Laparoscopic Assisted Vaginal Hysterectomy (LAVH): An urban study
Ghosh SK, Bairagi G

Abstract
Laparoscopic Assisted Vaginal Hysterectomy (LAVH) begins since 1989. This is a prospective study carried out at City Hospital (Pvt) Ltd. at Lakshmipur district during February 2004 to September 2004 in which 40 patients were selected randomly. Amongst them 20 cases had enlarged uterus with myomata (fibroid uterus) up to 14 weeks size, 10 cases had dysfunctional uterine bleeding, 5 cases had pelvic inflammatory disease, 5 cases had endometriosis. They were followed up for 6 months and no patient lost during follow up period. Unintended laparotomy (2.5%) done in one case and bladder repaired (2.5%) done in one case. 95% had good postoperative recovery. Though the operation time was longer but the recovery is quick and patients leave the hospital 48-72 hours after operation with satisfactory condition.

Introduction
Then use of laparoscopic hysterectomy has recently been reported as an alternative to traditional abdominal hysterectomy and the utilization of minimiendoscopic technique has also been recorded. Nevertheless, it has been founded in the UK that >80% of hysterectomies are still performed using the classical abdominal route. Moreover, even in majority of hysterectomies, especially if adnexectomy is associated are also performed abdominally. The first laparoscopic hysterectomy was performed and published in 1989 but it was only from 1991 onward that this surgical method of removing the uterus began to be used. However, since 1989 the new option of laparoscopic hysterectomy has raised questions about the most suitable type of approach. The advantage of the laparoscopic hysterectomy approach has been mainly associated with a short hospital stay and a quick convalescence. There are, however some concern related to the costs and morbidity of the approach. Laparoscopic hysterectomy took longer time to perform and required welltrained experienced surgeon.

The advent of diagnostic and operative endoscopy has dramatically changed the field of gynecologic surgery over the last several years. The revolution of fibre optic technology over recent years has allowed rapid progress in the field of Minimal Access Surgery (MAS). The benefit of MAS includes improved cost effectiveness, decreased morbidity, shorter hospital stay, earlier return to work and possible better cosmetic result.

Materials and methods
This is a prospective randomized study carried out from February 2004 to September 2004 at City Hospital (pvt.) Ltd. Lakshmipur. It includes 40 cases of laparoscopically (LAVH). The criteria for choosing laparoscopically assisted vaginal hysterectomy included enlarged uterus with myomata (Fibroid Uterus) up to 14 weeks size in 20 cases, dysfunctional uterine bleeding in 05 cases, pelvic inflammatory diseases in 05 cases and endometriosis in 05 cases. Table 1 shows the indication and number of patient underwent LAVH.

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Table 1. Indication and number of patient in LAVH

<table>
<thead>
<tr>
<th>Indication</th>
<th>No. of Pts</th>
<th>Grand total</th>
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<tr>
<td>Fibroid uterus</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Dysfunctional uterine bleeding</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Pelvic inflammatory disease</td>
<td>05</td>
<td></td>
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<tr>
<td>Endometriosis</td>
<td>05</td>
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Fibroid uterus more than 14 weeks size, cardiac and respiratory diseases were excluded from the study. All the laparoscopic hysterectomy were done by the same team of two surgeons (GSK, BG.) Patient had given their informed consent to undergo either LAVH or vaginal hysterectomy or unintended laparotomy. Bowl preparation was taken for 3 days prior to surgery. Patients were nothing by mouth for 8 hours before operation. Antibiotic Ceftriaxone (1 gm. Vertex, Orion) was given intravenously before induction of anaesthesia and another dose 12 hours after the 1 dose. The patient was placed in the lithotomy position with her legs open at 60 degree under general anaesthesia with endotracheal intubation. The bladder was emptied during the operation by metallic catheter. After carbon dioxide pneumoperitoneum was created by Veress needle a 10 mm trocher was placed umbilical port to introduce the laparoscope and the camera. Two ancillary 5mm trochers were also placed suprapubically and laterally. After an accurate pelvic and abdominal inspection, lysis of any adhesions were performed. The uterus was then mobilized by uterine manipulator making the various anatomical planes were more accesible. Particular attention was given to the course of the ureter in its pelvic zone. After bipolar coagulation, the round ligament was sectioned at 3 cm from the uterus, in order to prevent bleeding from the ascending uterine vessels. The areolar tissues of the broad ligament were then dissected and its posterior fold fenestrated at an avascular area above the uterine vessels. This manoeuvre permitted a better mobilization and identification of the infundibu-pelvic ligaments, whose vessels were coagulated and cut using bipolar forceps and scissor under direct visualization of the pelvic ureter. Once the uterine ligaments were sectioned, the operation continued centrally in a downward direction. If, however, the adnexae were not to be removed, the utero-ovarian ligament was coagulated and sectioned proximal to the ovaries. Thereafter the vesicouterine peritoneal fold was opened by scissor and a bladder dissection from the lower uterine segment down to the upper part of the vagina was performed; during this step, the location of the right cleavage plane was crucial to avoid any bladder injury. The utero-sacral ligaments were then coagulated and sectioned, thus favouring laterization of the uterus. With the help of monopolar diathermy circular colpotomy was done to open both the anterior and posterior pouches.

