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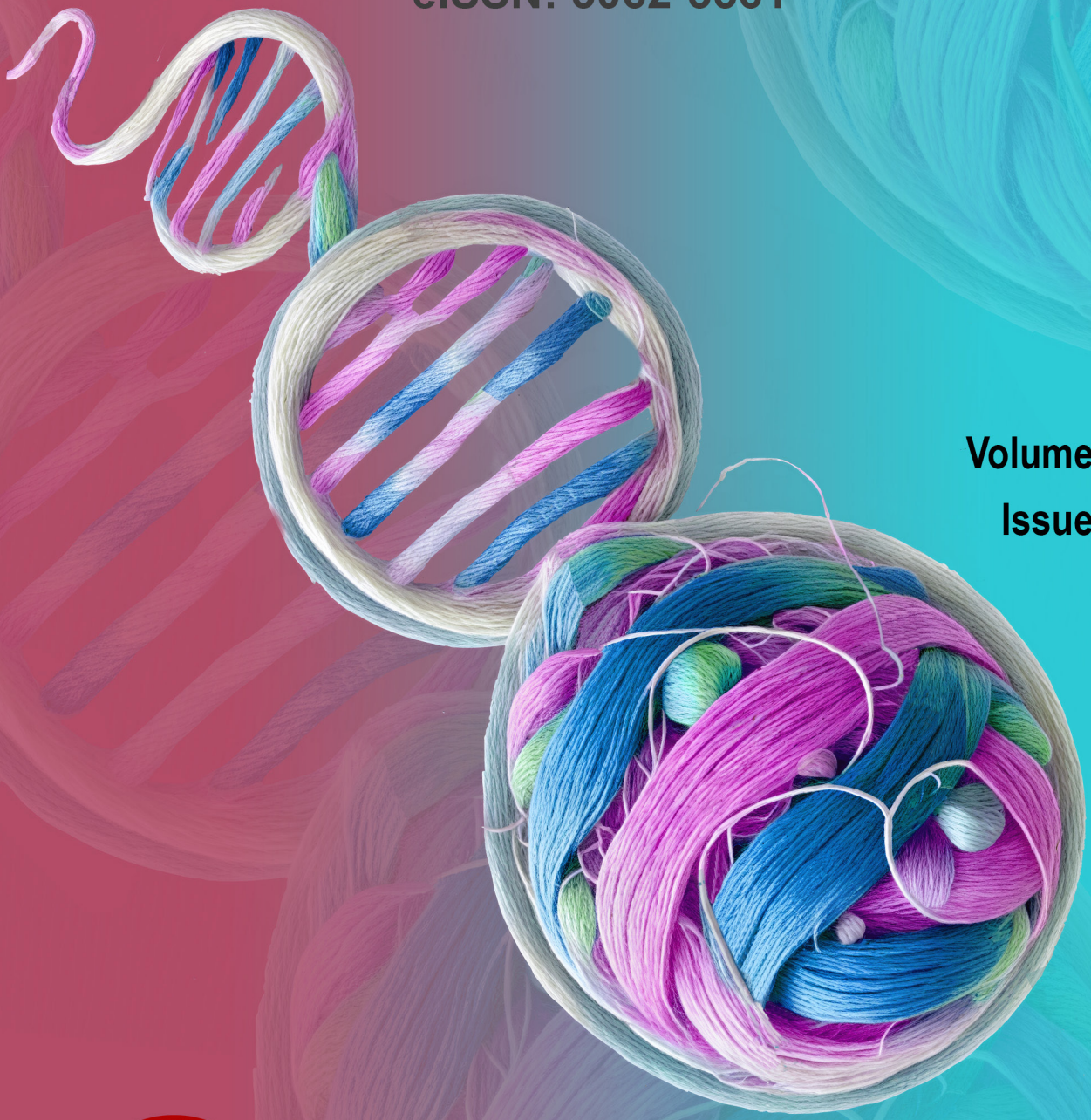

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We are thrilled to announce that the latest issue of the International Journal of Sexual Science has been published and is now available to you, our esteemed readers. Continuing our commitment to sharing cutting-edge scientific studies in sexual and reproductive health, this issue further enriches the global knowledge base with diverse and insightful research.

This issue features a compelling range of original articles covering various aspects of clinical and surgical health. The research presented includes an investigation into the incidence of erectile dysfunction following urological procedures, an analysis of the relationship between pelvic floor symptoms and sexual function in postmenopausal women, and a study on an innovative method for evaluating vaginal lubrication in pregnant women. Furthermore, we are pleased to share a unique prospective study on the changes in sexual function after cataract surgery, as well as a clinical examination of periclitoral abscess as a rare cause of vulvar pain.

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Sincerely,

Prof. Dr. Cengiz GÜLEÇ
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ORIGINAL ARTICLE

Incidence of Erectile Dysfunction Following Urological Procedures

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Abstract

Objective: To find out how often men develop ED after common urological procedures.

Materials and Methods: Our study is a single-center, retrospective chart review. Sexually active patients over the age of 18 who had not undergone any previous endourological procedures were included. Age, comorbidities, and erectile function scores based on the International Index of Erectile Function (IEF), which is routinely completed in our clinic at the preoperative, fourth, and 12th weeks after surgery, were reviewed.

Results: A total of 310 patients were included with a mean age of 54.7±7.42 years. Significant decreases in IIEF scores were observed at the fourth postoperative week across all procedure groups compared to preoperative scores ($P < 0.001$). By the 12th week, LIEF scores significantly improved compared to the fourth week ($p < 0.001$) but remained lower than baseline values ($p < 0.005$). These results were consistent in all patient groups.

Conclusion: In our study, IIEF scores significantly decreased at the 4th week after urological procedures, with partial recovery by the 12th week, although values remained below baseline. Larger prospective studies are needed to confirm these findings.

Keywords: benign prostatic hyperplasia, erectile dysfunction, urolithiasis

INTRODUCTION

Erectile dysfunction (ED) is a common problem that can seriously affect the quality of life in men and their partners. It has been reported to affect 45.2% of men between the ages of 40 and 70 (1). The causes of ED are complex and can be organic, psychological, or a mix of both. Among organic causes, the most common is related to blood vessels. Problems such as endothelial dysfunction, low-level inflammation, and low testosterone levels are among the main reasons (2).

Many patients worry about possible sexual problems after urological procedures. However, there are not many studies about how these procedures affect sexual function and quality of life. This makes it hard to give patients clear answers based on scientific evidence. Since these urological procedures are often done in urology clinics, the risk of ED after the procedure is important for both patients and doctors. In this article, we aimed to find out how often men develop ED after common endourological procedures.

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MATERIAL AND METHODS

Our study is a single-center, retrospective chart review. We included patients who underwent transurethral resection of the prostate (TUR-P), transurethral resection of the bladder tumor (TUR-BT), ureterorenoscopy (URS), or percutaneous nephrolithotomy (PCNL) in our clinic between January 2020 and January 2025. We also included patients who underwent a prostate biopsy, even though it is not an endourological procedure, because it is commonly performed in daily practice.

Sexually active patients over the age of 18 who had not undergone any previous endourological procedures were included. Patients were excluded if they had a history of previously diagnosed urological cancer, previous pelvic surgery, pelvic radiotherapy, or were already receiving treatment for erectile dysfunction. The patients who underwent TUR-BT are primary bladder tumor patients, and patients who have already been diagnosed with bladder cancer are excluded.

Data were collected retrospectively from patient records. Age, comorbidities, and erectile function scores based on the self-reported International Index of Erectile Function (IIEF), which is routinely completed in our clinic at the preoperative, fourth, and 12th weeks after surgery, were reviewed.

The study was approved by the Uşak University Non-Interventional Clinical Research Ethics Committee (Approval No: 796-796-17).

Statistical Analysis

IBM SPSS Statistics V22.0 was used for statistical analysis. Data were tested for normal distribution using the Kolmogorov-Smirnov test. The Mann-Whitney U test was used for data not showing a normal distribution, and the Student t-test was used to compare data with normally distributed data. Changes in IIEF scores were compared using the paired t-test. Statistical significance was accepted when the p-value was less than 0.005.

RESULTS

After applying the inclusion and exclusion criteria and excluding patients with missing or unavailable data, we analyzed a total of 310 patients. The mean age was 54.7±7.42 years. Diabetes mellitus (DM) was present in 93 patients, hypertension (HT) in 155 patients, chronic obstructive pulmonary disease (COPD) in 62 patients, and coronary artery disease (CAD) in 62 patients.

Procedures performed were as follows: 11 TUR-P, 72 TUR-BT, 155 URS, 61 PCNL, and 11 transrectal prostate biopsies. The mean ages for these groups were 58.18±3.99, 55.19±6.93, 53.58±8.35, 55.56±5.76, and 58.91±3.75 years, respectively. Descriptive statistics are summarized in Table 1.

