Evaluation of perioperative results of total laparoscopic hysterectomy cases: a tertiary referral center experience

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Abstract

Aim: The aim of this study is to evaluate the patient characteristics, operative indications and postoperative results of total laparoscopic hysterectomy (TLH) cases performed due to benign conditions in our hospital which is a tertiary referral center and to analyze the complications. Material and Method: Our study was conducted retrospectively with 530 patients who had been hospitalized for TLH for benign conditions between 2013 and 2016. Demographic characteristics such as age, gravida, parity, body mass index, previous surgical operation, accompanying disease, preoperative and postoperative hemoglobin levels were examined. Operative indications of patients, duration of operation, duration of hospital stay and complications were evaluated. Results: A total of 530 TLH-cases were included in the study. The mean age of these patients was 48,8 years, gravida 4.4, parity 3.3, body mass index 29.7, mean change in hemoglobin 1.5 g / dl, and hematocrite was 4.2 g / dl. The most frequent indication for clinical operation was myoma uteri (n: 231). The average duration of operation was calculated as 151 minutes. The complication rate was 16% (n: 85). The mean hospital stay of patients was 2.16 days. Discussion: Following an increasing trend in less invasive surgeries and laparoscopic operation techniques, hysterectomy is performed laparoscopically in selected patients in our hospital. In TLH series, the operation time is shortened and hospitalization durations of the patients decrease. Complication rates are not different from laparotomy series. Careful selection of patients, adequately trained surgeons and close follow-up are critical to reduce morbidity. Complication rates are relatively low in correlation with increasing experience.

Keywords

Total Laparoscopic Hysterectomy; Complication; Adhesion; Leiomyoma

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Introduction

Total laparoscopic hysterectomy (TLH) is a well established surgical technique in gynecology which is performed frequently as an alternative to both abdominal hysterectomy (AH) and vaginal hysterectomy (VH). Laparoscopic surgeons have well-known advantages, such as shorter hospital stay, reduced post-operative pain, faster return of normal activities of the patient, fewer wound infections, and less blood loss [1,2]. Although there are different specific designs, uterus sizes, and patient selection, it is generally accepted that complication rates are higher in abdominal surgery than in minimally invasive approaches [3]. Considering these obvious benefits, the use of laparoscopy has increased significantly and is the preferred approach when vaginal hysterectomy is not possible [2,4,5]. In our study, we aimed to evaluate the patient characteristics, operation indications and postoperative results of total laparoscopic hysterectomy cases performed with benign conditions within a period of three and a half years in our tertiary referral center and to analyze the complications.

Material and Method

This study was a retrospectively designed descriptive study in which the researchers reviewed the medical records of patients who underwent total laparoscopic hysterectomy with benign conditions in Istanbul Health Sciences University, Kanuni Sultan Süleyman Education and Research Hospital, Obstetrics and Gynecology Department between January 2013 and June 2016. Patient characteristics (age, body mass index, surgical indications, uterus weight), operative characteristics (duration of operation, additional procedures, prophylactic bilateral salpingectomy) and clinical outcomes (blood loss, complications, and length of stay in the hospital) were noted from the medical records of the patients. The duration of the operation was taken as the time from the beginning of the operation to the end of the procedure. The amount of blood loss in the operation was calculated by subtracting the amount of fluid used for irrigation from the aspirated amount in the aspirator. Intraoperative and postoperative complications were recorded. Analysis of the data was done by using the IBM SPSS Statistics 20.0 program. Continuous variables are expressed as mean ± standard deviation or median (minimum-maximum), nominal variables as number of cases and (%).

Results

The mean age of the patients was 48.8 ± 7.2 (31-80) years, gravida 4.4 ± 2.4 (0-15), parity 3.3 ± 2.0 (0-15), body mass index 29.7 (17.9-49.2 years), and totally 530 laparoscopic hysterectomies were performed, mean change in hemoglobin level was 1.5 (5-7) g / dl, and in hematocrit it was 4.2 ± 2.3 (2-22). Sixty-three (11.7%) patients were given erythrocyte suspension transfusion. Forty-six (73%) patients were transfused to increase hemoglobin levels preoperatively, and 17 (26.9%) were transfused due to the postoperative blood loss. A total of 179 (33.9%) patients had accompanying comorbid diseases and 122 (23.1%) patients had prior abdominal operations and associated adhesions at varying degrees (Table 1). The most frequent indications for clinical operation were myoma uteri (n: 231, %43.8), treatment-resistant abnormal uterine bleeding (n: 152, %28.8), and atypical endometrial hyperplasia (n: 73, %13.8) (Table 2). The average duration of operation was calculated as 15142.4 (60-300) minutes. The complication rate was 16 % (n: 85). The number of conversions to laparotomy was 9. Postoperative complications were following: 30 patients had vaginal cuff hematoma, 6 patients had abscess on vaginal cuff, 20 patients had subcutaneous emphysema, 4 patients had ureter injury, 12 patients had bladder injury, and 4 patients had vaginal cuff cellulitis (Table 3). The mean hospital stay of the patients who underwent surgery was 2.161.2 (2-6) days. In the pathologic evaluation of hysterectomy specimens, diagno-

