

Original Research Article

Abdominal hysterectomy versus total laparoscopic hysterectomy in cases of enlarged uterine size

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ABSTRACT

Background: Total laparoscopic hysterectomy (TLH) is a feasible, efficient way to manage benign uterine pathology, and is better than standard abdominal hysterectomy as it offers less postoperative discomfort, shorter hospitalization, rapid recovery, and early return to daily living activities.

Methods: A retrospective comparative cohort study was done on patients with abnormal uterine bleeding due to large myomas in the Department of Obstetrics and Gynecology, Tanta University Hospital, Tanta, Egypt, and Institute of Obstetrics and Gynecology, Cagliari University, Cagliari, Italy. Participants were classified into two groups. Group I (Laparoscopy group) included 20 patients for whom TLH was done. Group II (Laparotomy group) included 20 patients for whom open hysterectomy (OH) was done.

Results: Our result revealed that statistically significant differences were observed between the studied groups in post-operative Hb value, postoperative return of bowel sounds, and amount of blood loss however, prolonged duration of surgery was noticed in laparoscopic group than laparotomy group.

Conclusions: TLH is an accessible technique and an alternative to laparotomy when it was done by experienced surgeons for large uteri regardless of the site, size.

Keywords: Large uterus, Multiple fibroids, Abdominal hysterectomy, TLH

INTRODUCTION

Several surgical approaches are wont to do a hysterectomy. Abdominal hysterectomy was the commonest and invasive approach. Vaginal and laparoscopic hysterectomies are classified as minimally invasive procedures.¹

Nowadays, TLH is a feasible, efficient way to manage benign uterine pathology, and is a best alternative to standard abdominal hysterectomy as it offers less postoperative discomfort, shorter hospitalization, rapid recovery, and early return to daily living activities.² Laparoscopic hysterectomy (LH), defined as the

laparoscopic ligation of the uterine vessels by electrocautery desiccation, suture ligation was first done in 1988.³ Converting abdominal hysterectomy into a laparoscopic procedure is the rationale for TLH to minimize morbidity and trauma.⁴

Most studies mentioned that the upper limit for uterine size, usually 14 to 16 weeks' gestation or weight more than 500 grams as large uterine size.⁵ It was mentioned that Hugh uteri could be treated by laparotomy. Limited access to uterine pedicles depending on size and site of myomas, and high risk of complications such as haemorrhage are the main difficulties with Hugh uteri. Poor exposure, difficulty uterine extracting, and

prolonged procedure can lead to bowel and urinary tract injury.⁶ The aim of our study was to prove the feasibility and safety of laparoscopic hysterectomy in cases of enlarged uterine size.

METHODS

Consent to participate

An informed consent was obtained from each patient after the procedure was fully explained.

Study design

This observational comparative cohort study was conducted on 40 patients. Patients were classified into two groups: group I: (Laparoscopic group): LH was done for them (20 patients). Group II: (Laparotomy group): open hysterectomy was done for them (20 patients).

Settings

Patient selected from those attending the Department of Obstetrics and Gynecology, Tanta University Hospital, Tanta, Egypt, and Institute of Obstetrics and Gynecology, Cagliari University, Cagliari, Italy from October 2017 to October 2020.

Eligibility criteria

The patients were selected according to the following inclusion criteria: patients complained from abnormal uterine bleeding due to benign pathology with marked enlarged uterus.

Patients were excluded according to following exclusion criteria: 1) high anaesthesiology risk, 2) concurrent illness that does not permit using trendelenburg position, 3) malignant causes and 4) systemic diseases.

Full history

It includes-menstrual history, bleeding (onset, duration, rhythm, amount an-other sites of bleeding), systematic diseases causing bleeding, previous treatment of abnormal uterine bleeding, previous gynaecological surgery, and other comorbidities.

Clinical examination

Clinical examination included-systemic examination, abdominal examination, pelvic examination and bimanual pelvic examination.

Investigations

Imaging investigations

Transvaginal U/S. Computerized tomography (CT) or magnetic resonance imaging (MRI): when needed,

laboratory investigations: complete blood picture, coagulation profile, thyroid function test and liver function test.

Methods of follow-up

We estimated blood loss by calculating the blood volume of the suction machine during surgery excluding liquid used for intra-peritoneal washing and by weighing swabs. Operative time began at the first incision and finished after closure of the skin.

