

A Comparative Study of Laparoscopic Assisted Vaginal Hysterectomy Versus Total Abdominal Hysterectomy in Benign Gynaecological Conditions: A Prospective Study

Yusra Mushtaq Shah¹, Omer Khurshid², Aijaz Ahmad³

¹Postgraduate Scholar, Department of Obstetrics and Gynaecology, GMC, Srinagar.

²Senior Resident, Department of General Surgery, GMC, Srinagar.

Received: 20-03-2023 / Revised: 21-04-2023 / Accepted: 30-05-2023

Corresponding author: Dr. Aijaz Ahmad

Conflict of interest: Nil

Abstract:

Background: laparoscopic assisted vaginal hysterectomy (LAVH) has modernized and added another arrow to the surgeon's quiver. To compare the TAH and LAVH for benign diseases.

Methods: This prospective comparative observational study was undertaken to compare outcome of laparoscopic assisted vaginal hysterectomy with total abdominal hysterectomy for a total of 1 year in 60 patients who were undergoing hysterectomies for benign uterine abnormalities. 30 cases underwent TAH and 30 underwent LAVH.

Results: The mean operative time in LAVH group was 175.3 minutes whereas in TAH group it was 95.2 minutes ($p < 0.001$). 30% patients in TAH group had 250 to 500 ml of blood loss. In 90% of LAVH group blood loss was less than 250 ml ($p < 0.001$). Mean blood loss was 290 ml in TAH group and 160 ml in LAVH group. 20% of patients in TAH group and 6.6% patients in LAVH group required blood transfusion ($p > 0.05$). The mean postoperative hospital stay in LAVH group was 4.2 days and in TAH group it was 5.4 days ($p < 0.001$). Mean hospital stay in LAVH and TAH was 4.2 and 5.4 days ($p < 0.001$). Mean VAS in LAVH and TAH was 3.4 and 5.1 ($p < 0.001$). Mean hours required for ambulation in LAVH and TAH was 7.7 and 11.7 hours ($p < 0.001$). Return to daily activities after discharge was early with LAVH group i.e. 2 weeks. In 48 % of patients. In TAH group, it was late by 5 weeks in 58% patients and 7 weeks in 15% of patients.

Conclusion: This study demonstrates that LAVH is better alternative than TAH in terms of less blood loss, early ambulation and early resumption of daily activities.

Keywords: LAVH, TAH, Laparoscopic assisted vaginal hysterectomy, Total abdominal hysterectomy.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Hysterectomy is one of the most frequently performed gynecological procedures with approximately 6,00,000 women undergoing this procedure annually in the United States.[1] Abdominal hysterectomy involves removal of the uterus through an incision in the lower abdomen. Abdominal

hysterectomy remains the “fallback option” if the uterus cannot be removed by another approach.[2] Abdominal hysterectomy typically requires less operating time than laparoscopic hysterectomy and requires no advanced laparoscopic instrumentation and expertise.[3] However, abdominal

hysterectomy is associated with longer patient recovery and hospital stays, increased incisional pain, and increased risk of post-operative febrile morbidity and wound infection.[4,2,5] In laparoscopic assisted vaginal hysterectomy (LAVH), the procedure is done partly laparoscopically and partly vaginally but the laparoscopic component does not involve uterine vessel ligation. Since it was first reported by Reich et al.⁶ laparoscopic assisted vaginal hysterectomy (LAVH) has gained widespread acceptance. Laparoscopic assisted vaginal hysterectomy (LAVH) has now been developed to allow laparoscopic techniques to be used to separate the uterus from the surrounding pelvic structures, the uterus then being removed through the vagina[6], allowing rapid recovery and enabling oophorectomy to be achieved more easily than in vaginal hysterectomy. There are many surgical advantages to laparoscopy, particularly magnification of anatomy and pathology, easy access to the vagina and rectum, and the ability to achieve complete haemostasis. There are multiple patient advantages such as avoidance of painful abdominal incision, reduced duration of hospitalization and recovery and extremely low rate of infection. This method requires greater surgical expertise than the vaginal and abdominal methods. The proportion of hysterectomies performed laparoscopically has gradually increased, and, although the procedure takes longer, proponents have emphasised several advantages: the opportunity to diagnose and treat other pelvic diseases (such as endometriosis) and to carry out adnexal surgery including the removal of the ovaries; the ability to secure thorough intraperitoneal haemostasis at the end of the procedure and a rapid recovery time.[7] The aim of our study was to compare LAVH with TAH in terms of operative time, blood loss, hospital stay, analgesia, intra and postoperative complications rate and recovery.

