Laparoscopic Hysterectomy Versus Conventional Total Abdominal Hysterectomy

Laparoskopik Histerektomiye Karşı Total Abdominal Histerektomi

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ABSTRACT

Objective: Hysterectomy can be performed by vaginal, abdominal, and laparoscopic routes. Laparoscopic hysterectomy (LH) has been reported as an alternative to traditional total abdominal hysterectomy (TAH) with benefit of early recovery, shorter hospital stay and less operative complications. This study compared LH versus TAH in terms of duration of surgery, intraoperative complication, mean specimen weight, and duration of hospital stay.

Material and Methods: This is a retrospective comparative study among one hundred thirty-nine patients who underwent LH or TAH for various indications in the Department of Obstetrics and Gynecology of the Meram Medicine School of Necmettin Erbakan University from January 2008 to December 2017. The data of the patients meeting the set criteria were obtained from the hospital records and hospital based computerized coding system. Study groups have included two groups of patients: 74 patients treated by LH, 65 patients treated by classic TAH.

Results: The LH took longer time (115.9±8.6 min. versus 76.6±13.0 min.) than the TAH (p<0.001). Hemoglobin decline in the first postoperative day was 1.5±0.5 g/dl in the LH group and 2.4±0.4 g/dl in the TH group (p=0.001). Mean duration of hospital stay was significantly shorter in LH group 1.6±0.4 days versus 2.2±0.6 days in TAH group (p<0.001).

Conclusion: LH is an effective alternative to TAH with the advantage of less first postoperative day hemoglobin drop, and short hospital stay.

Key Words: Abdominal hysterectomy; hysterectomy; laparoscopic hysterectomy; laparoscopy

ÖZET

Giriş: Histerektomi vajinal, abdominal ve laparoskopik yöntemlerle yapılabilir. Laparoskopik histerektomi (LH), daha erken iyileşme, kısa hastanede kalış süresi ve daha az operatif komplikasyonlar açısından geleneksel total abdominal histerektomiye (TAH) alternatif bir yöntemdir. Bu çalışmada, LH ile TAH’ın ameliyat süresi, ameliyat sırasındaki komplikasyonlar, hastanede yatış süresi ve çıkarılan spesmen ortalaması ağırlıkları açısından karşılaştırılmıştır.

Gereç ve Yöntemler: Bu çalışma Ocak 2008-August 2017 tarihleri arasında Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı’nda çeşitli endikasyonlar ile LH ve TAH uygulanmış 139 hastanın değerlendirildiği retrospektif bir çalışmadır. Hastaların verileri hastaneye karşılaştılan ve hastane tabanı bilgisayarlı kodlama sisteminden elde edilen kriterler ile toplanmıştır. Çalışma iki hasta grubunu içermemektedir: LH yapılan 74 hasta ve TAH yapılan 65 hasta.

Bulgular: LH, TAHdan daha uzun sürdü (115,9±8,6 dk. 76,6±13,0 dk.) (p<0,001). LH grubunda postoperatif birinci günde ortala hemoglobin düşüşü 1,5±0,5 g/dl idi, TAH grubunda 2,4±0,4 g/dl idi (p=0,001). Ortalama hastanede yatış süresi LH grubunda 1,6±0,4 gün iken, TAH grubunda 2,2±0,6 gün olarak anlamlı şekilde daha kısaydı (p<0,001).

Sonuç; LH postoperatif daha yüksek hemoglobin seviyeleri ve daha kısa hastanede kalış süresi ile TAH’ye etkili bir alternatiftir.

Anahtar Kelimeler: Abdominal histerektomi; histerektomi; laparoskop; laparoskopik histerektomi

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Hysterectomy is one of the most common surgical procedures. It was first successfully performed in the 19th century using vaginal or abdominal incisions. Innovations in technology led to the performance of the first laparoscopic hysterectomy (LH) in 1989, but it was only from 1991 onwards that this surgical method of removing the uterus began to be used. However, laparoscopic surgery has some limitations such as increased operating time and longer training period. Two-dimensional views with reduced depth perception, rigid instruments and bad ergonomic circumstances may also result in a surgeon’s fatigue and awkward positioning. Till now, several studies have confirmed the feasibility of LH as a safe method with better postoperative recovery, reduced need of analgesics and shorter hospital stay. Whereas, total abdominal hysterectomy (TAH) has been the most popular method but it is more invasive and is associated with more blood loss, delayed in recovery and longer hospital stay.

In this retrospective cohort study, LH was compared to traditional TAH.

MATERIALS AND METHODS
This is a retrospective comparative study including one hundred thirty-nine patients who underwent LH or TAH for various benign indications in the Department of Obstetrics and Gynaecology of the Meram Medicine School of Necmettin Erbakan University from January 2008 to December 2017. The study protocol was approved by the ethics committee of the university hospital. We have included two groups of patients: 74 patients treated by LH, 65 patients treated by classic TAH. The patients were informed about the surgical procedure and consent was given for performing the surgery.

