Original Article

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# Outcome of Total Laparoscopic Hysterectomy in Obese Patients

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## Abstract

**Introduction:** Globally, obesity is a major health issue that has an impact on many facets of patient care and surgical results. Morbid obesity traditionally considered to be a contra indication to total laparoscopic hysterectomy is now evolving into an indication. Innovations and advancement in minimally intrusive. Surgical techniques have significantly improved patient morbidity and mortality rates, reduced operational costs and overall suffer surgical experience. **Objective:** The purpose of this study was to assess the risk of operative and post-operative complications of obese patients undergoing total laparoscopic hystertomy compared with non-obese patients. **Materials and Methods:** The cross-sectional observational study was conducted in the Department of Obstetrics and gynaecology, Labaid Specialized Hospital, Dhaka from January 2022 to December 2022. A total of 90 patients who underwent TLH. The patients were divided into 2 groups based on BMI, BMI < 30 kg/m2 (n=52) and BMI ≥ 30 kg/m2 (n=38). The questionnaire was pretested, corrected and finalized. Data were collected by face-to-face interview and analyzed by appropriate computer based programmed software Statistical Package for the Social Sciences (SPSS), version 24. **Results:** Mean age of the study subjects was 41.5±1.3 and 43.3±2.3 years in non-obese and obese group respectively. Mean BMI of the study subjects was 29.1±2.5 and 32.1±3.1 kg/m2 in non-obese and obese group respectively. The mean length of postoperative hospital stay for all subjects was 1.1 days. The mean length of stay among obese patients was 1 day compared with 1.2 days for nonobese patients. Only 6 (6.7%) study women were readmitted for postoperative complications, of whom 2 (5.3%) were obese. 5 (5.5%) patients required reoperation. Two (5.3%) of these patients were obese. Ten (11.1%) patients experienced major complications, 3 (7.8%) of which occurred in the obese group. Seven (7.8%) patients experienced minor complications, 2 (5.3%) of which occurred in the obese group. **Conclusion:** The majority of obese people can have a total laparoscopic hysterectomy with success, and the rate of complications is comparable to that of nonobese patients.

**Keywords:** Outcome, Total Laparoscopic Hysterectomy, Obese Patients, Non-obese Patients, BMI.

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## Introduction

Obesity has become an epidemic in both rich and developing nations in recent decades.[1] When a person's body mass index (BMI) is 30 or over, they are considered obese. They are further divided into three classes based on their BMI: class 1 (BMI >30-<34.5), class 2 (BMI>35- <39.9), and class 3 or severe obesity (BMI > 40). The World Health Organization estimates that 13% of people worldwide suffer from obesity, with women being more likely to be affected than males (37% vs. 27.4%).[2] Accordingly, obesity is a major risk factor for a number of gynecological conditions, the main treatment for which in some cases is a hysterectomy.[3-9]

Since its introduction by Reich et al. in 1989, laparoscopic hysterectomy (LH) has advanced technologically, enabling surgeons to use this minimally invasive technique to undertake progressively more difficult surgeries. The most common surgical procedure is still abdominal hysterectomy (AH), and only in the last few decades has the minimally invasive technique been widely used, even in the US, with a notable decrease in complications.[10-12] In fact, there are clear benefits to the minimally invasive hysterectomy technique over laparotomy.[10,13]

Surgeons encounter clinical and technical difficulties while performing hysterectomy on obese patients, as well as a higher incidence of complications and postoperative morbidity.[14] However, a crucial first step in lowering the cardiovascular risks associated with long-term Trendelenburg stance is preoperative preparation. Complex laparoscopic operations may even be affected by proper bowel preparation. Accessing the abdominal cavity in obese people carries additional risk since the surgeon must raise the needle's insertion angle to prevent damage to the intestine or arteries and, in certain situations, handle specialist laparoscopic equipment. However, the bulk of the information relates to open surgery, and fresh findings regarding the impact of obesity on minimally invasive

hysterectomy have only been reported in recent decades.

## Subjects and Methods

The cross-sectional observational study was conducted in the Department of Obstetrics and gynaecology, Labaid Specialized Hospital, Dhaka from January 2022 to December 2022. A total of 90 patients who underwent TLH. The patients were divided into 2 groups based on BMI, BMI < 30 kg/m2 (n=52) and BMI ≥ 30 kg/m2 (n=38). Patients who matched the inclusion and exclusion criteria were approached for participation in the study. Patients who were not willing to give consent were excluded. Purposive sampling was done according to the availability of the patients who fulfilled the selection criteria. Face to face interview was done to collect data with a semi-structured questionnaire. After collection, the data were checked and cleaned, followed by editing, compiling, coding, and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. Statistical evaluation of the results used to be obtained via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

