Original Article

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Effects of Sentinel Lymph Node Dissection on Sexual Function After Endometrial Cancer Surgery

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Abstract

Aim: The purpose of this research was to determine whether endometrial cancer (EC) patients' sexual function (SF) and quality of life (QoL) were affected by sentinel lymph node dissection (SLND). The effects on SF of SLND and pelvic and paraaortic lymph node dissection (LND) in the surgical treatment of EC were compared.

Methods: This prospective, single-center research comprised 82 individuals who had LND for endometrial cancer. Patients were categorized into two groups based on the extent of LND: Group A SLND and Group B (pelvic and/or para-aortic lymphadenectomy). The Female Sexual Function Index (FSFI) and the Functional Assessment of Cancer Therapy (FACT-G) were used to measure SF and QoL, respectively, six months after surgery.

Results: Among the 82 patients, 14 (17%) retained normal SF (FSFI ≥26.55), while 68 (83%) experienced sexual dysfunction. While no substantial difference was seen in overall FSFI scores among the groups, patients in the SLN group had significantly higher ratings in the desire (p=0.036) and orgasm (p=0.042) subdomains compared to the other groups. Quality of life, as assessed by the FACT-G, was negatively impacted by lower SF scores, particularly among highly educated patients (p=0.013).

Conclusion: Sentinel lymph node dissection may preserve aspects of female SF in patients undergoing surgery for endometrial carcinoma, especially in younger and more educated patients.

Keywords: Sentinel lymph node, endometrial neoplasms, sexual dysfunction, quality of life

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Introduction

In affluent nations, endometrial cancer (EC) is the predominant gynecological malignancy, impacting both young nulliparous and postmenopausal women (1). The median age for EC diagnosis is 61 years; however, the incidence rate has recently increased in women under 40, representing 4.2% of low-grade ECs detected in the United States (2). The majority of cases are identified early and exhibit a favorable prognosis (3). Prognosis is often positive after an EC diagnosis, with 81% of women surviving five years post-diagnosis (4). Enhancing the quality of care for patients undergoing treatment for EC would positively influence their sexual functioning (SF) and quality of life (QoL) metrics (5).

The mainstay of therapy in endometrial carcinoma is complete hysterectomy, bilateral salpingo-oophorectomy, and lymphadenectomy (6). Accurate nodal evaluation is essential for identifying lymphatic metastases, which are critical factors for prognosis and treatment planning (6). Sentinel lymph node dissection (SLND) is the recommended intervention compared to total lymphadenectomy when the illness is confined to the uterus. This is attributable to the reduced incidence of problems and the capability to perform lymph node assessment using ultrastaging (7,8).

Sexual engagement is an essential aspect of total well-being. Sexual dysfunction (SDF), a frequently neglected consequence of gynecological cancer therapies, pertains to challenges encountered at any phase of the sexual response cycle (9). Most cancer patients prioritize anticancer therapy and associated challenges, rendering sexuality less relevant. In EC, women have surgical menopause concurrent with surgery, adversely affecting their QoL (10). Despite the considerable frequency of SDF among patients with gynecologic malignancies, healthcare practitioners frequently lack awareness of the illness (11). The assessment of the effects of lymph node dissection (LND) on postoperative survival outcomes was conducted on individuals who received surgery for ovarian cancer in the literature review (11).

We hypothesized that this investigation of LND, especially SLND, would examine its impact on the social functions of patients with EC undergoing surgical intervention. In this context, we aimed to compare the SF and QoL scale scores in individuals from whom lymph nodes were removed during sentinel, pelvic, and pelvic para-aortic surgeries.

Materials and Methods

From March 2022 to December 2023, we operated on patients who had been diagnosed with EC. We assessed the sexual well-being of our patients using the Female Sexual Function Index (FSFI) and rated their QoL with the Functional Assessment of Cancer Therapy (FACT-G). All patients participating in the clinical investigation provided signed voluntary permission forms after being verbally informed about the study and reviewing the form.

