



Comparison of the Female Sexual Function Index, Beck Depression Inventory, and Patient Satisfaction Scale in Patients Undergoing Total Abdominal Hysterectomy and Single-Port Laparoscopic Hysterectomy for Benign Conditions

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Abstract

Aim: The uterus is widely accepted as a sexual organ, children-making body, secretory organ, youth, charm, or power supply by women. By hysterectomy, psychosocial problems such as fear of losing sexual identity occur, and depression may arise as a result of this. In this study, we investigated the effects of surgery on female sexual function and psychosocial situation according to the methods of Total Abdominal Hysterectomy (TAH) and Single Port Laparoscopic Hysterectomy (SPLH).

Material and Method: This prospective surgical study included 60 patients, including 30 SPLH and 30 TAH patients with benign reasons. The demographic data of patients, Female Sexual Function Inventory (FSFI) score, Beck Depression Inventory (BDI) score, and Patient Satisfaction Scale (PSS) score results were all assessed according to TAH and SPLH methods.

Results: In the FSFI questionnaire, significant differences were found between SPLH and TAH groups for all "desire frequency," "desire level," "stimulation frequency," "stimulation level," and "stimulation trust" subquestions ($p=0.004$, $p=0.0001$, $p=0.003$, $p=0.011$ and $p=0.011$, respectively). In the BDI, the TAH score (4.4 ± 3.25) was significantly higher than the SPLH score (2.77 ± 2.97) ($p=0.047$). TAH had 7.97 ± 3.6 points, and SPLH had 3.73 ± 1.1 points regarding treatment results ($p=0.00017$). Similarly, TAH had 14 ± 4.4 points, while SPLH had 6.1 ± 1.3 points regarding the functionality of hysterectomy ($p<0.0001$).

Conclusion: FSFI's results for SPLH were more effective than TAH's, as it was a more effective method for all the treatment processes, functionality, and treatment scores. SPLH instead of TAH will be powerfully influential in eliminating the postoperative negative impacts of hysterectomy.

Keywords: Female Sexual Function Index, Beck Depression Inventory, Patient Satisfaction Scale, Total Abdominal Hysterectomy, Single-Port Laparoscopic Hysterectomy

INTRODUCTION

Hysterectomy is the most commonly performed major surgical procedure by gynecologists (1). It is used to address various indications such as dysfunctional uterine bleeding, uterine fibroids, endometriosis, adenomyosis, pelvic inflammatory disease, pelvic pain, gynecological cancers, and obstetric complications (2). The removal of the uterus not only affects an individual's body image and psychosocial status but also jeopardizes their reproductive capacities and sexual functions (3). Cultural beliefs regarding

the importance of genital organs and the meanings attributed to the uterus influence women's perceptions of the implications of its removal (4).

Patients undergoing removal of any organ experience fears and anxieties related to pain, death, disability, and changes in body image (5). Specifically, women facing hysterectomy have additional concerns regarding loss of sexual function, fertility, and their role as women (6). The removal of the uterus often leads to physical symptoms as well as psychological distress, including feelings of weakness, loss of

CITATION

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sexual identity, and fears about their partners' fidelity, resulting in depression (7). Neurological implications are also significant, as autonomic nerve fibers originating from the pelvic region play crucial roles in stimulating sexual functions and facilitating orgasm through uterine contractions (8). Over the past decade, there has been a shift in surgical techniques towards minimally invasive procedures, which have become the standard treatment for various benign and malignant gynecological conditions (9,10). Gynecological laparoscopic surgery has seen a growing preference for single-port laparoscopic surgery (SPLH), which has shown promising results (11). However, there is limited information in the literature regarding the impact of SPLH on postoperative female sexual function (4,7,10). Given the uterus's perceived role as an organ of sexuality, fertility, and strength by women, the fear of losing one's sexual identity after a hysterectomy can lead to psychosocial issues, including depression.

This study aims to explore the effects of Total Abdominal Hysterectomy (TAH) and SPLH on female sexual function and psychosocial status. The Female Sexual Function Index (FSFI), Beck Depression Inventory (BDI), and Patient Satisfaction Scale (PSS) will be used to provide a comprehensive overview of these surgical impacts.

MATERIAL AND METHOD

Study Design and Ethical Approval

This prospective, randomized study was conducted at the Kocaeli Derince Education and Research Hospital, Department of Obstetrics and Gynecology. The research focused on women aged 35 to 70 years, diagnosed with benign gynecological conditions, who underwent elective hysterectomy procedures, either TAH or SPLH. A total of 60 patients (30 undergoing TAH and 30 undergoing SPLH) were included in the study.