## Results

**Table 1: Distribution of the patients according to patient's characteristics (n = 90)**

| | BMI < 30 kg/m2 (n=52) | BMI ≥ 30 kg/m2 (n=38) |
|---|---|---|
| Age Mean±SD (years) | 41.5±1.3 | 43.3 ±2.3 |
| BMI Mean±SD | 29.1± 2.5 | 32.1± 3.1 |
| Parity Mean±SD | 2.0± 1.2 | 2.3±1.2 |
| Operative time Mean±SD (min) | 111.4 ±3.2 | 127.5 ± 3.4 |
| Operative blood loss Mean±SD (ml) | 172.6± 8.3 | 232.4± 13.5 |

Table I shows that, Mean age of the study subjects was 41.5±1.3 and 43.3±2.3 years in non-obese and obese group respectively. Mean BMI of the study subjects was 29.1±2.5 and 32.1±3.1 kg/m2 in non-obese and obese group respectively. Mean operative time for the entire study group was 119 minutes. Mean operative time among obese patients was 127 minutes compared with 111 minutes for the nonobese group. Procedure completion for obese patients was 60% more likely to require at least 2 hours compared with nonobese patients. Mean estimated blood loss for the entire study group was 198 ml. Mean estimated blood loss was 232 ml for obese patients compared with 173 ml for non-obese patients.

**Table 2: Distribution of the patients according to Indications for Hysterectomy (n = 90)**

| | BMI < 30 kg/m2 (n=52) | BMI ≥ 30 kg/m2 (n=38) |
|---|---|---|
| Indications | | |
| Abnormal uterine bleeding | 43 (82.7) | 34 (89.5) |
| Myomas | 26 (50.0) | 22 (57.9) |
| Pelvic pain or endometriosis | 21 (40.4) | 13 (34.2) |
| Endometrial hyperplasia | 4 (7.7) | 2(5.3) |
| Cervical intraepithelial neoplasia | 5 (9.6) | 2(5.3) |
| Malignant disease | 1(1.9) | 0 (0.0) |
| Operative Procedures | | |
| Total laparoscopic hysterectomy | 50(96.2) | 35(92.1) |
| Laparoscopically assisted vaginal hysterectomy | 1(1.9) | 1(2.6) |
| Total abdominal hysterectomy | 1(1.9) | 2(5.3) |

Table II shows that, the most common reason for hysterectomy was abnormal uterine bleeding (85.5%), followed by uterine fibroids (53.3%). Pelvic pain was a factor in 37.8% of cases. Obese patients were more likely than non-obese patients to have a diagnosis of abnormal uterine bleeding as their indication for surgery. eight five (94.4%) cases were completed successfully by using purely endoscopic technique, whereas 2 (2.2%) were completed with a combined vaginal approach (LAVH). Only 3 (3.3%) cases were converted to laparotomy, 2 occurring in the obese group and 1 in the non-obese group.

**Table 3: Distribution of the patients according to Intraoperative Complications (n = 90)**

| Intraoperative Complications | BMI < 30 kg/m2 (n=52) | BMI ≥ 30 kg/m2 (n=38) |
|---|---|---|
| Inferior epigastric vessel injury | 2 (3.8) | 0 |
| Cystotomy | 1(1.9) | 1(2.6) |
| Small bowel injury | 0 | 1(2.6) |
| Large bowel injury | 2 (3.8) | 0 |

| | | |
|---|---|---|
| Hemorrhage | 1(1.9) | 1(2.6) |
| Major intraoperative complication | 4 (7.7) | 6 (15.8) |

Table III shows that, 10 (23.5%) patients experienced major intraoperative complications. Six (15.8%) of these occurred among obese patients and 4 (7.7%) among nonobese patients. Intraoperative complications included 2 inferior epigastric artery injuries, 1 injury of the small bowel mesentery, 2 serosal injuries of the large bowel, and 2 cystotomies. Only 3 patients in the study group required blood transfusion: 2 obese patients and 1 nonobese patients.

**Table 4: Distribution of the patients according to Postoperative Complications (n = 90)**

| Postoperative Complications | BMI < 30 kg/m2 (n=52) | BMI ≥ 30 kg/m2 (n=38) |
|---|---|---|
| Pelvic abscess | 1(1.9) | 0 |
| Vaginal cuff hematoma | 0 | 0 |
| Vaginal cuff cellulitis | 3 (5.7) | 2(5.3) |
| Vaginal cuff dehiscence | 2 (3.8) | 1(2.6) |
| Fever | 5 (9.6) | 3 (7.8) |
| Vesicovaginal fistula | 1(1.9) | 0 |
| Thromboembolic event | 0 | 1(2.6) |
| Wound infection | 1(1.9) | 1(2.6) |
| Any major postoperative complication | 8 (15.4) | 3 (7.8) |

Table IV shows that, 11(23.2%) patients experienced major postoperative complications. Three (7.8%) of these occurred in the obese group and 8 (15.4%) in the nonobese group. This difference did not represent a statistically significant increased risk. Major postoperative complications included 3 vaginal cuff dehiscences, 2 of which occurred in the nonobese group. There were also 1 pelvic abscess, and 1 patient developed a suspected vesicovaginal fistula that resolved spontaneously within 1 week of being detected.

