



# The impact of abdominal and laparoscopic hysterectomies on women's sexuality and psychological condition

## Abdominal ve laparoskopik histerektomilerin kadın cinselliği ve psikolojik durumuna etkileri

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### Abstract

**Objective:** To investigate whether there were any differences in the quality of life, sexual function, and self-esteem of patients who underwent total laparoscopic hysterectomy (TLH) (n=42) and total abdominal hysterectomy (TAH) (n=42).

**Materials and Methods:** All premenopausal patients who underwent TLH or TAH because of benign uterine disorders were enrolled. The sexual function and quality of life status were assessed preoperatively and 6 months postoperatively using three standardized validated questionnaires: the Arizona Sexual Experiences Scale (ASEX), the Symptom Checklist-90-Revised (SCL-90-R), and the Rosenberg Self-Esteem Scale (RSES).

**Results:** Preoperative ASEX, SCL-90-R and RSES scores were not different among the hysterectomy subgroups. The postoperative SCL-90-R scores were also not different among the hysterectomy subgroups. The postoperative RSES scores were significantly lower ( $p<0.05$ ) than the preoperative scores for all procedures (indicating improved self-esteem) but did not differ among the groups. The postoperative ASEX scores were significantly decreased ( $p<0.01$ ) as compared with the preoperative scores (indicating improved sexual function). When the average score of each item of the ASEX score was compared in both groups, significant differences were observed in sexual drive and arousal in the laparoscopy group ( $p<0.01$ ).

**Conclusion:** Women undergoing TLH for benign uterine disease may have better outcomes related to certain sexual function parameters than women undergoing TAH.

**Keywords:** Total abdominal hysterectomy, total laparoscopic hysterectomy, sexual function, self-esteem, quality of life

### Öz

**Amaç:** Benign nedenler ile total laparoskopik histerektomi (TLH) veya total abdominal histerektomi (TAH) operasyonu olan hastalarda ameliyat şeklinin hastanın yaşam kalitesi, cinsel işlev ve benlik saygısına olan etkisini araştırmayı amaçladık.

**Gereç ve Yöntemler:** Benign uterin hastalık endikasyonu ile TLH (n=42) veya TAH (n=42) yapılan premenopozal cinsel olarak aktif hastalar çalışmaya dahil edildi. Cinsel fonksiyon ve yaşam kalitesi preoperatif ve postoperatif 6. ay da standardize ve valide edilmiş anketler ile değerlendirildi.

Cinsel fonksiyonlar Arizona Cinsel Yaşam Skalası (ASEX) ile Revize Edilmiş Psikolojik Belirti Taraması-90 (SCL-90-R) formu ile benlik saygısı ise Rosenberg Benlik Saygı Ölçeği Skalası (RSES) kullanılarak değerlendirildi.

**Bulgular:** Preoperatif ASEX, SCL-90-R ve RSES skorlarında histerektomi grupları arasında fark izlenmedi ( $p>0,05$ ). Postoperatif 6. ayda bakılan SCL-90-R puanları da histerektomi alt grupları arasında farklı değildi ( $p>0,05$ ). Postoperatif RSES puanları tüm prosedürler için preoperatif puanlardan anlamlı olarak daha düşük bulundu (benlik saygısında artma) ( $p<0,05$ ), ancak gruplar arasında anlamlı farklılık izlenmedi ( $p>0,05$ ).

Postoperatif 6. ayda bakılan ASEX puanları preoperatif puanları ile karşılaştırıldığında anlamlı derecede azalmıştır ( $p<0,01$ ) (cinsel fonksiyonlarda iyileşme). Her iki grubun ASEX alt grup skorları karşılaştırıldığında laparoskopik grubunda cinsel dürtü ve uyarılma skorlarında anlamlı farklılık gözlenmiştir ( $p<0,01$ ).

**Sonuç:** Benign endikasyonla TLH olan kadınların TAH olan kadınlara göre daha iyi cinsel fonksiyon sonuçları gösterebilir.

**Anahtar Kelimeler:** Total abdominal histerektomi, total laparoskopik histerektomi, cinsel fonksiyon, benlik saygısı, yaşam kalitesi

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## Introduction

Hysterectomy is one of the most common gynecologic operations performed in developed countries and is usually performed for benign disorders<sup>(1,2)</sup>.

