



COMPARATIVE STUDY BETWEEN LAPAROSCOPIC TOTAL HYSTERECTOMY AND OPEN ABDOMINAL HYSTERECTOMY IN ALDIWANIYAH TEACHING HOSPITAL

*Dr. Mohammed H. Alobaidi M.B.CH.B, FACS., Dr. Qassim J. Alnaqeeb M.B.CH.B. C.A.B.S. and Dr. Ridah S. Alkinani M.B.CH.B.

Iraq.

*Corresponding Author: Dr. Mohammed H. Alobaidi

Iraq.

Article Received on 29/03/2019

Article Revised on 18/04/2019

Article Accepted on 08/05/2019

ABSTRACT

Background: Open abdominal hysterectomies was one of the most common and traditional surgical procedure for the removal of uterus in women for the treatment of benign gynecological disease. Laparoscopic hysterectomy results in less blood loss than abdominal surgeries and is also more achievable in nulliparous and obese women. Laparoscopic hysterectomy (LH) rates recently increases, but traditional open approach is still used in predominance. Most studies now prefer the laparoscopic approach for hysterectomy for the known benefits of minimal access surgery Aim of the Study: the study aimed to compare the outcome of laparoscopic total hysterectomy with its open counterpart in terms of some intraoperative and postoperative selected parameters. Patients and Methods: this prospective randomized controlled trial performed on 50 patients who underwent LH (group 1) compared to 50 patients who underwent AH (group 2). The mean age of the cases, body mass index (BMI), duration of operation, estimated blood loss (EBL), rate of complications, post-operative hospital stay and convalescence time were compared for two groups. Results: LH was associated with a significantly longer operating time (90+-12 minutes vs. 75+-15minutes P 0.004). Regarding the intraoperative complications there were no difference between both groups, but there is statistically significant difference regarding blood loss In LH group the pain score and analgesia requirements in post- operative period were significantly less with only few patients' required post-operative opioid analgesia. There was a highly significant difference between groups in postoperative wound related complications which were higher in AH group. LH was also associated with a significantly shorter hospital stay (1.6+-1 vs. 3+-2 days P= 0.001) and earlier returned to daily activities (9+-3.2 vs. 23.4+-11days P<0.001). Conclusion: total laparoscopic hysterectomy is safe and feasible procedure in treatment of benign uterine tumors and other pathologies with less postoperative pain, rate of wound complication, shorter hospital stay.

KEYWORDS: Total laparoscopic hysterectomy, total abdominal hysterectomy, outcomes and complications.

INTRODUCTION

Hysterectomy is one of the most common gynecological procedures performed worldwide. Approximately 600,000 hysterectomies are performed annually in the United States the majority of which are performed for benign indications.^[1] Hysterectomy can be performed Trans abdominally, Transvaginally, laparoscopic ally with or without robot-assisted facilities or a combination of 2 of the above mentioned approaches.^[2] Choosing route of hysterectomy is influenced by many factors as shape and size of the uterus and pelvis, surgical indications, presence or absence of adnexal pathology, extensive pelvic adhesive disease, surgical risks, hospitalization and recovery length, hospital resources, and surgeon expertise are all weighed once hysterectomy is planned. Each approach carries distinct advantages and disadvantages, and should be discussed with the

patient.^[3] Kurt Seem in Germany first described a technique for laparoscopic assistance in vaginal hysterectomy in 1984. The adnexa were separated laparoscopically in order to simplify vaginal hysterectomy this was later called laparoscopic assisted vaginal hysterectomy (LAVH).^[4] Harry Reich.^[5] performed the first laparoscopic hysterectomy (LH) in January, 1988. The ligaments and uterine vessels were coagulated with bipolar forceps and the vagina was closed vaginally. The total operating time was 180 minutes and the patient was discharged on the fourth postoperative day. Like other minimally invasive surgeries laparoscopic hysterectomy have been clearly associated with lower morbidity as less blood loss, shorter hospital stay, faster return to normal activities, and fewer wound related complications when compared with open abdominal hysterectomies.^[6]

AIM OF THE STUDY

The aim of this study is to compare the outcome of laparoscopic hysterectomy with open abdominal hysterectomy in uterine benign diseases.