Table 1. Descriptive characteristics of cases. İntraoperative and postoperative results

Parameters	Mean
Age	48.8 (31-80)*
Gravidity	4.42.4 (0-15)*
Parity	3.32 (0-15)*
Operation duration (min.)	15142.4 (60-300)*
Hospitalization (dys)	2.11.2 (2-6)*
Δ hemoglobin (g/dl)	1.5(5-7)*
Δ hematocrite	4.22.3 (2 - 22)*
Co-morbid disease history	179 (33.9 %)**
Prior abdominal surgery	122 (23.1 %)**
Cesaerian	92 (75,4 %)**
Gynecological	22 (18,0 %)**
Non-gynecological	8 (6,5 %)**
Transfusion	63 (11.8 %)**
Preoperative	46 (8,6 %)**
Postoperative	17 (3,2%)**
Uterine size (weeks)	
Regular size	263 (49.6 %)**
8.weeks	115 (21.6 %)**
10. weeks	64 (12.0 %)**
12. weeks	62 (11.6 %)**
14. weeks	18 (3.3 %)**
16. weeks	6 (1.1 %)**
18. weeks	2 (0.3 %)*

*: Values given as Mean ± Std deviation [min-max range]; **: n (%).

Table 2. Medical indications for hysterectomies

Clinical Indication	Count (n) (%)
Uterine myoma	231 (43.8 %)
Treatment Resistant Abnormal Uterine Bleeding	188 (35.6 %)
Endometrial Hyperplasia without Atypia	73 (13.8 %)
Adenomyosis	5 (0.9 %)
Adnexial Mass	17 (3.2 %)
Postmenopausal Bleeding	10 (1.9 %)
Pelvic Organ Prolapse	3 (0.6 %)
Tuboovarian abscess	1 (0.2 %)

Table 3. Complications Occured in Patients after TLH

Complications	Count (n) (%)
Conversion from Laparoscopy to Laparotomy	9 (1.69 %)
Vaginal cuff abscess	6 (1.13 %)
Vaginal cuff hematoma	30 (5.6 %)
Vaginal Cuff Cellulitis	4 (0.7 %)
Subcutaneous Emphysema	20 (0.9 %)
Damage to ureters	4 (0.75 %)
Damage to urinary bladder	12 (2.26 %)
Damage to bowels	0
Total	n:85 (16 %)

ses were as follows: leiomyoma 276 (52%), adenomyosis 162 (30,5%), endometrial hyperplasia 42 (7.9%), atrophic endometrium 32 (6%) and endometrial polyp 18 (3.3%) (Table 4).

Table 4. Histopathological results of cases.

Histopathological Diagnosis	Count (n) (%)
Leiomyoma	276 (52 %)
Adenomyosis	162 (30.5 %)
Endometrial Hiperplasia	42 (7.9 %)
Atrophic Endometrium	32 (6 %)
Endometrial Polyp	18 (3.3 %)

Dıscussion

The second most common gynecologic operation after cesarean section is hysterectomy. Laparoscopic hysterectomy is a minimally invasive procedure with established morbidity and mortality rates that are considerably lower compared to laparotomy and mean duration of post operative hospitalization is shorter. In the United States, in 2009, 56% of hysterectomies performed for benign causes were performed abdominally, 20% laparoscopically, 19% vaginally and 5% by robotic surgery [6]. In the study done by Loring, M et al., 8% of hysterectomies were performed by laparoscopy, and this ratio was more than 50 % in 2008 and increased to 72% in 2012 [7]. The factors affecting the decision on what technique is the most appropriate for hysterectomy are the indication of the operation, whether there is any other intervention to accompany it, the comorbid diseases of the patient and the experience of the surgeon. The least invasive method should be chosen. The American College of Obstetrics and Gynecology (ACOG) recommends vaginal hysterectomy (VH) as the first choice [8]. Laparoscopy Assisted Vaginal Hysterectomy (LAVH) was more popular among gynecologists in the first years of hysterectomy by laparoscopic surgery, but TLH gained the upper hand in time because it was shown that the risk of bleeding from the uterine artery pedicle was greater with LAVH [9]. TLH has a wide spectrum of indications including dysfunctional uterine bleeding, myoma uteri, gynecologic cancers, uterovaginal prolapse, endometriosis, adenomyosis, pelvic inflammatory disease and obstetric complications [10]. The most common indications in TLH are abnormal uterine bleeding and uterine fibroids [11]. In our study, myoma uteri was the leading reason with a frequency of 43.8 %. The advantages such as less postoperative pain, shorter hospitalization time, and a shorter interval to return to daily activities are the reasons why laparoscopic operations are preferred more frequently by surgeons for gynecological procedures. Application of this procedure to routine practice has taken time because of the high cost for departments, lengthier learning curves for surgeons, longer working hours and higher complication risks during the learning period [12]. In many studies, TLH was associated with shorter hospital stays, less postoperative pain, less blood loss, shorter time interval to return to normal daily activity, fewer wound infections, longer operating times, and more urinary tract injuries compared with abdominal hysterectomy [13,14]. The mean duration of operation in our study was 151 ± 42.4 (60-300) mins. The duration of the operation was found to be longer in the first years. This is considered to be due to the incomplete learning curves of our specialists, and we think that this is the effect during the teaching period because we are a resident training clinic. We observed that operation times decrease as the experiences of the surgeons build up.

