

# Comparison of Clinical Results in Patients with Total Abdominal Hysterectomy and Total Laparoscopic Hysterectomy

## Total Abdominal Histerektomi ve Total Laparoskopik Histerektomi Yapılan Hastaların Klinik Sonuçlarının Karşılaştırılması

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### ABSTRACT

**Objective:** The aim of our study is to compare the clinical results of total laparoscopic hysterectomy (TLH) and total abdominal hysterectomy (TAH) surgeries performed in our hospital. **Material and Methods:** The clinical records of 353 patients who applied to Necmettin Erbakan University Faculty of Medicine, Department of Obstetrics and Gynecology between January 2015 and January 2021 and underwent total hysterectomy were retrospectively reviewed. TLH (Group 1) was applied to 152 patients and TAH (Group 2) was applied to 202 patients. The mean age of the patients, body mass index (BMI), uterine volume, operation time, amount of blood loss, complication rates and postoperative hospital stay were compared between the two groups. **Results:** There was no statistically significant difference between these two groups in terms of mean age, mean body mass index (BMI), pre- and postoperative hemoglobin (hb) values. The most common indication for surgery in both groups was myoma uteri. The mean operative time was longer in group 1 and this was statistically significant (122.3±37.0 minutes-96.9±28.4, p<0.001). The mean hospital stay was shorter in group 1 patients and this was statistically significant (24.0 (24.0-48.0) h-72.0 (72-72) hours, p<0.001). Patients in the TAH group had a higher mean sample weight. **Conclusion:** Laparoscopic hysterectomy has a longer operation time. However, a smaller incision line provides less pain, less blood loss and faster recovery. Therefore, it can be said that the advantages are more for selected patients.

**Keywords:** Laparoscopic hysterectomy; total abdominal hysterectomy; complications; clinical outcomes

### ÖZET

**Amaç:** Bu çalışmanın amacı hastanemizde yapılan total laparoskopik histerektomi (TLH) ve total abdominal histerektomi (TAH) ameliyatlarının klinik sonuçlarını karşılaştırmaktır. **Gereç ve Yöntemler:** Necmettin Erbakan Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı'na Ocak 2015-Ocak 2021 tarihleri arasında başvuran ve total histerektomi uygulanan 353 hastanın klinik kayıtları retrospektif olarak incelendi. 152 hastaya TLH (Grup 1) ve 202 hastaya TAH (Grup 2) uygulandı. Hastaların ortalama yaşı, vücut kitle indeksi (BKİ), uterus hacmi, operasyon süresi, kan kaybı miktarı, komplikasyon oranları ve postoperatif hastanede kalış süresi iki grup arasında karşılaştırıldı. **Bulgular:** Bu iki grup arasında ortalama yaş, ortalama vücut kitle indeksi (VKİ), ameliyat öncesi ve sonrası hemoglobinin (hb) değerleri açısından istatistiksel olarak anlamlı fark yoktu. Her iki grupta da cerrahi için en yaygın endikasyon myoma uteri idi. Ortalama ameliyat süresi grup 1'de daha uzundu ve bu istatistiksel olarak anlamlıydı (122,3±37,0 dakika-96,9±28,4, p<0,001). Grup 1 hastalarda ortalama hastanede kalış süresi daha kısaydı ve bu istatistiksel olarak anlamlıydı (24,0 (24,0-48,0) h-72,0 (72-72) saat, p<0,001). TAH grubundaki hastalar daha yüksek bir ortalama örnek ağırlığına sahipti. **Sonuç:** Laparoskopik histerektomi daha uzun bir operasyon süresine sahiptir. Ancak daha küçük bir kesi hattı daha az ağrı, daha az kan kaybı ve daha hızlı iyileşme sağlar. Bu nedenle seçilmiş hastalar için avantajların daha fazla olduğu söylenebilir.