MATERIALS AND METHODS

This is a prospective randomized controlled trial performed on One hundred patients who had hysterectomy operation for benign uterine pathologies between January 2016 and January 2019 at ALdiwanya teaching hospital General surgical Department and private hospital. The study population was stratified into 2 groups the study group 1 50 patients underwent laparoscopic hysterectomy and another 50 patients are subjected to conventional open transabdominal hysterectomy as control group 2.

All of the patients were operated by team work surgeons. Cases in whom uterine malignancy was suspected those patients were excluded from the study.

Patient's selection: patients in both were matches and subjected to full preoperative assessment. Operations were performed under general anesthesia. All of the patients received antibiotic prophylaxis. Surgical details: open transabdominal hysterectomy was performed according to the standardized procedure used by many authors.

LH was performed in low dorsal lithotomy position and vaginal examination under anesthesia after folly's catheter insertion then uterine manipulator was placed in uterine cavity. Open technique for first port insertion to advance 10 mm umbilical port or mostly at Palmer's point. Two 5 mm trocars were inserted one lateral to the left inferior Epigastric arteries under direct laparoscopic vision and another trocar was inserted 2-3cm above the right anterior superior iliac spine under direct vision. The uterus was pushed cephalad and to one side from below

using the uterine manipulator. Using bipolar diathermy or Harmonic instrument the infundibula-pelvic ligament is dissected and cut, taking progressive bites of tissue starting at pelvic brim and moving towards the round ligament and continue downwards till controlling uterine vessels. Bladder is separated using monopolar diathermy then the vagina is opened anteriorly and continues circumferentially till complete separation the uterus and cervix from the vagina. The specimen is delivered out through vagina and the vagina closed by intracorporal continues or interrupted sutures.^[7]

Measured outcomes: Operative time was estimated. Intraoperative blood loss was recorded. Hospital stay and analgesics given to the patients were recorded. Patient discharged home after she can tolerate oral fluid. Regular follow up was adopted at outpatient clinic for evaluation of delayed complications. Groups were compared in terms of mean age, body mass index (BMI), operation time, estimated blood loss, complication rate, postoperative pain score and analgesic doses, postoperative hospitalization time and Convalescence time.

Statistical analysis: Data were analyzed using SPSS 20 software system, %, mean and chi-square test was used for categorical variables and Test for continuous variables.

RESULTS

Regarding the mean age of both groups was similar and there was no statistically significant difference. The body mass index (BMI) of both groups was significant statistically. There was no difference between two groups about previous abdominal surgery. Most of the women who had come to the hospital for hysterectomy were above the age of 40 years and many had already attained menopause. Patient's characteristics and operation indications were shown on Table (1) and (2).

Table (1): Patient's characteristics.

Character	LH n:50	AH n:50	P value
age	47-60 53.6±4.7	46-64 56.1±3.2	NS
BMI	31-44 36.8±2.5	30-35 33.4±2.1	0.001
Parity	2-4 3±1	0-5 2.4±2	NS
Premenopausal period	18(36%)	12(24%)	NS
Postmenopausal period	32(64%)	38(76%)	NS
Previous surgery	28(56)	32(64%)	NS

Table (2): Indications of hysterectomy.

Indications	LH n:50	AH n:50	P value
IUB	15(30%)	18(36%)	NS
PMB	13(26%)	14(28%)	NS
Fibroid	12(24%)	10(20%)	NS
Endometrial Hyperplasia or adenomyosis	8(6%)	5(10%)	NS
Cervical polyp	2(4%)	3(6%)	NS

Mean operative time was longer in group 1 than group 2 and this was statistically significant (90±12) minutes for LH compared to (75±15) minutes for AH, $p < 0.004$). Estimated blood loss was significantly different in LH

group (250±35) compared to AH group (300±40) $P = 0.003$. There was one case needed conversion to laparotomy. One patient in group 2 had intraoperative bladder injury (table 3).

Table (3): Intraoperative parameters.

Parameter	LH n:50	AH n:50	P value
operative time (min)	90±12	75±15	0.004
Blood loss(ml)	50-600 (240±35)	50-750 300±40	0.003
Blood transfusion	1(2%)	3(6%)	NS
Readmission	0	2(4%)	NS
Conversion rate	1(2%)	0	NS
Bladder injure	0	1(2%)	NS
Bowel injure	0	0	NS
Ureteric injure	0	0	NS

Postoperative pain score and analgesic doses required was significantly lower in patients in LH group compared to AH group. Prolong ileus occurred in 10 % of cases of open hysterectomy group compared to 0% of LH group ($p = 0.06$). Mean hospitalization time was shorter for patients who undergone LH (group 1) than patients who undergone AH (group 2) and this was statistically significant (1.6±1)days compared to 3±2

days, $p = .0001$). Women after LH reported that they could returned to normal life within 9±3.2 days compared to open abdominal hysterectomy 23.4±11 ($p < 0.001$). Regard the wound related complications was significantly lower in LH than AH, where wound related complications were occurred in 14% of patients with open hysterectomy compared to no significant infection at port sites (table 4).