Sexual function and the quality of life have been the focus of many recent studies. Investigation of the effects of hysterectomy performed for benign indications on sexual function and postoperative quality of life have led to varied results. Hysterectomy may cause sexual dysfunction in the postoperative period<sup>(3,4)</sup>. On the other hand, abnormal uterine bleeding, endometriosis, and adnexal or uterine pathologies can lead to sexual problems, and pain reduce quality of life<sup>(5)</sup>. The rapid progress made in laparoscopic surgery over the past 20 years has been a crucial development in gynecologic surgery and plays a role in the determination of treatment<sup>(6)</sup>. The most significant benefits of laparoscopic surgery include decreased blood loss, lower risk of surgical site infections, shorter hospital stays, and rapid return to normal daily activities in laparoscopy compared with laparotomy<sup>(7)</sup>. However, studies investigating postoperative psychological effects and effects on sexual function are limited.

In the present study, we conducted a prospective cohort trial investigating the advantages and potential drawbacks regarding the sexual function of patients who underwent laparoscopic and abdominal hysterectomy. Our goal was to investigate whether there were any differences in the quality of sexual function postoperatively.

## Materials and Methods

The present prospective cohort study was conducted in Zeynep Kamil Training and Research Hospital, which is one of the largest tertiary teaching hospitals in Turkey. All patients provided informed consent. Approval from the local ethics committee was acquired. Preoperatively, all patients underwent gynecologic examination, transvaginal ultrasounds, medical histories were obtained, and routine laboratory tests were performed.

Patients for whom hysterectomy without concurrent unilateral or bilateral adnexectomy was indicated for a benign gynecologic condition, who had a stable heterosexual relationship for at least 1 year, and who had no psychiatric disorders were included in the study. The exclusion criteria were suspicion of malignancy, a previous lower midline incision, the need for simultaneous interventions such as prolapse repair, the need for intraoperatively diagnosed adnexal pathology requiring subsequent unilateral or bilateral oophorectomy, having preoperative or postoperative hormone-therapy, and an inability to communicate in Turkish. In addition, patients with psychiatric disorders, vaginismus, lack of orgasm, a history of endometriosis, partners with sexual dysfunction, those who refused the interview, lost to follow-up, loss of sexual interest, psychological and physiological problems with partner's relationship, and in postmenopausal period were excluded

from the study. The patients and their physician had decided to the route of hysterectomy. The patients were included in the study if they were scheduled for abdominal or laparoscopic hysterectomy. Patients were divided into two groups according to the surgical treatment: the total abdominal hysterectomy (TAH) group and the total laparoscopic hysterectomy (TLH) group. The demographic characteristics (age, marital status, education, and occupation) were recorded. The sexual function and quality of life were assessed 1 day preoperatively on admission to our hospital. Both of the groups' patients were contacted 6 months postoperatively and interviewed again. All questionnaires were coded with an identifying number, and women could not view their previous answers. We confirmed that all of the patients had had sexual intercourse again six months after surgery. All data were recorded and analyzed by another researcher who was blinded to the group assignments.

## Operating procedures

All patients underwent general anesthesia and received preoperative antibiotic prophylaxis as well as anticoagulants during immobilization. Laparoscopic hysterectomies were all intentionally TLHs<sup>(8)</sup> and TAH was performed using the standard extrafascial technique by means of clamps and suture ligation<sup>(9)</sup>. The technical aspects of both types of hysterectomy were discussed with each patient, and the appropriate hysterectomy type was selected through mutual discussion.

## Questionnaires

Sexual dysfunction and quality of sexual life, psychological health status, and self-esteem were assessed preoperatively and 6 months postoperatively using standardized validated questionnaires: the Arizona Sexual Experiences Scale (ASEX), the Symptom Checklist-90-Revised (SCL-90-R), and the Rosenberg Self-Esteem Scale (RSES).

## Arizona Sexual Experiences Scale

The patients' quality of sexual life was measured using the ASEX scale. The ASEX is a five-item scale with six different levels of answers that measure sexual function. The questionnaire enquires about sex drive, arousal, vaginal lubrication, ability to reach orgasm, and satisfaction with orgasm. The female and male versions of the ASEX differ on the sex-specific question 3, which addresses erection/lubrication. A total ASEX score of  $\geq 19$ , any one item with an individual score of 5 or 6, and three or more items with individual scores of 4 have all been found highly correlated with physician-diagnosed sexual dysfunction<sup>(10)</sup>. Patients whose partners had sexual dysfunction were eliminated from the study. We used the Turkish version of the inventory, which has been proven valid and reliable by a recent study (Cronbach's  $\alpha=0.91$ )<sup>(11)</sup>.