Although there are different outcomes in the literature regarding TLH complications, TLH has been shown to have higher complication rates compared to other operation techniques in a number of studies [15]. In a study performed by Johnson et al., [16] involving 3643 patients from multiple centers, although vaginal and laparoscopic hysterectomy techniques were reported to be significantly more advantageous in terms of rapid wound healing and return to daily routine, bladder and ureter injury complications were more common in patients who underwent laparoscopic hysterectomy [17]. In a study by Makinen et al., authors evaluated 10110 patients who underwent hysterectomy according to the operation technique and found that urinary tract complications occurred between 0.2% and 0.5% in abdominal hysterectomies, whereas the frequency of urinary tract complications was 1.1% to 1.3% with the laparoscopic approach. Some studies in the literature report these complications to be as frequent as 3 % [14,18]. In a study by Malik et al. involving 106 patients, they had 11 cases of urinary complications [19]. In our study, ureter damage was seen in 4 patients, bladder injury occurred in 12 patients. Eleven of these 12 patients had previous operations, endometriosis and adhesions developed associated with these factors. In some studies, it has been demonstrated that proper dissection of the ureter during laparoscopy significantly reduced the likelihood of iatrogenic ureter injuries [20]. In our practice, ureteral dissection is not routinely performed during operations, but it is done if the probability of any injury to ureter arise or in the presence of severe adhesions.

Bowel injuries are a more prominent threat when the patients have endometriosis and/or adhesions formed due to prior abdominal surgeries or more rarely during electrocoagulation [21,22]. Shen et al. evaluated 284 patients in their study and detected intestinal complications in 6 patients (2.1%). Bowel complications were not observed in our study group.

In TLH operations, prior abdominal surgery increases the rate of conversion to laparotomy between 2.7% to 3.9%. Prevailing reasons for conversion to laparotomy are intra-abdominal dense adhesions, uncontrolled bleeding, unsuccessful pneumoperitoneum, and intra-abdominal organ injuries [14]. In our series, laparotomy was performed in 9 cases due to dense adhesions. Colling et al. compared abdominal hysterectomy with laparoscopic or robotic minimally invasive surgery. In abdominal hysterectomy cases, duration of post-operative hospital stay and surgical site infections were significantly more frequent [23]. In another study, the duration of hospitalization in the TLH group was significantly shorter than the abdominal hysterectomy group but not shorter than the vaginal hysterectomy group [24]. In our study, mean hospital stay was 2.16 days and this length was in accordance with other reports in the literature.

Preoperative hemoglobin values of patients scheduled for operation due to abnormal uterine bleeding are low and may require postoperative transfusion [25]. In our study, the mean hemoglobin decrease in the post-operative period was 1.5 g / dl in patients scheduled for the hysterectomy. Blood transfusions were

performed in 46 (8,6%) patients with low preoperative hemoglobin levels and in 17 (3,2%) patients owing to post-operative blood loss and thus in total 63 (11.8%) patients.

As a result, laparoscopic hysterectomy is a more preferable method than abdominal hysterectomy when vaginal hysterectomy is not a feasible option. In our study, we presented our clinical experience from a retrospective view. In the light of our own experience, we suggest that total laparoscopic hysterectomy is a minimally invasive procedure which is associated with less-complications in experienced hands with shorter durations of hospital stay, faster return to daily routine and better cosmetic results. Although total operation duration is longer in the average compared with other techniques, as the experience of the surgeon builds up, the procedure becomes shorter in duration, safer and more efficient.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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