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Outcome of Body Mass Index on Clinical Effects of Patients Undergoing Total Laparoscopic Hysterectomy

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Abstract

Objectives: The aim of this study is to assess the outcome of body mass index on clinical outcomes of patients undergoing total laparoscopic hysterectomy.

Methods: This observational study was carried out on 200 women admitted in the Department of obstetrics and gynecology, Evercare Hospital, Dhaka, Bangladesh during the study period. The duration of the period was from July 2021 to December 2022. The data for this study about had been accumulated from patient's sociodemographic & obstetrics information, physical examination and per-operative findings. Statistical evaluation of the results used to be got via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

Results: This study shows that according to general characteristics. Indication of Uterine fibroids, Abnormal uterine bleeding, Chronic Pelvic Pain. Anesthetic technique of General anesthesia, General anesthesia plus spinal anesthesia and General anesthesia plus epidural of Normal BMI were 36%, 48%, 16%; Overweight were 51%, 28%, 20% and Obesity were 58%, 28%, 14% respectfully. The P-value was found 0.048. The total complication of the population who had normal BMI where 2(0.1.73%) patient, the population who had overweight where 3(4.26%) patient and the population who had obesity where 1(6.66%) patient.

Conclusion: Total laparoscopic hysterectomy is a safe and effective procedure for obese patients, with efficacy comparable to that of nonobese patients.

Keywords: *Body mass index; Laparoscopic hysterectomy; Obesity*

Introduction

Laparoscopic procedures for specified surgical treatment have been shown to minimize length of hospital stay and postoperative disability. High Body mass index (BMI) used to be at first considered as a relative contraindication for superior laparoscopic procedures, however this has recently come beneath review [1]. Because excessive BMI is a recognized risk factor for abnormal natsumi bluder, adenomyosis, fibroids, endometrial hyperplasia, and endometrial carcinoma, many women with high BMI will require hysterectomy [2]. In addition, different gynecologic malignancies such as ovarian and cervical carcinoma of all BMIs and can also additionally require hysterectomy [3]. Many of these gynecologic conditions in overweight patients had been traditionally managed by total abdominal hysterectomy (TAH) with the aid of open laparotomy with a greater rate of problems such as wound infection, pelvic abscess, and dehiscence than determined in nonobese patients [4]. Now, with improved instrumentation and techniques, many advanced laparoscopic techniques have been discovered to be protected and viable in women with excessive BMI [5]. Obesity and comorbidities related with it are properly well-known elements that negatively have an effect on surgical outcomes. Since greater BMI is a predisposing aspect for extraordinary uterine bleeding, endometrial hyperplasia, adenomyosis, and so forth, many women of greater BMI may additionally require hysterectomy. In the past, laparoscopy used to be technically regarded difficult in obese patients and used to be frequently regarded a relative

contraindication. But with widespread advances in laparoscopic techniques this has come below assessment [6]. Abdominal hysterectomy has shown to be related with greater rates of problems like wound infection, pelvic abscess, and longer postoperative continue to be in obese than nonobese patients [7]. In the past, quantity of randomized managed trials has compared abdominal hysterectomy with laparoscopic assisted vaginal hysterectomy (LAVH) and observed it to be in favor of the latter in phrases of complications, blood loss, operating time pain, and hospital stay [8]. Total laparoscopic hysterectomy is feasible choice to LAVH particularly in obese patients the where vaginal dissection of cervix and decrease uterine section might also be hard for want of space and exposure [9].

Although there are reviews indicating that obesity may additionally be a relative contraindication for a laparoscopic manner, patients with high BMI would possibly advantage extra from this approach, in which complications associated to the abdominal incision are decreased markedly and the advantages are greater in contrast with open approaches [10,11]. These latter consequences have led to a re-examination of obesity as a contraindication for laparoscopic surgery.

Methods

The study was a cross-sectional descriptive study which was conducted in over a period from July 2021 to December 2022 with a structured questionnaire. The post-operative ward, gynae ward, and operating room at the department of obstetrics and gynecology, Evercare Hospital, Dhaka, Bangladesh were the study's settings. About 200 study population admitted in the Department of obstetrics and gynecology, Evercare Hospital, Dhaka. Convenience sampling technique was used as a sampling method. The study included people who need total laparoscopic hysterectomy. However, patients with known sensitivity to the drugs administered, liver disease, patients who had significant infections were excluded from the study. After collection, the data were checked followed by entry, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. The choice of treatment was made by the patient after a full discussion with the multidisciplinary team consisting of gynecologists. Collected data were edited and analyzed according to the objectives and variables by IBM software- Statistical package for Social Science (SPSS 25) version. Ethical clearance was taken from the IRB of the institution.

