

Original Research Article

Laparoscopic versus open hysterectomies in obese patients

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ABSTRACT

Background: Hysterectomy is one of the most frequently performed surgical procedure. Though there are three approaches in hysterectomy (open, vaginal and laparoscopic), still there are controversies regarding the optimal route for performing it.

Methods: This prospective comparative study included 42 obese patients subjected for pan-hysterectomy as a treatment. The forty-two patients were allocated into two groups: group (A) subjected to laparoscopic pan-hysterectomy, group (B) subjected to open pan-hysterectomy.

Results: There was significant difference between the two groups regarding mean operative time, blood loss, analgesic requirements and hospital stay, while no significant difference regarding intra-operative complications.

Conclusions: Laparoscopic hysterectomy in obese patients has emerged as a viable, safe and better alternative to open hysterectomy amongst appropriately trained surgeons.

Keywords: Hysterectomy, Laparoscopy, Laparotomy, Minimally-invasive, Obese

INTRODUCTION

Hysterectomy is one of the most frequently performed surgical procedure. Though there are three approaches in hysterectomy (open, vaginal and laparoscopic), still there are controversies regarding the optimal route for performing it. Obesity and comorbidities associated with it, are well known factors that negatively affect surgical outcomes. Open hysterectomy has shown to be associated with higher rates of complications like wound infection and longer postoperative hospital stay in obese patients.¹

Credit for the first successful albeit unplanned abdominal subtotal hysterectomy goes to Walter Burnham (1808-1883) of Lowell, Massachusetts. The honor of the first successful, planned subtotal abdominal hysterectomy for uterine fibroids goes to another surgeon from Lowell, Massachusetts: Oilman Kimball (1804-1892).²

First laparoscopic hysterectomy was described in 1989 by Harry Reich using bipolar desiccation; later he pioneered the use of energy devices & sutures for this operation, laparoscopic hysterectomy has become an option for patients and their surgeons to consider.³

Laparoscopic techniques may be particularly well suited to obese patients surgery as they can avoid the poor healing of surgical wounds and infection especially when diabetes is present, and also afford more rapid recovery and shorter period of hospitalization than open procedures.⁴

Intraperitoneal carbon dioxide (CO₂) insufflation and changes in patient positioning during laparoscopic surgery have several hemodynamic, pulmonary and endocrine consequences. In addition, several surgical complications, including subcutaneous emphysema, pneumothorax, pneumomediastinum, gas embolization,

acute hemorrhage and bowel or bladder perforation, can occur during the laparoscopic procedure.⁵

Despite the surgical advantages of laparoscopy, we needed to discuss and evaluate the technique of laparoscopic hysterectomy in obese patients and its complications; and the impact of surgical experience on the outcome and quality of life.⁶

METHODS

This prospective study conducted at Menoufiya University Hospitals, between March 2016 till April 2018, on 42 obese patients. The forty-two patients were allocated into two groups, 21 patients for each group: group (A) subjected to laparoscopic pan-hysterectomy, and group (B) subjected to open pan-hysterectomy. Patients included in the study were 18 to 80 years old with BMI more than 30kg/m².

Exclusion criteria

- History of previous abdominal surgery.
- Cardiac or respiratory co-morbidity preventing laparoscopic surgery.
- Patients who refused to participate in the study.

History and full clinical examination. Following are the investigations.

- Clinical investigations: electrocardiography, calculate body mass index (BMI).
- Biochemical investigations: complete blood count, liver function tests, kidney function tests and blood sugar curve.
- Radiological investigations: abdominal ultrasonography, chest X-ray, bone scanning and MRI and CT scanning.
- Pathological investigations: Endoscopic biopsy.
- Tumor markers : CA-125

Clear informed consent was obtained from every patient.

All patients received Ceftriaxone 1 gm iv & Flagyl iv infusion with induction of anesthesia.

Operative technique

1. Group A (laparoscopic hysterectomy)

Modified lithotomy position

Draping and prepping.

General anesthesia with endotracheal intubation.

Foley catheter and uterine manipulator are placed with 20° to 30° Trendelenburg position.

The operative room set-up is shown in (Figure 1).

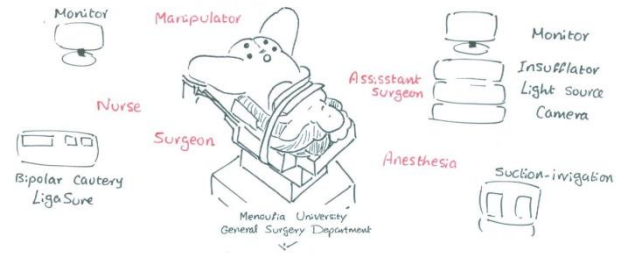


Figure 1: Describes the position of the personnel in operative theatre and the operative room set up.