Table 1. Descriptive statistics

Comorbidities	N(number of patients)	%(percentage)
DM	93	%30
HT	155	%50
COPD	62	%20
CAD	62	%20

In patients who underwent TUR-P, the mean preoperative IIEF score was 26.53±2.93. At the fourth postoperative week, it dropped significantly to 18.78±2.44 ($p < 0.001$). At the 12th week, the score increased to 25.18±2.40, which was significantly higher than the fourth week score ($p<0.001$), but still significantly lower than the preoperative value ($p<0.003$) (Table 2).

In patients who underwent TUR-BT, the mean preoperative IIEF score was 24.46±4.79. It significantly decreased to 17.19±3.68 at the fourth postoperative week ($p < 0.001$). By the 12th week, it increased to 23.44±4.32, which was significantly higher than the fourth week score ($p<0.001$), but still significantly lower than the preoperative score ($p<0.001$) (Table 2).

In the URS group, the mean preoperative IIEF score was 24.94±4.00. At the fourth week, it dropped to 17.43±2.98 ($p < 0.001$). At the 12th week, the score rose to 23.89±3.53, which was significantly higher than at the fourth week ($p<0.001$), but remained significantly lower than the baseline ($p<0.001$) (Table 2).

In patients who underwent PCNL, the mean preoperative IIEF score was 24.62±4.35. It significantly dropped to 16.69±3.26 at the fourth postoperative week ($p<0.001$), and increased to 23.87±3.98 at the 12th week, which was significantly higher than the fourth week score ($p<0.001$), but still lower than the preoperative score ($p<0.001$) (Table 2).

In the prostate biopsy group, the mean preoperative IIEF score was 25.82±3.76. At the fourth week, it significantly decreased to 18.00±2.60 (p<0.001). At the 12th week, it increased to 24.45±2.97, significantly higher than at the fourth week (p<0.001), but still significantly lower than the baseline value (p<0.004) (Table 2).

When all patients were analyzed together, the mean preoperative IIEF score was 24.86±4.23. This decreased significantly to 17.27±3.18 at the 4th week (p<0.001), then increased to 23.85±3.76 at the 12th week, significantly higher than at the fourth week (p<0.001), but still significantly lower than the preoperative score (p<0.001) (Table 2).

Table 2. IIEF scores of patient groups at preoperative and postoperative visits

N	TUR-P	TUR-M	URS	PCNL	PXBX	Total
	72	155	62	61	11	310
Age	58.18 ± 3.99	55.19 ± 6.93	53.58 ± 8.35	55.56 ± 5.76	58.91 ± 3.75	54.7 ± 7.42
preop. IIEF score	26.53 ± 2.93	24.46 ± 4.79	24.94 ± 4.00	24.62 ± 4.35	25.82 ± 3.76	25.82 ± 3.76
postop. 4th week IIEF score	18.78 ± 2.44 p<0.001	17.19 ± 3.68 p<0.001	17.43 ± 2.98 p<0.001	16.69 ± 3.26 p<0.001	18.0 ± 2.60 p<0.001	18.00 ± 2.60 p<0.001
postop. 12th week IIEF score	25.18 ± 2.40 p<0.003	23.44 ± 4.32 p<0.001	23.89 ± 3.53 p<0.001	23.87 ± 3.98 p<0.001	24.45 ± 2.97 p<0.004	24.45 ± 2.97 p<0.004

DISCUSSION

Erectile dysfunction (ED) is a growing health problem with increasing prevalence and importance, especially due to the rapidly aging global population. ED significantly affects the quality of life of both men and their partners. Its prevalence has been reported as 45.2% among men aged 40-70 years (1).

Endourological procedures have become central to modern urology practice. Despite advances in technology and the development of alternative treatments, TUR-P remains the standard surgical option, especially for patients with small prostates. TUR-BT is still essential in the treatment of bladder tumors. For urinary stones, the choice of URS or PCNL depends on the stone's size and location, and both remain widely used.

In our study, we observed a significant decrease in IIEF scores at the fourth postoperative week in all male patients who underwent TUR-P, TUR-BT, URS, PCNL, and transrectal prostate biopsy.

Although IIEF scores at the 12th postoperative week were significantly higher than at the fourth week, they were still significantly lower than the preoperative scores in all groups.

In the study by Akman et al., patients who underwent monopolar and bipolar TUR-P showed reduced IIEF scores at the first postoperative month, but scores improved within a year. These results are consistent with ours, although in our study, the decline persisted at 12 weeks (3). In contrast, the study by Al Demour et al. showed that although ejaculatory function worsened after TUR-P, no significant drop in IIEF scores was reported (4)

Peng et al. examined the incidence of ED after TUR-B in men under and over 45 years old using IIEF scores. They found that ED significantly increased in men under 45, while no meaningful change was seen in the older group (5). However, in our study, despite the average age being over 45, we still observed a significant decrease in IIEF scores after TUR-B.

Bolat et al. evaluated IIEF scores in URS patients at the preoperative, first month, and third month. Monthly time points. Similar to our findings, they found a significant drop in scores at the first month post-op, and although scores improved by the third month, they remained lower than pre-op values (6).

Although prostate biopsy is not technically an endourological procedure, it is commonly performed in daily practice and directly involves the prostate. Therefore, we included patients who underwent transrectal ultrasound-guided prostate biopsy in our analysis. Like in the endourological procedures, we observed a decrease in IIEF scores at the 4th and 12th

weeks after the procedure. Similarly, Tan et al. reported that in patients undergoing transperineal prostate biopsy, about one-fourth of those without prior ED developed ED within four weeks, and ED worsened in about one-third of those with pre-existing ED (7).

URS, TUR-P, and TUR-BT procedures included in our study are done under spinal regional anesthesia. The prostate biopsies are done under local anesthesia using a prostatic block, and PCNLs are done under general anesthesia. Even though in our study, the IIEF score differences between procedures that are done under different anesthesia types are not studied, we believe anesthesia type and anesthesia itself are important factors in postoperative ED. We hypothesize that the surgical and psychological stress that our patients experience is an important factor in explaining the postoperative ED. The nature of many endourological procedures being done via the penile urethral route is also a contributing factor to the psychological stress, in our opinion.

Our study is a retrospective chart review. Its main limitations are the small sample size and its retrospective design. We did not classify ED severity based on IIEF scores, and we did not separately evaluate patients with and without preoperative ED.
We believe that our study provides valuable insights by taking a holistic approach to evaluating patients who underwent procedures that are part of routine practice in urology clinics.

CONCLUSION

In our study, we observed a decrease in self-reported IIEF scores at the 4th week after urological procedures, with partial recovery by the 12th week. However, scores remained below baseline levels. Larger prospective studies are needed to reach definitive conclusions.
We emphasize the importance of assessing erectile function in the preoperative period and informing patients about possible postoperative sexual outcomes. We hope our study will serve as a guide regarding sexual function after these procedures.

Conflict of Interest: The authors declare no conflicts of interest.

Informed Consent: No consent was obtained due to retrospective design.

Funding: No financial support was received for this study.

Ethical Approval: The study was approved by the Uşak University Non-Interventional Clinical Research Ethics Committee (Approval No: 796-796-17).

Author Contributions:
Concept and Design: 3, 4
Supervision: 3, 4
Data Collection and/or Processing: 1, 2, 3
Materials: 1, 2, 3, 4
Analysis and/or Interpretation: 1, 3, 4
Literature Search: 1, 3
Writing and Critical Review: 1, 2, 3, 4

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ORIGINAL ARTICLE

The Relationship Between Vaginal and Pelvic Floor Symptoms and Sexual Function in Postmenopausal Women

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Abstract

Objective: This study aimed to investigate the relationship between vaginal and pelvic floor symptom levels and sexual function in postmenopausal women.

Material and Methods: A total of 121 postmenopausal women with an active sexual life were included in the study. The number and severity of vaginal and pelvic floor symptoms were recorded. The impact level of vaginal symptoms was assessed using the Day-to-Day Impact of Vaginal Aging Questionnaire, while pelvic floor distress was evaluated with the Pelvic Floor Distress Inventory-20. Sexual function was assessed with the Short Form of the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire (PISQ-12). Pearson or Spearman correlation coefficients were used for statistical analysis. The statistical significance level (p) was set at 5%.

Results: Negative moderate-to-weak correlations were identified between the number and impact level of vaginal symptoms and the PISQ-12 subscale scores ($r=0.28–0.59$, $p<0.001$). On the other hand, negative correlations ranging from strong to weak were found between the number and distress level of pelvic floor symptoms and the PISQ-12 subscale scores ($r=0.15–0.70$, $p<0.001$).

Conclusion: Although pelvic floor symptom severity showed a stronger relationship, all subdomains of sexual function—particularly the physical subdomain—appeared to be associated with both vaginal and pelvic floor symptoms. Vaginal and pelvic floor health should be considered in the assessment and intervention phases in individuals with sexual dysfunction.

Keywords: dyspareunia, incontinence, menopause, pelvic organ prolapse, sexual dysfunction

INTRODUCTION

Menopause is a natural and physiological process experienced by all women as a part of aging (1, 2). The World Health Organization defines menopause as the permanent cessation of menstruation due to the loss of ovarian follicular activity (3). Globally, the age of menopause varies between 45 and 58 years, while the average menopausal age in Turkish women has been reported as 47 years (4). Considering the average age at menopause and the life expectancy of women, it is

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estimated that women spend approximately one-third of their lives in the postmenopausal period (5).

