The duration of surgery can never supersede the safety but it can be clue to the improvement in procedures and gadgets. Different studies revealed that time of procedure was 1 hours and 30 minutes to 3 hours.[13] Time for surgery in our study was noted to be from 3 hours to 4 hours and 30 minutes.

In most of the advance laparoscopic centers patient is discharged next day if patient is vitally stable. Patient remains catheterized for 4-7 days and is first follow up catheter is removed. Next follow up is done in fortnightly then monthly for three months. We also used the same policy. Satisfaction level is almost the same when compared with studies of other authors. In most studies 30 mg ketorolac intravenous at the end of the procedure given and four doses after that. For postoperative pain management we use diclofenac suppositories at induction, injection Tramadol I/V and inj. Lignocaine 1% at port site at the end of the procedure. Pain management was excellent in most of cases.

Authors find some limitation in current study. Firstly it is not study of single method or technique. Secondly the practical aspects are highlighted without much stress on statistical aspects. Thirdly number of patients is less due to time constraint and heavy workload.

Authors want to share few practice points and suggestion:

1. A training workshop with hands on practice must be mandatory before TLH is started.
2. Vaginal manipulator and energy sources has key role.
3. Patient safety is priority. So never hesitate to convert in case of any problem.
4. Don't do surgery for big fibroid or patients with adhesions in early phase.
5. A multiple discipline involvement makes the procedure safe and easy.

Conclusion

TLH is a technically demanding procedure. There are challenges regarding the training, use of gadgetry, unfamiliar anatomy, bleeding and gas leakage. Proper training, use of uterine manipulator, best assisting technique and use of energy devices make it easy and achievable.

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