



MINILAPAROTOMY HYSTERECTOMY IN LOW-RESOURCE SETTING: FEASIBILITY AND COMPLIANCE

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ABSTRACT

The minimally invasive techniques, such as laparoscopy and robotic surgery, have a long learning curve and high setup and instrumentation costs. Minilaparotomy hysterectomy (MLH) relies on the simplicity of the conventional open abdominal hysterectomy technique and imparts cosmesis and a quicker recovery. In the current study, we sought to determine whether the feasibility, intraoperative factors, and complications of MLH and LAVH can be compared. Patients can be reassured that MLH produces equivalent results in cases where cost and the surgeon's experience are the limiting factors because both MLH and LAVH are comparable methods. Materials and Methods. This prospective observational study was conducted at a teaching hospital over a year period. Although 75 individuals in all were sought for, only 62 (MLH: 32; LAVH: 30) could be used in the research. Results of each procedure, which was carried out by one of two gynaecologists with nearly similar surgical skill, were compared. Results: Since none of the patients required a larger first incision, MLH is a viable choice for benign gynaecological disorders (4–6 cm). In comparison to LAVH, MLH could be performed on uteri that were larger (MLH: 511.31±319.95 g against LAVH: 226.61± 159.01 g; p <0.001), took less time to complete (MLH: 110.00±20.43 min versus LAVH: 163.00±25.91 min; p< 0.001), and had comparable blood loss. Conclusion: The MLH technique should be mastered and promoted for usage in low-resource settings to achieve outcomes similar to those of laparoscopic surgery.

Key words: Minilaparotomy hysterectomy, Laparoscopic-assisted vaginal hysterectomy, body mass index

INTRODUCTION

Next to caesarean, hysterectomy is the second most common major surgical treatment performed on women worldwide. However, there is disagreement over the hysterectomy route and/or procedure [1]. The best approach to execute a hysterectomy is continuously being researched by enthusiastic surgeons and curious researchers. The laparoscopic abdominal hysterectomy offers advantages such as greater cosmesis and a shorter hospital stay while still being simple to perform and straightforward to learn. Minilaparotomy Hysterectomy (MLH), which combines cosmesis and quicker recovery with less reliance on technology and apparatus, has recently gained popularity [2, 3]. This method relies on the straightforwardness of the conventional open abdominal

hysterectomy technique and avoids the steep learning curve, high setup and apparatus costs, and lengthy recovery period of laparoscopic hysterectomy. Although the vaginal technique has been recommended as the optimum method for conducting a surgery for benign gynaecological diseases in the Review study, this strategy is not always practical. The laparoscopic approach is the second-best choice, however total laparoscopic hysterectomy (TLH) is linked to higher urinary tract complications [4]. Laparoscopic-assisted vaginal hysterectomy (LAVH) is a mix of these two procedures in which the uterine arteries are skeletonized laparoscopically up to a certain point and the remainder of the hysterectomy is carried out vaginally.

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The setup, expense, length of the procedure, and surgical skill, however, continue to be the stumbling blocks to making it a global standard of treatment.

In the current study, we sought to determine if the MLH and LAVH outcomes could be contrasted in terms of practicality, intraoperative factors (such as length of operation and blood loss), and complications. When cost and the surgeon's experience are the limiting factors, patients can be reassured that MLH delivers equivalent results because both MLH and LAVH are comparable methods.

Methodology

An observational study was conducted in the year 2022 at a tertiary hospital in Chennai. IEC 491/2022 approval was obtained from the Institutional Ethical Committee. Hysterectomy patients (with uterine size up to 20 weeks) without uterine descent were recruited for the study. As per the available literature, each patient received an in-depth explanation of the different types of hysterectomy available. MLH was recommended if the patient had endometriosis (e.g., encouraged by endometriosis), and if the patient had cardiorespiratory conditions contradicting pneumoperitoneum (e.g., encouraged by cardiorespiratory conditions contradicting pneumoperitoneum). Each patient signed a written consent form after receiving informed consent.

Intervention

Every patient adhered to the same preoperative guidelines. All procedures involved endotracheal intubation and general anaesthesia. Age, parity, body mass index (BMI), baseline tests, diagnoses, and comorbidities were among the demographic information that was gathered the day before surgery. Based on our initial experience using MLH to decrease intraoperative blood loss, 300 mcg of misoprostol was injected vaginally and 1 g of tranexamic acid in 100 ml of saline was supplied intravenously in cases of enlarged uteri where it was necessary to debulk prior to clamping of uterine arteries. To lessen operator bias, intraoperative statistics were recorded in agreement with the anaesthesiologist. These variables included the length of the procedure (from the start of the skin incision to the conclusion of skin suturing), loss of blood, uterus mass, visceral injuries, and conversion rate. There were two gynaecologists who performed all surgeries with almost equal surgical competence. We also recorded postoperative pain, need for analgesia, complications, and the length of time spent in the hospital.