## Symptom Checklist-90-Revised Scale

SCL-90-R was used to evaluate the psychological health status of the patients. The SCL-90-R includes items about psychosomatic symptoms of the patient and covers nine scales:

1. Somatization;
2. Obsessive-compulsive behavior;
3. Interpersonal sensitivity;
4. Depression;
5. Anxiety;
6. Hostility;
7. Phobic anxiety;
8. Paranoid ideation;
9. Psychoticism<sup>(12,13)</sup>.

Stressful personality, depression, anxiety, and somatization are generally measured using five-point scales (scores between 0-4)<sup>(14)</sup>. Increasing scores generally indicate that the patient is anxious about the symptoms and signs. We used the Turkish version of the inventory, which has been proven valid and reliable by a recent study (Cronbach's alpha=0.83)<sup>(15)</sup>.

**Rosenberg Self-Esteem Scale**

RSES consists of 10 items for assessing levels of self-esteem. The items are answered on a four-point scale using anchors of strongly agree (0) and strongly disagree. Its reliability and validity in Turkish were confirmed in 1986 by Çuhadaroğlu<sup>(16)</sup> and the first 10 items of the test, which assess self-esteem, were

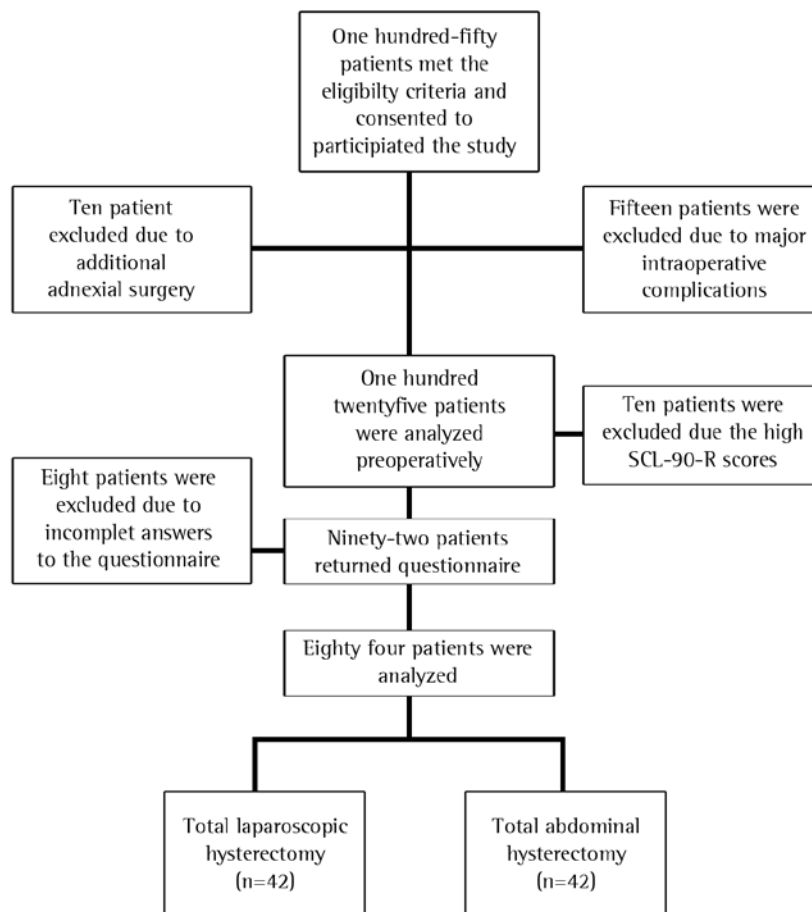
used. The subjects achieve scores between 0 and 6 according to the self-assessment system of the scale. A score of 0-1 is considered high self-esteem, a score of 2-4 is considered moderate self-esteem, and a score of 5-6 is considered low self-esteem. A high score indicates low self-esteem, whereas a low score indicates high self-esteem.