Data Collection & Assessment Instruments

Patient data were meticulously collected and anonymized, including demographic information, preoperative and postoperative clinical records, anesthesia logs, and surgical notes. A questionnaire developed based on existing literature was used to assess sociodemographic characteristics, obstetric history, and potential risk factors for sexual dysfunction. FSFI: A 19-item Likert scale to assess sexual dysfunction among women. BDI: This 21-item scale measures the severity of depression. The scale has demonstrated high reliability and validity. PSS: Employed to assess patient satisfaction during and after treatment, consisting of questions ranging from symptom management to satisfaction with the treatment outcomes.

Statistical Analysis

Data were analyzed using the IBM-SPSS-16.0 software. The initial step in the analysis involved examining the normality of the distribution for each variable using the Shapiro-Wilk test. For two independent groups, the following methods were employed depending on the data distribution: An independent samples t-test was used to compare the means of the two groups for normally distributed numerical data. The Mann-Whitney U test was utilized for non-normally distributed numerical data. This non-parametric test compares two independent groups when the data does not follow a normal distribution. The Chi-square was applied to evaluate the differences in categorical variables. At the same time, Fisher's exact test was used when the expected frequencies were too low for reliable Chi-square computation. It provides a precise p-value calculation without requiring large sample sizes. To ensure robustness in the findings, a multiple regression analysis was also performed to adjust for potential confounding variables and to assess the independent effects of various predictors on the outcomes of interest. All tests were two-tailed, and the results were considered significant at a p-value less than 0.05.

RESULTS

Demographic Data

The average age was comparable between the two groups (TAH: 46.9±6.1; SPLH: 47.7±4.8; p=0.41). Most patients had a primary or secondary education level (TAH 29/30; SPLH 24/30), with no significant difference in education levels between groups. All operated patients were married, and most were housewives (29/30). None of the patients consumed alcohol, and a small proportion smoked (TAH: 6/30; SPLH: 7/30). There was a difference in height between groups (p=0.001) but no difference in BMI and weight (p=0.859 and p=0.071, respectively). There were no differences in the number of births, pregnancies, or miscarriages between the groups. Among all patients, 34 (56.7%) had no miscarriages, 22 (36.7%) had one, and 4 (6.6%) had two or more miscarriages. Thus, the demographic characteristics of both groups were similar.

Sexual Function

Analysis of FSFI responses revealed differences between the TAH and SPLH in questions 1 (Desire frequency), 2 (Desire level), 3 (Arousal frequency), 4 (Arousal level), and 5 (Arousal confidence) with p-values of 0.004, 0.0001, 0.003, 0.011, and 0.011, respectively (Table 1). Despite significant differences in the first five questions of the FSFI, there were no significant differences in the subcategories of desire, arousal, lubrication, orgasm, satisfaction, and pain (Table 2).

Test questions	TAH (SD)	SPLH (SD)	p-value
1. Desire: frequency	2.80 (1.25)	1.97 (0.84)	0.004
2. Desire: level	3.67 (1.11)	2.00 (0.82)	0.0001
3. Arousal: frequency	3.67 (1.11)	2.87 (0.81)	0.0003
4. Arousal: level	3.50 (1.18)	2.83 (0.69)	0.011
5. Arousal: confidence	3.33 (1.22)	2.57 (0.99)	0.011
6. Arousal: satisfaction	3.07 (1.31)	2.80 (0.87)	0.366
7. Lubrication: frequency	3.03 (1.25)	2.87 (0.72)	0.536
8. Lubrication: difficulty	3.37 (1.22)	3.40 (0.71)	0.9
9. Lubrication: maintenance frequency	3.07 (1.31)	2.67 (0.79)	0.165
10. Lubrication: difficulty	3.30 (1.13)	3.20 (0.91)	0.712
11. Orgasm: frequency	2.97 (1.38)	2.80 (0.79)	0.574
12. Orgasm: difficulty	3.33 (1.32)	3.30 (0.82)	0.909
13. Orgasm: satisfaction	2.80 (1.25)	2.63 (0.84)	0.553
14. Satisfaction: intimacy level with partner	2.20 (1.17)	2.63 (0.84)	0.109
15. Satisfaction: sexual intercourse	2.50 (1.18)	2.57 (0.76)	0.799
16. Satisfaction: overall sexual life	2.80 (1.25)	2.53 (0.76)	0.331
17. Pain: frequency during vaginal penetration	3.67 (1.11)	3.40 (0.99)	0.336
18. Pain: frequency after vaginal penetration	3.67 (1.11)	3.60 (0.92)	0.803
19. Pain: level during or after vaginal penetration	3.50 (1.18)	3.60 (0.80)	0.706

