

Laparoscopically Assisted Vaginal Hysterectomy for Women With Anterior Wall Adherence After Cesarean Section

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ABSTRACT

Objectives: To share and report experiences of using lateral approach technique to perform laparoscopically assisted vaginal hysterectomy (LAVH) for women with anterior wall adherence after cesarean section.

Methods: We analyzed a retrospective chart review of 47 women with anterior wall adhesion after a cesarean section who underwent LAVH from March 1st 2003 to March 31st 2012, selected from a total of 1967 women who underwent LAVH during that period.

Results: The median age of the patients was 42 years (range 34–56 years). The median operating time was 120 minutes (range 85–240 minutes), and the median weight of the removed uterus was 247 g (range 50–896 g). The median change in hemoglobin level was 2.0 g/dL (range 0–3.0 g/dL). The median hospital stay was 3.0 days (range 2–6 days). There were complications in 2 cases: bladder injury in one and postoperative ileus in the other. There were no conversions to laparotomy.

Conclusions: Lateral approach technique to make a pneumoperitoneum and to perform adhesiolysis is effective in LAVH for women with anterior wall adherence after cesarean section.

Key Words: Adhesion, Cesarean section, Hysterectomy, Laparoscopic surgery.

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INTRODUCTION

Laparoscopic surgery for women with endometriosis or who have undergone several previous abdominal surgeries remains a great challenge to surgeons, due to anatomical variation.¹ The most common previous abdominal surgery in women is cesarean section. If this has been performed several times, thick and dense adhesion can occur between the uterus and bladder, which makes it difficult to find the dissection plane when performing a hysterectomy. The adhesion also causes difficulty in observing the uterine cervix during pelvic examination and is an obstacle to surgeons when performing laparoscopic surgery. Sometimes, laparotomic surgery is recommended first for patients who have undergone several cesarean sections when surgical treatment is required for other gynecologic diseases. Laparoscopic surgery is not readily recommended if the patient has a history of several previous abdominal surgeries. The location of the adhesion and its extent cannot be assumed to be correlated with the history of previous abdominal surgery and the results of radiological studies performed before that surgery.

In this study, we analyzed the clinical characteristics and surgical outcomes of patients who underwent laparoscopically assisted vaginal hysterectomy (LAVH) for benign uterine diseases using a lateral approach technique to assess the feasibility of this surgical technique in women with anterior wall adherence after cesarean section.

MATERIALS AND METHODS

We conducted a retrospective chart review of women with anterior wall adhesion after cesarean section(s) who underwent LAVH from March 2003 to March 2012, selected from a total of 1967 women who underwent LAVH during that period. All LAVHs were performed by 2 experienced gynecologic surgeons (L.J.H. and C.J.S.). The diagnosis of anterior wall adherence was based on laparoscopic surgical pictures. A computerized database was created to record demographic information, body mass index, indications for LAVH, surgical findings, complications, change in hemoglobin concentration from before surgery to postoperative day 1, conversion to laparotomy,

specimen weight (g), operating time (minutes), and hospital stay (days). The operating time was defined as the time elapsed from the insertion of the first trocar to the closure of the trocar site. The return of bowel activity was defined as the period from the end of general anesthesia to the first occurrence of bowel gas passage. Postoperative fever was defined as a body temperature at least 38°C on 2 consecutive occasions at least 6 hours apart, excluding the first 24 hours. All statistical analyses were performed using SAS (version 9.2; SAS Inc., Cary, North Carolina) and SPSS version 17.0 (SPSS Inc., Chicago, Illinois). Kangbuk Samsung Hospital Institutional Review Board approved this retrospective study.

Surgical Techniques

A preoperative bowel preparation with Fleet Phosphosoda (C. B. Fleet Co. Inc., Lynchburg, Virginia) was performed in all cases. To safely create a pneumoperitoneum, a lateral approach was used as a Veress needle or a 5-mm trocar was inserted directly into the left upper quadrant (LUQ), lateral to the inferior and superior epigastric vessels at a level between the umbilicus and the epigastric area (**Figure 1**). Because the surgeon stood to the left of

