



## Whether the Previous Abdominal Surgeries Affect the Subsequent Total Laparoscopic Hysterectomies or Not?

Gizem Isik<sup>1\*</sup>, Selver Kubra Akkaya<sup>2</sup>, Funda Cevher Akdulum<sup>1</sup>, Burcu Ozata<sup>1</sup>, Ebru Yuce<sup>3</sup>, Erhan Demirdag<sup>1</sup>, Ezgi Basaran<sup>4</sup> and Nuray Bozkurt<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Gazi University, Ankara, Turkey.

<sup>2</sup>Department of Obstetrics and Gynecology, Dr. Hulusi Alataş Elmadag State Hospital, Ankara, Turkey.

<sup>3</sup>Department of Obstetrics and Gynecology, Liv Hospital, Ankara, Turkey.

<sup>4</sup>Department of Obstetrics and Gynecology, Muradiye State Hospital, Van, Turkey.

### Authors' contributions

This work was carried out in collaboration among all authors. Author GI designed the study and wrote the first draft of the manuscript. Author SKA managed the analyses of the study. Author FCA performed the statistical analysis. Author BO managed the literature searches and analyses the patients. Author EY managed the analyses. Author ED managed the study and literature searches. Author EB managed the patients. Author NB designed the study and wrote the protocol. All authors read and approved the final manuscript.

### Article Information

#### Editor(s):

(1) Dr. B. Eghon Guzman, Hospital Dr. Sotero del Rio, Chile.

#### Reviewers:

(1) Vaibhav Anjankar, India.

(2) Mallikarjuna N. Manangi, Rajiv Gandhi University of Health Sciences, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/58395>

Original Research Article

Received 10 April 2020

Accepted 17 June 2020

Published 25 June 2020

### ABSTRACT

**Aim:** Total laparoscopic hysterectomies (TLHs) are safe and patient-convenient alternative hysterectomies. Previous abdominal surgeries can increase the complications seen at TLHs. The aim of this study is evaluating the effects of previous abdominal surgeries on the feasibility and safety of TLHs.

**Methods:** 153 TLHs that performed between June 2013 and January 2016 in our clinic were evaluated retrospectively. 81 of these patients had no history of previous abdominal surgeries and 72 had been treated with at least one previous abdominal surgery. The operation durations and results were recorded. Shapiro-Wilk, the Kolmogorov-Smirnov and the Mann Whitney U tests were preferred for statistical analysis.

\*Corresponding author: E-mail: [gizemgizem87@gmail.com](mailto:gizemgizem87@gmail.com);

**Results:** The operation times of the two groups were statistically significantly different (P: 0.009). However, statistically no significant difference was found for the other values.

**Conclusions:** Laparoscopic hysterectomies are safe for the patients who had previous abdominal surgeries. Laparoscopic hysterectomy can increase the major intraoperative complications slightly. Till TLH is safety and feasible for all patients As a conclusion, laparoscopic hysterectomy can still be recommended for the patients that had previous operations as a microinvasive technique for enhancing the outpatient results.

*Keywords: Intraoperative complications; microinvasive surgeries; previous abdominal surgeries; laparoscopic hysterectomy.*

## 1. INTRODUCTION

Hysterectomies are one of the most common types of gynecological surgeries. The benign indications lead to hysterectomy recommendations include myomas, menstrual problems, prolapse and endometriosis [1].

Total laparoscopic hysterectomies (TLHs) are now seen as a safe and patient-convenient alternative to traditional abdominal hysterectomies [2]. Laparoscopic surgeries are associated with less pain, shorter hospitalization and better cosmetic results compared to abdominal hysterectomies [3].

The intraabdominal adhesions that typically occur after an abdominal surgery can complicate a subsequent TLH [4]. Previous studies have reported that the risk of significant complications during TLH, such as urological injuries and increased blood loss, is between 5–10% [5]. However, TLH complications in patients who have had a previous abdominal surgery are largely underreported [6].

If an enhanced view of the anatomy is needed for the hysterectomy, a laparoscopic approach may be the best choice for an experienced surgeon. The laparoscopic approach facilitates hemostasis, allows for effective adhesiolysis and reduces the morbidity associated with large abdominal incisions [7].

Our study sought to evaluate the effects of previous abdominal surgeries on the feasibility and safety of TLHs that were performed by one surgeon at a single operating center. The feasibility of such a microinvasive surgery would be enhanced the patient's post operative results.