Methods

This was a prospective comparative observational study which was carried out in Government Lalla Ded Hospital, Srinagar, an associated hospital of Government Medical College, Srinagar. A total of 60 patients undergoing hysterectomy for benign gynecological conditions. 30 patients underwent LAVH and rest 30 underwent TAH.

Inclusion criteria was all women undergoing hysterectomy for benign uterine abnormalities.

Exclusion criteria were patients with uterine size >14 weeks, patients with malignancies, patients undergoing emergency hysterectomies, patients with severe endometriosis, patients with uterine prolapse and patients who didn't gave consent for study.

Outcome: Operative intervention includes Operative time, Intra operative blood loss estimation, Intra op injuries. Post-operative evaluation include measurement of vitals, Pain scoring using VAS & analgesics required, Ambulatory period, Postoperative complications, Hospital stay. Statistical analysis performed using SPSS Version 20. Analysis of significance performed t test and chi square test. A p value 0.05 or less has been considered as statistically significant.

Results

There was no statistically significant difference among the groups as to mean age, parity.

In our study operative time for LAVH group was more than TAH group, reason being LAVH being technically more challenging. The mean operative time in LAVH group was 175.3 minutes whereas in TAH group it was 95.2 minutes ($p < 0.001$).

Blood loss in LAVH group was less as compared to TAH group. 30% patients in TAH group had 250 to 500 ml of blood

loss. In 90% of LAVH group blood loss was less than 250 ml ($p < 0.001$). Mean blood loss was 290 ml in TAH group and 160 ml in LAVH group.

In our study only one patient from LAVH group had bowel injury which was identified on table and repaired. Two patients (6.7%) in LAVH group, two patients (6.7%) in VH group and three patients (10%) in TAH group developed pyrexia in post-operative period which was managed by antipyretics. One patient (3.3%) in VH group and one patient (3.3%) in TAH group developed urinary tract infection which was managed by antibiotics and oral fluids. Three patients (10%) in TAH group developed wound infection which was treated by antibiotics, wound debridement and daily antiseptic dressings. In our study more number of patients from TAH group needed post-op blood transfusion than LAVH group. 20% of patients in TAH group and 6.6% patients in LAVH group required blood transfusion ($p > 0.05$). In our study

discharge from hospital was early for LAVH group than TAH group. Mean hospital stay in LAVH and TAH was 4.2 and 5.4 days ($p < 0.001$).

In our study patients from LAVH group complained of less pain postoperatively than TAH group. Also majority of patients from LAVH group required mild to moderate analgesia whereas majority of patients in TAH group required higher use of analgesics ($p < 0.001$). Mean VAS in LAVH and TAH was 3.4 and 5.1 ($p < 0.001$). Ambulation was early for LAVH group as compared with TAH group. Mean hours required for ambulation in LAVH and TAH was 7.7 and 11.7 hours ($p < 0.001$).

The mean hospital stay was little less in LAVH group as compared with TAH group. Return to daily activities after discharge was as early with LAVH group as 2 weeks in 46.66% of patients. In TAH group, it was late by 5 weeks in 70% patients.

Table 1: Comparison of LAVH and TAH groups:

	TAH	LAVH
Mean Age	47.9 ± 3.36	46 ± 4.06
Parity (%)		
Para 2	6.7	3.3
Para 3	43.3	53.3
Para 4	26.7	26.7
Para 5	13.3	13.3
Para 6	3.3	3.3
Indications (%)		
DUB	50.0	73.3
Fibroid Uterus	36.7	13.3
Adenomyosis	13.3	3.3
Chronic pelvic pain	0.0	10.0
Mean Operative time	92.2	175.3
Blood loss (ml)		
<250	60%	90%
250-500	30%	10%
>500	10%	0.0%
Intraoperative complications		
Hemorrhage	10%	3.3%
Urinary Tract Injury	0.0%	0.0%
Bowel injury	0.0%	3.3%

Pain scale VAS	5.1±1.24	3.4±0.97
Blood transfusion	20%	6.6%
Mean drop in Hb (g/dl) > 48 hrs of surgery		
	1.30	0.78
Post-operative complications		
Fever	10%	6.7%
UTI	3.3%	0.0%
Wound Infection	10%	0.0%
Mean Hospital stay	5.4±0.85	4.2±0.925
Ambulation	11.7±1.44	7.7±0.83
Return to daily activity (weeks)		
1	0	6.66%
2	0	46.66%
3	3.33%	26.66%
4	10%	13.33%
5	70%	3.33%
6	16.66%	3.33%