Compliance with Ethical Standards

The study was carried out in conformity with the Good Clinical Practice Guidelines and the Declaration of Helsinki. Ethical approval was obtained from the University of Health Sciences Türkiye, Bakirkoy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (approval no.: 2022-04-12, date: 21.02.2022).

Study Design

This study is an observational, prospective, single-center investigation. Our patients were categorized into two groups: Those who underwent SLND (Group A) and those who underwent only pelvic or pelvic and para-aortic LND (Group B). The extent of LND was determined according to the current guidelines (12,13). As molecular studies were not feasible, we designated tumors without lymphovascular invasion, endometrioid type, and grade 1 and 2 tumors up to Stage 2A as early stage (6). Before the surgery, we refrained from assessing SF and scoring the QoL scale due to the assumption that the patient's new diagnosis would induce anxiety. Patients above the age of 18 were included if they had operable EC and no other malignancies, did not have any systemic or local diseases that could affect their SFs, had a spouse or partner, agreed to participate in interviews, and signed voluntary consent forms. Patients who were under the age of 18, had a malignancy other than EC and were undergoing therapy, had a systemic condition affecting SF, or did not have a sexual relationship were eliminated.

Six months postoperatively, patients responded to questions on the FSFI and FACT-G scales. Questions were explained if participants did not understand them. Scores for the FSFI's arousal, lubrication, orgasm, and pain components vary from 0 to 5, while the desire and pleasure sections run from 1 to 5. To get the overall section scores, we multiplied the section scores by the following coefficients: 3.0 for stimulation and lubrication, 0.6 for desire, and 0.4 for pleasure, agony, and orgasm. The overall FSFI score was derived by aggregating the scores from these sections. The FSFI scores were categorized as follows: Normal SF (total FSFI score ≥26.55), mild risk for female SDF (total FSFI score 18-26.55), moderate risk for female SDF (total FSFI score 11-17), and severe risk for female SDF (total FSFI score <10). The SDF of individuals was evaluated when their FSFI score fell below 26.55 (14). The FACT-G (version 4) is a validated 27-item questionnaire specific to cancer that evaluates overall QoL and is categorized into four primary subscales: Physical, social, emotional, and functional well-being. Numbers vary from zero to 108, with greater numbers signifying superior QoL. In our study, the median FACT-G score at six months served as the threshold to indicate poor or good QoL. Figure 1 presents a concise depiction of the study's flow diagram.

Statistical Analysis

The power study was carried out using the G*Power 3.1 Manual for macOS, which was developed by the Heinrich-Heine-Universität Dusseldorf in Dusseldorf, Germany. Following Cohen's instructions and the research of Datta, Datta et al. (3), we determined the effect size and accepted 1 beta at 0.95 to preserve the greater power of the study. The minimum required number of research participants was determined to be 32 patients for each group. The analyses were performed using version 25.0 of the statistical package for social sciences software, with a significance level of $p<0.05$. The independent samples t-test was used for continuous variables, [age, body mass index (BMI)] since the assumption of normal distribution was satisfied. Categorical factors (menopausal status, education, SF, kind of surgery, stage): The chi-square test was utilized. The FSFI scale scores were compared with LND operation types by using non-parametric tests (Mann-Whitney U test). The independent factors were identified using multivariable linear regression analysis [age, BMI, education level, International Federation of Gynecology and Obstetrics (FIGO) stage, FACT-G score] of the FSFI total score.

Results

Eighty-two patients with EC were stratified by type of LND. At six months postoperatively, 14 (17%) demonstrated normal SF (FSFI >26.55), while 68 (83%) had dysfunction. Sexual function did not differ significantly between groups (p=0.244). The mean age and BMI were 54±8.7 years and 34.5±6.5, respectively, with 63% having primary/secondary education. Age, BMI, education, disease stage, menopausal status, and surgical approach showed no significant association with postoperative SF. Postoperatively, 12% of patients in Group A and 5% in Group B remained sexually active, with no significant difference in FSFI scores. As shown in Table 1, following surgery, 10 (12%) patients in Group A and 4 (5%) patients in Group B were sexually active. In evaluating SF among both groups in the study, it was observed there was no statistical difference between the FSFI total scores.