TAH: Total abdominal hysterectomy, SPLH: Supracervical laparoscopic hysterectomy, SD: Standard deviation

Category	TAH±SD	SPLH±SD	p-value
Desire	5.27±2.71	3.97±1.6	0.009
Arousal	1.27±4.75	11.07±3.0	0.021
Lubrication	1.27±1.96	12.13±1.4	0.012
Orgasm	0.91±1.58	8.73±0.9	0.026
Satisfaction	0.75±3.37	7.73±2.3	0.092
Pain	1.08±3.31	1.06±2.6	0.051
TOTAL	58.07±3.19	5.42±2.4	0.084

TAH: Total abdominal hysterectomy, SPLH: Supracervical laparoscopic hysterectomy, SD: Standard deviation, FSHI: Female Sexual Health Inventory

Depression and Satisfaction

FSHI total scores were higher in the TAH (58.1±10.4) compared to the SPLH (54.23±6.45), but this difference was not significant (p=0.084). The average FSFI score was higher in the TAH group (9.6) compared to the SPLH (9.01), but again, this difference was not significant (p=0.084). However, the BDI score was higher in the TAH (4.4±3.25) compared to the SPLH (2.77±2.97) (p=0.047), indicating a higher tendency towards depression in the TAH. According to the BDI, the majority of patients in both groups had no depression, with only one patient in each group scoring ten or above (Table 3).

Category	TAH±SD	SPLH±SD	p-value
FSHI Sexual Dysfunction Survey	5.81±1.04	54.23±6.45	0.084
BDI	4.4±3.25	2.77±2.97	0.047
Treatment Process and Post-Treatment Assessment	3.52±1.19	16.77±3.57	0.000001

TAH: Total abdominal hysterectomy, SPLH: Supracervical laparoscopic hysterectomy, SD: Standard deviation, FSHI: Female Sexual Health Inventory, BDI: Beck Depression Inventory

Patient Satisfaction

Significant differences were observed in responses to treatment-related questions between the TAH and SPLH groups. TAH responses to "Did the same doctor continue treatment?" (23.3%+16.7% vs. 56.7%+40%; p=0.0004), "Was the doctor knowledgeable about my condition?" (36.7%+16.7% vs. 60%+40%; p=0.001), "Did I have the opportunity to talk to my doctor about my condition?"

(33.3%+16.7% vs. 76.7%+23.3%; p=0.002), "Did my doctor listen and understand me?" (p=0.004), and "Did I receive regular information about my treatment and progress?" (p=0.00003) were significantly lower compared to the SPLH.

Postoperative Pain and Aesthetics

Postoperative pain and aesthetic assessments showed

differences between the TAH and SPLH groups. The SPLH group reported higher satisfaction regarding sexual life post-surgery ($p=0.002$), frequency of pain during intercourse ($p=0.0001$), and absence of pain at the surgical site ($p=0.00004$). Additionally, the SPLH group reported higher aesthetic satisfaction with the surgical site ($p=0.00001$). The Patient Satisfaction Survey results showed that the average scores for treatment process, functionality, and treatment outcomes were significantly lower in the SPLH group than in the TAH group, indicating higher satisfaction in the SPLH. The overall satisfaction score was lower in the SPLH (16.77 ± 3.57) compared to the TAH group (35.2 ± 11.9) ($p=0.00001$), demonstrating that the SPLH method provided better patient satisfaction.

Correlation Analysis

Pearson correlation showed a positive correlation between patient satisfaction scores and both FSFI ($r=0.452$, $p=0.0001$) and BDI ($r=0.265$, $p=0.041$) scores, indicating a solid association with FSFI. A stronger positive correlation was found between BDI and FSFI ($r=0.619$, $p=0.00001$). A weak positive correlation was found between FSFI and age (Table 4). No correlation was found between BMI and any scale. These results suggest that patient satisfaction is closely associated with sexual function and depression scores. The results of this study indicate that SPLH is associated with higher patient satisfaction, lower depression scores, and better postoperative pain and aesthetic outcomes compared to TAH.