Discussion

In our study the mean operative time in LAVH group (175.3) was significantly more than TAH group (95.2) (p-value <0.001). In the study done by G McCracken et al.[8] the mean operative time in LAVH (95) was significantly more than TAH (73.9). Similar results were also observed in eValuate study[9] and in the study conducted by Ottosen C et al.[10] and Stovall and Summitt et al.[11] Similar observations were also made in the NICE interventional procedure overview of laparoscopic techniques for hysterectomy by Johnson N et al.[12] In this study intra operative blood loss in TAH group (250-500 ml) was more in comparison to LAVH group (<250 ml). Similar results were also observed in studies conducted by Lal Manju et al.[13] (TAH -125 to 175 ml, LAVH- 100 to 130 ml), Prasong et al.[14] (TAH- 60 to 400 ml, LAVH- 40 to 250 ml), Kapoor Nisha et al.[15] (TAH-150 ml, LAVH116 ml), Kongwattanakul et al.[16] (TAH- 250 ml, LAVH120 ml). In our study, 1 (3.3%) patient in LAVH group and 3 (10%) patients in TAH group had intraoperative haemorrhage but the difference was statistically insignificant. 1 (3.3%) patient in LAVH group had bowel

injury. Similar observations were made by G McCracken et al.[8] In their study no significant difference was found in the intraoperative complications in the two groups. The mean drop in haemoglobin in LAVH (0.78) group was found to be less than TAH group (1.30) and the difference was statistically significant. Similar observations were made in the NICE study by Johnson N et al.[12] in which they observed small drop of haemoglobin in laparoscopic group as compared to TAH group. In our study the mean VAS was more in TAH group (5.1) compared to LAVH group (3.4) indicating more postoperative pain in TAH group. Similar observations were made in the studies conducted by Summitt RL Jr et al.[11], G McCracken et al.[8] and in the evaluated study.[9] The postoperative analgesic requirement was found more in TAH group compared to VH and LAVH groups and the difference was statistically significant. The analgesic requirement in LAVH and VH groups were comparable. Similar results were observed in the study conducted by G McCracken et al. [8] In our study, 2 (6.7%) patients in LAVH group, 2 (6.7%) and 3 (10%) patients in TAH group developed post-operative pyrexia. 1 (3.3%) patient in the TAH

group developed urinary tract infection and 3 (10%) patients in TAH group developed wound infection. The NICE study by Johnson N et al.[12] also observed fewer febrile episodes and fewer wound infections in LAVH group when compared with the TAH group. Summitt RL Jr et al.[11] also reported more wound complications in TAH group-E. David Montefiore et al.[17] also reported more intra and post-operative complications in TAH group compared to LAVH group. J. D. Arbogast et al.[18] also reported less febrile morbidity in LAVH group. In our study LAVH group patients, duration of hospital stay was less because of less postoperative pain, complications and early ambulation. In the present study, return to normal activities was significantly quicker (2 weeks) in patients of LAVH group compared as to patients of TAH group. It took a little longer time to return to work (4 weeks) in patients of TAH group. Time to return to work was significantly shortened among LAVH group as supported by all the above-mentioned studies. In Prasong et al.[14] study, he used a recovery scale of 1 to 10. It showed significant difference in recovery score between LAVH and TAH groups as early as day 7. This was more pronounced by day 14, when the mean scores for the LAVH group were 8 and 5 for the TAH group; significant differences even persisted to day 28, with scores of 9 and 7.

Conclusion

This study demonstrates that LAVH is better alternative to TAH for benign gynaecological disorders offering important advantages. The hospital stay, requirement of blood transfusion, post-operative pain, analgesic requirement and drop in haemoglobin were found to be significantly lower in LAVH group as compared to TAH group. Various intra-operative and post-operative complications were also less in LAVH group as compared to TAH group. The patients in

LAVH group also ambulated earlier than TAH group. LAVH required significantly more operative time than TAH former demanding more surgical expertise. Therefore, it can be concluded that LAVH should be the approach of choice, whenever feasible, based on its advantages and lower complication rates. Medical outcomes of shorter length of stay in hospital, less pain, lower complication rates, decreased blood loss, early ambulation and a scar less surgery favour the LAVH approach. Laparoscopic assisted vaginal hysterectomy is an alternative to abdominal hysterectomy for those in whom vaginal hysterectomy is not considered feasible.