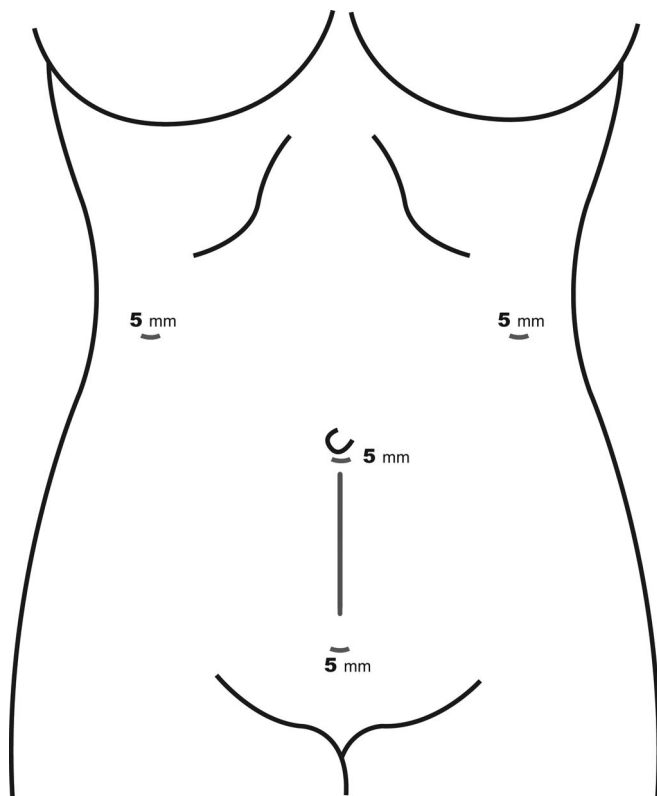


Figure 1. Port-placement system.

the patient, inserting the first trocar in the LUQ was effective in creating a pneumoperitoneum. After preparing the pneumoperitoneum, a 5-mm telescope was used to check the intra-abdominal cavity and confirm the grade and location of the adhesion. A second trocar was inserted in the right upper quadrant (RUQ). An umbilical trocar was inserted when there was no severe adhesion beneath the umbilicus. If there was an umbilical adhesion, the telescope was moved to the RUQ port site to secure the visual field and dissecting Metzenbaum scissors with monopolar coagulation or a harmonic shears (Ethicon Endo-Surgery Inc., Cincinnati, Ohio) were used in the LUQ port for adhesiolysis; then the umbilical trocar was inserted. After inserting the 3 trocars, the telescope and laparoscopic instruments were operated in a manner appropriate for anterior wall adhesiolysis. After the adhesiolysis had progressed somewhat, the last trocar was inserted above the symphysis pubis. The telescope was moved to the umbilical port, as in previous methods, to free both surgeon's hands, and the remaining surgical procedures were performed as previously described for LAVH. If the margin between the urinary bladder and the uterine lower segment was unclear while moving toward the uterine cervix, a Foley catheter was used to introduce approximately 150 to 200 mL of normal saline or carbon dioxide. This made the margin more visible and avoided bladder injury. Peristalsis of the both ureters and any absence of bleeding in the trocar region were confirmed (**Figure 2**). Subsequently, a drainage tube was inserted through the 5-mm trocar and the gas was removed.

RESULTS

Of the total 1967 women, 311 (15.7%) had undergone cesarean section at least once during the study period, and 47 (15.1%) of these women had anterior wall adherence. Vaginal bleeding was the most common indication for LAVH. There was no conversion to laparotomy. The clinical characteristics of the patients are summarized in **Table 1**. There was a case of bladder injury during surgery that occurred while performing anterior colpotomy. Primary repair was performed vaginally. Postoperative ileus and fever were managed with conservative treatment.

DISCUSSION

Women with a history of cesarean section who present with gynecologic disease are suspected to have anterior



Figure 2. Image of laparoscopically assisted vaginal hysterectomy for woman with anterior wall adherence. **A.** This is a typical picture from the trocar in right upper quadrant. **B.** Lateral approach technique to dissect the dense adhesion between the anterior abdominal wall and the uterus. **C.** This is an immediate postoperative picture.

Table 1.

Clinical Characteristics and Surgical Outcomes of the 47 Patients

Clinical Characteristics	Median (Range)
Age, yrs	42 (34–56)
BMI, kg/m ²	22.6 (18.8–31.4)
Uterine weight, g	247 (50–896)
Cesarean section(s), <i>n</i>	2 (1–3)
Hemoglobin change, g/dL	2 (0–7.0)
Hospital stay, d	3 (2–11)
Operating time, min	120 (85–370)
	<i>n</i> (%)
Incision of previous cesarean section(s)	
Pfannenstiel	35 (74.5)
Midline	12 (25.5)
Indications of LAVH	
Vaginal bleeding	19 (40.4)
Lower abdominal pain	15 (32.0)
Palpable abdominal mass	8 (17.0)
CIS of the uterine cervix	5 (10.6)
Complications	
Intraoperative complication	
Bladder injury	1 (2.1)
Postoperative complication	
Fever	1 (2.1)
Ileus	1 (2.1)