Table (4): Postoperative complications.

Complications	LH n:50	AH n:50	P value
Wound related complications	0	7(14%)	0.001
Prolong ileus	0	5(10%)	0.006
Pulmonary cx.	0	2(4%)	NS
Postop. Pain in 1st and 2nd days	2-6 4±1.2	4-10 7.1±2	0.001
Postop. Analgesia(dose)	2-5 3.1±1	5-100 7.2±3	0.001
Hospital stay	1-2 1.6±1	2-5 3±2	0.001
Return to normal life	5-11 9±3.2	15-35 23.4±11	0.001

DISCUSSION

Hysterectomy is one of the most frequently performed gynecologic surgery and used for treatment of both malignant and benign diseases. There are many approaches for hysterectomy vaginal, laparoscopic or abdominal approach and the choice between them remains controversial. AH is still ongoing approach in spite of the good evidences that laparoscopic hysterectomy in advocated by many authors owing to its added advantages of comparable complication incidence, lower postoperative pain, less blood loss, shorter hospitalization period, shorter healing time and earlier turn back to daily activities.^[8,9] Because of laparoscopic surgery needs experience, laparoscopic hysterectomy take a long time at the beginning, with progressive experience operation time is getting shorter. A lot of studies.^[6,9,10,11,12] agree with our results and reported that laparoscopic hysterectomy takes longer operative time than abdominal hysterectomy while Seracchioli *et al.*^[13] reported no statistically significant difference about LH and AH operation time. On the other hand Sesti *et al.*^[14] found that LAVH took shorter time than abdominal hysterectomy. This was the same result reported in recent

study by Malik *et al.*^[15] on a series of 296 hysterectomies, they reported that TLH was associated with a significantly lower mean operating time (63.4 minute versus 75.3 minute $P < 0.001$). When discussing LH complication rate particularly the urinary tract injury we found no significant difference between AH and LH. Starting with a study of Donnez *et al.*^[16] on 3190 women underwent laparoscopic hysterectomy, they reported more complications than abdominal hysterectomy and they found significantly higher risk for urinary tract injuries with LH. However since its publication there has been significant criticisms of this study; it can be hypothesized that the increased complication rates may have been a consequence of the relative inexperience of the surgeons rather than the technique of LH. Malik *et al.*^[15] in 2016 reported that the intraoperative complication rates were significantly less in the LH group 1.9% versus 7.0% in AH group ($P = 0.029$). Low complication rate is replicated in other literatures.^[16,17,18] In our study there was no significant difference as regard intra-operative complications between both groups except operative time which was longer in LH than AH. But there was a significant difference between groups

when comparing the post-operative complications in which there were higher rate of delayed intestinal motility and wound related complications after open hysterectomy. This result agrees with other studies.^[12,13,14] Harkki-Siren et al, Seracchioli R et al, Sesti F et al. In study by Lowell et al.,^[19] in which LAVH had more estimated blood loss than AH. But in other studies as Perino et al.^[20] Long et al.,^[21] O'Hanlan et al.^[22] and Canadian et al.^[18] they found that intraoperative blood loss in laparoscopic hysterectomy was less than abdominal hysterectomy. In our study estimated blood loss was significantly lower in LH group (mean 250±35) when compared to AH group (mean 300±40). Also in our study there was no difference in the number of patients whom received blood transfusion but the number of transfused units of blood is more in AH group. On other hand Çelik et al.^[23] Seracchioli et al.^[13] and Ribeiro et al.^[24] found that no statistically significant difference about blood loss between LH and AH. Postoperative pain was significantly lower in laparoscopic hysterectomy group than abdominal hysterectomy group in all post-operative period. Our data is in keeping with the anticipated decrease in postoperative pain associated with minimally invasive surgery, which is supported by many literature as Harkki-Siren et al.^[12] Naik et al.^[25] and Ghezzi et al.^[26] Our study found that significantly lower analgesics doses were required postoperatively in the LH group than AH group. Mallick et al.^[15] report data keeping with this as they found that overall analgesia requirements to be significantly less in the LH group. One would also expect that hospital stay would be reduced when surgery is performed by the minimally invasive route and this is supported by the literatures, as Celik et al.^[23] Balci,^[27] Pather et al.^[28] and Kondo et al.^[29] Like other studies, hospital stay for our patients in LH group was significantly shorter than that for patients with AH group and women reported that they could returned to normal life earlier after LH than AH.