Furthermore, as seen in Table 2, when the FSFI subcategories were evaluated independently, patients who had SLN dissection exhibited substantially elevated ratings in sexual desire (p=0.036) and orgasm (p=0.042) relative to the other cohort. The postoperative SF rates of patients in Group A were found to be higher than those of Group B. The patients underwent independent assessment utilizing FSFI subcategories (arousal, lubrication, desire, orgasm, pleasure, and pain) based on their age, BMI, cancer stage, and educational attainment. A reduction in patient age (p=0.002) and an enhancement in educational

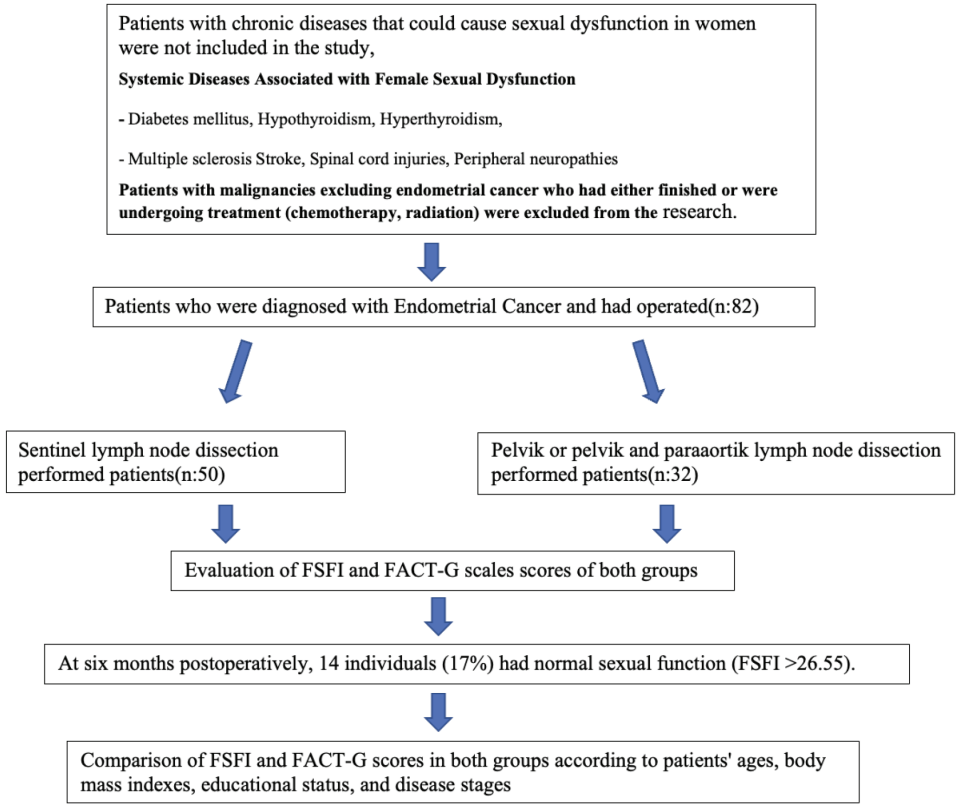

Figure 1. Presents a concise depiction of the study's flow diagram

Table 1. Demographic characteristics of patients treated for endometrial cancer			
	Total (n=82)		**p-value**
Variables	**Group A: Sentinel lymph node dissecsition (n=50)**	**Group B: Pelvic/pelvic+paraaortic lymph node dissection lymph node dissection (n=32)**	
Sexually active	10 (20%)	4 (13%)	0.244
Age (years)	54±8.7	56.4±9.3	0.188
BMI (kg/m^2)	34.5±6.5	34.6±8.5	0.741
Menopousal status (%)			0.373
Premenopausal	14 (21.5%)	7 (30.4%)	
Postmenopausal	51 (78.5%)	16 (69.6)	
Educational status			0.756
Primary school	31 (47.7%)	10 (43.5%)	
Secondary school	12 (18.5%)	3 (13%)	
Tertiary school	17 (26.2%)	6 (26.1%)	
High school	3 (4.6%)	3 (13%)	
University	2 (2%)	1 (4.3%)	
Type of surgery			0.376
Laparotomy	0	3 (12%)	
Laparoscopy	14 (21.5%)	17 (68%)	
Robotic surgery	51 (78.5%)	5 (20%)	
FIGO stage†			0.491
Early stage (1A-1B-2A)	42 (84%)	-	
Advanced stages (2B and over)	12 (16%)	32 (100%)	

†FIGO Stage: FIGO endometrial cancer staging 2023
BMI: Body mass index

Table 2. Comparisons of FSFI and FACT-G scores between groups			
	Group A: Sentinel lymph node dissecsition (n=50)	**Group B: Pelvic/pelvic+paraaortic lymph node dissection lymph node dissection (n=32)**	**p-value†**
FSFI desire	4.8 (1.8-6.0)	2.0 (1.8-3.6)	**0.036**
FSFI arousal	2.2 (1.2-4.8)	1.9 (1.2-4.2)	0.226
FSFI lubrication	2.3 (1.8-4.6)	1.8 (1.8-3.6)	0.641
FSFI orgasm	3.9 (1.2-4.8)	1.9 (1.2-4.8)	**0.042**
FSFI satisfaction	2.2 (1.6-4.8)	2.4 (1.6-4.2)	0.745
FSFI pain	2.2 (1.2-4.2)	3.9 (1.2-4.2)	0.037
FSFI total	15.6 (29.8-11.7)	12.8 (26.6-9.4)	0.255
FACT-G total	91 (65-104)	91 (60-104)	0.642