Result

Shows that socioeconomic level distribution of the population who had normal BMI where 6.08% were low level, 40% were medium level and 53.92% were high level. The population who Overweight where 10% were low level, 30% were medium level and 60% were high level. The population who had Obesity where 20% were low level, 70% were mid-level and 10% were high level. The P-value was found 0.045. The status normal BMI, overweight and obesity of the participant was insignificant associated with their socioeconomic condition. Smoking history of the population who had normal BMI where 10%, overweight 40% and 2% were obesity were smoker. The P-value was found 0.180. The status normal BMI, overweight and obesity of the participant was insignificant associated with their smoking history. Cesarean deliveries distribution of the population who had normal BMI where 35% were 0, 17% were 2 and 48% were ≥2. The population who Overweight where 42% were 0, 27% were 2 and 31% were ≥2. The population who had Obesity where 55% were 0, 20% were 2 and 25% were ≥2. Preoperative diagnosis Indication of the population who had normal BMI where 45% were Uterine fibroids, 30% were Abnormal uterine bleeding, 15% were Chronic Pelvic Pain, 6% were adenomyosis and 4% were Endometrial hyperplasia. The population who Overweight where 68% were uterine fibroids, 20% were abnormal uterine bleeding, 5% were Chronic Pelvic Pain, 5% were adenomyosis and 2% were endometrial hyperplasia. The population who had Obesity where 75% were Uterine fibroids, 10% were Abnormal uterine bleeding, 8% were Chronic Pelvic Pain, 4% were adenomyosis and 3% were Endometrial hyperplasia. The P-value was found <0.001. The status normal BMI, overweight and obesity of the participant was significant associated with their Preoperative diagnosis Indication. Anesthetic technique of General anesthesia, General anesthesia plus spinal anesthesia and General anesthesia plus epidural of Normal BMI were 36%, 48%, 16%; Overweight were 51%, 28%, 20% and Obesity were 58%, 28%, 14% respectfully. The P-value was found 0.048. The status normal BMI, overweight and obesity of the participant was insignificant associated with their anesthetic technique. Previous abdominal surgery of the population who had normal BMI where 75%, overweight 75% and 70% were obesity were Previous abdominal surgery. The P-value was found 0.851. The status normal BMI, overweight and obesity of the participant was insignificant associated with their previous abdominal surgery. Access technique of the population who had normal BMI where 10%, overweight 100% and 100% were obesity were closed technique (Table 1). Demonstrated the Characteristics of the procedure and clinical evaluation. Characteristics of Duration of the procedure, Uterine size, Uterine weight, Surgical bleeding, Hospital stays, Ambulation start time and conversion to laparotomy of Normal BMI were 108.4 ± 33.0, 10.3 ± 2.1, 167.6 ± 91.0, 80.6 ± 69.2, 60 ± 6.3, 10.2 ± 6.7 and 0.0%; Overweight were 110.4 ± 44.0, 11.4 ± 2.5, 199.4 ± 112.3, 145.5 ± 148.8, 72 ± 7.8, 12.1 ± 5.5 and 0.0%; Obesity (n=15) were 145.0 ± 59.7, 11.9 ± 4.0, 191.2 ± 97.2, 144.0 ± 132.3, 26.7 ±

10.3, 14.2 ± 6.7 and 6.66% respectfully (Table 2). Demonstrated the Frequency and Comorbidities of the Hypertension, Diabetes mellitus, Hypothyroidism, Heart disease, Chronic kidney disease of Normal BMI (n=115) were 70, 45, 20, 7, 5, 15, 9; Overweight (n=70) were 45, 25, 9, 5, 3, 8, 6 and Obesity (n=15) were 10, 9, 6, 5, 4, 3, 4 respectfully (Table 3).

Table 1: *Distribution of the study patients according to general characteristics.*

Characteristics	Normal BMI 18.5-24.9 n=115 (%)	Overweight 25-<30 n=70 (%)	Obesity ≥30 n=15 (%)	P value
Socioeconomic level				
Low	6.08	10	20	0.045
Medium	40	30	70	
High	53.92	60	10	
Smoking History	10	6	2	0.180
Cesarean deliveries				
0	35	42	55	0.412
2	17	27	20	
≥2	48	31	25	
Preoperative diagnosis Indication				
Uterine fibroids	45	68	75	<0.001
Abnormal uterine bleeding	30	20	10	
Chronic Pelvic Pain	15	5	8	
Adenomyosis	6	5	4	
Endometrial hyperplasia	4	2	3	
Anesthetic technique				
General anesthesia	36	51	58	0.048
General anesthesia plus spinal anesthesia	48	28	28	
General Anesthesia plus Epidural	16	20	14	
Previous abdominal surgery (%)				
	75	75	70	0.851
Access technique				0.009
Closed	100	100	100	