**Statistical Analysis**

Statistical analysis was performed using SPSS version 21.0 for Windows. Values are expressed as mean ± standard deviation. The Kolmogorov-Smirnov test was performed to assess the distribution of data. A comparison of two groups was performed using Student's t-test or Mann-Whitney U test for continuous variables, and the chi-square test for categorical variables. Comparisons of preoperative and postoperative scores were performed using the paired-samples t-test and Wilcoxon test. A p value of <0.05 was considered to indicate statistical significance.

**Results**

The patient flow chart is listed in detail in Figure 1. Out of 150 eligible patients, 84 completed the study. The demographic and clinical data of the two groups are summarized in Table 1.



**Figure 1.** Flow chart of study design  
 SCL-90-R: Symptom Checklist-90-Revised

**Table 1.** Patients' sociodemographic variables and medical characteristics prior to surgery

	Group 1 (TAH) Mean ± SD % (n)	Group 2 (TLH) Mean ± SD % (n)	P
Age (year)	42.8±2.5	41.1±5.5	0.161 <sup>m</sup>
BMI (kg/cm <sup>2</sup> )	28.6±4.0	29.5±6.9	0.542 <sup>m</sup>
Duration of marriage (year)	23.1±4.8	24.5±9.6	0.146 <sup>t</sup>
Partner age (year)	46.8±3.6	48.6±6.3	0.135 <sup>t</sup>
<b>Education status</b>			
Primary school	41.5% (17)	36.6% (15)	
High school	36.6% (15)	36.6% (15)	0.850
University	22.0% (9)	26.8% (11)	
<b>Occupation</b>			
Works	26.8% (11)	29.3% (12)	
House wife	73.2% (30)	70.7% (29)	0.810
Gravida	3.4±2.0	4.2±2.7	0.146 <sup>m</sup>
Parity	2.7±1.4	3.2±1.8	0.149 <sup>m</sup>
<b>Route of delivery</b>			
Vaginal	75.6% (31)	85.4% (35)	
Cesarean section	24.4% (10)	17.1% (7)	0.850
<b>Intermarriage</b>			
Yes	19.5% (8)	26.8% (11)	
No	80.5% (33)	73.2% (30)	0.432
2 <sup>nd</sup> degree	2.4% (1)	0.0% (0)	
3 <sup>rd</sup> degree	12.2% (5)	12.2% (5)	
4 <sup>th</sup> degree	4.9% (2)	14.6% (6)	
<b>Marital status</b>			
Single	9.8% (4)	7.3% (3)	
Married	90.2% (37)	92.7% (38)	0.690
<b>Type of marriage</b>			
Flirting	36.6% (15)	41.5%	
Arranged	63.4% (26)	58.5%	0.650
<b>Indication of operation</b>			
Abnormal uterine bleeding	36.6% (15)	43.9% (18)	
Endometrial hyperplasia	17.1% (7)	17.1% (7)	
Myoma uteri	26.8% (11)	19.5% (8)	0.862
Cervical pathology	19.5% (8)	19.5% (8)	

<sup>m</sup>:Mann-Whitney U test/t test/chi-square test, \*p<0.05, TLH: Total laparoscopic hysterectomy, TAH: Total abdominal hysterectomy, SD: Standard deviation

There were no statistically significant differences in the pre-and postoperative SCL-90-R scores between the groups (p>0.05) (Table 2).

Both groups exhibited a statistically significant decrease in the postoperative RSES scores compared with the preoperative scores (p<0.05). However, there were no statistically significant differences between the groups (p>0.05) (Table 3). Evaluations of sexual function are summarized in Table 4. No differences were observed between the two groups preoperatively. Postoperative decreases in ASEX scores (improvement in sexual function) were observed in both groups. Improvement in sex drive score and psychological arousal scores were better in the laparoscopic hysterectomy group compared with the abdominal group (p<0.01).