Urogenital tissue receptors are sensitive to endogenous estrogen levels. Estrogen receptors are present in the vagina, vulva, urinary tract, bladder, trigone, urethra, and levator ani muscles (6, 7). In a healthy vagina, sufficient estrogen provides a thick and resilient vaginal epithelium, high blood flow and lubrication, a vaginal flora dominated by lactobacillus bacteria, and acidic vaginal pH (<4.5) (8). As serum estrogen levels decrease after menopause, the expression of estrogen receptors in vaginal tissue also decreases significantly. With the reduction in estrogen, the number of lactobacilli decreases and vaginal pH shifts toward alkalinity (pH 5–7). Consequently, atrophy occurs in the vagina, vulva, clitoris, and Bartholin's glands, vaginal secretions change in quality and quantity, vaginal walls become thinner, elasticity decreases, and the vagina shortens and narrows, leaving the vaginal surface prone to ulceration (7, 9). These changes give rise to vaginal symptoms in women such as dryness, irritation/burning, itching, pain, discharge, dyspareunia, and postcoital bleeding. In addition, prolonged estrogen deficiency increases the incidence of urgency urinary incontinence (10).

The pelvic floor is composed of muscles, fascia, ligaments, external genital organs, skin, as well as neural and vascular networks, and provides support for abdominal and pelvic organs. While active support is maintained by muscular contraction, passive support is provided by fascia and ligaments. The pelvic floor plays an essential role in urination, defecation, urinary and fecal continence, sexual function, and childbirth (11, 12). Aging and menopause weaken the pelvic floor muscles and fascial supports, impairing pelvic floor function and leading to symptoms such as urinary incontinence, pelvic organ prolapse, anorectal dysfunction, and pelvic pain (11). Furthermore, the tone, strength, and performance of the pelvic floor muscles are one of the major factors involved in vaginal sensitivity and responsiveness, coital competence, and orgasmic response. Insufficient pelvic floor strength and tone may impair genital arousal, reduce sexual desire, mental arousal, and both physical and emotional satisfaction. Additionally, reduced pelvic floor support associated with pelvic organ prolapse (POP) may hinder penetration and cause dyspareunia. In contrast, hyperactivity of the pelvic floor may lead to sexual pain disorders such as dyspareunia and vaginismus (13).

Sexual dysfunction in postmenopausal women is multifactorial and complex (10). Menopausal vaginal symptoms and pelvic floor symptoms not only represent physical problems but may also alter body image, contribute to partner relationship issues, and cause psychological problems, ultimately affecting sexual health and health-related quality of life (14). Considering that by 2030, there will be an estimated 1.2 billion postmenopausal women worldwide, evaluating age- and menopause-related symptoms and determining their relationship with sexual function, which constitutes an important dimension of quality of life, is of great importance (15, 16). Observational studies in the literature generally focus on the prevalence of menopausal symptoms and/or the overall quality of life of postmenopausal women. There are limited studies examining vaginal symptoms, pelvic floor symptoms, and sexual function together using condition-specific instruments. To our knowledge, no study has specifically examined vaginal and pelvic floor symptoms in relation to the subdomains of sexual function. Therefore, this study aimed to investigate the relationship between vaginal and pelvic floor symptom severity and the subdomains of sexual function in postmenopausal women.

MATERIALS AND METHODS

Participants

Postmenopausal women who applied to Hacettepe University, Faculty of Physical Therapy and Rehabilitation, and their relatives (e.g., friends, family members) identified through snowball sampling, were included in the study. To minimize selection bias, initial participants were selected from a variety of socio-demographic characteristics and all referred individuals were rigorously screened by the researchers to ensure eligibility. Prior to the study, ethical approval was obtained from the Hacettepe University Non-Interventional Clinical Research Ethics Committee (GO 18/776-45). All participants were informed about the study based on the Declaration of Helsinki, and written informed consent was obtained from those who agreed to participate. The study adhered to the STROBE checklist for reporting observational research.

The inclusion criteria for the study were being in the postmenopausal period (completion of a 12-month

amenorrhea period), having an active sexual life, presence of at least one vaginal and/or pelvic floor symptom, absence of any problems in completing the assessment scales, and a Mini-Mental Test score > 24 in individuals over 65 years of age. The exclusion criteria included the presence of Stage 4 POP, a history of urogynecological/pelvic floor surgery within the last year, having received hormone replacement therapy or pelvic floor muscle training, diagnosis of psychiatric disease and/or use of psychiatric medication, presence of a diseases causing vaginal dryness, and use of related medications (e.g., Sjögren syndrome, antidepressants or antihistamines) (17).

Methods

The demographic characteristics of the individuals were recorded, including their age, marital status, education level, and employment status. Physical characteristics included height (m) and body weight (kg). Body mass index (BMI) was calculated as weight/height² (kg/m²). Obstetric history, including parity and number of vaginal deliveries, was obtained. Menopause-related data included the type of menopause, age at menopause (years), and duration of menopause (years). Presence of chronic disease (diabetes or others, yes/no), history of urogynecological surgery (hysterectomy, oophorectomy, repair surgeries), and history of hormone replacement therapy were recorded.

Vaginal symptoms assessed included vaginal dryness, irritation, discharge, itching, and dyspareunia (present/absent), and the total number of vaginal symptoms was calculated. Pelvic floor symptoms assessed included stress urinary incontinence, urgency urinary incontinence, voiding difficulty, chronic constipation, fecal incontinence, flatal incontinence, pelvic organ prolapse, and chronic pelvic pain (present/absent), and the total number of pelvic floor symptoms was calculated.

The Turkish version of the Day-to-day Impact of Vaginal Aging Questionnaire (DIVA) was used to assess the impact of vaginal symptoms in individuals (18). The total scale score ranges from 0 to 16, with higher scores indicating a greater impact of vaginal symptoms on daily life.

The level of discomfort associated with pelvic floor symptoms was assessed using the Turkish "Pelvic Floor Distress Inventory-20" (PTDE-20) (19). The scale has three subscales: the Pelvic Organ Prolapse Distress Inventory-6 (POPDE-6), the Colorectal-Anal Distress Inventory-8 (CRADE-8), and the Urinary Distress Inventory-6 (UDE-6). Subscale scores range from 0 to 100, and total scores range from 0 to 300, with higher scores indicating greater distress.

Sexual function was assessed using the Turkish version of the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire-12 (PISQ-12) (20). This scale evaluates sexual function across three domains: behavioral-emotional, physical, and partner-related. Scores range from 0–48, with higher scores indicating better sexual function.

Statistical Analysis

The study data were analyzed using the SPSS 24 (Statistical Packages for the Social Sciences Version 24) program. Descriptive statistics such as mean ± standard deviation, minimum-maximum values, or number (%) were used. Pearson correlation analysis was applied if parametric assumptions were met, while Spearman correlation analysis was used when assumptions were not met. In terms of correlation coefficients (r): $0.90<r<1$ is considered "very high correlation," $0.70<r<0.89$ is considered "high correlation," $0.40<r<0.69$ is considered "moderate correlation," $0.10<r<0.39$ for "weak correlation," and $r<0.10$ for "negligible correlation" (21). Statistical significance was set at $p<0.05$.

RESULTS

Between September 2018 and December 2019, a total of 253 postmenopausal women were screened. Ninety-seven women without an active sexual life, 27 women who had received hormone replacement therapy within the past year, and 8 women with psychiatric diagnoses and/or psychiatric medication use were excluded. Consequently, 121 women were included in the study. The descriptive characteristics of the participants are presented in Table 1.

Data on vaginal and pelvic floor symptoms are shown in Table 2. The most common vaginal symptoms were vaginal dryness (86%) and dyspareunia (62%), whereas the most common pelvic floor symptoms were stress urinary incontinence (35.5%) and urgency urinary incontinence (31.4%).

Data on the relationship between vaginal symptoms and sexual function are presented in Table 3. Negative and moderate correlations (r=0.50-0.59) were found between the number/impact of vaginal symptoms and the PISQ-12 behavioral-emotional and physical domain. Additionally, negative weak correlations (r=0.28-0.36) were found between the number/impact of vaginal symptoms and the PISQ-12 partner-related domain (p<0.001).

