Original Article

Surgical Outcome of Single Site Total Laparoscopic Hysterectomy for Mental Restriction Patients and Caregiver Satisfaction

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Objective: To evaluate the operative outcomes and complication that include short-term and long-term in mental restriction patients and caregiver satisfaction after laparo-endoscopic single site (LESS) hysterectomy.

Materials and Methods: The present study was a retrospective study of 100 mental restriction patients that underwent hysterectomy with LESS technique between August 2011 and November 2017 at Ramathibodi Hospital. The data such as patient characteristics, preoperative diagnosis, operative procedure, operative outcome, and postoperative complication were collected from the medical record. Caregiver satisfaction and long-term operative outcomes were collected by sending the questionnaires to the caregivers and using Likert scale for the assessment of satisfaction level.

Results: One hundred mental restriction patients were included in the present study. The mean age of the patient was 13.8 years old. The most common cause of mental restriction was Down syndrome. Ninety-four patients were successfully performed LESS hysterectomy, another five patients had an additional port due to various reasons and one patient was performed LESS subtotal hysterectomy. Postoperative minor complication was noted in 5 patients composed of postoperative fever and abdominal bruise in 4 patients and 1 patient, respectively. The overall caregiver satisfaction level after LESS hysterectomy was extremely satisfied. Almost all of the patients had no visible surgical scar.

Conclusion: LESS hysterectomy in patient with mental restriction had good outcomes and minimal morbidity. So, it is one of the good choice for hysterectomy for this group of patients.

Keywords: Mental restriction, Laparo-endoscopic single site (LESS) hysterectomy

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Hysterectomy procedures, as one type of the essential procedures in obstetrics and gynecologic field. There are various procedures for hysterectomy such as abdominal hysterectomy, vaginal hysterectomy and laparoscopic hysterectomy. The vaginal hysterectomy procedure has the better outcomes than the abdominal hysterectomy in term of reduction of operation time, blood loss, postoperative pain and the length of hospital stay[(1)]. Even though, it offers many advantages, the procedure is limited to perform in the pediatric patients. Because of this group has small vaginal canal which is difficult to perform vaginal operation. Another well-known procedure, called laparoscopic hysterectomy, is associated with less morbidity than abdominal hysterectomy[(2-4)].

Laparoscopic hysterectomy has been introduced to teenage group, particularly in the mental restriction. It becomes generally practical procedure in this age group. Ramathibodi Hospital gradually develops the new innovative instruments and techniques using only 3 and 5 millimeter ports at the umbilicus which is called the "Ramathibodi Laparo-Endoscopic Single Site (LESS) Hysterectomy. This procedure is therefore, beneficial for the patients as follows: reduce volume of blood loss, decrease size of surgical wound result in less postoperative pain and better cosmetics. Thus, Ramathibodi Hospital conducted

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this new hysterectomy procedure for the mental restriction (MR) patients in Department of Obstetrics and Gynecology, Ramathibodi Hospital since 2011 and had good results. After that, the procedure has been continuing as a part of general practice for hysterectomy in mental restriction patients. The authors were interested to know the result and the follow-up of the operative outcomes of this new procedure such as: wound healing, long-term complications and caregiver satisfaction.

Materials and Methods

The present study was approved by the Research Ethics Committee of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University. It was a retrospective study of the medical record of the patients with mental restriction whom were performed LESS hysterectomy between August 2011 and November 2017 at Ramathibodi Hospital.

The sample size was calculated with an infinite population proportion formula and based on the total major complication rate of laparoscopic hysterectomies at Ramathibodi Hospital between January 2016 and December 2016 which was 5.6% (7 of 126 cases). The 95% confidence interval and the precision of 5% instead of 1.96, and included 20% data loss were used for the calculation. There were 98 patients were required to provide a representative sample size.

The inclusion criteria were mental restriction patient whose age was less than or equal to 20 years old at time of surgery were included. The exclusion criteria were incomplete medical record, and/or loss follow-up.

The major complications consisted of major organ injury, intraoperative blood loss over 1,000 ml and/or needed blood transfusion, and wound infection. The minor complication was postoperative fever. The postoperative fever was body temperature greater than or equal to 38.3°C, measured at 2 consecutive times after 24 hours postoperation.