**Anahtar Kelimeler:** Laparoskopik histerektomi; total abdominal histerektomi; komplikasyonlar; klinik sonuçlar

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Recently, the number of total laparoscopic hysterectomies performed in our hospital has been increasing. Reich et al. He reported the first case of laparoscopically assisted vaginal hysterectomy in 1989.<sup>1</sup> In the past, simpler surgical procedures such as cyst aspiration and ovarian biopsy were performed by laparoscopic method. Recent studies have proven that laparoscopic hysterectomy has some advantages over the abdominal approach.<sup>2,3</sup> Total laparoscopic hysterectomy (TLH) is performed with a smaller incision compared to total abdominal hysterectomy (TAH). There are fewer wound complications. It has better results in terms of aesthetics. Post-operative pain is less. It has less intraoperative blood loss. Less febrile periods are seen. Thanks to faster recovery, the duration of hospital stay is shortened and thus patients can return to their normal lives faster. Therefore, TLH is greatly beneficial to the quality of life of patients.<sup>4-7</sup> However, laparoscopic surgery has less field of vision than laparotomy during operation and uterine traction is limited. Studies conducted for these reasons have shown that the operative time of the laparoscopic approach takes longer than the abdominal approach.<sup>2,8-10</sup> In addition, there are even studies that associate longer operation times with different negative results regardless of the surgical procedure.<sup>11,12</sup> In this study, it was aimed to compare the clinical results of patients who underwent TLH and TAH in our hospital.

## MATERIALS AND METHODS

The clinical records of 353 patients who applied to Necmettin Erbakan University Meram Faculty of Medicine, Department of Obstetrics and Gynecology between January 2015 and January 2021 and underwent hysterectomy were retrospectively reviewed. This study was conducted in accordance with the Helsinki Declaration Principles. Necessary ethical approval was obtained from the Ethics Committee of NEÜ Meram Faculty of Medicine on 02.04.2021 with the number 2021/3169. The cases were divided into two groups. Group 1 includes 202 patients who have undergone TLH operation. Group 2 includes 151 patients who underwent TAH operation. General anesthesia, endotracheal intubation, Foley catheterization, pre- and postoperative standard antibiotic prophylaxis

were applied to all patients. Preoperative preparations of both groups were made in the same way. All surgeries were performed by the same surgeon. During the operation, urine output was monitored hourly with a Foley catheter. Both groups were given analgesics suitable for postoperative pain control. TAH is defined as a method performed with a pfannenstiel incision between 10 cm and 15 cm in the abdominal wall.<sup>13</sup> Patients generally experience a recovery period of about 40 days after staying in the hospital for 2 to 4 days.<sup>14</sup> In our study, a pfannenstiel incision was made using the classical technique in patients who underwent TAH surgery. Patients with TLH surgery were placed in the 15-degree Trendelenburg position under general anesthesia. Pneumoperitoneum was created by injecting carbon dioxide at a pressure of 15 mm Hg from the incision site. A 10 mm trocar (Versaport Plus®, Covidien, Mansfield) was then placed under the navel in the abdomen. A camera was inserted through the cannula to view the abdominal organs. Then, two 5 mm trocars were placed at both points close to the left and right anterior iliac spina. The surgeon directed the operation by standing on the patient's left side. The assistant was on his right and directed the camera. The second assistant placed the uterine manipulator (VCARE®, Conmed, Hannover, Germany) into the endometrial cavity for vaginal manipulation. The preparation part of the surgery was completed within 15 minutes. After abdominal examination and cytological washing, all relations between the uterus and the vaginal complex were cut using a ligasure scalpel (Blunt Type Laparoscopic Sealer/Divider®, Covidien, Mansfield, USA). The uterus and ovaries were removed from the vagina. The cervicovaginal junction was opened using a needle-tipped cautery. Vaginal cuff 1 Vicryl (Pegeleak®, dogs, Turkey) was closed vaginally. The skin incisions were closed and the operation was terminated. The operation time was determined by calculating the time between the skin incision and the last skin stitch. Preoperative and postoperative hemoglobin values of the patients were noted. The time from surgery to discharge from the hospital was recorded. Perioperative complications such as incision site infection, ureter injury, and bladder injury were extensively evaluated and recorded. All patients were invited for gynecol-

ogical examination on the 40<sup>th</sup> postoperative day. In this study, mean age, body mass index (BMI), uterine volume, operation time, blood loss, perioperative complication rate and postoperative hospital stay were analyzed and compared between the groups. Data analysis was obtained by SPSS program, chi-square and independent T test, Mann Whitney U test or Chi-square test. A value of  $P < 0.05$  was considered statistically significant. Written informed consent was obtained from each patient.

## RESULTS

A total of 353 patients were evaluated in the study. TLH and TAH were performed in 202 (57%) and 151 (43%) cases, respectively. The mean age of the TLH group was  $49.3 \pm 6.7$  years, and the mean age of the TAH group was  $49.7 \pm 6.8$  years ( $p = 0.589$ ). The mean body mass index of the TLH group was  $30.0 \pm 5.9$  and the mean body mass index of the TAH group was  $30.7 \pm 4.7$  years ( $p = 0.25$ ). There was no statistically significant difference between the mean age and mean body mass index (BMI) of these two groups. The demographic characteristics and surgical indications of the patients are given in Table 1.