†: p-value of <0.05 was considered significant for all bold values
FSFI: Female sexual function index, FACT-G: Functional assessment of cancer therapy, FIGO: International Federation of Gynecology and Obstetrics

achievement (p=0.003) were associated with a statistically significant increase in sexual desire. In patients whose SF was active after surgery, there was no statistically significant variation between the assessment of SF and the stage of the disease, even if the disease was still in its early stages (p=0.466). When SF and education level were compared, it was found that college and university graduates had higher SF scores than other patients. In the multivariate analysis of the FSFI total score and its subgroups, alongside the patients' education level and FACT-G QoL scores in Group A patients who underwent SLND, an inverse correlation was observed between education level and SF, which significantly reduced the FACT-G scores (p=0.013). Table 3 presents an overview of the aforementioned explanations.

Table 3. Correlation between FSFI[¥] (total and subscores) and variables in patients with sentinel lymph node dissection Group A														
	FSFI total		FSFI arousal		FSFI desire		FSFI satisfaction		FSFI orgasm		FSFI pain		FSFI lubrication	
Variables	**r**	**P***	**r**	**P**	**r**	**P***	**r**	**P**	**r**	**P**	**r**	**P**	**r**	**P**
Age (years)	-0.380	0.282	-0.312	**0.018**	-0.321	0.002	-0.204	0.072	-0.541	0.753	-0.625	0.243	0.591	0.453
BMI (kg/m²)	-0.423	0.242	-0.036	0.563	-0.064	0.423	0.056	0.242	-0.034	0.341	-0.043	0.672	-0.078	0.212
Education status	0.032	**0.004**	-0.199	0.243	-0.043	0.112	0.216	0.651	0.024	0.411	-0.025	0.342	-0.244	0.211
FIGO stage†	0.366	0.212	-0.213	0.221	0.013	0.131	-0.214	0.314	0.145	0.141	0.156	0.284	0.272	0.116
FACT-G score	-0.360	**0.013**	0.206	0.113	0.014	0.183	-0.167	0.192	0.154	0.916	0.141	0.711	0.145	0.214

¥: Female sexual function index, †:FIGO Stage: FIGO endometrial cancer staging 2023, *: P-value of <0.05 was considered significant for all bold values
BMI: Body mass index, FSFI: Female sexual function index, FACT-G: Functional assessment of cancer therapy, FIGO: International Federation of Gynecology and Obstetrics

Discussion

The study's results indicate that SLND may mitigate the loss of SF in patients with EC, particularly in younger individuals.