SURGICAL APPROACHES
All the procedures were performed under general anaesthesia, endotracheal intubation, Foley catheterisation, standard prophylactic cephalosporin antibiotic, and wore sequential compres- sion devices on their upper and lower legs. In the cases treated by LH, an intrauterine manipulator was used.

TAH is defined as an abdominal hysterectomy with a 10-cm to 15-cm pfannenstiel incision in the abdominal wall, through which the standard operation is carried out. Patients usually require a 2-day to 5-day hospitalization, followed by a 6-week recovery time.

All LH and TAH procedures were performed by same senior gynaecologist (Gorkemli H. M.D.). All LH operations were performed by using the same technique. An abdominal incision was made at the base of the umbilicus. After creation of pneumoperitoneum using the Veress needle at an angle of 45-90°, a 10-mm trocar (Versaport Plus®, Covidien, Mansfield, USA) was inserted via the umbilicus for the camera. In all cases, 2 additional 5-mm ports were inserted under direct visualization from medial and superior to the anterior superior iliac spine. The V- Care uterine manipulator (VCARE®, Conmed, Hannover, Germany) was used for uterus manipulation. After abdominal inspection and cytologic washing (if indicated), the round ligaments were cauterized and cut using a 5-mm ligasure scalpel (Blunt Tip Laparoscopic Sealer/Divider®, Covidien, Mansfield, USA). The posterior leaf of the broad ligament was opened, and the infundibulopelvic or utero-ovarian ligament was coagulated and incised ligasure scalpel. The posterior leaf of the broad ligament was dissected toward the uterosacral ligament. The uterine artery was coagulated and sectioned using ligasure scalpel. The cervicovaginal junction was opened using the tipped needle unipolar cautery, and the vaginal cuff was closed via vaginal approach by using the No. 1 Vicryl (Pegeleak®, Dogsan, Turkey).

Several clinico-pathological parameters were analysed: age, BMI, past medical history, preoperative and postoperative clinical and laboratory parameters, and complete data regarding the surgical procedure. Operative times (from incision to placement of the final abdominal or vaginal closure su- ture), histopathological findings, mass of the surgical specimen (calculated from the dimensions recorded on the pathology report), and length of hospital stay (defined as the total number of inpa- tient hospital days excluding the day of admission) were also analysed. Total operative time was meas-
ured from the moment of the abdominal incision to the last suture. Intraoperative and immediate postoperative complications were defined as complications occurring during surgery and within 24 hours after surgery, respectively. Complete blood counts were measured at 24 h postoperatively.

Major complications included haemorrhage requiring transfusion or reoperation, haematoma requiring transfusion or surgical drainage, visceral injury (to bladder, bowel, or ureter), relaparotomy, pulmonary embolism and major anaesthesia problems. Minor complications included infection or temperature of more than 38°C on twice six hours apart (excluding the first 24 hours after surgery), haematoma not requiring transfusion or surgical drainage, deep vein thrombosis and minor anaesthesia problems. Delayed postoperative complications (more than 24 hours after surgery), return visits to the emergency room and hospital readmissions were recorded. The postoperative follow-up period ranged from six months to five years.

DATA MANAGEMENT AND ANALYSIS

Statistical analysis was undertaken using the SPSS software version 16.0 (SPSS, Chicago, IL). Means and standard deviations were used to describe continuous variables, and frequencies and percentages were used to describe categorical variables. Student’s t test and Fisher’s exact test were used to compare demographic and clinical characteristics between groups, as appropriate. A p-value of < 0.05 was considered statistically significant.

RESULTS

One hundred thirty-nine patients, who underwent total hysterectomy were included in this study. The characteristics of the groups of patients are presented in (Table 1). The mean age of the patients in LH group was 47.0±5.9 years and that of TAH group was 45.7±4.7 years (p=0.25). Twelve (16.2%) patients in the LH group and 10 (15.3%) patients in the abdominal hysterectomy group had a history of previous abdominal operation (p=0.65). These differences were not statistically significant.

The two types of procedures were used for similar conditions. The conditions for which hysterectomy was performed are presented in (Table 2). In both groups the most common indication for hysterectomy was uterine leiomyoma (50.0% and 73.8%).

Patients in the LH group had significantly longer mean operative time than patients in the TAH group (115.9±8.6 versus 76.6±13.0 min., p<0.001). The mean duration of hospital stay for patients in LH group was significantly shorter when compared to TAH group (1.6±0.4 versus 2.2±0.6 days) which was statistically significant (p<0.001).