Preoperative hemoglobin (Hb) value was similar for both groups and there was no statistically significant difference. The decrease in hemoglobin according to the hemoglobin value measured on the first postoperative day was similar in both groups and there was no statistically significant difference. If we look at the indications for surgery, the most common indication for surgery in both groups was myoma uteri. The mean operation time was longer in group 1 than in group 2, and this was statistically significant ( $122.3 \pm 37.0$  minutes -  $96.9 \pm 28.4$ ,  $p < 0.001$ ). The average length of hospital stay was shorter in group 1 patients treated with TLH than in group 2 patients treated with TAH, and this was statistically significant ( $24.0$  (24.0-48.0) hours -  $72.0$  (72-72) hours,  $p < 0.001$ ). Patients in the TAH group had a significantly higher mean sample weight than patients in the TLH group. Considering the perioperative and postoperative complications (Table 2), bladder injury was observed in 1 patient who underwent laparoscopy, and this patient was switched to laparotomy. In the TAH group, 1 patient had bladder injury, 1 patient had bowel serosa injury, 2 patients had postop wound infection, and 1 patient had postoperative ileus. Post-

TABLE 1: Patients' characteristics and operation indications.

	TLH (n=202)	TAH (n=151)	P-value
Age (year)	49.3±6.7	49.7±6.8	0.589 <sup>a</sup>
BMI (kg/m <sup>2</sup> )	30.0±5.9	30.7±4.7	0,59
Operation time (min)	122.3±37.0	96.9±28.4	<0.001 <sup>a</sup>
Hospitalization time (hours)	24.0 (24.0-48.0)	72.0 (72-72)	<0.001 <sup>b</sup>
Preoperative Hb (g/dL)	12.4±1.5	12.1±1.5	0.02 <sup>a</sup>
Postoperative Hb (g/dL)	11.3±1.4	11.1±1.5	0.277 <sup>a</sup>
Specimen weight (gr)	215.8±117.4	235.8±94.4	0.47
		<b>Indications</b>	
Myoma uteri	81 (40.1 %)	100 (66.2 %)	<0.01 <sup>c</sup>
DUK	27 (13.4 %)	26 (17.2 %)	
Endometrial polyp	6 (3.0 %)	3 (2.0 %)	
Adenomyosis	43 (21.3 %)	2 (1.3 %)	
Ovarian cyst	15 (7.4 %)	9 (6.0 %)	
Uterine prolapse	2 (1 %)	2 (1.3 %)	
Cervical precancerous lesion	15 (7.4 %)	3 (2.0 %)	
Endometrial hyperplasia	10 (5.0 %)	0 (0.0 %)	
Myoma uteri + Ovarian cyst	3 (1.5 %)	6 (4.0 %)	

Hb: Hemoglobin; DUK: dysfunctional uterine bleeding. Data are presented as mean ± standard deviation, median (25 % -75 % interquartile range) and number (%). P values were obtained by, <sup>a</sup>:Independent T test; <sup>b</sup>: Mann Whitney U test or; <sup>c</sup>: Ki Square Test.

**TABLE 2:** Perioperative and postoperative complications.

	TLH	TAH
Blood transfusion	0	0
Post- operative fever	0	0
Bladder injury	1	1
Bowel injury	0	1
Ureter injury	0	0
Conversion to laparotomy	1	0
Incision site infection	0	2
Postop ileus	0	1

TLH: Total Laparoscopic Hysterectomy, TAH: Total Abdominal Hysterectomy.

operative pathology results were reported; 181 patients had leiomyoma, 9 patients had ovarian cysts and leiomyoma, 45 patients had adenomyosis, 53 patients had dysfunctional uterine bleeding, 9 patients had endometrial polyp, 14 patients had serous cystadenoma, 6 patients had mature cystic teratoma, 4 patients had ovarian endometrioma, 18 patients had cervical precancerous lesions. 4 patients had uterine prolapse, 10 patients had endometrial hyperplasia with and without atypia.