Table 2: *Characteristics of the procedure and clinical evaluation by study group.*

Characteristics	Normal BMI 18.5-24.9 (n=115)	Overweight 25-<30 (n=70)	Obesity ≥30 (n=15)	P value
Duration of the procedure, min	108.4 ± 33.0	110.4 ± 44.0	145.0 ± 59.7	<0.001
Uterine size, cm	10.3 ± 2.1	11.4 ± 2.5	11.9 ± 4.0	0.006
Uterine weight, g	167.6 ± 91.0	199.4 ± 112.3	191.2 ± 97.2	0.166
Surgical bleeding, mL	80.6 ± 69.2	145.5 ± 148.8	140 ± 132.3	0.002
Hospital stays, h	60 ± 6.3	72 ± 7.8	80.0 ± 10.3	0.117
Ambulation start time, h	10.2 ± 6.7	12.1 ± 5.5	14.2 ± 6.7	0.065
Conversion to laparotomy, %	0.0	0.0	6.66	0.863

Table 3: *Frequency and Comorbidities by study group*

Comorbidities	Normal BMI 18.5-24.9 (n=115)	Overweight 25-<30 (n=70)	Obesity ≥30 (n=15)
Hypertension	70	45	10
Diabetes mellitus	45	25	9
Hypothyroidism	20	9	6
Heart disease	7	5	5
Chronic kidney disease	5	3	4

Demonstrated the frequency and type of complication of the population who had normal BMI where 1(0.86%) patient was Bladder injury and 1(0.86%) patient was Vaginal cuff bleeding. The population who had overweight where 1(1.42%) patients were Excessive bleeding, 1(1.42%) patients were Bladder injury and 1(1.42%) patient was ureter injury. The population who had obesity where 1(6.66%) patient was Entry site infection. The total complication of the population who had normal BMI where 2(0.1.73%) patient, the population who had overweight where 3(4.26%) patient and the population who had obesity where 1(6.66%) patient.

Discussion

Laparoscopy in obese patients can be technically difficult for the surgeon however is extra rewarding for the patient. The most important preliminary technical difficulties encountered with greater BMI are introduction and renovation of pneumoperitoneum. Direct trocar needle entry, in our study, was the preferred technique for introduction of pneumoperitoneum in all BMI groups. Due to growing skin thickness, counter traction with a skin fold is no longer viable in instances of greater BMI; vertically directed trocar entry yields quality result. It is viable that in thin patients the directed trocar entry might also tentatively be directed extra in the direction of the pubic symphysis for fear of injuring major vital structures below umbilicus. In patients of greater BMI, a longer trocar used which might also additionally have contributed to fewer instances of failed insufflation. In this study, socioeconomic level distribution of the population who had normal BMI where 6.08% were low level, 40% were medium level and 53.92% were high level. The population who Overweight where 10% were low level, 30% were medium level and 60% were high level. The population who had Obesity where 20% were low level, 70% were mid-level and 10% were high level. The P-value was found 0.045. The status normal BMI, overweight and obesity of the participant was insignificant associated with their socioeconomic condition. Smoking history of the population who had normal BMI where 10%, overweight 40% and 2% were obesity were smoker. The P-value was found 0.180. The status normal BMI, overweight and obesity of the participant was insignificant associated with their smoking history. Cesarean deliveries distribution of the population who had normal BMI where 35% were 0, 17% were 2 and 48% were ≥2. The population who Overweight where 42% were 0, 27% were 2 and 31% were ≥2. The population who had Obesity where 55% were 0, 20% were 2 and 25% were ≥2. Preoperative diagnosis Indication of the population who had normal BMI where 45% were Uterine fibroids, 30% were Abnormal uterine bleeding, 15% were Chronic Pelvic Pain, 6% were adenomyosis and 4% were Endometrial hyperplasia. The population who Overweight where 68% were uterine fibroids, 20% were abnormal uterine bleeding, 5% were Chronic Pelvic Pain, 5% were adenomyosis and 2% were endometrial hyperplasia. The population who had Obesity where 75% were Uterine fibroids, 10% were Abnormal uterine bleeding, 8% were Chronic Pelvic Pain, 4% were adenomyosis and 3% were Endometrial hyperplasia. The P-value was found <0.001. The status normal BMI, overweight and obesity of the participant was significant associated with their Preoperative diagnosis Indication. Anesthetic technique of General anesthesia, General anesthesia plus spinal anesthesia and General anesthesia plus epidural of Normal BMI were 36%, 48%, 16%; Overweight were 51%, 28%, 20% and Obesity were 58%, 28%, 14% respectfully. The P-value was found 0.048. The status normal BMI, overweight and obesity of the participant was insignificant associated with their anesthetic technique. Previous abdominal surgery of the population who had normal BMI where 75%, overweight 75% and 70% were obesity were Previous abdominal surgery. The P-value was found 0.851. The status normal BMI, overweight and obesity of the participant was insignificant associated with their previous abdominal surgery. Access technique of the population who had normal BMI where 10%, overweight 100% and 100% were obesity were closed technique.