Table 1. Descriptive Characteristics of Participants

Parameters	Participants (n=121)
Age (years)	55.06 ± 5.95 (45–79)
Body Weight (kg) **Height** (m) **Body Mass Index** (kg/m^2)	72.71 ± 10.74 (53-100) 1.62 ± 0.05 (1.52-1.77) 27.42 ± 4.07 (20.57-38.10)
Marital Status Married Single/Widowed	 121 (%100) 0 (%0)
Educational Status Primary School High School Higher education	 8 (%6.6) 33 (%27.3) 80 (%66.1)
Employment Status Employed Unemployed/Retired	 50 (%41.3) 71 (%58.7)
Obstetric Characteristics Parity Number of Vaginal Deliveries	 2.52 ± 1.29 (0-7) 1.73 ± 0.81 (0-5)
Menopausal Characteristics Spontaneous menopause (yes) Age at menopause (years) Postmenopausal duration (years)	 96 (%79.3) 47.18 ± 3.93 (32-55) 7.60 ± 5.91 (1-26)
Medical History Chronic disease (yes) Urogynecological surgery (yes) Hormone replacement therapy (yes)	 63 (%52.1) 46 (%38) 29 (%24)
Frequency of sexual intercourse (number/month)	3.52 ± 2.64 (1-12)

n: Number of participants, %: percentage. Data were presented as mean±standard deviation (minimum-maximum).

Data on the relationship between pelvic floor symptoms and sexual function are presented in Table 4. Weak-to-moderate negative correlations (r=0.30–0.41) were found between the number/distress levels of pelvic floor symptoms and the emotional domain of the PISQ-12. Moderate-to-strong correlations (r=0.44–0.70) were found between pelvic floor symptoms and the physical domain of the PISQ-12. Meanwhile, correlations with the partner-related domain were weak (r=0.15–0.35) (p<0.001). Clinically, these results suggest that the physical burden of symptoms hinders sexual function more directly than emotional or partner-related factors.

Table 2. Vaginal and Pelvic Floor Symptoms

Vaginal and Pelvic Floor Symptoms	Yes (n/121)
Vaginal Symptoms	
Vaginal dryness	105 (%86.8)
Vaginal irritation	54 (%44.6)
Vaginal discharge	39 (%32.2)
Vaginal itching	21 (%17.4)
Dyspareunia	75 (%62)
None	10 (%8.3)
Number of Vaginal Symptoms	2.40 ± 1.43 (0-5)
Pelvic Floor Symptoms	
Stress urinary incontinence	43 (%35.5)
Urgency urinary incontinence	38 (%31.4)
Voiding difficulty	12 (%9.9)
Chronic constipation	28 (%23.1)
Fecal incontinence	7(%5.8)
Flatal incontinence	33 (%27.3)
Pelvic Organ Prolapse	10 (%8.3)
Chronic pelvic pain	17 (%14)
None	40 (%33.1)
Number of Pelvic Floor Symptoms	1.56 ± 1.59 (0-6)

n: Number of participants. Data were presented as n (%) or mean±standard deviation (minimum-maximum), Note: Participants included in the study had at least one vaginal and/or pelvic floor symptom. Therefore, a score of '0' indicates participants who are asymptomatic in that specific domain but symptomatic in the other.

Table 3. Relationship of Vaginal Symptoms with Sexual Function

Vaginal Symptoms		PISQ-12 behavioral-emotional	PISQ-12 physical	PISQ-12 partner
Number of Vaginal Symptoms	**r** **p**	-0.57[b] 0.001*	-0.51[a] 0.001*	-0.28[a] 0.001*
Impact of Vaginal Symptoms	**r**	-0.59[b]	-0.50[b]	-0.36[b]
	p	0.001*	0.001*	0.001*

r: Correlation Coefficient. *p<0,05. [a]: Pearson Correlation. [b]: Spearman Correlation.

Table 4. Relationship of Pelvic Floor Symptoms with Sexual Function

Pelvic Floor Symptoms		PISQ-12 behavioral-emotional	PISQ-12 physical	PISQ-12 partner
Number of Pelvic Floor Symptoms	**r**	-0.41 [b]	-0.70 [a]	-0.30 [a]
	p	0,001*	0,001*	0.001*
POP-Distress	**r**	-0.30 [b]	-0.44 [b]	-0.17 [b]
	p	0,001*	0,001*	0,001*
Colorectal Distress	**r**	-0.37 [b]	-0.46 [b]	-0.16 [b]
	p	0,001*	0,001*	0,001*
Urinary Distress	**r**	-0.35 [b]	-0.58 [b]	-0.35 [b]
	p	0,001*	0,001*	0,001*

r: Correlation Coefficient. *p<0,05. POP: Pelvic Organ Prolapse [a]: Pearson Correlation. [b]: Spearman Correlation.

DISCUSSION

This study was designed to examine the relationship between vaginal and pelvic floor symptom severity and sexual function in postmenopausal women. To our knowledge, this is the first study to evaluate vaginal and pelvic floor symptoms together and to investigate their association with the subdomains of sexual function in this population. While previous research, such as Sert et al. (18), has examined these relationships, our study fills a critical gap by using condition-specific tools to analyze the physical, emotional, and partner-related subdomains of sexual function.

Sexual health is a multidimensional concept, defined as a state of complete physical, psychological, social, and emotional well-being in relation to sexuality (22). Both menopause and aging are major biopsychosocial regulators of sexual function (23). Declining estradiol levels have negative effects on sexual desire and response (arousal, sexual pleasure, and orgasm), mood, general and sexual health, and feelings toward the partner (24). Although the majority of postmenopausal women appear to remain sexually active, most tolerate painful intercourse and reduce the frequency of sexual activity compared to earlier periods (25). Important factors that reduce a woman's sexual experience include concerns about the appearance of the vagina, embarrassment, concerns about partner satisfaction, discomfort associated with pelvic organ prolapse, decreased genital sensation, and fear of worsening prolapse (13). While sexual dysfunction is not solely related to vaginal symptoms, studies have shown that loss of libido and reduced arousal in postmenopausal women are associated with vaginal dryness and dyspareunia (24, 25). Vaginal and pelvic floor symptoms also negatively impact self-esteem, body image, marriage/relationships, and social life, making women feel older, leading to sexual dysfunction and a lower quality of life (23, 26).

Palma et al. (27) reported that at least 50% of postmenopausal women complained of vaginal dryness, followed by dyspareunia. In a Turkish population study by Aydın et al. (28) in 2014, vaginal dryness (33.4%) was the most frequently reported vaginal symptom. Similarly, Selvi et al. (29) in 2020 found that the most common genitourinary symptom was vaginal dryness (66.2%). Consistent with these findings, the most prevalent vaginal symptoms in the present study were vaginal dryness (86%) and dyspareunia (62%).

Due to both aging and hormonal changes, pelvic floor symptoms are common in the postmenopausal period, and unlike vasomotor symptoms, their severity increases with advancing age (30, 31). Among pelvic floor symptoms in postmenopausal women, urinary incontinence is the most frequent, with stress urinary incontinence being the predominant type (32, 33). In the present study, stress urinary incontinence was the most frequent pelvic floor symptom, followed by urgency urinary incontinence.

In the present study, moderate correlations between the number/impact of vaginal symptoms and both the behavioral/emotional and physical subdomains of sexual function indicated that vaginal symptoms negatively affect both dimensions. This finding supports the notion that vaginal symptoms can lead to sexual emotional impairment, such as sexual aversion, arousal difficulties, and anorgasmia (23).

The Melbourne Women's Midlife Health Project reported that the prevalence of sexual dysfunction increased from 42% to 88% during the menopausal transition, with significant increases in vaginal dryness and dyspareunia, alongside reductions in sexual desire, arousal, orgasm, and frequency of sexual activity (34). These results confirm that vaginal symptoms affect the physical and emotional aspects of sexual function. Dyspareunia, in particular, can lead to postcoital bleeding as a physical consequence, while also causing

avoidance of intercourse, anxiety, and loss of desire as emotional consequences (35). Additionally, it has been reported that vaginal discomfort, which affects 80% of postmenopausal women, makes women feel older (36%), reduces self-esteem (26%), sexual intimacy (75%), emotional relationship quality (33%), and general quality of life (25%) (35).

Pelvic floor symptoms have also been shown to negatively affect women's physical, psychological, social, and sexual well-being. One-third of women with POP are not sexually active, and the coexistence of prolapse and incontinence has a cumulative negative impact on sexual function (36). In the present study, moderate-to-strong correlations were found between the number and distress levels of pelvic floor symptoms and the physical domain of the PISQ-12. In contrast, weak-to-moderate correlations were found with the behavioral-emotional domain. This highlights that pelvic floor symptoms primarily impair the physical aspect of sexual function. Similarly, previous studies have indicated that major factors reducing sexual experience in women with pelvic floor dysfunction are prolapse (changes in vaginal appearance, dyspareunia), urinary incontinence (coital incontinence), and fecal incontinence (soiling), which together create significant physical problems (13). Negative genital body image is also an important risk factor for sexual health (37). Moreover, compared to women without prolapse, those with prolapse report lower sexual confidence, even in the presence of supportive partners who do not complain about the condition (38). Therefore, pelvic floor symptoms can be considered strong determinants of the physical subdomain of sexual function in women.

In this study, the weak relationship between the partner-related domain of sexual function with both vaginal and pelvic floor symptoms may be because the questions in this sub-dimension focus solely on male sexual dysfunction, such as premature ejaculation and erectile dysfunction. However, even this weak association suggests that pelvic floor symptoms in women may contribute to sexual dysfunction in their partners. For example, the presence of POP, accompanied by dyspareunia, pain, and bleeding, as well as women's verbal and physical responses during intercourse, may contribute to erectile difficulties or premature ejaculation in men (39).