This study is the first in the literature to examine the impact of SLND on SF after EC surgery. Sexual dysfunction is expected as a result of surgical and natural menopause, as mentioned in the literature (15,16). Upon evaluation of the FSFI subheadings, the orgasm and desire ratings in patients who underwent SLND were shown to be statistically significantly elevated compared to other groups. Consistent with our findings, it has been documented that the preservation of sympathetic and parasympathetic nerves following surgery leads to a diminished effect on SF (17). The investigation demonstrated, as previously shown in the literature (18,19), that the average age and menopausal state of patients in both groups did not affect postoperative SF.

After a cancer diagnosis, people frequently abstain from sexual intercourse with their partners throughout and after treatment, concentrating exclusively on illness care and dreading recurrence following intercourse. Several patients indicated that they participated in sexual intercourse due to a perceived responsibility to their partners. It has been shown that the QoL of these individuals, together with their SFs, is markedly impacted, resulting in heightened social isolation (3,9,15,16). Our findings about the influence of age on SF in patients post-EC surgery align with a meta-analysis (4). In accordance with the literature, we observed that BMI did not affect SF in patients with increased BMI who underwent surgery for EC (20). However, contrary to our findings, evidence suggests that obesity adversely affects SF and QoL assessments in patients with EC (10). No association was seen between disease stage and SF in the FIGO staging of patients following surgery. Furthermore, in accordance with the literature, patients with SF were noted to be in the initial stage (21,22). The data we acquired about the impact of EC stage and postoperative SF aligns with existing research (3). Literature indicates that SF scores and QoL metrics are diminished in EC, irrespective of disease stage (23).

The study concluded that a diminished or low SF score impacts QoL measures more significantly in patients with higher education levels, underscoring the increased relevance of SF in assessing QoL within this population. Comparable findings have been documented in the contemporary literature for the assessment of educational attainment, SF, and QoL scale metrics (2,24).

Study Limitations

The fact that the patients were evaluated only at 6 months after surgery and not evaluated at later times, that depression and body image evaluations were not made before and after treatment, and that the patients' spouses or partners were excluded from the study introduces limitations to our study. Despite these limitations, our study was conducted as a prospective single-center investigation. This study is the first in the literature evaluating the effect of SLND on SF in the management of EC.

Conclusion

Sentinel lymph node dissection positively influences SF in the management of EC. Furthermore, health practitioners should foster understanding to enhance patients' SFs and elevate their QoL following EC surgery.

Ethics

Ethics Committee Approval: Ethical approval was obtained from the University of Health Sciences Türkiye, Bakirkoy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (approval no.: 2022-04-12, date: 21.02.2022).

Informed Consent: Patients above the age of 18 were included if they had operable EC and no other malignancies, did not have any systemic or local diseases that could affect their SFs, had a spouse or partner, agreed to participate in interviews, and signed voluntary consent forms.

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Footnotes

Authorship Contributions

Surgicial and Medical Practices: E.S., S.K., Concept: E.S., S.Y., S.K., S.G., O.A.Y., Design: E.S., S.Y., S.K., C.C., L.Y., Data Collection or Processing: E.S., S.G., O.A.Y., N.K., Analysis or Interpretation: S.Y., O.K., Literature Search: E.S., Writing: E.S., C.C., L.Y.

Conflict of Interest: No conflicts of interest were declared by the authors.

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