Previously, many authors have in contrast the relationship of BMI with effects in laparoscopic hysterectomy. A potential finds out about via [12]. Confirmed a nonsignificant trend towards an increased rate of important operative problems in a team of 54 overweight patients present laparoscopic hysterectomy. Only half of the patients in that find out about underwent tries at complete laparoscopic hysterectomy, whereas the ultimate half of have been tried as laparoscopically assisted vaginal hysterectomies, a process proven by way of [13]. To be related with increased morbidity than supracervical laparoscopic hysterectomy [14]. Confirmed no expanded rate of problems in his sequence of complete laparoscopic hysterectomies in 11 overweight women. This was a pilot segment record in which obesity was once described as a feature of best body weight, alternatively than BMI [15]. Said on 330 patients, stratified in accordance to BMI groups, who underwent complete laparoscopic hysterectomy. Those retrospective research include 78 obese women and found comparable mean operating time, mean operative blood loss, mean length of hospital stay, and difficulty rates across all BMI groups. Currently, obesity is a pandemic sickness affecting each high- and low-income countries; therefore, any endoscopic doctor can also have to operate methods such as laparoscopic hysterectomy in patients with obesity, regardless of the excessive rate of morbidity owing to technical difficulties of the approach, which are comparable to these encountered in an open strategy [16]. Laparoscopic surgical operation in obese patients offers an actual technical challenge, because setting up and preserving the pneumoperitoneum has a heightened degree of problem owing to

the thickness of the abdominal wall and the quantity of stomach fat [17]. Obesity has additionally been suggested to have an have an effect on in the rate of conversion to laparotomy owing technical issues [6]. The frequency of issues in the study population undergoing laparoscopic hysterectomy was similar to that reported for endoscopic procedures and open techniques [18,19]. When evaluating total complications amongst the learn about groups, a greater frequency of problems was located for the obesity group; this differs from preceding findings [20,21]. In this present study, comorbidities of the hypertension, diabetes mellitus, hypothyroidism, heart disease, chronic kidney disease of normal BMI (n=115) were 70, 45, 20, 7, 5, 1; overweight (n=70) were 45, 25, 9, 5, 3 and obesity (n=15) were 10, 9, 6, 5, 4 respectfully. Our study shows the frequency and type of complication of the frequency and type of complication of the population who had normal BMI where 1(0.86%) patient was Bladder injury and 1(0.86%) patient was Vaginal cuff bleeding. The population who had overweight where 1(1.42%) patients were Excessive bleeding, 1(1.42%) patients were Bladder injury and 1(1.42%) patient was ureter injury. The population who had obesity where 1(6.66%) patient was Entry site infection. The total complication of the population who had normal BMI where 2(0.1.73%) patient, the population who had overweight where 3(4.26%) patient and the population who had obesity where 1(6.66%) patient. There is no doubt that obesity is growing at an accelerating rate in the population; as a result, we need to be organized for and decide the influence of performing a laparoscopic hysterectomy amongst this group of patients. The consequences of the current find out about exhibit that each the period of the surgical system and the surgical morbidity make increase for patients with obesity, often owing to minor complications, even though difficulties in the laparoscopic strategy have to additionally be taken into account.

Limitations of the Study

The present study was conducted in a very short period due to time constraints and funding limitations. The small sample size was also a limitation of the present study.

Conclusion

Total laparoscopic hysterectomy is a safe and effective procedure for obese patients, with efficacy comparable to that of nonobese patients.

Recommendation

This study can serve as a pilot to much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for future use and emphasize points to ensure better management and adherence.

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The wide range of disciplines involved in outcome of body mass index on clinical effects of patients undergoing total laparoscopic hysterectomy research means that editors need much assistance from referees in the evaluation of papers submitted for publication. I am very grateful to many colleagues for their thorough, helpful and usually prompt responses to requests for their opinion and advice.

Declaration

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Conflict of interest

None declared.

Ethical Approval

The study was approved by the ethical committee of Evercare Hospital, Dhaka, Bangladesh.

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