## 2. MATERIALS AND METHODS

We reviewed 153 TLHs that were performed to address benign gynecological diseases. All the TLHs were performed by a single surgeon

between June 2013 and January 2016 in our clinic. This study was approved by the local ethics committee with 238 decree no. Of these 153 patients, 81 had no history of previous abdominal surgery, and 72 patients had been treated with at least one previous abdominal surgery. We documented the operation indications, the operator's notes, the pathology results and the patient histories from our hospital's general patient tracking system. Any patients who had received the operation due to malignancy were excluded. Accepted indications were abnormal uterine bleeding that could not be treated with drugs, myoma uteri, cervical intraepithelial neoplasia, descensus uteri, endometrial hyperplasia, adnexal masses and chronic pelvic pains. Clinical parameters and patient characteristics (age, parity, mean operation time (OT) and estimated blood loss (EBL)) were recorded.

The surgical procedures were performed by a single surgeon, all under similar conditions and with similar operation teams. During laparoscopic hysterectomy same uterine manipulator type (RUMI II) was used and adhesions were dissected with using bipolar modality systems and Vessel Sealing System (*Ligasure*). The ligaments of uterus and uterine artery were also ligated with Vessel Sealing System (*Ligasure*). The vaginal cuff incisions were done with ultrasonic energy modality (*Harmonic Scalpel*). All vaginal cuffs were sutured intracorporeally using polyglactin 910 absorbable sutures and in all cases, three or four stitches were required. Complications are defined as circumstances arising at the time of the laparoscopic procedure that required further interventions or extension of hospital stay.

The operation time was measured from the insertion of the optical camera to the closure of the vaginal cuff. This time was recorded in our electronic operation record system. Hemogram values before and after surgery were noted in our system so that blood loss could be analyzed

objectively. The surgical procedures were performed by a single surgeon, under similar conditions and with a similar operating team. All vaginal cuffs were sutured intracorporeally using polyglactin 910 absorbable sutures, and, for all vaginal cuffs, 3 or 4 sutures were used. Complications were identified as circumstances that were caused at the time of the laparoscopic procedure and that required further intervention.

The statistical analyses were performed using IBM SPSS version 16.0(SPSS Inc., Chicago, IL, USA). Differences between the groups were tested using the Shapiro-Wilk, the Kolmogorov-Smirnov and the Mann Whitney U tests. Differences were accepted as meaningful if the P values were less than 0.05.

### 3. RESULTS

We evaluated 153 consecutive TLH procedures for benign indications that were performed by one surgeon at a single operating center. The first 40 operations of surgeon were accepted as learning curve cases and this patients were excluded.

The average age in the patient group with no history of previous abdominal operations was similar to that of the group that had been treated with previous surgeries (48.3 and 49.0, respectively). All the reasons for performing the hysterectomy procedures were benign. The hysterectomy indications included myoma uteri (46.4%), treatment-resistant menometrorrhagia (28.1%), endometrial hyperplasia (15.7%), cervical intraepithelial neoplasia (2.6%), descensus uteri (1.3%), benign adnexal masses (5.2%) and chronic pelvic pain (0.7%). These indications were similar in both groups. The preoperative hemoglobin values were evaluated

in all the patients. In the control group of patients who had no history of previous abdominal operations, the mean value was  $12.69 \pm 1.5$  mg/dl. When patients who had been treated with previous abdominal surgeries were considered, the mean value was similar to the control group ( $12.33 \pm 1.64$  mg/dl,  $P = 0.2$ ). There were no statistically meaningful differences between the two groups (Table 1).

The previous abdominal operations of the 72 patients were mostly Caesarian section surgeries. The other operations included appendectomies, cholecystectomies, laparoscopies, myomectomies and ovarian cystectomies (Table 2).

The following factors were evaluated for this study: mean duration of the operations, uterine weights, postoperative hemoglobin values and the mean amount of hemoglobin lost during the operation (Table 3).

The mean weights of the hysterectomy materials of the control group and of the group that had been treated with previous operations were  $340 \pm 158$  g and  $312 \pm 155$  g, respectively. The maximum weight of the control group was 860 g. In the patients who had a history of previous abdominal surgery, the maximum uterine weight was 782 g. There were no significant differences between the two groups.