Despite the fact that the camera port for LH is sited preferentially in the periumbilical region our experience entailed that the used of high up port site (palmer point) as substitute for the following reasons to avoid overcrowding of port in the lower abdomen which give the surgeon more comfortable hand movement, the laparoscopic view if not the same it give better image and the site can avoid crossing over problem with working port instruments.

CONCLUSION

Study shows that TLH is minimally invasive and is related to a low intra and postoperative complication rate, even in high BMI-patients and when there is a history of abdomino-pelvic surgery. Laparoscopic surgeries result in a faster recovery time and lesser hospital stay and minimal pain and complications compared to abdominal and even vaginal hysterectomy. However, this type of a surgery requires surgeon's experience and expertise.

In conclusion, laparoscopic hysterectomy is a safe and suitable procedure for chosen patients. It affords patients advantages like less peri-operative morbidity, better life quality, shorter hospitalization time, and faster return to activity.

REFERENCES

1. Doll KM, Dusetzina SB, and Robinson W Trends in inpatient and outpatient hysterectomy and oophorectomy rates among commercially insured women in the United States, 2000–2014. *JAMA Surg.*, 2016; 151(9): 876–7.
2. Lonnerfors C, Reynisson P, Persson J A randomized trial comparing vaginal and laparoscopic hysterectomy vs robot-assisted hysterectomy. *J Minim Invasive Gynecol.*, 2015; 22(1): 78–86.
3. Van Der Meij E and Emanuel MH Hysterectomy for Heavy Menstrual Bleeding. *Women's Health (Lond)*, 2016; 12(1): 63–9.
4. Semm K *Operationslehre für endoskopische Abdominal- Chirurgie.* Stuttgart, New York, Schattauer, 1984.
5. Reich H, DeCaprio J, McGlynn F Laparoscopic hysterectomy. *J Gynecol Surg.*, 1989; 5(2): 213-6.
6. He H, Yang Z, Zeng D, Fan J, Hu X, Ye Y et al. Comparison of the short-term and long-term outcomes of laparoscopic hysterectomies and of abdominal hysterectomies: a case study of 4,895 patients in the Guangxi Zhuang Autonomous Region, China. *Chin J Cancer Res.*, 2016; 28(2): 187-96.
7. Einarsson J and Suzuki Y Total laparoscopic Hysterectomy: 10 Steps toward a Successful Procedure. *Rev Obstet Gynecol.*, 2009; 2(1): 57-64.
8. Cheung VYT, Rosenthal DM, Morton M and Kadanka H Total Laparoscopic Hysterectomy: A Five-Year Experience. *J Obstet Gynaecol Can.*, 2007; 29(4): 337–43.
9. Arts JW, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BW et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev.*, 2015; 12(8): CD003677.
10. Uccella S, Casarin J, Marconi N, Cromi A, Morosi C, Gisone B et al. Laparoscopic versus open hysterectomy for benign disease in women with giant uteri (≥1500 g): feasibility and outcomes. *J Minim Invasive Gynecol.*, 2016; 23(6): 922–7.
11. Olsson JH, Ellstrom M, Hahlin M A randomized prospective trial comparing laparoscopic and abdominal hysterectomy. *Br J Obstet Gynaecol.*, 1996; 103(4): 345-50.
12. Harkki-Siren P, Sjoberg J, Toivonen J and Tiitinen A Clinical outcome and tissue trauma after laparoscopic and abdominal hysterectomy: a randomized controlled study. *Acta Obstet Gynecol Scand.*, 2000; 79(10): 866-71.
13. Seracchioli R, Venturoli S, Vianello F, Govoni F, Cantarelli M, Gualerzi Bet al. Total laparoscopic hysterectomy compared with abdominal hysterectomy in the presence of a large uterus. *J Am*