**Table 4: Distribution of the patients according to Postoperative Parameters (n = 90)**

| Postoperative Parameters | BMI < 30 kg/m2 (n=52) | BMI ≥ 30 kg/m2 (n=38) |
|---|---|---|
| Mean hospital stay (d) | 1.2 ± 0.7 | 1.0± 0.2 |
| > 1 postoperative day | 13 (25.0) | 7 (18.4) |
| Readmission | 4 (7.7) | 2(5.3) |
| Reoperation | 3 (5.7) | 2(5.3) |
| Major complications | 7 (13.5) | 3 (7.8) |
| Minor complications | 5 (9.6) | 2(5.3) |

Table V shows that, the mean length of postoperative hospital stay for all subjects was 1.1 days. The mean length of stay among obese patients was 1 day compared with 1.2 days for nonobese patients. Only 6 (6.7%) study women were readmitted for postoperative complications, of whom 2 (5.3%) were obese. 5 (5.5%) patients required reoperation. Two (5.3%) of these patients were obese. Ten (11.1%) patients experienced major complications, 3 (7.8%) of which occurred in the obese group. Seven (7.8%) patients experienced minor complications, 2 (5.3%) of which occurred in the obese group.

## Discussion

Gynecologic surgeons must be knowledgeable enough to advise obese women about the hazards unique to their condition when having a hysterectomy. Obese patients are more technically difficult to do laparoscopy on than normal-weight patients, hence only individuals with sufficient laparoscopic surgical experience should perform this procedure. The 150 mm length of the Veress needle may aid establish pneumoperitoneum and prevent pre-peritoneal insufflation due to the increase in size of the anterior abdominal wall; larger accessory trocars (up to 150 mm) may also be helpful. The inferior epigastric vessels may not be as well visible, making the placement of accessory trocars more difficult. When performing surgery in an obese patient's pelvis, exposure can be challenging. The Trendelenburg position is necessary for pelvic surgery, which could make it more difficult to ventilate the patient. It might be necessary to increase the pneumoperitoneal pressure, although doing so could make it more difficult to deliver sufficient ventilation. Another challenge is the reduced ability to manipulate instruments and the omental fat. The biggest obstacle is frequently closing any port that is at least 10 mm in size; in these cases, a port closure method that allows for laparoscopic visibility could be helpful.[15]

The cross-sectional observational study was conducted in the Department of Obstetrics and gynaecology, Anower Khan Modern Medical College Hospital, Dhaka from June 2023 to May 2024. A total of 90 patients who underwent TLH. The patients were divided into 2 groups based on BMI, BMI < 30 kg/m2 (n=52) and BMI ≥ 30 kg/m2 (n=38).

In this study, Mean age of the study subjects was 41.5±1.3 and 43.3±2.3 years in non-obese and obese group respectively. Mean BMI of the study subjects was 29.1±2.5

and 32.1±3.1 kg/m2 in non-obese and obese group respectively. The most common reason for hysterectomy was abnormal uterine bleeding (85.5%), followed by uterine fibroids (53.3%). Pelvic pain was a factor in 37.8% of cases. Obese patients were more likely than non-obese patients to have a diagnosis of abnormal uterine bleeding as their indication for surgery. Eight five (94.4%) cases were completed successfully by using purely endoscopic technique, whereas 2 (2.2%) were completed with a combined vaginal approach (LAVH). Only 3 (3.3%) cases were converted to laparotomy, 2 occurring in the obese group and 1 in the non-obese group. Mean operative time for the entire study group was 119 minutes. Mean operative time among obese patients was 127 minutes compared with 111 minutes for the nonobese group. Procedure completion for obese patients was 60% more likely to require at least 2 hours compared with nonobese patients. Mean estimated blood loss for the entire study group was 198 ml. Mean estimated blood loss was 232 ml for obese patients compared with 173 ml for non-obese patients. Ten (11.1%) patients experienced major intraoperative complications. Six (15.8%) of these occurred among obese patients and 4 (7.7%) among nonobese patients. Intraoperative complications included 2 inferior epigastric artery injuries, 1 injury of the small bowel mesentery, 2 serosal injuries of the large bowel, and 2 cystotomies. Only 3 patients in the study group required blood transfusion: 2 obese patients and 1 nonobese patients. Eleven (12.2%) patients experienced major postoperative complications. Three (7.8%) of these occurred in the obese group and 8 (15.4%) in the nonobese group. This difference did not represent a statistically significant increased risk. Major postoperative complications included 3 vaginal cuff dehiscences, 2 of which occurred in the nonobese group. There were also 1 pelvic abscess, and 1 patient developed a suspected vesicovaginal fistula that resolved spontaneously within 1 week of being detected. The mean length of postoperative hospital stay for all subjects was 1.1 days. The mean length of stay among obese patients was 1 day compared with 1.2 days for nonobese patients. Only 6 (6.7%) study women were readmitted for postoperative complications, of whom 2 (5.3%) were obese. 5 (5.5%) patients required reoperation. Two (5.3%) of these patients were obese. Ten (11.1%) patients experienced major complications, 3 (7.8%) of which occurred in the obese group. Seven (7.8%) patients experienced minor complications, 2 (5.3%) of which occurred in the obese group.