Table 4. Pearson correlation analysis for HMS, FSFI, BDI, age, and BMI

Tests	HMS	FSFI	BDI	Age	BMI
HMS	1	0.452**	0.265*	0.039	-0.089
		0.00001	0.041	0.769	0.5
FSFI	0.452**	1	0.619**	0.264*	-0.083
	0.00001		0.000001	0.041	0.52
BDI	0.265*	0.619**	1	0.239	0.219
	0.041	0.00001		0.066	0.09

HMS: Hysterectomy-related menopausal symptoms, FSFI: Female Sexual Health Inventory, BDI: Beck Depression Inventory, BMI: body mass index

DISCUSSION

The impact of hysterectomy on sexual functionality is a matter of paramount concern. Our study reveals that women undergoing TAH experience a more protracted recovery period and a heightened risk of developing abdominal adhesions, which can detrimentally affect sexual function. Comparing the sexual functionality and predisposition to depression in patients undergoing TAH and SPLH were essential issues, as our findings underscore the significant role played by choice of surgical technique in influencing these outcomes.

Hysterectomy is a commonly performed surgical procedure primarily intended for nonmalignant conditions, but it carries considerable physical and psychosocial consequences for women (12). The findings are congruous with the results reported by Weber et al., which indicate a greater incidence of sexual dysfunction following TAH (13). Conversely, patients undergoing SPLH report less pain during intercourse and better overall sexual health. These findings lend support to the notion that the minimally invasive nature of SPLH helps to preserve sexual function (14). This is consistent with the findings of Rhodes et al., who observed that less invasive procedures tend to lead to fewer sexual complications (1).

The psychological aspect of sexual health after hysterectomy is also worthy of note (15). Women frequently associate their uterus with their femininity and sexual identity, and this can have a significant impact on their postoperative sexual satisfaction (16). The

findings of our study indicate that the superior sexual outcomes experienced by SPLH may be attributed to the less invasive nature of the procedure, which leads to less disruption to their psychological and sexual well-being (11). Depression is a commonly observed issue following a hysterectomy, as it is influenced by the physical and mental stress associated with the procedure (17). Utilizing the BDI, our study reveals that TAH patients exhibit higher depression scores compared to SPLH, indicating a greater predisposition to depression (18). This finding concurs with the research conducted by Goktas et al., which reported an increase in depression after hysterectomy (7). The less invasive SPLH procedure is likely to contribute to lower depression rates due to its swifter recovery and reduced physical trauma, thereby enhancing overall psychological well-being.

Demographic factors such as educational level, employment status, and marital status exert an influence on the assessment of sexual function and psychological health after surgery (10). Most participants in our study were married housewives with primary or middle school education, which aligns with the findings of previous studies (19, 20). This demographic homogeneity highlights the importance of providing tailored educational and psychological support to these women, addressing their unique needs and concerns. Patient satisfaction is a critical indicator of surgical success in an academic context (13). Our study discovered that patients who underwent SPLH reported higher satisfaction levels. This can be attributed to several factors, including

reduced hospital stays, decreased intraoperative blood loss, diminished postoperative pain, and faster recovery times associated with SPLH (21). These benefits of SPLH align with the findings of Ayoubi et al., indicating a growing preference for minimally invasive techniques in gynecological surgeries (22). Given the higher satisfaction rates among SPLH, it suggests that this technique better aligns with patient expectations and needs, ultimately resulting in improved overall outcomes.

Despite this study's strengths, such as utilizing validated assessment tools and carefully considering demographic factors, some limitations need acknowledgment. The absence of preoperative FSFI scores limits a comprehensive evaluation of the impact on sexual function, as pre-existing conditions are not taken into account. Additionally, the sample size and the need for a control group restrict the generalizability of the findings. Future research should include more extensive and diverse populations while incorporating preoperative assessments to understand the effects of different hysterectomy techniques better.

CONCLUSION

Hysterectomy significantly impacts the sexual and psychological well-being of women, with the chosen surgical technique playing a critical role in determining these outcomes. Our study suggests that SPLH is associated with more remarkable preservation of sexual function and a lower risk of depression compared to TAH. These findings support the increased utilization of SPLH in clinical practice to enhance postoperative outcomes and patient satisfaction. Given the multifaceted nature of sexual health and psychological well-being, further research is necessary to delve deeper into these relationships and develop comprehensive strategies for undergoing hysterectomy. Through such research, healthcare providers can better support their patients during surgical and postoperative recovery, ensuring physical and psychological needs are adequately addressed.