Techniques

1. MLH

In order to facilitate vaginal uterine manipulation, the surgery was performed in the low lithotomy position. Two cm above the pubic symphysis, a transverse incision of 4–6 cm was made. There was a transverse

incision of 6-8 cm on each side of the underlying rectus sheath, one cm more than the skin incision. A thin Deaver or Richardson retractor was used after opening the peritoneum vertically. In cases of large uteri, the bulldog clamp was used to hold the fundus of the uterus or the anterior uterine wall so it could be mobilized. The uterus could be held and the ligaments clamped sequentially until the uterine arteries were clamped, at least on one side, when the uterus was up to 12 weeks size. A subsequent clamping procedure was performed on the other side after the uterus was pulled from the detached side. Debulking was performed by myomectomy in cases of multiple fibroids or with helical incisions when the uterus was bigger and it was impossible to reach its fundus [5]. In accordance with standard protocol, hysterectomy was performed after optimal debulking of the uterus.

2. LAVH

The procedure was performed in LAVH using a main trocar of 10 mm and three smaller trocars of 5 mm. The rest of the process was carried out vaginally. Specimens were retrieved via vaginal access after volume reductions such as bisections, myomectomy, or corings if needed

Statistical analysis

Compilation of data and statistical analysis were conducted using statistical package (SPSS) for Windows. In order to test the difference between mean values of continuous variables, such as age, BMI, and operative time, the independent sample *t*-test was used. Additionally, the VAS was used to compare pain levels between groups. An analysis of blood loss and specimen weight that had a non-parametric distribution was performed using the Mann-Whitney test.

Results

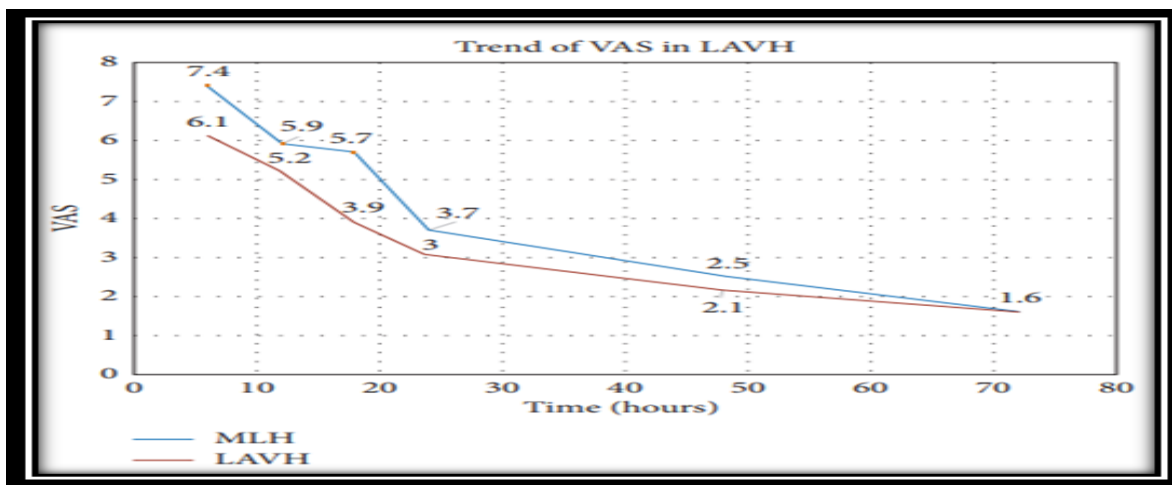
A total of 75 women who met the inclusion criteria and were scheduled to have hysterectomy for benign gynaecological disease were recruited for the study. A total of 69 women participated in the study after receiving complete information about it, but six declined to participate. Seven other patients were excluded during the preoperative workup among these 69 women. In one surgical case, cholelithiasis was discovered incidentally, and a cholecystectomy was performed simultaneously, and an umbilical hernia repair was performed in another. The surgery of 2 women was postponed because they were found to have previously undiagnosed hypothyroidism. A retropositive patient was detected. Preanesthetic checks revealed that two other patients were not suitable for general anaesthesia, so they were given spinal anaesthesia for hysterectomy instead. As a result, 62 patients were included in the study, of which 32 underwent MLH and 30 underwent LAVH. In both groups, the average age of the women was similar. (MLH= 43.75±4.03 yrs; LAVH=