These findings have important clinical implications. The observation that vaginal and pelvic floor symptoms are closely linked to sexual function suggests that addressing dysfunction solely as a psychosexual issue is inadequate. Therefore, comprehensive assessment and interventions addressing vaginal and pelvic floor health are essential for women experiencing sexual dysfunction. Adopting such a holistic approach can help break the cycle of dysfunction and improve the quality of life of postmenopausal women.

The strengths of this study include highlighting the importance of both vaginal and pelvic floor health in sexual dysfunction and analyzing sexual health in terms of its subdomains. Another strength is the use of valid and reliable tools widely accepted for the assessment of vaginal symptoms, pelvic floor symptoms, and sexual function. A limitation of the study is its single-center design, which may affect the generalizability of the results. Additionally, it should be acknowledged that the reliance on self-reported questionnaires may introduce reporting bias; however, this is a common and often unavoidable limitation in sexual health research.

CONCLUSION

In postmenopausal women, sexual function is negatively affected as the level of vaginal and pelvic floor symptoms increases. Vaginal symptom severity appears to be more strongly associated with the behavioral-emotional and physical subdomains of sexual function. In contrast, pelvic floor symptom severity shows a stronger relationship with the physical subdomain. Our findings underscore that this subdomain-specific analysis offers a more comprehensive and detailed insight into the symptom burden on sexual function. Therefore, the evaluation of vaginal and pelvic floor health and the management of pelvic floor dysfunctions are crucial in women with sexual dysfunction. In the management of sexual dysfunction, vaginal and pelvic floor symptoms should be addressed, and multidimensional interventions should be implemented.

Conflict of Interest: The authors declare no conflicts of interest.

Informed Consent: Informed consent was obtained from all participants involved in the study.

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Author Contributions:

- **Concept and Design:** BSG, SÖ
- **Supervision:** SÖ
- **Data Collection and/or Processing:** BSG
- **Materials:** BSG, SÖ
- **Analysis and/or Interpretation:** BSG, SÖ
- **Literature Search:** BSG
- **Writing and Critical Review:** BSG, SÖ

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ORIGINAL ARTICLE

An Innovative Method for the Evaluation of Vaginal Lubrication in Pregnant Women: The Relationship Between Vaginal Lubrication Kit (VLK) Results, Vaginal Symptoms, and Sexual Function

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Abstract

Objective: This study aimed to investigate the relationship between vaginal symptoms, sexual function, and vaginal lubrication levels, measured objectively with the Vaginal Lubrication Kit (VLK), in pregnant women.

Material and Methods: This observational, cross-sectional study included 105 pregnant women (age: 30.2 ± 5.8 years, height: 161.4 ± 5.6 centimeter (cm), weight: 68.1 ± 10.3 kg, Body Mass Index (BMI): 26.2 ± 4.4 kg/m^2) admitted to the Obstetrics and Gynecology Clinic of Istanbul Training and Research Hospital between January and August 2024. Sociodemographic and obstetric characteristics were recorded, and participants were assessed using the Female Sexual Function Index (FSFI) and Visual Analog Scale (VAS) for vaginal dryness, burning, and dyspareunia. The VLK scores were obtained using a modified Schirmer test strip adapted for vaginal application. Correlation analyses were performed using Spearman's rank test.

Results: The mean number of pregnancy weeks of participants was 20.5± 11.4 weeks, and the mean parity was 2.0 ± 1.4. The mean VLK score was 24.6 ± 11.0 mm. The mean FSFI score was 16.6 ± 11.2, whereas the mean VAS scores were 1.9 ± 2.6 cm for vaginal dryness, 2.1 ± 2.7cm for burning, and 1.9 ± 2.7cm for dyspareunia. VLK scores were significantly positively correlated with FSFI scores (r = 0.230, p = 0.018) and moderate-to-strong negative correlations with VAS dryness (r= –0.680), burning (r= –0.530), and dyspareunia (r= –0.530), (p <0.001).

Conclusion: VLK is a safe and non-invasive method to evaluate vaginal lubrication in pregnant women, lower scores being associated with more symptoms and reduced sexual function.

Keywords: atrophic vaginitis, dyspareunia, pregnancy, sexual activity

INTRODUCTION

Vaginal lubrication is a physiological event that occurs through increased transudation of the vaginal walls during sexual activity (1). It increased vaginal wall transudation during sexual activity, thereby reducing friction (1). Vaginal dryness is defined as a decrease in vaginal lubrication. Vaginal dryness leads to burning and dyspareunia (2). Vaginal dryness and related symptoms negatively affect women's quality of life, sexual function, and self-perception (3,4).

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Vaginal symptoms are common during pregnancy and the postpartum period (5,6). Approximately 27% of women experience vaginal dryness and 41% experience dyspareunia during pregnancy, while the prevalence of decreased lubrication and dyspareunia increases further in the postpartum period. These findings indicate that vaginal symptoms during pregnancy may have significant negative effects on sexual function and quality of life (5,6).

In the evaluation of vaginal lubrication, subjective methods such as the Female Sexual Function Index (FSFI) and the Vaginal Health Index are frequently used in the literature (7,8). However, these methods have certain limitations in the objective assessment of vaginal lubrication. The Vaginal Lubrication Kit (VLK) has been developed as an innovative approach to provide vaginal lubrication. Identifying the relationship between VLK-derived data and vaginal symptoms and sexual function may yield more reliable outcomes in both clinical practice and research. In this context, our study aimed to investigate the relationship between VLK results, vaginal symptoms, and sexual function in pregnant women.

MATERIALS AND METHODS

Study Design

This observational and cross-sectional study was designed to evaluate the relationship between vaginal symptoms, sexual function, and VLK results in pregnant women. The study was approved by the Clinical Research Ethics Committee of Istanbul Training and Research Hospital (Date: December 22, 2023; Approval No: 360) and adhered to the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants before enrollment.

Participants

This study included 105 pregnant women who were under follow-up at the Obstetrics and Gynecology Clinic of Istanbul Training and Research Hospital between January 2024 and August 2024. The inclusion criterion was the voluntary participation of pregnant women. Exclusion criteria included active vaginal or urinary tract infection, a history of active malignancy, local estrogen use, sexual intercourse within the last two days, stage 2 or higher pelvic organ prolapse, history of mesh surgery, and any disease or medication known to cause vaginal dryness (e.g., Sjögren's syndrome, lichen planus, lichen sclerosus, use of antidepressants or antihistamines).

Descriptive and Outcome Measures

The participants' baseline demographic, physical, and obstetric characteristics were recorded (Table 1).
After completing the sociodemographic form, the participants were administered the FSFI and Visual Analog Scale (VAS). Subsequently, the VLK measurement was performed. All assessments were completed within a single session.

The VLK score was the primary outcome measure. The VLK, which was developed for the objective evaluation of vaginal dryness, was adapted from the Schirmer test used to assess dry eye (9). In this study, Schirmer strips were modified for vaginal application. The strips, measuring 5 mm × 40 mm and were free of blue dye, were folded at 5 mm within sterile packaging to prevent the passage of fluids other than vaginal lubrication. The strip was placed 2 cm proximal to the Carunculae Hymenalis using sterile forceps or by holding from its end and left in place for 5 minutes. The wetting length was measured immediately, after removal. A patent application for the test strip has been submitted to the Turkish Patent and Trademark Office (Application No: 2025/007314).

The secondary outcome measures included correlations between VLK scores and VAS values for vaginal dryness, burning, and dyspareunia, as well as the FSFI. The VAS is a 10 cm horizontal line used to measure symptoms of genitourinary syndrome of menopause (GSM), where 0 indicates no symptoms and 10 represents unbearable symptoms. The score was determined by measuring the distance marked by the participant. The FSFI is a self-report questionnaire with established validity and reliability that was developed to assess sexual function in women (10). This 19-item scale evaluates six domains: desire, arousal, lubrication, orgasm, satisfaction, and dyspareunia. Each domain is scored from 0 or 1 to 5, and the total score ranges from 2 to 36. Lower scores indicate sexual dysfunction. The FSFI was used to determine the sexual function levels of pregnant women, and the scores obtained were included in the correlation analysis with the VLK results.

Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS), version 23.0 (IBM Corp., Armonk,

NY, USA). Descriptive statistics were presented as mean ± standard deviation (SD) and median (interquartile range, Q1–Q3) for continuous variables, and frequency and percentage (%) for categorical variables. The Shapiro–Wilk test was used to assess the normality of data distribution. Relationships between numerical variables were examined with Spearman's correlation coefficient. A p-value of <0.05 was considered statistically significant for all tests.

RESULTS

A total of 110 pregnant women were assessed for eligibility, of whom 105 were included in the study. Three women with a diagnosis of vaginitis and two women who declined participation were excluded for not meeting the inclusion criteria.

The baseline demographic, obstetric, and primary and secondary outcome measures of the participants are summarized in Table 1.