The authors used the questionnaire as a tool to evaluate long-term operative outcomes, such as the character of wound healing and caregiver satisfaction. Furthermore, the validated questionnaire method was done by a child psychologist and three senior gynecologists at Ramathibodi Hospital and caregivers. The questionnaires were sent to the caregivers after the operation at least 6 months, including patient's information, caregiver's information, and the long-term operative outcomes.

The caregiver satisfactions were assessed by using the Likert's scale which divide to five levels (level 0 to 4). The level 0 was not satisfied, and the level 4 was extremely satisfied.

The hypertrophic scar was defined as initially brownish-red in color, but could become pale with age. These lesions did not extend beyond the original boundaries of the wound.

The keloid scar was defined as an abnormal scar that grew beyond the boundaries of the original site of skin injury.

Table 1. General characteristics (n=100)

Characteristics	n
Age (year), Mean±SD	13.8±2.3
Weight (kg), Mean±SD	45.2±13.1
Height (cm), Mean±SD	146.7±9.4
Body mass index (kg/m^2), Mean±SD	20.9±5.1
Level of intellectual impairment	
Mild	15
Moderate	13
Severe	11
Unspecified	61

SD=standard deviation

Results

According to the inclusion criteria, 110 participants were included in the present study. Ten participants were excluded because of incomplete medical record (8) and loss follow-up (2). Finally, 100 participants were included in the present study. The caregiver satisfaction level and surgical wound data were collected by sending the questionnaire after underwent the operation at least 6 months. The questionnaires were returned 30% the first time, then the authors resent the same questionnaires to the unreturned group. The total questionnaires returned were 50% (50 from 100 patients).

General characteristic

The mean age of the patients at the time of surgery was 13.8 years old (Table 1). The level of mental restriction was identified in 39 patients (mild 15, moderate 13, severe 11). Among the 100 patients, 58 patients could be identified the cause of mental restriction (Table 2). The most common cause of mental restriction in the present study was Down's syndrome (20 out of 58 patients) and autism (15 out of 58 patients), respectively. The other (42 patients) could not identify the cause of mental restriction.

Table 2. Cause of mental restriction (n=100)

Cause of mental restriction	n
Unknown cause	42
Down syndrome	20
Autism	15
Cerebral palsy	7
William syndrome	3
Hydrocephalus	2
Hypoxia	2
Post-encephalitis	2
Angleman syndrome	1
Birth asphyxia	1
Frontal lobectomy	1
Hypothyroidism	1
Incomplete corpus collosum	1
Kabuki syndrome	1
Rubinstein-Taybi syndrome	1

Table 3. Operative outcomes (n=100)

Outcome	n
Surgical time (minutes), Mean±SD	116.1±26.2
Estimated blood loss (mL), Mean±SD	32.4±29.7
Blood transfusion received	0
Length of hospital stay (day), Mean±SD	2.7±0.6
Type of procedure	
LESS TLH	94
LESS TLH with additional port	5
LESS subtotal hysterectomy	1
Complication	
Intraoprtative: abdominal wall bruise	1
Postoperative: fever (tissue reaction)	4

SD=standard deviation; LESS=laparo-endoscopic single site; TLH=total laparoscopic hysterectomy

Total of one hundred patients were operated through different three types of LESS hysterectomy (Table 3). Of these, ninetyfour patients had LESS hysterectomy. Five patients had LESS hysterectomy with additional port, two of them were used for fellowship trainee teaching. One had megacolon which obscured the uterus, unable to performed LESS hysterectomy. Another patient was performed appendectomy with hysterectomy. The other had engorged pelvic vessel which prone to injury. One had LESS subtotal hysterectomy due to venticulo-peritoneal (VP) shunt medical device placed at cul-de-sac which many studies had reported about VP shunt migration induced infection from vagina if performed total hysterectomy.

Mean operative time was 116.1±26.2 minute. Mean estimated blood loss was 32.4±29.7 ml. No blood or post-operation component was transfused. Length of hospital stay was 2.7±0.6 days. Minor complications were found in five patients where one patient had intra-abdominal wall bruise during operation from skin elevation for veress needle insertion, and four patients had post-operative fever from tissue reaction, which recovered after receiving oral antibiotic treatment.