46.20± 4.26 yrs; P= 0.123). There was also a statistically significant difference between the two groups in mean BMI. (MLH= 23.84± 2.63kg/m²; LAVH= 25.61 ± 3.90 kg/m²; P=0.024). In the LAVH group, the upper limit of BMI was higher (33.8 kg/m²) than the upper limit in the MLH group (30.5 kg/m²). In this case, selection bias may have played a role. The number of women who had undergone previous abdominal and pelvic surgeries was around 20% in both groups. Among groups, fibroid uterus was the most common indication. Although 92.6% women in the MLH group (n=25) had hysterectomy for fibroid, only 36% of women in the LAVH group (n=9) had fibroid uterus. In both groups, the intraoperative blood loss was statistically comparable. (MLH: 344.63 ± 217.96 ml; LAVH: 392.40 ± 214.02 ml; p =0.334). Nevertheless, careful examination of the range reveals that LAVH has a minimum blood loss of 100ml, while MLH has a minimum blood loss of 70 ml. Comparing MLH with LAVH, there was a smaller difference in time taken between the initiation of the abdominal incision and the end of the abdominal skin suturing (port closure in the case of

LAVH). In MLH and LAVH, the duration ranged between 30 and 75 minutes. Accordingly, the minimum time required to complete LAVH was still twice that of MLH. There was a statistically significant difference in the weight of the recovered specimen in the MLH group after surgery. There was a noticeable difference between the MLH (1300 g) and the LAVH (850 g) groups in the size of the uterus removed. VAS was used to measure postoperative pain perception. In the LAVH group, there was a significantly lower rate of infection in the first and second postoperative days. Nonetheless, both groups experienced the same level of pain on the third postoperative day. There was a mean stay of 5.7 days in MLH and 5.68 days in LAVH. Three patients were admitted to the LAVH group for an extended period of time. In one case, the patient underwent a laparoscopic conversion and developed a fever on day 4 (13-day stay), in another case, the patient had poorly controlled diabetes (10-day stay), and in the third case, the patient lived in an area with inadequate medical facilities (9-day stay).

Table: 1 Demographic characteristics and intraoperative variables among two groups

Characteristics/variables	MLH group	LAVH group	P value
Age in years	43.75±4.03	46.20± 4.26 yrs	0.123
BMI (kg/m ²)	23.84± 2.63kg/m ²	25.61 ± 3.90 kg/m ²	0.024
Operating time	115±21.43	172±27.91	<0.001
Estimated blood loss in ml	344.63 ± 217.96 ml	392.40 ± 214.02 ml	0.324
Weight of uterus	511.31±319.95 g	226.61± 159.01 g	<0.001



Discussion

In this study, we discovered that MLH is a viable alternative to LAVH for benign gynaecological diseases because it may be performed on larger uteri in a shorter amount of time with less to equivalent blood loss and without life-threatening consequences. Since the late 20th century, MLH has been a well-known and researched method for performing hysterectomies for benign

gynaecological diseases [6]. Pelosi and Pelosi made their method of hysterectomy by a tiny abdominal incision widespread in the early twenty-first century (3-6 cm small minilaparotomy and 7-8 cm large minilaparotomy) [3]. A soft, sleeve-style self-retaining abdominal retractor that helps the process is preferred by some surgeons. Colorectal doctors utilise this form of retractor [7]. However, in our experience, we didn't use this disposable retractor; instead,

we carried out the treatment with standard metal retractors and adjusted their locations as needed. With the minilaparotomy technique, a 4.5 kg myoma is removed through the minilaparotomy not only for hysterectomy, but also for myomectomies as well [8]. According to these studies, MLH also caused higher blood loss compared to laparoscopy. Also, with large urothelium and much more volume reduction treatments, the differences in our study was not statistically significant [9, 10].

We injected 300 mcg of misoprostol vaginally and gave one gram of tranexamic acid intravenously an hour before surgery. Based on our expertise, we advise using these methods to lessen blood loss. MLH can be an ideal technique that offers equal surgical results and patient satisfaction with a little modification and adaptation of procedures including the careful use of retractors, mastery of volume reduction techniques, and prudent use of blood loss decreasing measures. There were no discernible variations in the occurrence of superficial wound

complications in a research comparing these bigger incisions to laparoscopy/robotic ports, including cellulitis, seroma, hematoma, skin separation, wound infection, or post-procedure wound issues [11]. This is, in our opinion, one of the better solutions for gynaecologists just starting out in low-resource settings.

Conclusion

When compared to LAVH, MLH is a viable choice for the treatment of benign gynaecological disorders since it can be performed on bigger uteri in a shorter amount of time, with less or comparable blood loss, and without the occurrence of major consequences. MLH also eliminates the requirement for expensive instruments and setup, as well as previous surgical experience. This method of performing a hysterectomy ought to be mastered, and it ought to be encouraged to be used in low-resource settings, so as to achieve results that are comparable to those obtained through laparoscopic surgery.

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