## Discussion

In the present study, decreased ASEX scores were observed 6 months postoperatively in both groups. This was more remarkable in the laparoscopy group compared with the laparotomy group. Both groups showed improvement in RSES scores; however, no significant difference was observed. Regarding the psychiatric evaluation, there were no significant differences between the groups preoperatively and 6 months postoperatively. The effects of hysterectomy on women's sexuality are controversial, and sexual function in the post-hysterectomy period is a complicated and uncertain issue by means of its results<sup>(17-21)</sup>. Hysterectomy may increase the quality of life in patients who did not respond to conservative therapy by relieving symptoms<sup>(22)</sup>. Nevertheless, patients preparing for hysterectomy may experience fear and anxiety of sexual function loss<sup>(23)</sup>. Hysterectomy is a loss because the uterus is an organ to which women are connected psychologically. Psychosexual problems after hysterectomy are usually related to marital issues and poor body image, which are exacerbated with hysterectomy. Age, biologic and psychological factors, relationships and social and cultural circumstances affect a woman's sexuality<sup>(2,24)</sup>. Therefore, women's sexuality needs to be assessed through many independent factors. On the other hand, preoperative sexual function and psychological status are also important determinants of sexual dysfunction postoperatively. In our study, essential factors affecting sexuality such as self-respect and psychological status were evaluated. We observed no statistically significant changes in psychiatric scores in either group; however, amelioration of self-respect was observed postoperatively, and in our opinion, this may be a substantial factor affecting sexual improvement. In order to ensure a homogenous study population, we excluded patients with high preoperative psychiatric scores. Thus, we aimed to assess the effect of the operation on sexual life and also on the patient's psychology. Following hysterectomy, elimination of pain, discomfort, resistant menometrorrhagia associated with present disease, and risk of cancer and unwanted pregnancy may result in higher frequency of orgasms and a more satisfying sexual life<sup>(25)</sup>.

**Table 2.** Comparison of Symptom Checklist-90-Revised preoperative and postoperative 6<sup>th</sup> month

SCL-90-R	Group 1 (TAH)	Group 2 (TLH)	*p
<b>Somatization score</b>			
Preoperative	1.3±1.0	1.4±0.9	0.551 <sup>m</sup>
Postoperative	1.2±1.0	1.2±0.9	0.927 <sup>m</sup>
Preop-postop difference	0.0±1.1	0.3±1.0	0.666 <sup>m</sup>
Difference p	0.190 <sup>w</sup>	0.121 <sup>w</sup>	
<b>Depression score</b>			
Preoperative	1.0±0.8	1.2±1.2	0.410 <sup>m</sup>
Postoperative	0.8±0.9	1.0±1.3	0.659 <sup>m</sup>
Preop-postop difference	0.1±0.9	0.3±0.9	0.707 <sup>m</sup>
Difference p	0.158 <sup>w</sup>	0.171 <sup>w</sup>	
<b>Obsessive-compulsive behavior score</b>			
Preoperative	1.0±0.8	1.2±0.8	0.483 <sup>m</sup>
Postoperative	0.9±1.0	1.0±0.9	0.563 <sup>m</sup>
Preop-postop difference	0.2±1.1	0.2±0.9	0.654 <sup>m</sup>
Difference p	0.126 <sup>w</sup>	0.89 <sup>w</sup>	
<b>Anxiety score</b>			
Preoperative	0.9±0.8	0.9±0.7	0.825 <sup>m</sup>
Postoperative	0.8±0.9	0.7±0.7	0.979 <sup>m</sup>
Preop-postop difference	0.1±1.0	0.3±0.8	0.527 <sup>m</sup>
Difference p	0.441 <sup>w</sup>	0.104 <sup>w</sup>	
<b>Interpersonal sensitivity score</b>			
Preoperative	1.0±0.9	1.1±1.0	0.517 <sup>m</sup>
Postoperative	0.8±0.9	0.8±0.8	0.372 <sup>m</sup>
Preop-postop difference	0.2±1.1	0.4±0.8	0.930 <sup>m</sup>
Difference p	0.051 <sup>w</sup>	0.055 <sup>w</sup>	
<b>Hostility score</b>			
Preoperative	0.8±0.8	0.7±0.6	0.551 <sup>m</sup>
Postoperative	0.7±0.9	0.7±0.8	0.927 <sup>m</sup>
Preop-postop difference	0.0±0.9	0.1±0.8	0.666 <sup>m</sup>
Difference p	0.508 <sup>w</sup>	0.501 <sup>w</sup>	
<b>Phobic anxiety score</b>			
Preoperative	0.5±0.6	0.6±0.7	0.947 <sup>m</sup>
Postoperative	0.5±0.7	0.5±0.7	0.903 <sup>m</sup>
Preop-Postop Difference	0.0±0.8	0.1±0.6	0.866 <sup>m</sup>
Difference p	0.656 <sup>w</sup>	0.180 <sup>w</sup>	