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REFERENCES

- Thakar R. Is the uterus a sexual organ? sexual function following hysterectomy. *Sex Med Rev.* 2015;3:264-78.
- Brace C, Burns M, Thurston J, Rajakumar C. Laparoscopic single-port subtotal hysterectomy: technique and advantages. *J Obstet Gynaecol Can.* 2019;41:1409.
- Orhan A, Ozerkan K, Kasapoglu I, et al. Laparoscopic hysterectomy trends in challenging cases (1995-2018). *J Gynecol Obstet Hum Reprod.* 2019;48:791-8.
- Beyan E, Inan AH, Emirdar V, et al. Comparison of the effects of total laparoscopic hysterectomy and total abdominal hysterectomy on sexual function and quality of life. *Biomed Res Int.* 2020;2020:8247207.
- Spüntrup C, Banerjee M, Piana J, et al. The influence of persistent bleeding after supracervical hysterectomy on depressive and anxious symptoms: a prospective bicenter study. *Arch Gynecol Obstet.* 2022;306:127-32.
- Yurtkal A, Canday M. Optimizing hysterectomy: a prospective comparative analysis of surgical techniques and their impact on women's lives. *J Pers Med.* 2024;14:265.
- Goktas SB, Gun I, Yildiz T, et al. The effect of total hysterectomy on sexual function and depression. *Pak J Med Sci.* 2015;31:700-5.
- Obermair A, Hanna GB, Gebiski V, et al. Feasibility and safety of a surgical training program in total laparoscopic hysterectomy: Results of a pilot trial. *Aust N Z J Obstet Gynaecol.* 2024;64:48-54.
- He GL, Gong XZ, He JL, et al. Evaluation of the efficacy and safety of intradermal needle therapy on the sleep quality of patients following laparoscopic hysterectomy: study protocol for a randomized controlled trial. *Ann Transl Med.* 2022;10:808.
- Skorupska K, Wawrysiuk S, Bogusiewicz M, et al. Impact of hysterectomy on quality of life, urinary incontinence, sexual functions and urethral length. *J Clin Med.* 2021;10:3608.
- Yang L, Gao J, Zeng L, et al. Systematic review and meta-analysis of single-port versus conventional laparoscopic hysterectomy. *Int J Gynaecol Obstet.* 2016;133:9-16.
- Ikoma D, Ikoma M, Gnade C, Haugsdal M. Benign hysterectomy operative times and 30-day complications: a cohort study. *J Minim Invasive Gynecol.* 2022;29:429-39.
- Weber AM, Walters MD, Schover LR, et al. Functional outcomes and satisfaction after abdominal hysterectomy. *Primary Care Update for OB/GYNS.* 1998;5:203.
- Xie W, Cao D, Yang J, et al. Single-port vs multiport laparoscopic hysterectomy: a meta-analysis of randomized controlled trials. *J Minim Invasive Gynecol.* 2016;23:1049-56.
- Wang Y, Ying X. Sexual function after total laparoscopic hysterectomy or transabdominal hysterectomy for benign uterine disorders: a retrospective cohort. *Braz J Med Biol Res.* 2020;53:e9058.
- Jerome RR, Randhawa MK, Kowalczyk J, et al. Sexual satisfaction after gender affirmation surgery in transgender individuals. *Cureus.* 2022;14:e27365. Erratum in: *Cureus.* 2022;14:c70.
- Katon JG, Callegari LS, Bossick AS, et al. Association of depression and post-traumatic stress disorder with receipt of minimally invasive hysterectomy for uterine fibroids: findings from the U.S. department of veterans affairs. *Womens Health Issues.* 2020;30:359-65.
- Kilpiö O, Härkki PSM, Mentula MJ, Pakarinen PI. Health-related quality of life after laparoscopic hysterectomy following enhanced recovery after surgery protocol or a conventional recovery protocol. *J Minim Invasive Gynecol.* 2021;28:1650-5.

19. Nazlı E, Adahan D, Korkut B, et al. Histerektomi olan ve olmayan kadınlarda post menopozal dönemde cinsel yaşam kalitesinin değerlendirilmesi. UNIKA Journal of Health Sciences. 2023;3:399-408.
20. Udokang NE, Udom UG. Sexual dysfunction in female undergraduates. Sch J App Med Sci. 2022;10:660-72.
21. Şendağ F, Peker N, Aydeniz EG, et al. Single-port total laparoscopic hysterectomy in a patient with deep infiltrating endometriosis. J Minim Invasive Gynecol. 2017;24:196-7.
22. Ayoubi JM, Fanchin R, Monrozier X, et al. Respective consequences of abdominal, vaginal, and laparoscopic hysterectomies on women's sexuality. Eur J Obstet Gynecol Reprod Biol. 2003;111:179-82.