When we looked at postoperative hemoglobin values for the control group and the group that had a history of previous operations, the mean values were  $10.75 \pm 1.4$  mg/dl and  $10.3 \pm 1.59$  mg/dl, respectively. There were no statistical differences between the values for the two groups ( $P = 0.2$ ). The blood loss values during the operations were evaluated by comparing

**Table 1. Patient characteristics and operation indications**

	<b>Patients without previous operations</b>	<b>Patients with previous operations</b>	<b>Total</b>	<b>P value</b>
Age(years±SD)	48.36±5	49±5.5	48.62±5.2	0.94
Preoperative Hemoglobuline Values(mg/dl±SD)	12.69±1.5	12.33±1.6	12.5±1.5	0.38
<b>Indications(N/ %)</b>				
Myoma Uteri	39/48.2	32/44.4	71/46.4	
Menometrorrhagia	21/25.9	22/30.5	43/28.1	
Endometrial Hyperplasia	15/18.5	9/12.5	24/15.7	
Adnexal Masses	4/4.9	4/5.6	8/5.2	
Cervical Intraepithelial Neoplasi(CIN)	1/1.2	3/4.2	4/2.6	
Descensus Uteri	1/1.2	1/1.4	2/1.3	
Chronic Pelvic Pain	0/0	1/1.4	1/0.7	

**Table 2. Previous operations (n/%)**

	<b>N/%</b>
Patients without previous operations	81/52.9
Patients with previous operations	72/47.1
Caeserean Section(C/S)	49/32.1
1 C/S	26/17
2 C/S	16/10.5
3 ≤ C/S	7/4.6
Cholecystectomy	6/3.9
Appendectomy	5/3.3
Myomectomy	5/3.3
Laparoscopy	6/3.9
Overian Cystectomy	1/0.7

**Table 3. Operation outcomes**

	<b>Patients without previous operations n:81</b>	<b>Patients with previous operations n:72</b>	<b>P value</b>
Weight of Uterus(g)	340±158	312±155	0.2
Postoperative Hemoglobuline Values(mg/dl)	10.75±1.4	10.3±1.59	0.2
Blood loss values(mg/dl)	1.94±1.02	2.03±0.99	0.18
Operation time(min)	43.02±11.12	50.86±13.56	0.009

the differences between the preoperative and postoperative hemoglobin values ( $1.94 \pm 1.02$  mg/dl and  $2.03 \pm 0.99$  mg/dl,  $P = 0.18$ ). There were no statistically significant differences between the two groups.

The operation times of the two groups were statistically significantly different. The operations of the patients with a history of previous abdominal surgeries were significantly prolonged ( $43.02 \pm 11.13$  min,  $50.86 \pm 13.56$  min,  $P = 0.009$ ). This difference arose from the necessity of performing adhesiolysis and the anatomical variations due to the previous operations.

Three bladder injuries occurred as complications. These three cases all had a history of previous abdominal surgeries. Two of the patients had received two previous Caesarian section operations, and one patient had received three Caesarian section operations.

#### 4. DISCUSSION

For hysterectomies, the laparoscopic approach is the first choice for surgeons who have experience with this procedure. This minimally invasive technique offers many advantages for patients [8].

The appropriate hysterectomy route should be individualized. This study evaluated the feasibility

of performing TLH after previous abdominal surgeries. The primary difficulties in performing laparoscopic surgery for patients with a history of abdominal surgeries include the risk of access-related injury as well as the necessity for adhesiolysis and its attendant complications [9].

Our study results were similar to those reported in the literature. The operation durations were statistically significantly longer in the group of patients with a history of abdominal surgeries. Seo et al. showed that adhesiolysis was performed much more frequently in a study group with a history of previous abdominal surgeries and that the difference was statistically meaningful [10]. In our study, the operation durations were significantly increased in the group that had a history of previous operations ( $P = 0.009$ ). This increase was due to adhesiolysis and the anatomical changes that occurred after the previous surgeries. Lim et al. also analyzed the results of TLH after previous surgeries. There were no differences about the prevalence of complications. The operations' durations were significantly longer in the prior CS group similar with our study [11].