**Table 2 continued.** Comparison of Symptom Checklist-90-Revised preoperative and postoperative 6<sup>th</sup> month

SCL-90-R	Group 1 (TAH)	Group 2 (TLH)	*p
<b>Paranoid ideation score</b>			
Preoperative	0.8±0.9	0.9±0.8	0.430 <sup>m</sup>
Postoperative	0.6±0.8	0.7±0.8	0.515 <sup>m</sup>
Preop-postop difference	0.2±1.2	0.4±0.8	0.865 <sup>m</sup>
Difference p	0.090 <sup>w</sup>	0.052 <sup>w</sup>	
<b>Psychoticism score</b>			
Preoperative	0.6±0.6	0.5±0.6	0.637 <sup>m</sup>
Postoperative	0.5±0.6	0.5±0.5	0.283 <sup>m</sup>
Preop-postop difference	0.1±0.7	0.1±0.6	0.580 <sup>m</sup>
Difference p	0.290 <sup>w</sup>	0.352 <sup>w</sup>	

<sup>m</sup>:Mann-Whitney U test, <sup>w</sup>:Wilcoxon test, \*p<0.05, SCL-90-R: Symptom Checklist-90-Revised, TLH: Total laparoscopic hysterectomy, TAH: Total abdominal hysterectomy

**Table 3.** Comparison of Rosenberg Self-Esteem Scale preoperative and postoperative 6<sup>th</sup> month

Rosenberg Self-Esteem Scale	Group 1 (TAH)	Group 2 (TLH)	**p
Preoperative	2.1±1.1	2.4±1.1	0.147 <sup>m</sup>
Postoperative	1.1±0.8	1.0±0.6	0.907 <sup>m</sup>
Preop-postop difference	-1.0±1.1	-1.4±1.2	0.083 <sup>m</sup>
Difference p	0.000 <sup>w</sup>	0.000 <sup>w</sup>	

<sup>m</sup>: Mann-Whitney U test, <sup>w</sup>: Wilcoxon test, \*\*p<0.05, TAH: Total abdominal hysterectomy, TLH: Total laparoscopic hysterectomy

Farrell and Kieser<sup>(26)</sup> claimed in their study that improvement in quality of life and no negative effects on sexuality were observed. The most important factor they emphasized was that there were many factors influencing sexual life and that these should be assessed in unity.

Ayoubi et al.<sup>(2)</sup> compared three types of hysterectomy (vaginal, abdominal, and laparoscopic) and found no differences in the effects on orgasm, frequency of sexual intercourse and sexual desire between groups; however, poorer body image was observed less in the TLH group compared with the TAH group. Another important finding of this study was that adverse psychological effects were observed less in the laparoscopy group. The absence of abdominal scars in the laparoscopy group and less postoperative pain may explain these findings. A study that compared 5 different hysterectomy procedures conducted by Lermann et al.<sup>(27)</sup> reported that women in the laparoscopic supracervical hysterectomy (LASH) and TLH groups had more favorable results. However, the difference between TLH and LASH groups was not statistically significant.

The study of Lermann et al.<sup>(27)</sup> was a long-term and broad study but the retrospective study design and lack of sexual evaluation before surgery were important limitations of the study. Although statistical significant differences between the groups were not encountered, the conclusion of less invasive methods had more favorable results was compatible with our results.