Technique/procedure of TLH

Step 1: Positioning and insertion of a uterine manipulator. Step 2: Abdominal entry and Trocar insertion: through 4 punctures with trocars: 1 inserted either at the Palmer's point (a point 3 cm below the left costal margin in the midclavicular line) or supraumbilical 10-mm video port and three lateral 5-mm ports. Patients were then placed in Trendelenburg position. Step 3: Round ligament transection (Figure 1 A). Step 4: Removal or preservation of one or both ovaries: close to the ovary (hug the ovary) (Figure 1 B). Step 5: Mobilization of the bladder by opening uterovesical fold of peritoneum from the round ligaments then dissection of the anterior leaf of the broad ligament continues anteriorly (Figure 1 C and D). Step 6: The uterine vessels are ligation at the level of the internal OS (Figure 2 A). Step 7: Colpotomy: created using bipolar energy, ultrasonic energy, or a cold knife (Figure 2 B). Step 8: The specimen is retrieved by Morcellation through the left upper quadrant 5-mm port, which is converted to 15-mm port. Using endo knife to cut specimen into pieces to permit extraction the uterus vaginally (Figure 2 C). Step 9: Vaginal cuff closure with no. 0 delayed absorbable interrupted figure-of-8 sutures (Figure 2 D). Step 10: Port site closure with subcuticular sutures using no. 3-0 delayed absorbable suture.

Certain modifications are adopted as myomectomy prior to hysterectomy to create space for the procedure.

Procedure of total abdominal hysterectomy (TAH)

Patient in a supine position, a transverse incision or a midline vertical abdominal incision was made.

Step 1: Round ligament cutting. Step 2: Fallopian tube and ovarian ligament or in fundibulo-pelvic ligament clamping, cutting, and ligation (Figure 3 A). Step 3: Bladder mobilization. Step 4: Uterine vessels and upper part of cardinal ligament cutting (Figure 3 B). Procedures 2, 3, and 4 are also performed on the other side. Step 5: Anterior vaginal wall incision and opening of the vaginal cavity (Figure 3 C). Step 6: Bilateral USL clamping, cutting, and ligation. Step 7: Clamp, cut, and ligate the USL and posterior half of the cardinal ligament. Step 8: Vaginal vault closure and step 9: Abdominal wall haemostasis and closure.

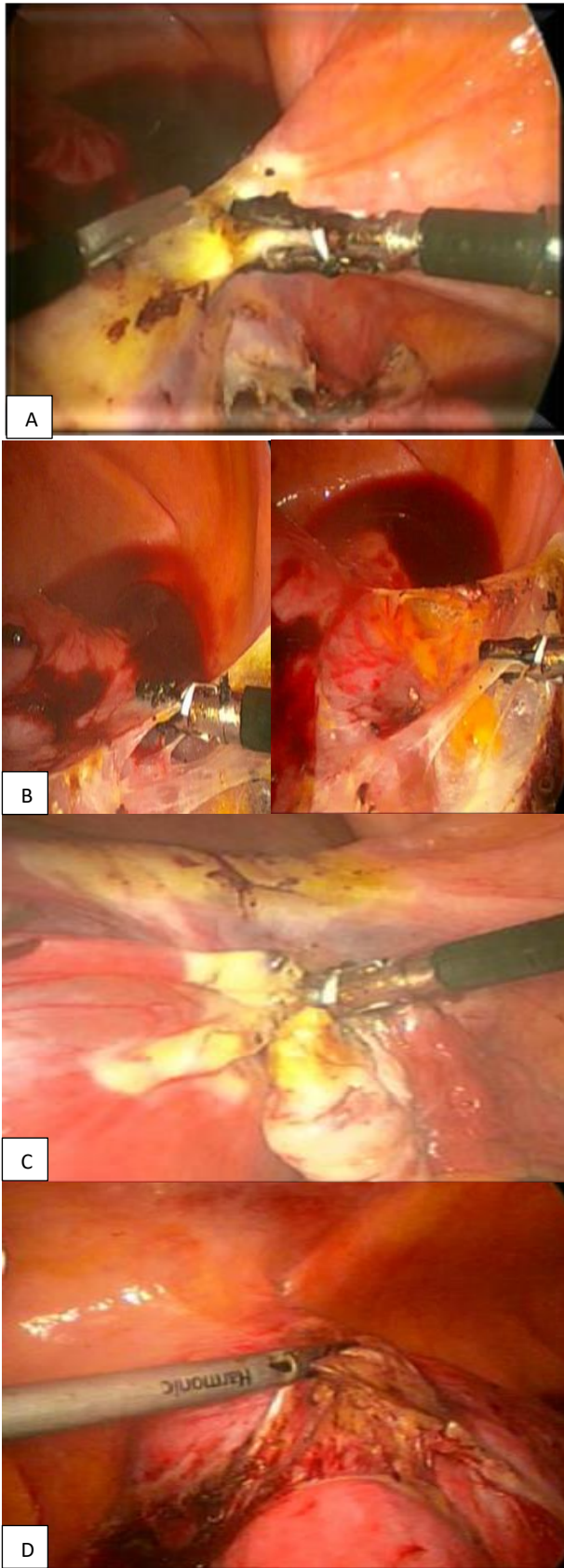


Figure 1 (A-D): Total laparoscopic hysterectomy. Round ligament transection; The anterior and posterior leaves of the broad ligament were separated; Hug the ovaries; mobilization of the bladder.