Table 1. Demographic, obstetric, and medical characteristics of the participants

Characteristics	n=105
Age (years),	
mean ± SD	30.2 ± 5.8
BMI (kg/m²),	
mean ± SD	26.2 ± 4.8
Pregnancy Week	
(week)	20.5± 11.4
Employment status,	
% (n)	100 % (105)
– Employed	28.6 (30)
– Unemployed	71.4 (75)
Educational level,	
% (n)	100 % (105)
– Illiterate	0
– Literate	13.3 (14)
– Primary school	16.2 (17)
– High school	34.3 (36)
– University	30.5 (32)
– Postgraduate	5.7 (6)
Marital status,	
% (n)	100 % (105)
– Single	0
– Married	100 % (105)
– With partner	0
Parity,	
median (IQR)	2 (1-3)
Frequency of sexual intercourse (per month),	
median (IQR)	8 (4-8)
VAS VD (cm),	
mean ± SD	1.9 ± 2.6
VAS VB (cm),	
mean ± SD	2.1 ± 2.7
VAS D (cm),	
mean ± SD	1.9 ± 2.7
VLK score (mm),	
mean ± SD	24.6 ± 11
FSFI score,	
mean ± SD	16.6 ± 11.2

Data are presented as mean ± standard deviation or number (percentage). n: number, BMI: Body Mass Index, IQR: Interquartile Range, FSFI: Female Sexual Function Index, VAS: Visual Analog Scale.

In the correlation analysis, a significant positive relationship was found between VLK scores and FSFI scores (r = 0.230, p = 0.018) (Table 2). In addition, moderate-to-strong negative correlations were observed between VLK scores and VAS dryness (r = –0.680, p < 0.001), VAS burning (r = –0.530, p < 0.001), and VAS dyspareunia (r = –0.530, p < 0.001) (Table 2).

Table 2. Spearman correlation coefficients between VLK scores, FSFI scores, and vaginal symptoms (VAS dryness, VAS burning, VAS dyspareunia)

Outcome measurements	VLK score r	p
FSFI	0.230	0.018
VAS dryness	-0.680	<0.001
VAS burning	-0.530	<0.001
VAS dyspareunia	-0.530	<0.001

r: Spearman's rank correlation coefficient; Negative values indicate an inverse relationship, while positive values indicate a direct relationship, p: significance level.

These findings also indicate that the VLK is an objective measurement of vaginal symptoms in pregnant women and provides valuable information related to sexual function.

DISCUSSION

In this study, the VLK, which enables an objective assessment of vaginal lubrication in pregnant women, was used to examine the relationship between obtained scores, vaginal symptoms, and sexual function. Our findings demonstrated a significant positive correlation between VLK scores and FSFI scores. In addition, moderate-to-strong negative correlations were identified between VLK scores and symptoms such as vaginal dryness, burning, and dyspareunia. These results suggest that the VLK can serve as an objective tool for evaluating vaginal lubrication during pregnancy and can reflect both sexual function and symptom levels.

When the relationship between VLK scores and vaginal symptoms was examined, a strong negative correlation was particularly observed with dyspareunia. This finding is consistent with previous studies reporting that dyspareunia is common during pregnancy (11,12). In a prospective study involving 103 pregnant women, it was reported that vaginal burning and dyspareunia increased as pregnancy progressed (11). Similarly, Tennfjord et al. evaluated the prevalence of dyspareunia at 22 and 37 weeks of pregnancy and in the postpartum period, reporting that dyspareunia was common throughout pregnancy (12). In parallel with these studies, our findings also highlight that dyspareunia is an important vaginal symptom during pregnancy and may negatively affect sexual function.

Vaginal dryness was another symptom that showed a strong negative correlation with VLK scores in our study. Consistent with findings in the literature, Kennedy et al. examined the prevalence of vulvovaginal symptoms during pregnancy and puerperium, reporting that complaints such as dryness, burning, and discharge increased as pregnancy advanced (11). Another study conducted in Turkey demonstrated that dryness and dyspareunia negatively affected FSFI scores in third-trimester pregnant women (13). Furthermore, a study conducted in 2022 assessed vaginal dryness during pregnancy and the postpartum period, reporting that it was both a common symptom and associated with various risk factors (14). Our study supports this body of evidence by demonstrating that vaginal dryness during pregnancy can negatively affect sexual function and quality of life, while the VLK offers an innovative method for the objective assessment of these symptoms.

Examining our findings, the positive relationship between VLK scores and sexual function scores in pregnant women is noteworthy. While moderate-to-strong negative correlations were found between VLK and vaginal symptoms such as dryness, burning, and dyspareunia, a positive correlation was observed with FSFI scores. These findings are in line with the literature reporting that vaginal symptoms negatively impact sexual function during pregnancy (15–18). A systematic review in 2019 emphasized that sexual dysfunctions are common among women during pregnancy (15). A recent study in 2023 showed that sexual function decreases in later stages of pregnancy while vaginal symptoms increase significantly (16). Another study by Szymanska et al. in 2024 reported that physiological and hormonal changes during pregnancy were associated with vaginal symptoms, which adversely affected women's sexual lives (17). In addition, de Amorim et al. (2025) stated that symptoms related to pelvic floor dysfunction increased throughout pregnancy and were associated with sexual dysfunction (18). Our study supports these findings, while making an original contribution by providing objective measurements with the VLK, in addition to the predominantly subjective self-reported assessments found in the literature.

One of the strengths of this study is the use of the VLK, an innovative, objective, and safe method for evaluating vaginal lubrication. The potential contributions of VLK in clinical practice are also noteworthy. At present, the assessment of vaginal symptoms largely relies on self-report scales, which depend on patients' subjective perceptions. In contrast, the VLK can provide clinicians with objective data, as it is quick to administer, non-invasive, and does not require additional laboratory equipment. Its feasibility during routine gynecological examinations may help in the early detection of symptoms such as vaginal dryness and dyspareunia, particularly during pregnancy, and contribute to the planning of appropriate treatment strategies. Moreover, the VLK may serve as a complementary tool in identifying pregnant women at risk of sexual dysfunction and in monitoring the effectiveness of interventions. The combined use of subjective (VAS and FSFI) and objective (VLK) methods in evaluating vaginal symptoms during pregnancy allows for a multidimensional assessment. The relatively large sample size (n = 105) and evaluation of data across different stages of pregnancy are additional strengths of the study.

An important aspect of this study is the clinical applicability of the VLK. Objective tools for assessing vaginal dryness are limited, and previous studies have been conducted in populations physiologically different from pregnant women. Therefore, this study provides preliminary data on the feasibility of using the VLK during pregnancy and addresses a gap in the literature. Due to its rapid, non-invasive, and equipment-free design, the VLK may be clinically valuable in assessing symptoms such as vaginal dryness and dyspareunia. Overall, this study represents an initial step in exploring the potential role of the VLK in evaluating vaginal symptoms during pregnancy.

Nevertheless, the study had some limitations. First, it was conducted in a single center, which may limit the generalizability of the results. Furthermore, due to the cross-sectional design of the study, causal relationships cannot be established. The self-report scales (VAS, FSFI) used to evaluate symptoms rely on participants' subjective perceptions and carry the risk of bias. Although the VLK was applied for the first time in pregnant women, representing an innovative aspect, its psychometric properties (validity and reliability) have not yet been adequately tested in different populations. Finally, additional variables that could influence sexual function, such as hormonal levels or psychosocial factors, were not evaluated in this study.

CONCLUSION

This study demonstrates the feasibility of using the VLK, developed for the objective assessment of vaginal lubrication, in pregnant women. The findings revealed that VLK scores were positively associated with sexual function and negatively associated with vaginal symptoms.

Conflict of Interest: The authors declare no conflicts of interest.

Informed Consent: Informed consent was obtained from all participants involved in the study. **Funding:** No financial support was received for this study.

Ethical Approval: The study was approved by the Clinical Research Ethics Committee of Istanbul Training and Research Hospital (Date: December 22, 2023; Approval No: 360)

Author Contributions:

- **Concept and Design:** K.HG, A.T, U.N, K.DC
- **Supervision:** A.T
- **Data Collection and/or Processing:** K.HG
- **Materials:** K.HG, U.N, K.DC
- **Analysis and/or Interpretation:** K.HG
- **Literature Search:** K.HG
- **Writing and Critical Review:** K.HG, A.T, U.N, K.DC

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ORIGINAL ARTICLE

Evaluation of Changes in Sexual Function After Cataract Surgery: A Prospective Study Using the International Index of Erectile Function (IIEF)

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Abstract

Objective: To evaluate postoperative changes in male sexual function after cataract surgery and to examine the association between improvements in visual acuity and sexual performance using the International Index of Erectile Function (IIEF).

Material and Methods: This prospective observational study included 52 men with age-related cataract who underwent uncomplicated phacoemulsification and intraocular lens implantation. Sexual function was assessed using the IIEF, encompassing erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. Assessments were conducted preoperatively and one month postoperatively. Best-corrected visual acuity (BCVA) and demographic data were also recorded. Paired Student's t-test was used to compare pre- and postoperative results.