Laparoscopic cholecystectomy has been shown by several authors to be safe and well suited to the obese patient.[16-18] A multicenter review of urologic laparoscopic surgery in 125 obese patients was less favorable, showing an increased rate of operative and postoperative complications in obese patients.[19] A prospective study by Holub et al,[20] showed a nonsignificant trend toward an increased rate of major operative complications in a group of 54 obese patients undergoing laparoscopic hysterectomy. Only half of the patients in that study underwent attempts at total laparoscopic hysterectomy, whereas the remaining half were attempted as laparoscopically assisted vaginal hysterectomies, a procedure shown by Milad et al,[21] to be associated with greater morbidity than supracervical laparoscopic hysterectomy. Ostrzenski,[22] showed no increased rate of complications in his series of total laparoscopic hysterectomies in 11 obese women. His was a pilot phase report in which obesity was defined as a function of ideal body weight, rather than BMI. More recently, O'Hanlan et al,[23] reported on 330 patients, stratified according to BMI groups, who underwent total laparoscopic hysterectomy. That retrospective study included 78 obese women and found similar mean operating time, mean operative blood loss, mean length of hospital stay, and complication rates across all BMI groups.

Technical obstacles associated with open pelvic surgery in the obese are primarily those related to exposure of the operative field and access to deep pelvic structures. These obstacles present similar challenges when laparoscopy is attempted, as have been previously described.[24,25] Loffer and Pent,[26] discussed at length the additional, unique difficulty of establishing pneumoperitoneum in obese patients. Together, all of these limitations place the obese patient undergoing laparoscopy at an inherently increased risk of conversion to laparotomy, as confirmed by several authors.[17-19] In a recent review of 2,530 attempted gynecologic laparoscopic surgeries, Sokol et al,[27] determined that a BMI greater than 30 kg/m2 placed patients at a more than 2-fold risk of unintended laparotomy. Eltabbakh et al,[28] noted similar findings in a review of 47 obese patients who underwent operative gynecologic laparoscopies. Despite these challenges, a laparoscopic approach is well suited to the obese patient, who is inherently less mobile and, therefore, more susceptible to thromboembolic events and suboptimal wound healing following laparotomy.[29] One randomized, prospective trial comparing outcomes of laparoscopic with abdominal hysterectomy found less operative blood loss, less postoperative pain, and shorter hospital and convalescence times for patients undergoing laparoscopic hysterectomy.[30] These same authors concluded that total laparoscopic hysterectomy may afford significant benefit to society in the form of indirect costs related to recovery time, when compared with abdominal hysterectomy.[31]

Of those studies addressing the technique of total laparoscopic hysterectomy for obese women, ours comprises the largest cohort of obese patients to date. Total laparoscopic hysterectomy was successfully completed without excessive operative or postoperative complications in almost 90% of our obese patients compared with 96% of our nonobese patients. The 6.6% rate of conversion

to laparotomy associated with obese patients in our study is similar to rates reported by others.[27,28,32] Moreover, no conversion to laparotomy in our study occurred after December 2000, supporting the notion that this risk decreases as operator experience is accrued.[27,32] In practice, the number of patients in our study is relatively large. However, the observational nature of a retrospective study precludes absolute conclusions.

## Conclusion

Despite these drawbacks, our research contributes to the expanding corpus of research indicating that obese patients can have total laparoscopic hysterectomy safely, with complication rates comparable to those of nonobese patients. It would be clinically beneficial to conduct large, prospective trials to identify the safest, most suitable method of hysterectomy for obese women.

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