Then the cardinal ligments and uterine vessels were clamped, sectioned and ligated from below and the uterus was removed through the vagina as shown in Fig:1. The vault was closed from below with Dexon no.1 suture. Finally, again the camera was introduced into the pelvis, performed pelvic irrigation and suction, thus removing blood clots and ensured haemostasis. The beginning of the operation was calculated at the moment of the umbilical incision and introduction of laparoscopic camera and cutaneous suture was considered the end of the operation. One patient had bladder injury, which was repaired vaginally, and an indwelling catheter was left for 2 weeks. Unintended laparotomy done in one patient due to slipping of ligature of the uterine vessel.

![Figure 1: Number and Method of removal of uterus](image-url)
Patients were given liquid diet 6-8 hours after and semi-solid diet 12-16 hours after operation. All patients were given normal diet 24 hours after operation. Injection Ceftriaxon (1gm Vertex, Orion) IV was given just before operation and 1gm IV, 12 hours after the initial dose. Then switched over to oral cephalosporin for 5-7 days only. After completion of operation 1-2. litres of fluid (Dextrosol/Dextropac, Orion) was given IV. Pain killer ketorolac 30 mg IV given 8 hourly for 2 days. Patients were discharged from hospital 48 to 72 hours after operation.

Figure 2: Complication following LAVH

No patient required per operative and postoperative blood transfusion. Patients were assessed at an interval of 4 weeks, 3 months and 6 months after operation shown in table II.

Table II. Follow up of the patient following LAVH

<table>
<thead>
<tr>
<th>Time interval</th>
<th>Number of Patient (n=40)</th>
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<tr>
<td>4 weeks</td>
<td>40</td>
</tr>
<tr>
<td>3 Months</td>
<td>40</td>
</tr>
<tr>
<td>6 Months</td>
<td>40</td>
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Most patients were able to resume normal activities between 10 and 21 days after surgery.

Results
The hospital stay and convalescence period (time from operation to day when the patient returns to daily work) was the shortest in laparoscopic hysterectomy. Patients return home 48 to 72 hours after operation. For the first 15 cases time employed for LAVH was 120 minutes and last 25 cases it was 70 minutes. Average time required for LAVH was 81 minutes. No patient required post-operative blood transfusion and average intra-operative blood loss was significantly lower in LAVH. One patient (2.5%) developed bladder injury which was repaired vaginally keeping an indwelling Foley's catheter for 2 weeks and patient recovered fully. Unintended laparotomy was done in one (2.5%) patient due to ligature slipping of uterine vessels. No patient developed bowel or ureteric injury. Patients underwent LAVH had less intensive postoperative pain, analgesic ketorolac given for 48 hours only. Quality of life including physical, mental and sexual activity at six weeks interval was significantly better. There were little or no scar, rare chance of incisional hemia. There were no wound infection, wound dehiscence and burst abdomen were observed in this series.

Discussion
LAVH is a very recent technique in our country. It may be converted to vaginal or abdominal hysterectomy in presence of complication. It is more safe as that of conventional operation, in a hand of an experienced surgeon. The duration of LAVH was significantly longer than that of abdominal hysterectomy, for the first 15 operations it required 120 mins to complete each operation which decreased to 70 mins for each of the last 25 cases.

Advantages of the patient underwent LAVH is avoiding laparotomy incision. Hospital stay in LAVH is short only 48 hours to 72 hours. Post-operative pain is less; it required analgesic for 48 hours only. Early ambulation prevents postoperative thrombo-embolism. Most of the patient resume normal activities between 10 and 21 days after surgery. There is early convalescence and negligible post-operative febrile morbidity. Post-operative shock and discomfort is very negligible. Often the patient

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scarcely knows she has an operation. Blood loss minimal and no patient required post-operative blood transfusion. Of course cost remains a problem, the instrument is costly and need special training and experienced surgeon. It is technologically difficult, requires extensive technology and is time consuming. One patient (2.5%) developed bladder injury which was repaired and one patient (2.5%) required unintended laparotomy was a major complication. The good post-operative recovery in 95% of the patients was encouraging.

Conclusion
With laparoscopically assisted vaginal hysterectomy patient had less pain, shorter hospital stay quicker recovery, improved quality of life and the incidence of complications were also low. Two major complications were found but in our opinion it is possible to avoid major complications by paying particular attention to the surgical details.

References