The caregiver satisfaction and surgical wound healing were evaluated by using the questionnaires. Almost all caregivers were extremely satisfied (96%) and very satisfied (4%) with the outcomes of new operative technique.

Long-term follow-up of the surgical wounds were assessed after six months of operation by questionnaires. Forty-five out of 50 patients had no visible wound. Three patients had one hypertrophic scar and two patients had two hypertrophic scar around umbilicus. However, none of them had keloid.

Discussion

Unwanted pregnancy problem is a concerning issue for the caregiver. Additionally, there are various gynecologic problems such as menstrual hygiene, sexual abuse, and sexually transmitted disease. Hysterectomy is controversial[10,11]. Long-term hormonal medication is the least invasive management for this problem, but lack of adequate support from health care, family, and poor economic status are the obstacle factors for this method. Hysterectomy is a surgical procedure that caregiver chose to solve this problem. In the present study, although the most level of mental restriction is mild level, the caregiver is very concern about unwanted pregnancy and menstrual problem.

The laparoscopic surgery technique has been continually developed to minimize the risk and maximize the benefit of patients. The current practice tried to reduce the number and size of ports for improving cosmetic wound, post-operative pain, operative time, and minimal morbidity. Various previous studies[5,6] demonstrated that the LESS surgery was not different in less post-operative pain and cosmetic wound outcome when comparing

with the conventional laparoscopic surgery, but LESS surgery had longer operative time. However, the present study showed a good cosmetic wound outcome. This might be due to the use of 3 mm and 5 mm ports at umbilicus.

The results of the present study showed high success rate of the new procedure (95%), minimal blood loss, and no serious complications. Caregivers had high satisfaction level with the new procedure technique.

In addition, a previous study of hysterectomy in the mental restriction group[7], which has the same condition as in the present study, showed the conventional total laparoscopic hysterectomy (TLH) had longer operative time and more blood loss than the present study. Due to the different procedure technique, the LESS TLH had better operative outcomes.

The operative time in the present study was also in accordance with the previous study[8], which used the same procedure in adult. However, the estimate blood loss was less. In fact, there are difference in the pelvic organ anatomy and pathology among pediatric and adult patient. For the minor differences, performing LESS hysterectomy procedure in adult is more difficult. In addition, the operations in the present study were performed by experienced gynecologist and fellowship trainee. This might be a reason that the study took longer operative time than expected.

The length of hospital stay in the previous study[7] of hysterectomy in the mental restriction group was shorter than the present study. The patients that underwent laparoscopic surgery at Ramathibodi Hospital were routinely discharged at the third day of the operation. This might be the reason of longer hospital stay.

About the satisfaction of the operative outcomes, almost all of the caregivers were extremely satisfied with the procedure. For that reason, the LESS TLH has been the operative option for the patients with mental restriction.

The limitation of the present study was the retrospective study. The data were from review of the medical records.

Further randomize studies to reduce recall bias and confounding factor should be done.

Conclusion

LESS hysterectomy is a feasible method for hysterectomy in mental restriction patients. This procedure had good surgical outcomes and minimal morbidity. Therefore, LESS TLH is one of a choice for hysterectomy for these patients.

Further randomized studies to reduce recall bias and confounding factor are needed.

What is already known on this topic?

Minimally invasive approaches to hysterectomy, vaginal or laparoscopic hysterectomy, should be performed, whenever feasible, based on their well-documented advantages over abdominal hysterectomy. The selection of the route of hysterectomy for benign causes can be influenced by the size and shape of the vagina and uterus. According to ACOG, the committee recommends laparoscopic hysterectomy as a preferable alternative to open abdominal hysterectomy for those patients in whom a vaginal hysterectomy is not indicated or feasible.

What this study adds?

For mental restriction patients who had narrow vagina that could be obstacle for vaginal hysterectomy, laparoscopic single site hysterectomy or LESS TLH is safe and feasible.

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Conflicts of interest

The authors declare no conflict of interest.

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