Patients in the TAH group had significantly heavier mean specimen weight than patients in the

| TABLE 1: Clinical features and operative results of the patients included in the study. |
|-----------------------------------------------|-----------------|---------------|
| Age (years) | LH (n=74) | TAH (n=65) | P-value |
| 47.0±5.9 | 45.7±4.7 | 0.25 |
| BMI (kg/m2) | 24.1±2.0 | 26.5±2.7 | 0.16 |
| Prior abdominal surgery | 12 (16.2%) | 10 (15.3%) | 0.65 |
| Hb drop (g/dl) | 1.5±0.5 | 2.4±0.4 | <0.001 |
| Duration of surgery (min.) | 115.9±8.6 | 76.6±13.0 | <0.001 |
| Length of hospital stay (day) | 1.6±0.4 | 2.2±0.6 | <0.001 |
| Specimen weight (gr) | 240.5±90.7 | 296.4±126.2 | 0.01 |
| Blood transfusion | 4 (5.4%) | 4 (6.1%) | 0.57 |
| Post-operative fever | 3 (4.0%) | 4 (6.1%) | 0.47 |
| Vault infection | 2 (2.7%) | 3 (4.6%) | 0.52 |
| Bladder injury | 2 (2.7%) | 1 (1.3%) | 0.56 |

Data are given mean ± standard deviation or number (percentage).
LH: Laparoscopic Hysterectomy; TAH: Total Abdominal Hysterectomy; BMI: Body mass index; Hb: Hemoglobin.

| TABLE 2: Indications for hysterectomy. |
|-----------------------------------------------|-----------------|
| LH (n=74) | TAH (n=65) |
| Leiomyoma | 37 (50.0%) | 48 (73.8%) |
| Adenomyosis | 4 (5.4%) | 1 (1.5%) |
| AUB | 22 (29.7%) | 11 (16.9%) |
| Endometrial hyperplasia | 8 (10.8%) | 3 (4.7%) |
| CIN | 3 (4.1%) | 2 (3.1%) |
| Total | 74 (100%) | 65 (100%) |

Data are number (percentage).
AUB: Abnormal Uterine Bleeding; CIN: Cervical intraepithelial neoplasia.
LH group (240.5±90.7 versus 296.4±126.2 gram, p=0.01). First postoperative day hemoglobin drop was significantly lower in LH as opposed to TAH (1.5±0.5 versus 2.4±0.4 g/dl, p<0.001).

Intraoperative complication in the LH group was two cases (2.7%) of bladder injury. Postoperative complications in the LH group were fever after surgery in three patients (4.0%) and vault infection in two patients (2.7%). Intraoperative complication in the TAH group was one case (1.3%) of bladder injury. Postoperative complications in the TAH group were fever after surgery in four patients (6.1%) and vault infection in three patients (4.6%) diagnosed 10 days after surgery in seven different patients. The incidence of complications was uncommon and was similar in each group. No bowel or ureteric injury was reported. In this study, there was no need to convert from LH to TAH.

### DISCUSSION

In this retrospective study we aimed to compare LH and TAH in a nine years period (2008-2017). This study we found that LH is as safe as TAH, as previously reported.8,9 The purpose of this study was to evaluate the results of operating time, perioperative complications, and duration of hospitalization to help clinicians decide between LH and TAH.

Studies report that LH takes longer operation time than TAH. Cohen et al. and Chopin et al. reported correspondingly that operation time for LH is statistically significant longer than TAH (10,11). But Seracchioli et al. reported no statistically significant difference about LH and TAH operation time at their clinical trial which includes 122 women who have bigger uterus than 14th gestational week.12 Similarly, Ribeiro et al. found out operation time shorter for vaginal hysterectomy, found out no difference between TAH and LH in their randomized prospective study which consisted of 60 patients and compared abdominal, vaginal and laparoscopic hysterectomy.13 In our study the operation time was greater for LH (115.9±8.6 min.) than for TAH (76.6±13.0 min.). This difference was statistically significant (p<0.001).

The rate of serious complications associated specifically with a laparoscopic approach is overall low. Up to half of complications occur at the time of abdominal access for camera or port placement.17 Complications can also arise from abdominal insufflation, tissue dissection, and hemostasis.18 Some investigators reported that LH involves a high rate of major complications during the initial learning period of the surgeon.19,20 Others concluded that LH is a safe procedure even when performed by a variety of surgeons with different skill levels.21 According to our experience, the rate of complications of LH was low and similar to TAH (2.7% versus 1.3%). This rate was similar to the 3% complication rate reported by Chopin et al.11,22,23

### CONCLUSION

In summary, this retrospective study demonstrates that LH can be safely done with a low and reasonable complication rate, and a shorter hospital stay but with longer operation time than the traditional TAH.
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