Abbreviations: BMI, body mass index; CIS, carcinoma in situ; LAVH, laparoscopically assisted vaginal hysterectomy.

wall adhesion. This makes laparoscopic hysterectomy difficult to perform because the port-placement system used for adhesiolysis in a laparoscopic approach cannot be established properly. Total abdominal hysterectomy is recommended because of concerns over injury of other organs, and unplanned conversion to laparotomy occurs in many cases.²

Anterior wall adherence should be anticipated in patients who have undergone cesarean section if the uterine cervix is found to be located much superior to its normal location during pelvic examination.³ In general, the umbilical trocar is inserted first to create a pneumoperitoneum for surgery. However, because midline adhesion is most common in women with anterior wall adherence, this may be difficult. Therefore, for laparoscopic hysterectomy in such women, it is safer and more effective to make a pneumoperitoneum by inserting the first trocar in the upper lateral part instead of the umbilical trocar. Ancillary trocars are then inserted in sites with less adhesion. Sufficient adhesiolysis is performed to secure adequate visual field for laparoscopic hysterectomy. If both the surgeon's hands are freed as in previously described surgical method, hysterectomy can be performed successfully. The adhesion site between the uterus and anterior wall is examined closely and the lateral portion of the adhesion is dissected with a dissecting Metzenbaum scissors with monopolar coagulation. As we have described, a pneumoperitoneum is created, or adhesiolysis is performed from a lateral approach, so that this method is called the lateral approach technique.

The following are the advantages of this surgical technique. First, because the first trocar or a Veress needle is inserted in the lateral portion of the upper abdomen, any anterior wall adherence can be avoided and a pneumoperitoneum can be easily created. Second, because in

most patients, anterior wall adherence occurs between the uterine fundal wall and peritoneum, it would be difficult to locate the boundary with the adhesion if this area were dissected first, and undesirable bleeding could occur during adhesiolysis. The use of lateral approach for adhesiolysis can reduce bleeding, allowing hysterectomy to be performed more easily.

Bladder wall adhesion is an unavoidable side effect in patients who have undergone cesarean section.⁴ In a study, 38 of 7725 (0.49%) women who received LAVH suffered urinary tract injury (30 with bladder injury, 8 with ureteral injury). The investigators also reported that the possibility of bladder injury was higher in cases with a history of cesarean section and anterior colpotomy.⁵ Sinha et al⁶ reported bladder injuries in 2 of 261 women with a history of cesarean section who underwent total laparoscopic hysterectomy. In the present study, 2 of 311 (0.64%) women with a history of cesarean section who underwent LAVH and 1 of 47 (2.1%) women with anterior wall adherence had bladder injuries, all of which occurred during the anterior colpotomy process.

We propose the following approach when performing laparoscopic hysterectomy in women who have undergone cesarean section previously. In our experience, bladder adhesion was not more severe or more superiorly located in patients with anterior wall adherence than in those without this adhesion. It is thus not necessary to be too cautious during adhesiolysis of the anterior wall adherence. Surgery can be performed with a lateral approach to the adhesion site. If the boundary between the bladder and adhesion is unclear, we used the cystosufflation technique using carbon dioxide to distend the bladder through a Foley catheter during the laparoscopic procedure to check the border for a site to perform adhesiolysis.⁷

The lateral approach technique has 2 factors to consider when making a pneumoperitoneum and when performing adhesiolysis. First, we insert a Veress needle or 5-mm trocar directly into the LUQ, not through the umbilicus, to make a pneumoperitoneum. It can be hard to make a pneumoperitoneum using the conventional method be-

cause of preexisting anterior wall adherence. The second issue is the distance from the anterior wall adherence to the 5-mm telescope. If it is too close, then if we were to insert a 5-mm telescope through the umbilical port while performing adhesiolysis between the peritoneum and the uterus, this restricted field of action could make surgery too difficult. It is easier to perform adhesiolysis of the anterior wall adherence using a 5-mm telescope in the RUQ port and laparoscopic instruments in the LUQ and umbilical port without leading to major changes in the surgical view between the umbilical and RUQ port sites.

In conclusion, lateral approach techniques to creating a pneumoperitoneum and to dissecting a dense adhesion between the anterior abdominal wall and the uterus are effective in LAVH for women with anterior wall adherence after cesarean section.

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