The previous abdominal surgeries increased complications also in traditional vaginal and abdominal hysterectomies [12,13]. There are different surgical techniques of bladder peritoneal

dissections for decreasing complications [14]. In the literature it was concluded that the previous CS was a significant risk factor for lower urinary tract injury [15]. However Chang et al found no difference of urinary tract complications after previous CS cases [16]. A meta-analysis in literature showed that previous CS increased bladder injuries; but ureteral injuries were not significantly related with previous CS [17]. Three major complications were observed as bladder injuries in our study. The bladder injuries are increased at the patients who had previous abdominal surgeries, especially caesarian sections. In our study, the bladder injuries could not be compared because there were only three cases that had previous surgeries before.

In our study we included the operations that were performed by one surgeon, also the learning curve cases were not included to the study. This means that there is mostly no change in technique of operations. This study has limitations also. Firstly, retrospective data was used. Secondly, we could not collect the long term results of patients.

## 5. CONCLUSION

In conclusion, our study results that laparoscopic hysterectomy can be performed safely for the patients with previous abdominal surgery. The major perioperative complications are minimally increased during laparoscopic hysterectomy. TLH can still be the preferred as a safety and feasible hysterectomy method for the patients that had previous operations.

## CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

## ETHICAL APPROVAL

This study was approved by the local ethics committee with 238 decree no.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Xu Y, Wang Q, Wang F. Previous cesarean section and risk of urinary tract injury during laparoscopic hysterectomy: A meta-analysis. *Int Urogynecol J.* 2015; 26(9):1269-75.
2. Walsh CA, et al. Total abdominal hysterectomy versus total laparoscopic hysterectomy for benign disease: A meta-analysis. *Eur J Obstet Gynecol Reprod Biol.* 2009;144(1):3-7.
3. Perino A, et al. Total laparoscopic hysterectomy versus total abdominal hysterectomy: An assessment of the learning curve in a prospective randomized study. *Hum Reprod.* 1999;14(12):2996-9.
4. Ko JH, et al. Safety of laparoscopically assisted vaginal hysterectomy for women with anterior wall adherence after cesarean section. *Obstet Gynecol Sci.* 2015;58(6): 501-6.
5. Garry R, et al. The evaluate study: Two parallel randomised trials, one comparing laparoscopic with abdominal hysterectomy, the other comparing laparoscopic with vaginal hysterectomy. *BMJ.* 2004; 328(7432):129.
6. Johnson N, et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev.* 2005;1:CD003677.
7. Elkington N, et al. Total laparoscopic hysterectomy: A tried and tested technique. *J Minim Invasive Gynecol.* 2005;12(3):267-74.
8. Pather S, et al. Perioperative outcomes after total laparoscopic hysterectomy compared with fast-track open hysterectomy - a retrospective case-control study. *Aust N Z J Obstet Gynaecol.* 2011;51(5):393-6.
9. Levrant SG, Bieber EJ, Barnes RB. Anterior abdominal wall adhesions after laparotomy or laparoscopy. *J Am Assoc Gynecol Laparosc.* 1997;4(3):353-6.
10. Seo ES, et al. Influence of previous abdominal surgery on clinical outcomes of patients undergoing total laparoscopic hysterectomy. *Obstet Gynecol Sci.* 2018;61(3):379-385.
11. Lim S, et al. Safety of total laparoscopic hysterectomy in patients with prior cesarean section. *J Obstet Gynaecol Res.* 2017;43(1):196-201.
12. Munro MG, Parker WH. A classification system for laparoscopic hysterectomy. *Obstet Gynecol.* 1993;82(4 Pt 1):624-9.
13. Poindexter YM, et al. Previous cesarean section. A contraindication to vaginal hysterectomy? *J Reprod Med.* 2001;46(9): 840-4.

14. Cho FN. A technique to deal with severe adhesions between the uterus and bladder or rectum in laparoscopic-assisted vaginal hysterectomy. *J Minim Invasive Gynecol.* 2007;14(6):750-1.
15. Rooney CM, et al. Is previous cesarean section a risk for incidental cystotomy at the time of hysterectomy? A case-controlled study. *Am J Obstet Gynecol.* 2005;193(6):2041-4.
16. Chang WC, et al. Minimizing bladder injury in laparoscopically assisted vaginal hysterectomy among women with previous cesarean sections. *Surg Endosc.* 2008;22(1):171-6.
17. Yinghua Xu QW, Furan Wang. Previous cesarean section and risk of urinary tract injury during laparoscopic hysterectomy: A meta-analysis. *Int Urogynecol J.* 2015;26: 1269–1275.

---

© 2020 Isik et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<http://www.sdiarticle4.com/review-history/58395>