**Table 4.** Comparison of Arizona Sexual Experiences Scale score preoperative and postoperative

Female Arizona Sexual Experiences Scale	Group 1 (TAH)	Group 2 (TLH)	+p
<b>Sexual drive</b>			
Preoperative	3.3±1.2	3.6±1.2	0.185 <sup>m</sup>
Postoperative	2.7±1.0	1.7±0.8	<0.001 <sup>m</sup>
Preop-postop difference	0.7±1.1	1.9±1.4	<0.001 <sup>m</sup>
Difference p	0.000 <sup>w</sup>	0.001 <sup>w</sup>	
<b>Arousal</b>			
Preoperative	3.4±1.3	3.8±0.9	0.138 <sup>m</sup>
Postoperative	2.7±1.1	2.0±0.8	0.002 <sup>m</sup>
Preop-postop difference	0.7±1.1	1.8±1.2	<0.001 <sup>m</sup>
Difference p	0.000 <sup>w</sup>	0.001 <sup>w</sup>	
<b>Vaginal lubrication</b>			
Preoperative	3.1±1.0	3.4±0.8	0.180 <sup>m</sup>
Postoperative	2.5±0.8	2.3±0.9	0.258 <sup>m</sup>
Preop-postop difference	0.1±1.0	1.0±1.1	0.051 <sup>m</sup>
Difference p	0.000 <sup>w</sup>	0.002 <sup>w</sup>	
<b>Ability to reach orgasm</b>			
Preoperative	3.4±1.1	3.4±1.2	0.796 <sup>m</sup>
Postoperative	2.7±1.1	2.8±1.1	0.846 <sup>m</sup>
Preop-postop difference	0.8±1.5	0.7±1.2	0.895 <sup>m</sup>
Difference p	0.002 <sup>w</sup>	0.0091 <sup>w</sup>	
<b>Satisfaction with orgasm score</b>			
Preoperative	2.9±1.2	3.0±1.2	0.679 <sup>m</sup>
Postoperative	2.4±1.2	2.0±1.0	0.105 <sup>m</sup>
Preop-postop difference	0.6±1.1	1.0±1.4	0.064 <sup>m</sup>
Difference p	0.000 <sup>w</sup>	0.004 <sup>w</sup>	
<b>Total score</b>			
Preoperative	16.1±4.3	17.2±3.7	0.135 <sup>m</sup>
Postoperative	12.9±3.7	10.8±2.1	0.008 <sup>m</sup>
Preop-postop difference	3.2±3.9	6.4±3.3	<0.001 <sup>m</sup>
Difference p	0.000 <sup>w</sup>	0.000 <sup>w</sup>	

<sup>m</sup>: Mann-Whitney U test, <sup>w</sup>: Wilcoxon test, +p<0.05, TAH: Total abdominal hysterectomy, TLH: Total laparoscopic hysterectomy

Gutl et al.<sup>(28)</sup> compared vaginal hysterectomy (VH) and TAH groups. The authors assessed patients 3 months and 2 years postoperatively and observed improvement on sexual function in both groups; more pain and poor self-image were observed in the TAH group, which may be associated with abdominal scar appearance. In addition, the recovery period was longer compared with the VH group. Hehenkamp et al.<sup>(29)</sup> randomly assigned patients to undergo uterine artery embolization and hysterectomy for the treatment uterine fibroids, then assessed sexual activity and body image scales in both groups. Improvement was more apparent in the uterine artery embolization group. Less invasive methods of surgery appear to have a positive impact on quality of life and patient comfort. This favorable change in self-body image and quality of life also has indirect positive repercussions on sexual life. Both TLH and TAH groups showed decreased postoperative ASEX scores. In comparison with abdominal operations, sexual drive scores and arousal scores decreased more in the TLH group, which indicated improvement in sexual function. TLH appears to have advantages for women who require total hysterectomy for benign indications, particularly with regard to sexual functions. The main strengths of our study were the prospective observational design and the patients were chosen homogeneously. However, the small number of the study group and short follow-up period (6 months postoperatively) were the main limitations of the study.

## Conclusion

In conclusion, laparoscopic surgery should be performed on suitable patients considering that it is less invasive, has a shorter recovery period, and has positive effects on sexual function and quality of life. We think that further research with a prospective long-term follow-up design is necessary to identify a surgical option associated with maximum preservation of sexual function during hysterectomy procedures.

## Ethics

Ethics Committee Approval: All procedures performed in studies involving human participants 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. Approval number: 127/2013, Informed Consent: Informed consent was obtained from all individual participants included in the study. Peer-review: Internally peer-reviewed.

## Authorship Contributions

Surgical and Medical Practices: Meryem Kürek Eken, Ateş Karateke, Concept: Meryem Kürek Eken, Gülşah İlhan, Evrim Erbek Çelik, Design: Ateş Karateke, Meryem Kürek Eken, Evrim Erbek Çelik, Data Collection or Processing: Meryem Kürek Eken, Dilşad Herkioglu, Evrim Erbek Çelik, Analysis or Interpretation: Meryem Kürek Eken, Gülşah İlhan, Osman Temizkan, Literature Search: Osman Temizkan, Evrim Erbek

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