Results: The mean BCVA improved significantly from 0.58 ± 0.21 logMAR preoperatively to 0.14 ± 0.09 logMAR at one month ($p < 0.001$). Total IIEF scores increased from 35 ± 1.6 to 43 ± 1.7 ($p < 0.005$), indicating overall enhancement in sexual function. Significant improvements were observed in orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction ($p < 0.005$ for all), while changes in erectile function were not statistically significant ($p > 0.05$). Visual improvement correlated positively with changes in total IIEF score ($r = 0.52$, $p = 0.001$).

Conclusion: Cataract surgery not only restores vision but also positively influences sexual and psychosocial well-being. Improvements in sexual satisfaction, desire, and orgasmic function highlight the broader quality-of-life benefits of visual rehabilitation. Further large-scale studies are needed to clarify the mechanisms underlying this association.

Keywords: cataract surgery, International Index of Erectile Function (IIEF), sexual function, visual acuity

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INTRODUCTION

Cataract, one of the most common visual impairments associated with aging, adversely affects individuals' visual acuity and overall visual function, leading to significant limitations in daily life activities. Surgical correction of this visual loss not only restores visual acuity but also substantially improves patients' overall quality of life and psychosocial functioning (1–3).Recovery of visual function enhances individuals' independence, supports social interaction, and contributes to a more positive psychological outlook (4,5).

However, data on the effects of such improvement on sexual life remain limited. An early study found significant improvements in sexual desire and satisfaction after surgery but noted the scant evidence on this topic (6-9). Despite the importance of understanding the broader impacts of cataract surgery, a review of the existing literature reveals a clear gap: only a handful of studies—fewer than 10—address this specific interaction between visual improvement and sexual function. This scarcity underlines the need for more comprehensive research, such as the present investigation, to better elucidate these dynamics.

The present study aims to evaluate changes in Sexual function scores obtained from the International Index of Erectile Function (IIEF) in male patients following cataract surgery; to examine the relationship between improvement in visual function and changes in sexual function; and to elucidate the potential contribution of surgery to the quality of sexual life.

MATERIALS AND METHODS

Study Design and Participants

This prospective observational study was conducted at the Ophthalmology Department of Buldan State Hospital. Male patients diagnosed with age-related cataract who underwent uneventful phacoemulsification and intraocular lens implantation were included in the study.

The study adhered to the Declaration of Helsinki and received approval from the XXXXXXX University Non-Interventional Clinical Research Ethics Committee (Approval No: E-60116787-020-767116, Date: October 16, 2025). All participants provided written informed consent before inclusion in the study.

Inclusion and Exclusion Criteria

Inclusion criteria were: male patients aged ≥50 years, sexually active, diagnosed with senile cataract significantly affecting vision, and willing to complete the questionnaire form.

Exclusion criteria included past diabetic neuropathy, advanced cardiovascular disease, chronic renal failure, major psychiatric disorder, pelvic or prostate surgery, or use of antidepressants, antipsychotics, or phosphodiesterase inhibitors.

Surgical Procedure

All operations were performed by a single experienced surgeon (T.A.) under topical anesthesia using the standard, precise corneal phacoemulsification technique. In all cases, a foldable hydrophobic acrylic intraocular lens was implanted into the capsular bag.
The postoperative regimen consisted of topical antibiotic and corticosteroid eye drops, which were gradually tapered over four weeks.

Assessment of Sexual Function

Sexual function was evaluated using the International Index of Erectile Function (IIEF). This psychometrically validated self-report scale comprehensively assesses male sexual performance across five domains: erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction.

Each domain and the total IIEF score were calculated according to the original scoring system (total score range: 5–75; higher scores indicate better sexual function). The questionnaire was administered preoperatively and repeated at postoperative month 1, after stabilization of visual acuity.

Visual and Demographic Data

Uncorrected and best-corrected visual acuities (UCVA and BCVA) were assessed using a standard Snellen chart. Demographic data, including age, marital status, systemic comorbidities, and current medication use, were systematically recorded for all participants.

Statistical Analysis

Data were analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). The distribution of the variables was assessed with the Kolmogorov–Smirnov test.

Preoperative and postoperative continuous variables were compared using the paired Student's *t*-test. A *p*-value < 0.05 was considered statistically significant. Results were expressed as mean ± standard deviation (SD).

RESULTS

A total of 52 male patients (mean age 57.3 ± 5.8 years) were included. All procedures were uneventful, with no postoperative intraocular complications.

A comparison of preoperative and postoperative first-month IIEF scores is presented in Table 1.

Total IIEF scores significantly increased after surgery (35 ± 1.6 → 43 ± 1.7; $p < 0.005$), indicating an overall enhancement in sexual function.

Subdomain analysis revealed statistically significant increases in orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction scores compared with preoperative values ($p < 0.005$ for all). In contrast, the increase in erectile function score did not reach statistical significance ($p > 0.005$). This outcome may be attributed to various factors, such as vascular comorbidities common in the patient population, which can independently influence erectile function despite visual improvements. Furthermore, age-related changes and the potential presence of underlying systemic conditions, like diabetes or hypertension, could affect erectile function. Exploring these alternative explanations provides a valuable direction for future research, which might investigate the complex interplay between vascular health, visual restoration, and sexual function dynamics within this patient group.

Preoperative mean BCVA was 0.58 ± 0.21 logMAR. It improved to 0.14 ± 0.09 logMAR at 1 month ($p < 0.001$). 95% of patients gained at least 2 Snellen lines.

A statistically significant positive correlation was observed between improvement in postoperative visual acuity and change in total IIEF score ($r = 0.52$, $p = 0.001$).

These findings suggest that enhancement of visual function not only improves visual performance but also has a favorable impact on psychosocial well-being and satisfaction with sexual life.

DISCUSSION

This study assessed sexual function changes in male patients after cataract surgery using the IIEF. There was a significant increase in the total IIEF score after surgery. Marked improvements were noted in all domains except erectile function, which did not show a significant change. Recovery of visual function appears to provide physical, psychological, and social benefits.

Cataracts are linked to loss of independence, depression symptoms, and lower quality of life in elderly individuals due to visual impairment. Improvements in visual acuity and quality-of-life scores following surgery have been shown to enhance self-care, mobility, and social participation (4,10,14). In the present study, the significant improvement in visual acuity was found to parallel the enhancement observed in sexual life. The recovery of visual function likely contributes to increased self-confidence and a more positive perception within intimate relationships.

Table 1. Comparison of preoperative and postoperative International Index of Erectile Function (IIEF) scores

Parameter	Preoperative (Mean ± SD)	Postoperative (Mean ± SD)	p-value
Total IIEF score	35 ± 1.6	43 ± 1.7	p < 0.005
Erectile function score	13 ± 2.1	14 ± 2.8	p > 0.005
Orgasmic function score	5.2 ± 1.4	7 ± 1.0	p < 0.005
Sexual desire score	4.6 ± 1.7	6 ± 1.6	p < 0.005
Intercourse satisfaction score	6.6 ± 1.3	8.9 ± 1.5	p < 0.005
Overall satisfaction score	6.0 ± 1.0	8.0 ± 1.0	p < 0.005

Data are presented as mean ± standard deviation. Comparisons between preoperative and postoperative scores were performed using the paired sample t-test. A p-value < 0.05 was considered statistically significant.

Significant improvements in sexual desire, orgasmic satisfaction, and overall satisfaction scores were observed after cataract surgery in male patients, while no significant change was noted in erectile function (6). This finding is entirely consistent with our results.

In addition, visual rehabilitation after cataract surgery has been shown to significantly improve patients' self-esteem and life satisfaction, further supporting the psychosocial benefits of surgical vision restoration (14).

Sexual function encompasses various dimensions, influenced by physiological, psychological, emotional, and social factors. Visual impairment can lead to lower self-esteem, social isolation, and depressive moods, all of which may diminish sexual function—desire (11,12,15). Surgical improvements in vision can alleviate negative influences, leading to a significant enhancement in subjective satisfaction and sexual fulfillment. This interpretation aligns with the notable increases observed in several IIEF subdomain scores postoperatively in our study.

However, the lack of a statistically significant improvement in erectile function may stem from its stronger dependence on vascular and neurological factors. Additionally, although major comorbidities were not identified, the advanced mean age of participants and the possible presence of systemic conditions—such as diabetes or hypertension—may have obscured potential changes. The strengths of this study include its prospective design, the standardized surgical technique performed by a single experienced surgeon, and the use of a well-validated assessment tool (IIEF).

Nevertheless, the study is limited by its inclusion of only male patients. The study lacked a control group and had a relatively small sample size, which may limit the generalizability of the findings. Due to the limited follow-up period of one month, the results represent early postoperative findings. Longer-term follow-up is required to determine whether changes in sexual function persist or evolve.

CONCLUSION

Cataract surgery not only provides visual rehabilitation but also exerts positive effects on patients' psychosocial and sexual quality of life. The significant improvements observed in subjective parameters such as sexual desire, orgasmic function, and overall satisfaction highlight the multidimensional contribution of surgery to overall well-being. Further research with larger sample sizes and longer follow-up periods is necessary to better understand the underlying psychophysiological mechanisms of this association.