- Assoc Gynecol Laparosc., 2016; 9(3): 333-8.
14. Sesti F, Calonzi F, Ruggeri V, Pietropolli A and Piccione E A comparison of vaginal, laparoscopic-assisted vaginal and minilaparotomy hysterectomies for enlarged myomatous uteri. *Int J Gynecol Obstet.*, 2008; 103(3): 227-31.
 15. Mallick R, English J and Waters N Total Laparoscopic Hysterectomy versus Total Abdominal Hysterectomy in the Treatment of Benign Gynaecological Disease: A Retrospective Review Over 5 Years. *Gynecological surgery*, 2016; 13(4): 359-64.
 16. Donnez O, Jadoul P, Squifflet J and Donnez J A series of 3190 laparoscopic hysterectomies for benign disease from 1990 to 2006: evaluation of complications compared with vaginal and abdominal procedures. *BJOG.*, 2009; 116(4): 492-500.
 17. Gendy R, Walsh C, Walsh SR and Karantanis E Vaginal hysterectomy versus total laparoscopic hysterectomy for benign disease: a metaanalysis of randomized controlled trials. *Am J Obstet Gynecol.*, 2011; 204(5): 388.e1-8.
 18. Candiani M, Izzo S, Bulfoni A, Riparini J, Ronzoni Sand Marconi A Laparoscopic vs vaginal hysterectomy for benign pathology. *Am J Obstet Gynecol.*, 2009; 200(4): 368.e1-7.
 19. Lowell L and Kessler A Laparoscopically assisted vaginal hysterectomy. A suitable substitute for abdominal hysterectomy? *J Reprod Med.*, 2000; 45(9): 738-42.
 20. Perino A, Cucinella G, Venezia R Castelli A and Cittadini E Total laparoscopic hysterectomy versus total abdominal hysterectomy: an assessment of the learning curve in a prospective randomized study. *Hum Reprod.*, 1999; 14(12): 2996-9.
 21. Mohamad Fathy et al., 5432.
 22. Long CY, Fang JH, Chen WC, Su JH and Hsu SC Comparison of total laparoscopic hysterectomy and laparoscopically assisted vaginal hysterectomy. *Gynaecol Obstet Invest.*, 2002; 53: 214-19.
 23. O'Hanlan KA, Dibble SL, Garnier AC and Reuland M. Total Laparoscopic Hysterectomy: Technique and Complications of 830 Cases. *JSLs.*, 2007; 11(1): 45-53.
 24. Celik C, Abali R, Tasdemir N, Aksu E, Caliskan H, Akkus D et al Total Laparoscopic Hysterectomy Compared with Abdominal Hysterectomy; Clinical Outcomes. *J Clin Anal Med.*, 2014; 5(6): 490-3.
 25. Ribeiro SC, Ribeiro RM Santos, NC and Pinotti JA A randomized study of total abdominal, vaginal and laparoscopic hysterectomy. *Int J Gynaecol Obstet.*, 2003; 83(1): 37-43.
 26. Naik R, Jackson KS, Lopes A, Cross P and Henry JA Laparoscopic assisted radical vaginal hysterectomy versus radical abdominal hysterectomy a randomized phase II trial: perioperative outcomes and surgicopathological measurements. *BJOG.*, 2010; 117(6): 746- 51.
 27. Ghezzi F, Uccella S, Cromi A, Siesto G, Serati M, Bogani G et al. Postoperative pain after laparoscopic and vaginal hysterectomy for benign gynecologic disease: a randomized trial. *Am J Obstet Gynecol.*, 2010; 203(2): 118.e1-118.e8.
 28. Balci O Comparison of Laparoscopic and Abdominal Hysterectomy. *Turk J Obstet Gynecol.*, 2014; 11(4): 224-7.
 29. Pather S, Loadsman JA, Mansfield C, Rao A, Arora V, Philp S et al. Perioperative outcomes after total laparoscopic hysterectomy compared with fast-track open hysterectomy - a retrospective casecontrol study. *ANZJOG.*, 2011; 51(5): 393-6.
 30. Kondo W, Bourdel N, Marengo F, Botchorishvili R, Pouly JL, Jardon K et al. Is laparoscopic hysterectomy feasible for uteri larger than 1000 g? *Eur J Obstet Gynecol Reprod Biol.*, 2011; 58(1): 76-81.