Peritoneal access with closed veress needle technique.

Four - trocar technique was employed in addition to the supra-umbilical port for laparoscope.

Steps: the operation was completed in 10 steps as follow:

- The round ligament on one side was elevated and divided
- The broad ligament peritoneum was opened to divide infundibulo-pelvic ligament
- Ligation and division of uterine artery
- Division of utero-sacral ligament
- The same was done on the other side, division of round ligament
- Infundibulo-pelvic ligament ligation and division
- Uterine artery ligation and division
- Division of uterosacral ligament
- Elevation of bladder flap
- Removal of uterus then vaginal cuff closure.

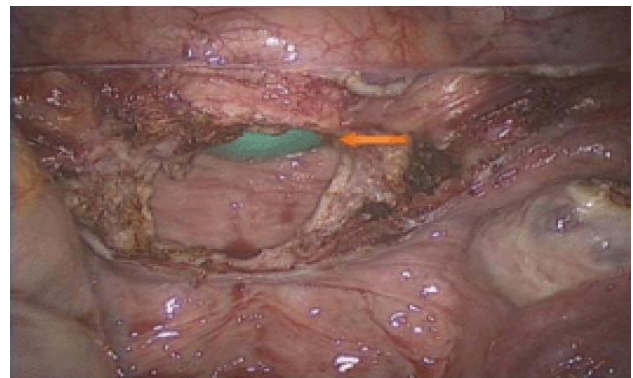


Figure 2: A glove with sponges is seen in the vagina (arrow) and is used to maintain pneumoperitoneum prior to and during vaginal cuff suturing.

2. Group B (open hysterectomy)

Supine position

Draping and prepping.

General anesthesia with endotracheal intubation.

Foley catheter is placed with 20° to 30° Trendelenburg position.

Then the 10 steps as mentioned before

Post-operative treatment

Patients received Ceftriaxone 1 gm i.v., Flagyl i.v. infusion twice a day, Clexane 40 mg subcutaneously once a day and analgesics in the form of NSAIDs for 24 hours then upon the patient's request

Discharge criteria

Were met once the patient was of a good general condition, with audible bowel sounds and able to tolerate a liquid diet and oral analgesia. The specimens were sent for pathology and assessing pathological diagnosis.

RESULTS

The mean age of patients was 54.80±8.96 years for laparoscopic hysterectomy (LH) group and 51.66±9.17 years for open hysterectomy (OH) group. The mean BMI of patients was 38.76±1.97 k/m² for laparoscopic hysterectomy group and 39.52±2.33k/m² for open hysterectomy group. No significant difference between the two groups regarding demographic and clinical data, indications for hysterectomy, intra-operative complications (Table 1), early post-operative complications (Table 2) nor late post-operative complications.

Two laparoscopic cases were converted to open, one to control intra-operative bleeding and the other to repair large bowel injury, while we succeeded to repair bladder injury in two cases laparoscopically.

Table 1: Intra-operative complications.

Variables	Laparoscopic (n=21)		Open hysterectomies (n=21)		P value
	No	%	No	%	
Anasthetic problems	0	0	0	0	-
Intraoperative bleeding	1	4.8	0	0	1.0
Bladder injury	2	9.5	0	0	0.488
Ureteric injury	0	0	0	0	-
Bowel injury	1	4.8	0	0	1
Vascular injury	0	0	0	0	-
Conversion	2	9.5	0	0	0.488

Table 2: Early post-operative complications.

Variables	Laparoscopic (n=21)		Open hysterectomies (n=21)		P value
	No	%	No	%	
Chest infection	2	9.5	4	19.0	0.663
Wound infection	1	4.8	4	19.0	0.343
Urinary tract infection	3	14.3	1	4.8	0.606
Hematomas	0	0	0	0	-
Deep venous thrombosis	0	0	0	0	-

Table 3: Early post-operative findings.

Variables	Laparoscopic (n=21)	Open hysterectomies (n=21)	Test of significance	P value
Post-operative analgesic requirements (75 mg Diclofenac Na amp)				
Median	2.00	3.00	Z=5.31	<0.001**
Min-Max	1.00-2.00	2.00-4.00		
Hospital stay (days)				
Mean ± SD	2.28±0.56	4.33±0.48	t=12.68	<0.001**
Min-Max	1.00-3.00	4.00-5.00		

Early post-operatively, one case from laparoscopic group had wound infection in comparison to four cases from open group, all cases were treated conservatively.