Funding: No funding sources.

Ethical approval: The study was approved by the institutional ethical committee.

References

1. Farquhar CM, Steiner CA: Hysterectomy rates in the United States 1990-1997. *Obstet Gynecol.* 2002; 99(2): 229-34.
2. Neil Johnson, David Barlow, Anne Lathaby, Emma Tavender, Liz Curr, Ray Garry. *Methods of Hysterectomy: systematic review and meta-analysis of randomized controlled trials.* *bmj.com*; 2005; 330:1478.
3. Falcone T, Paraiso MF, Mascha E: Prospective randomized clinical trial of laparoscopically assisted vaginal hysterectomy versus total abdominal hysterectomy. *AM J Obstet Gynecol.* 1999; 180: 955.
4. Johns DA, Carrera B, Jones J, et al: The medical and economic impact of laparoscopic assisted vaginal hysterectomy in a large metropolitan, not-for-profit hospital. *Am J Obstet Gynecol.* 1995; 172: 1709.
5. Marrana R, Busacca M, Zupi E, et al: Laparoscopic assisted vaginal hysterectomy versus total abdominal hysterectomy: a prospective,

- randomized, multicenter study, Am J Obstet Gynecol. 1999; 180: 270.
6. Reich H, Decaprio J, McGlynn F. Laparoscopic hysterectomy. J Gynecol Surg. 1989; 5: 213-216.
 7. Garry R. Towards evidence-based hysterectomy. Gynaecol Endosc. 1998; 7:225-33
 8. G McCracken, D Hunter, D Morgan, JH Price. Comparison of Laparoscopic assisted Vaginal Hysterectomy, Total Abdominal Hysterectomy and Vaginal Hysterectomy. Ulster Med J. 2006;75(1) 54-58.
 9. The eVALuate study: two parallel randomized trials, one comparing laparoscopic with abdominal hysterectomy the other comparing laparoscopic with vaginal hysterectomy. Obstet Gynecol. 2004; 103: 795-795.
 10. Otosson C, Ling Mang G, Ottoson L. Three methods for hysterectomy a randomized prospective study of short-term outcome. BJOGN. Nov 2000; Vol. 107: page 1380-1385.
 11. Summitt RL Jr, Stovall TG, Steege JF, Lipscomb GH. A multicenter randomized comparison of laparoscopically assisted vaginal hysterectomy and abdominal hysterectomy in abdominal hysterectomy candidates. Obstet Gynecol. 1999 Jan; 93(1): 160.
 12. Johnson N et al. NICE interventional procedure overview of laparoscopic techniques for hysterectomy, 2006.
 13. Lal Manju et al. Laparoscopic assisted vaginal hysterectomy (LAVH)- truly an advance in gynaecological surgery. Department of Obstetrics & Gynaecology, Swami Rama Himalayan University, Dehradun., Int J Biol Med Res. 2014;5(3):4346-9.
 14. Jaturasivilai P. A Comparative study between Laparoscopically Assisted Vaginal Hysterectomy and Abdominal Hysterectomy. Department of Obstetrics and Gynaecology, Uttaradit Hospital, Uttaradit., J Med Assoc Thai. 2007;90(5):837-43.
 15. Nisha K. Laparoscopic-assisted Vaginal Hysterectomy (LAVH)- An effective alternative to conventional hysterectomy. Fortis escorts Hospital, Faridabad. J Obstet Gynecol India. 2010;60(5):429- 35
 16. Kongawattanakul K. Comparison of laparoscopically assisted vaginal randomized controlled trial. Department of Obstetrics and Gynaecology, Faculty of Medicine, Khon Kaen University, Thailand. 2010.
 17. David-Montefiore E, Rouzier R, Chapron C, Daraï E; Collegiale d'Obstétrique et Gynécologie de Paris-Ile de France. Surgical routes and complications of hysterectomy for benign disorders: a prospective observational study in French university hospitals. Hum Reprod. 2007 Jan; 22(1): 260-5.
 18. J.D. Arbogast, R.A. Welch, E.D. Riza, E.L. Ricaurte, D.R. Pieper. Laparoscopically Assisted Vaginal Hysterectomy Appears to Be an Alternative to Total Abdominal Hysterectomy. Journal of Laparoendoscopic Surgery. 1994; 4(3):185-90.