## DISCUSSION

In many studies comparing abdominal hysterectomy with laparoscopic hysterectomy, it has been reported that laparoscopic hysterectomy is more advantageous than abdominal. The most important reason is the shortening of the recovery period. There is less incidence of complications in surgeries performed with laparoscopic technique. Post-operative pain is less. Blood loss is less common. Thus, the person's return to their daily activities is much earlier. However, it is difficult to determine the anatomy in the pelvis during TLH and therefore the operation time is prolonged. It is known that laparoscopic hysterectomy requires longer time than abdominal hysterectomy. Çelik et al. and Härkki-Sirén et al. They found that TLH surgery took longer than TAH surgery. These results were statistically significant.<sup>15,16</sup> In another study, Ribeiro et al. They could not find a statistically significant difference between TAH and TLH operation times in their randomized prospective study involving 60 patients.<sup>17</sup> With the development of techniques in the future, the operation time can be ex-

pected to shorten. For the operator performing the TLH surgery, Komatsu et al. He reported that determination of ureter and uterine artery stages are the most important stages affecting the duration of the operation.<sup>18</sup> In our study, it was observed that the operation time was longer in patients with TLH than in TAH patients, and this was statistically significant. However, although TLH lasts longer, laparoscopic hysterectomy is more advantageous when evaluated together with other results. Since only a small skin incision is made for TLH, there is rapid improvement in TLH in the incision line and patients experience less postoperative pain. For this reason, the hospital stay is short. As a result, patients can easily return to their daily life activities after surgery. In many studies comparing laparoscopic technique with open surgical hysterectomy, it was observed that patients described less postoperative pain and shorter recovery time due to less tissue trauma and associated inflammatory response.<sup>16,19-26</sup> Phipps, et al. and Olsson et al., Härkki-Sirén, et al. In 3 separate studies, they showed that the postoperative hospital stay was shorter in the laparoscopic surgery group.<sup>15,23,26</sup> In our study, postoperative hospital stay was longer in the TAH group compared to patients with TLH surgery. Howard et al. In their study comparing 15 patients who underwent laparoscopic-assisted vaginal hysterectomy and 15 patients who underwent abdominal hysterectomy, Nezhad F, et al. In their study comparing 10 cases of TAH with 10 laparoscopic-assisted vaginal hysterectomies, and Phipps, et al. In their study comparing 51 total laparoscopic hysterectomies with 51 abdominal hysterectomies, it was reported that the perioperative blood loss was less in laparoscopic hysterectomy than abdominal hysterectomy.<sup>21-23</sup> Raju, et al., Ribeiro, et al. and Seracchioli, et al. reported that there is no significant difference between TLH and TAH in terms of blood loss.<sup>17,20,27</sup> In our study, when postoperative hemoglobin values were compared, similar values were found in the TLH group and the TAH group. The complication rate in laparoscopic hysterectomy is similar to that seen in laparotomic hysterectomy. Çelik et al. Complication rates between 71 TLH and 72 TAH cases were compared and similarly, no significant difference was found.<sup>16</sup> Regarding the results of laparoscopic hys-

terectomy, Wattiez et al. emphasized the effect of surgical experience on complication rates and operation time.<sup>28</sup> Makinen et al. In their study comparing 2434 laparoscopic hysterectomy cases, they reported that surgeons with 30 laparoscopic surgery experience had twice the bladder damage and four times more ureter damage compared to surgeons with more than 30 experiences.<sup>29</sup> Johnson et al. reported that urinary tract injuries were more common in laparoscopic hysterectomy cases compared to abdominal hysterectomy, but there was no statistically significant difference in other visceral organ injuries.<sup>30</sup> There were intraoperative complications in our study. Bladder damage was observed in 1 patient in the TLH group, intestinal serosa damage and bladder damage were observed in 2 patients in the TAH group. As a result, laparoscopic hysterectomy provides less pain, less blood loss, faster recovery and shorter hospital

stay. Thus, a faster return to daily activities is provided. It also provides cosmetic advantage thanks to the smaller incision line. Therefore, it can be said that it is an appropriate and safe procedure for selected patients.

### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

**Idea/Concept:** Hüseyin Görkemli; **Design:** Hüseyin Görkemli; **Control/Supervision:** Hüseyin Görkemli; **Data Collection and/or Processing:** Gülnur Eren, Tuğçehan Şimşekler; **Analysis and/or Interpretation:** Hüseyin Görkemli; **Literature Review:** Gülnur Eren; **Writing the Article:** Hüseyin Görkemli, Gülnur Eren; **Critical Review:** Hüseyin Görkemli, Gülnur Eren.

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