Late post-operative complications included two cases of re-admission, one in each group.

One for repair of vesico-vaginal fistula in (LH) group which was referred and managed by urological team and the other for repair of incisional hernia in (OH) group.

Significant difference was found between the two groups for mean Operative time (133.80 ± 29.74 min for (LH) versus 97.14 ± 13.09 min for (OH)), intra-operative blood loss (254.76 ± 36.41 ml in (LH) versus 533.33 ± 131.65 ml in (OH)) and analgesic requirements (Table 3).

The study showed correlation between operative time, estimated blood loss and time of resuming daily activities (10.8 ± 2.51 days for (LH) versus 17.5 ± 3.38 days for (OH)) and returning to work with its economic impact on the country.

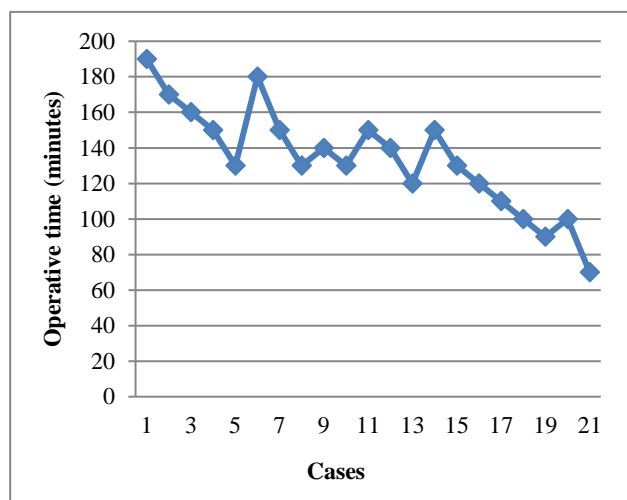


Figure 3: Learning curve effect in laparoscopic hysterectomy.

Figure 3 demonstrates the improvement of learning curve in (LH) and the impact of surgical experience on operative times being reduced from about three hours in the initial cases to about one hour in the last cases.

DISCUSSION

Tinelli et al showed significant difference between study groups regarding mean operative time which was 166 ± 21 minutes in laparoscopic hysterectomy group compared with 143 ± 25 minutes in open hysterectomy group which is consistent with our study.⁷

No significant difference in intraoperative complications was observed between study groups, whereas postoperative complications were significantly less common in the laparoscopy than in the laparotomy group which is in line with the Gynecologic Oncology Group LAP2 trial comparing laparoscopy and laparotomy for obese patients with stage I to IIA uterine cancer where laparoscopy led to fewer moderate to severe postoperative adverse events than did laparotomy but similar rates of intraoperative complications, despite having a significantly longer operative time as regard

laparoscopy, also consistent with a study by Sokol et al. 2003.^{8,9}

Colin et al, also found that laparoscopic hysterectomy is associated with reduced overall peri-operative complications (pooled odds ratios (OR) 0.19; 95% confidence interval (CI) 0.07–0.50) and reduced estimated blood loss (weighted mean differences (WMD)-183 ml; 95% CI-346 ml to 21 ml; probability value (p)=0.03). Additionally, there are trends towards shorter hospital stay (WMD-2.5 days; 95% CI-5.1 days to 0.01 days; p=0.05) and post-operative haematoma formation (pooled OR 0.17; 95% CI 0.03–1.01) compared to open hysterectomy and the only trade-off appears to be a longer operating time in the Laparoscopic hysterectomy group.¹⁰

Malzoni et al, Lu et al and Eltabbakh et al concluded that most obese patients with early stage endometrial cancer can be safely managed through laparoscopy with excellent surgical outcome, shorter hospitalization, and less postoperative pain than those managed through laparotomy which agreed with this study.¹¹⁻¹³

Previous studies of outcomes in laparoscopic hysterectomy have highlighted the learning curve effect in laparoscopic hysterectomy and the impact of surgical experience on complication rates and operative times. An analysis of 2434 laparoscopic hysterectomies (type unspecified) by Makinen et al, found that surgeons with experience of ≤ 30 procedures, were twice as likely to injure the bladder and four times as likely to cause ureteric injury as surgeons with experience of >30 procedures.¹⁴

Therefore, laparoscopic hysterectomy in obese patients has emerged as a viable, safe and better alternative to open hysterectomy amongst appropriately trained surgeons.

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Ethical approval: Not required

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