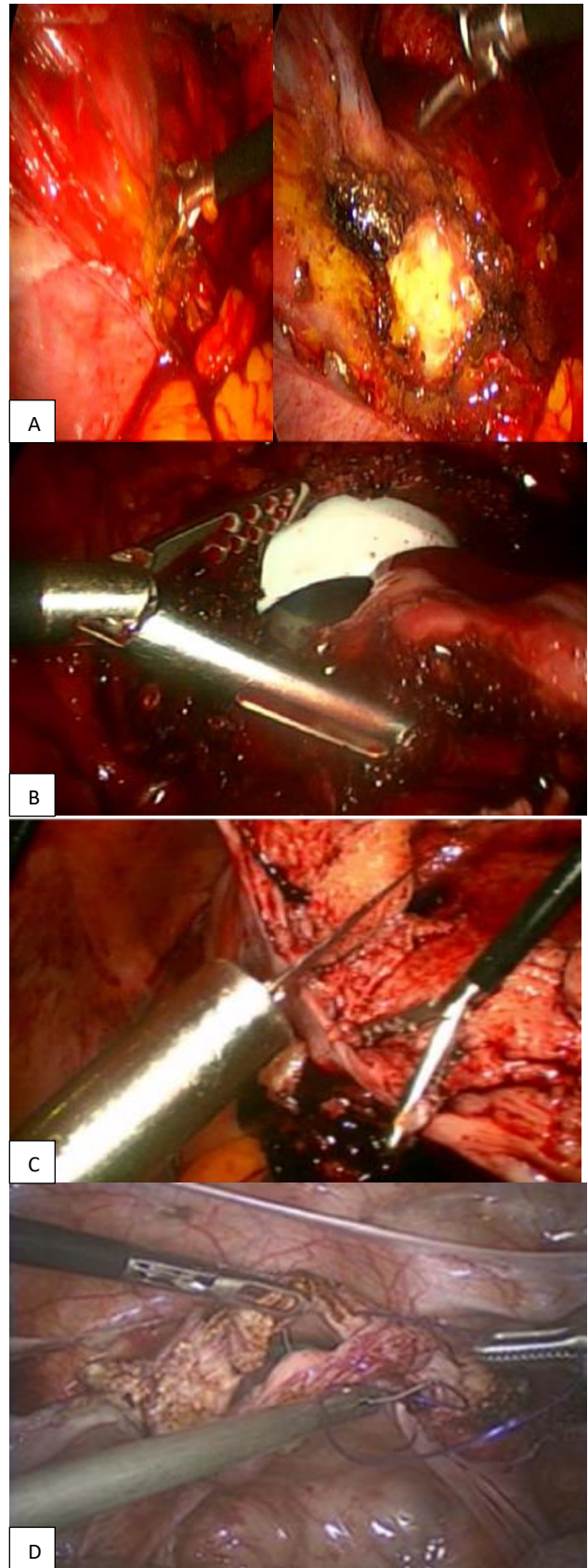


Figure 2 (A-D): Total laparoscopic hysterectomy. Securing the uterine artery; colpotomy; the specimen is reduced by using endo knife and vaginal cuff closure.