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Conflict of Interest: The authors declare no conflict of interest.

Informed Consent: Written informed consent was obtained from all participants before enrollment in the study.

Ethics Approval: Approved by the Pamukkale University Non-Interventional Clinical Research Ethics Committee (Approval No: E-60116787-020-767116, Date: October 16, 2025)

Authors' Contributions

T.A. conceived and designed the study, performed all surgical procedures, and drafted the manuscript.
E.S.U. collected and organized the clinical data.
O.P. performed statistical analysis and literature review.

Consent to Publish: All participants provided consent for anonymized data to be published in a scientific journal.
The data supporting the findings of this study are available from the corresponding author on reasonable request.

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CASE REPORT

The Rare Cause of Vulvar Pain After Oral Sex: Periclitoral Abscess

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Abstract
Clitoral abscess is a rare gynecological condition that causes severe vulvar pain. Very few cases have been reported in the literature. There are no guidelines available that include treatment protocols for this condition. Treatment may be either conservative or surgical. Most cases recover with a conservative approach. Surgical intervention is necessary in rare cases. In this case presentation, we discuss the conservative management of a perineal abscess that developed after oral sex.

Keywords: abscess, clitoris, periclitoris, trauma, vulvar pain

INTRODUCTION

The etiology of clitoral abscesses is not fully understood, but they are largely attributed to conditions such as pilonidal disease, female genital mutilation, or genital trauma. However, such abscesses can also occur in women without any known risk factors (1). A clitoral abscess typically presents as a localized, painful, and fluctuating inflammatory lesion surrounding the clitoris. Among women of reproductive age, it can lead to significant morbidity, manifesting as severe vulvar pain, dysuria, vulvar swelling, and erythema at the clitoral head (2).

Management of clitoral abscesses often involves antibiotic treatment and may also include surgical intervention, such as marsupialization and drainage. However, it has been shown that these surgical interventions have limited effects in preventing the recurrence of clitoral abscesses (3).

In this case presentation, we discuss the management of a clitoral abscess in a 25-year-old woman, who developed the abscess one week after engaging in oral sex, at 69 days postpartum.

CASE

A 25-year-old woman, who had a vaginal delivery 69 days ago, presented with complaints of progressively worsening vulvar pain and swelling that began one week after engaging in oral and vaginal sex. During the gynecological examination, a tender, fluctuating, mildly erythematous mass measuring 6x3 cm, involving the right labium minus and surrounding the clitoris, was detected (Picture 1). Laboratory parameters showed a WBC of 18,300 and a CRP of 93.

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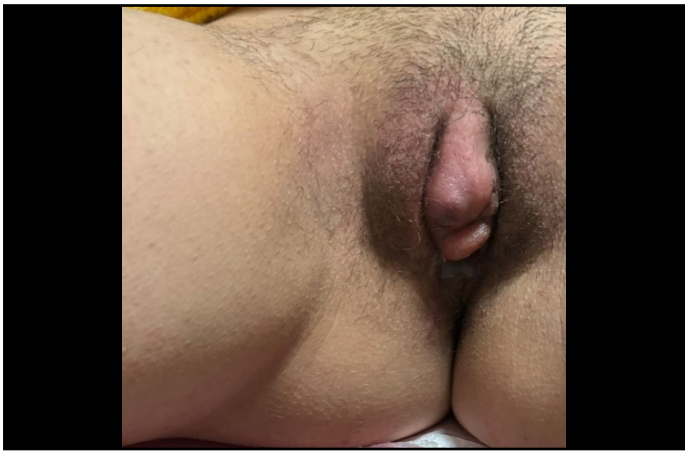
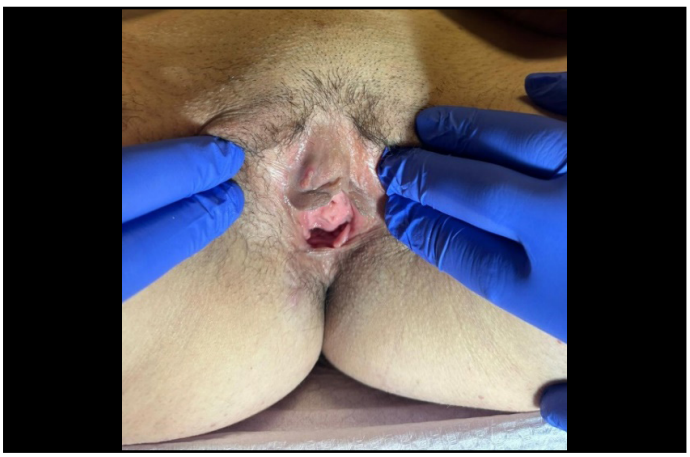
The patient was initially managed with medical therapy for a presumptive diagnosis of clitoral abscess. A combined oral antibiotic regimen consisting of cefdinir 600 mg and metronidazole 500 mg was initiated. Cefdinir 600 mg was administered once daily, and metronidazole 500 mg was administered three times daily. On the fourth day of antibiotic therapy, spontaneous drainage occurred (Picture 2). During follow-up, infection markers showed improvement, with WBC decreasing to 12,540 and CRP to 47.6. Given the regression of both infection parameters and the patient's symptoms, the antibiotic regimen was considered effective against the underlying microorganism, and therefore no culture sample was obtained. After one week, the patient's symptoms had improved and vulvar swelling had diminished. The patient was discharged after seven days of treatment, and intravenous antibiotic therapy was stopped. To prevent recurrence, continuation with oral antibiotics was planned. Oral antibiotic therapy was maintained for a total duration of 14 days.



Picture 1. Condition of Vulva at Presentation to Clinic



Picture 2. Spontaneous drainage on the fourth day after medical treatment

CONCLUSION

The clitoris is a multiplanar structure that is broadly connected to the arcus pubis and supported by a wide tissue connection to the mons pubis and labium. It contains erectile bodies, the glans clitoris, and neurovascular structures. Embryologically, it is analogous to the penis and serves as the anatomical center for orgasmic response in women. The average size, including the external glans, hood, internal body, root, and crura, can reach up to 9-11 cm (4,5). Clitoral abscess, a rarely reported gynecological condition, can occur due to identifiable causes such as spontaneous formation or genital trauma. The abscess surrounding the clitoris can lead to significant morbidity because it is a painful inflammatory lesion (6,7). In our case, the patient is 25 years old and has a history of oral and vaginal sex, but no history of genital trauma.

A review of the literature indicates that the typical age range for clitoral abscess is 20-30 years (6). Although no specific risk factors are consistently identified, some cases have been associated with smoking or a history of pregnancy (2,3). Although rare, in older patients with comorbidities or immunosuppressed individuals, periclitoral abscesses have been reported to lead to necrotizing fasciitis (8).

Female circumcision performed for religious reasons increases the likelihood of clitoral abscess formation due to infection of inclusion cysts that develop in the tissue after the operation. The disruption of the anatomy creates challenges for the surgeon in the treatment of these patients when surgical intervention is necessary and increases complication rates (9,10).

The shaving of pubic hair or the use of various techniques for hair removal can cause hairs to become trapped in the area due to the covering and protective mechanism of the clitoral hood, creating a predisposition for folliculitis or abscess formation secondary to minimal skin damage (11).

There is no consensus on treatment, but the first-line treatment should be medical therapy to avoid damaging the clitoral components (2,6). However, in cases of recurrent periclitoral abscesses, surgical treatment (marsupialization) should be preferred. Among patients requiring surgical intervention, the incision should be made laterally to avoid damaging

the clitoral components (12).

To reduce the risk of recurrence, the literature recommends obtaining tissue or purulent material cultures—particularly in cases where the causative microorganism cannot be identified or in the presence of multiple recurrences—so that antibiotic therapy can be tailored according to culture and susceptibility results. If an underlying inclusion cyst, chronic pilonidal tract, or hair fragments are identified beneath the lesion, excision or marsupialization to create a permanent drainage tract should be considered. When surgical intervention is required, lateral incisions and meticulous dissection are preferred to preserve clitoral structures and their functional integrity. Avoidance of local trauma, patient education regarding hair removal methods, hygiene optimization, and appropriate follow-up are essential to minimize skin damage (13,14).

In conclusion, the conservative management approach implemented in our case—considering the patient's young age, the fact that this was the first episode, and the priority to preserve sexual function and anatomical integrity—is supported by the existing literature. Nevertheless, previous reports emphasize that recurrence is relatively common and, in such instances, culture sampling, surgical management of underlying cystic lesions (including marsupialization or excision), and the use of surgical techniques that preserve clitoral structures are recommended (15). In accordance with the literature, our patient was managed with oral antibiotic therapy, and no recurrence was observed during the 6-month follow-up period.

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Informed Consent: The patient and relatives gave informed consent to surgery and photo recording

Acknowledgments: None.

Conflict of Interest: The authors have no financial associations or any other conflicts of interest to declare.

Ethical Approval: N/A

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