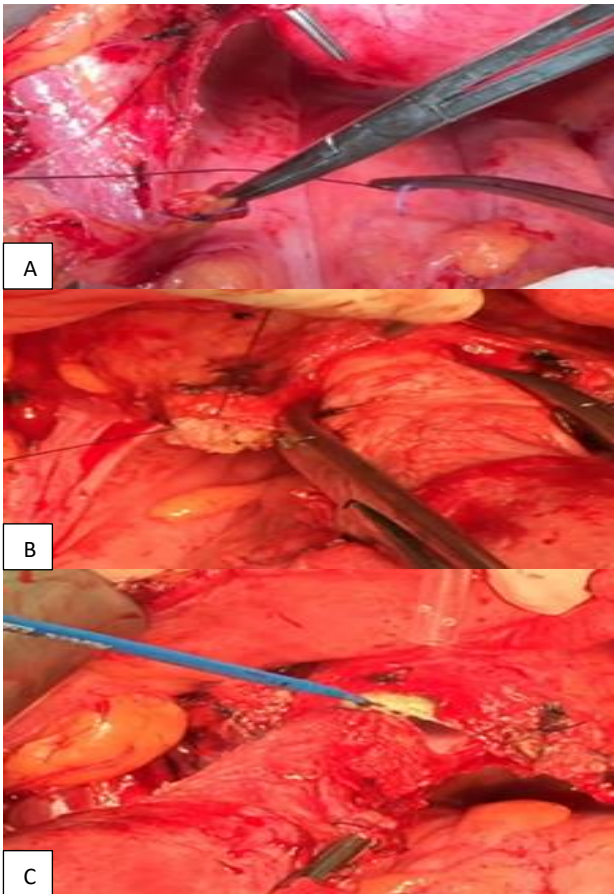


Figure 3 (A-C): Abdominal hysterectomy. Ligation of IPL; cut and ligation of uterine vessels and cardinal ligament and colpotomy and uterine separation.

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, and chi-square test by SPSS V.17.

RESULTS

Our study compared between laparoscopy and laparotomy intraoperatively and postoperatively in cases of huge uterine size including operative duration, postop

Hb, return of bowel sounds, blood transfusion, convalescence period, specimen weight, and blood loss.

Table 1: Statistical comparison between the two studied groups as regards age, (n=20).

Age (years)	Laparoscopy	Laparotomy
Range	41-74	35-54
Mean±SD	50.35±9.08	46.60±4.86
T test	2.652	
P value	0.112	

There was no statistically significant difference were observed between the studied groups in mean age.

Table 2: Statistical comparison between the two studied groups as regards body mass index, (n=20).

BMI (kg/m ²)	Laparoscopy	Laparotomy
Range	22-36	24-40.5
Mean±SD	29.19±3.61	31.15±4.88
T test	2.095	
P value	0.156	

There was no statistically significant difference were observed between the studied groups in BMI.

Table 3: Statistical comparison between the two studied groups as regards parity, (n=20).

Parity	Laparo- scopy		Laparo- tomy		X ²	P value
	N	%	N	%		
Normal	13	65	10	50	0.923	0.337
CS	7	35	10	50		

There was no statistically significant difference was observed between the studied groups in parity. Seven cases and ten cases whose were operated by laparoscopy and laparotomy successively were delivered by CS. Six cases from seven and only four cases from ten performed only one precious CS, however, one case from seven and only three cases from ten performed two precious CS.

Table 4: The clinical (Intra-operative, post-operative) outcome of patients between the 2 groups, (n=20).

Parameters	Laparoscopy group		Laparotomy group		X ²	P value
	N	%	N	%		
Intraoperative outcome						
Operative duration (min)						
60-90	1	5	3	15	15.14	0.002
91-120	5	25	15	75		
121-180	12	60	2	10		
More than 180	2	10	0	0		
Post-operative outcome						
Post-operative Hb value (gm/dl)						
6-8.4	0	0	4	20	23.01	<0.001
8.5-10	2	10	13	65		
10.1-11.5	15	75	2	10		
More than 11.5	3	15	1	5		

Continued.

Parameters	Laparoscopy group		Laparotomy group		X ²	P value
	N	%	N	%		
Post-operative return of bowel sounds (days)						
1 st day	18	90	4	20	19.85	<0.001
2 nd day	2	10	15	75		
3 rd day	0	0	1	5		
Convalescence period (weeks)						
1-2	19	95	12	60	7.08	0.029
3-6	1	5	7	35		
More than 6 weeks	0	0	1	5		
Blood transfusion						
Yes	0	0	4	20	---	0.106
No	20	100	16	80		
Specimen weight (kg)						
From 500 gm to 1 kg	11	55	8	40	1.29	0.256
More than 1 kg	9	45	12	60		

Table 5: Blood loss between the two groups, (n=20).

Parameters	Laparoscopy group	Laparotomy group
Range	300-600	400-1500
Mean±SD	462.1±63.9	917.6±263.8
T test	7.5	
P value	<0.001	

The previous tables reveal that statistically significant differences were observed between the studied groups in post-operative Hb value, postoperative return of bowel sounds, and amount of blood loss however, prolonged duration of surgery was noticed in laparoscopic group than laparotomy group.

DISCUSSION

TLH is a feasible technique and an alternative to laparotomy when it was performed by experienced gynaecologist for large uteri regardless of the location, size, or number of the myomas, which provides good results but with longer operation time and higher cost. Using laparoscopic hysterectomy in cases of bulky uterus has been considered a matter of debate compared with abdominal hysterectomy, however, A lot of evidence indicates that laparoscopy has specific advantages.⁷ Our conclusion was that TLH is an accessible and safe technique to expert gynaecologist in cases of enlarged uteri, which permits efficient avoidance of laparotomy incision in most of the procedures with evident benefits for the women. Our study indicates that there is a lower rate of intraoperative complication laparoscopically compared to hysterectomy done by open laparotomy.

Literature concluded that laparotomy is the treatment of choice in cases of greatly enlarged uteri. Sixteen weeks gestation is the upper limit for uterine size for laparoscopy use in almost studies.⁸ In 1998, a multicenter randomized clinical trial compared TLH with total abdominal hysterectomy (TAH). Multiple myomas were the indication for hysterectomy in the most cases in this

study. The largest uterine weight in the TLH group was 1550 g; the highest blood loss was in the TAH group and was 3000 ml. The mean blood loss was significantly lower for the TLH group than the TAH group however, prolonged duration in TLH group.⁹

In markedly enlarged uterus, there is distortion of normal anatomy especially the uterine vessels and the ureters. In the case of lateral wall myomas that arise below the entry of the uterine vessels, the ureter is pushed outwards and almost raised onto the superior surface of the myoma. The uterine vessels are raised high up almost to the level of the ovarian vessels. Ureter pushed outwards and downwards by lateral wall myomas that arise above the level of the uterine vessels. Cervical myomas and large anterior wall flatten the bladder, which can get raised high up on the anterior uterine surface. A major concern of distortions is poor exposure that may increase the risk of bladder, bowel, and ureteric injury. This is compounded by the technical difficulty involved in retrieval of the uterus and the skill that is necessary to secure the uterine vessels.

To overcome challenges such as Poor access and exposure during TLH, several modifications to current technique were suggested. First, the optical trocar is placed at palmer point or supraumbilical to facilitate proper visualization. The use of myoma screw increases uterine mobility and changes in its positioning can aid access to all pedicles. Another concern is the bleeding risk due to difficult exposure. Blood loss can be minimized by ligating the uterine pedicle as the first step in the hysterectomy procedure.

For securing the pedicles, several options available to the laparoscopic gynaecologist including bipolar diathermy, harmonic, vessel-sealing device such as Tender beat and enseal, endoscopic suturing techniques, or staples. Complications such as bladder injuries, ureteric injuries, and haemorrhage are directly or indirectly related to the step of securing the vascular pedicles. The author has described the use of laparoscopic reusable clamps for all the pedicles, which adopts the basic principles of TAH.¹⁰

The clamp is used to secure a vascular pedicle in other operative procedures such as salpingectomy, and salpingo-oophorectomy.

Adequate laparoscopic training in a proper technique permits performing TLH in a successfully manner in almost women with very enlarged uteri, with no increase in complication rates and short-term recovery. In skilled hands, these patients could benefit all the advantages related to minimally invasive approach such as minimal blood loss, short hospital stay, prompt recovery, obtaining a satisfactory result. From our data, there is no reason any longer to consider a contraindication to TLH in bulky uterus; and in accordance with other studies, laparoscopy is a best alternative to laparotomy in all cases irrespective of the size of the uterus especially if the operation will be done by expert surgeon.¹¹

The present study showed a complication rate was more in the AH group instead of the LH group. Concerning intra-operative complications: the speed of the complication in TLH was seen in one case and TAH were three cases. In TLH: one case with conversion to laparotomy, however, in TAH: one case with visceral (bladder) injury because of dense adhesions that recognized intraoperative and the fringe of the wound was mobilized to assess the total extent of the injury and bladder was repaired with a double layer closure with small caliber absorbable suture further as methylthionine chloride test was done to confirm that the repair is adequate and two cases with intromission. Concerning postoperative events: the speed of the complication in TLH was one case per twenty cases, however, the rate of the complications in TAH were six cases per twenty cases. In TLH: one case with vault dehiscence, however, In TAH: 2 cases with hemoglobin change, two cases with post-operative Fever, one case with bladder injury, and one case with wound infection (p=0.001). Pyrexia was seen in patients who underwent abdominal hysterectomy. The 10% of those patients underwent abdominal hysterectomy and. none of patients of LH had pyrexia.

No studies were excluded on language restrictions. Mainly prospective and retrospective studies were included. The results in these studies were all constant. This study was limited by the small sample size as such the external validity of this analysis may vary by patient cohort and surgeon experience.

CONCLUSIONS

TLH is an accessible technique and an alternative to laparotomy when it was done by experienced surgeons for large uteri regardless of the site, size.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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