



# Reclaiming feminine vitality: A comprehensive study on the influence of vaginal hysterectomy on sexual function and quality of life in pelvic organ prolapse, a preliminary study

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Department of Obstetrics and Gynecology, Kafkas University Faculty of Medicine, Kars, Türkiye

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## ABSTRACT

**Objectives:** This report examines the impact of surgical treatment for pelvic organ prolapse on sexual function and quality of life in women.

**Materials and Methods:** The study group consisted of 34 sexually active women. Baseline characteristics and medical and obstetric history of the patients were recorded. All women underwent vaginal examination to determine the degree of prolapse by pelvic organ prolapse (POP) quantification system. Out of 34 women, 16 (47.05%) had stage 3 prolapse, while 18 (52.94%) women presented with stage 4 apical prolapse. Women were seen before surgery and 3 months postoperatively. At both visits, a short form health survey-36 (SF-36) and female sexual function index (FSFI) were completed, and a qualitative face-to-face interview was conducted. Questionnaires total and domain scores and the change in the preoperative and postoperative scores were calculated and analyzed using the Wilcoxon signed-rank test.

**Results:** The mean age of the study participants was  $53.73 \pm 8.41$  years, with 17.6% of the patients having a history of grandmultiparity, 67.6% having a lower level of education, and 49.9% having a high body mass index. None of the patients underwent incontinence surgery as part of their hysterectomy procedure. Following surgery for POP, a statistically significant improvement was observed in female sexual functions ( $p < 0.01$ ). This improvement was evident in the total and individual scores of each domain of the FSFI, resulting in an overall enhancement in sexual function from a mean score of  $15.03 \pm 6.2$  pre-surgery to  $27.03 \pm 4.43$  post-surgery. Moreover, a statistically significant difference in SF-36 sub-dimensions was identified between the two time-dependent measurements taken after POP surgery. Qualitative data analysis revealed that the improvement in sexual function was associated with the treatment of POP symptoms.

**Conclusion:** Pelvic floor dysfunction is a multi-faceted problem because it has anatomical and functional aspects. This study demonstrates that POP influences women's quality of life and sexual functions and shows significant improvement following reconstructive surgeries for these pelvic floor disorders.

**Keywords:** Female sexual function; FSFI; pelvic floor surgery; pelvic organ prolapse; SF-36 quality of life scale; vaginal hysterectomy

**Address for Correspondence:** Müjde Canday, Department of Obstetrics and Gynecology, Kafkas University Faculty of Medicine, Kars, Türkiye

**Phone:** +90 555 969 94 89 **E-mail:** drmujdeuygur35@gmail.com **ORCID ID:** orcid.org/0000-0002-0164-2764

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## INTRODUCTION

Pelvic organ prolapse (POP) is a common and disturbing problem that can have a significant impact on a patient's quality of life (QoL) secondary to symptoms of vaginal bulge, pelvic pressure, urinary and bowel dysfunction, or sexual dysfunction.<sup>1</sup> Sexual function is a significant aspect of adult life, and there is limited knowledge about the connections between female sexuality and persistent health conditions, such as pelvic floor disorders.<sup>2</sup> Handa et al.<sup>2</sup> reported that women who reported pelvic floor dysfunction complaints experienced reduced frequency of orgasms, diminished arousal, and an increased incidence of dyspareunia. Given the intimate anatomical connection and shared pathophysiology, patients with prolapse may also experience concurrent urinary symptoms, and vice versa.<sup>3</sup> POP can affect the QoL and sexuality. For an extended period, the sexual well-being of women with POP was often neglected and hardly articulated for being considered a sensitive or taboo subject.<sup>4</sup>

POP results in physical changes to women's genitalia and can negatively affect women's sense of body image, in turn inducing negative changes in parameters of sexual function, such as loss of libido or reduced genital sensation.<sup>5</sup> These changes are highly variable and can be experienced differently among women.<sup>6</sup> It is of paramount importance to consider the patient's sexual needs when proposing a course of treatment. A thorough evaluation of the potential sexual consequences of the treatment should precede any recommendations. The decision-making process for managing POP should involve shared decision-making between the patient and the clinician, considering various treatment options. As a result of the growing recognition of the significance of sexual function in the treatment of POP, the scientific literature on the impact of POP and its treatment, primarily surgical repair, on sexual function has witnessed a substantial increase in the past two decades.<sup>4</sup>

Literature shows varying results regarding the effect of POP on sexual functions. While certain studies indicate a higher prevalence of sexual dysfunctions in women with urinary incontinence, others highlight that dyspareunia, reduced libido, and vaginal dryness are more frequently observed in patients with POP.<sup>7</sup> Nevertheless, some studies find no significant difference in sexual functioning between women with and without POP. Studies examining the impact of surgery for POP on female sexual functions also yield diverse results. Through reconstructive surgery for POP, our goal is to enhance and restore optimal sexual function.<sup>8</sup> Evaluating the effects of natural tissue repair for POP on sexual function indicates a significant enhancement in sexual function and a reduction in

painful sexual intercourse after this type of repair.<sup>9</sup> Generally, there has been limited attention given to the impact of these conditions on women's sexual well-being, as most efforts have been directed towards treating POP and incontinence rather than addressing sexual functions.

Furthermore, many studies have solely focused on dyspareunia without using validated questionnaires, raising concerns about the reliability of their findings. We aimed to investigate the influence of POP on female sexual functions using a validated questionnaire. The main objective of this study was to evaluate different aspects of female sexual function in patients before and after reconstructive surgery for pelvic organ prolapse, utilizing the FSFI questionnaire.

In this study, we discuss the QoL and sexual function of women with POP and the consequences of vaginal hysterectomy (VH) about these issues. The complex multifactorial nature of human sexual function means that relevant data are only truly provided by prospective studies incorporating a preoperative assessment.

## MATERIALS AND METHODS

The Kafkas University Medicine Faculty Research and Application Hospital Review Board approved this study (80576354-050-99/341). This cross-sectional prospective study involved 34 women referred for POP between January and June 2023 at Kafkas University Hospital. Preoperative and postoperative questionnaires assessing QoL and sexual function were administered to these 34 patients who presented to our outpatient clinic with complaints of apical prolapse and had planned hysterectomy following comprehensive gynecological examinations. POP surgery was performed only in patients with symptomatic POP  $\geq$  stage 3, according to POP-Q. The decision to undergo surgery is typically based on subjective complaints, including sensations of pelvic bulge and obstructive symptoms for patients who did not prefer or experienced but failed to benefit from conservative treatments, such as the use of a vaginal pessary before.

Participants underwent a standardized assessment, which included a detailed medical history and physical examination. This assessment encompassed demographic information and an evaluation of pelvic floor functionality. The physical examination encompassed the measurement of body mass index and the assessment of POP-Q measurements.

The target population included sexually active adult women seeking outpatient gynecologic care for prolapse symptoms. Exclusions from the study encompassed sexually inactive individuals, pregnant women, those unwilling to provide comprehensive survey responses, and those not in a suitable mental state for healthy responses. Additionally, women with

chronic pain, neurological deficits, or psychiatric conditions were excluded. Follow-up appointments were scheduled for the third month postoperatively to evaluate patients' postoperative controls. This timing was chosen with the expectation that patients would have completed their recovery and overcome their fear of surgical complications. It alleviated concerns about post-surgical disappointment by then, having resumed their preoperative routines. The urogynecological examination was performed using standard POP-Q staging.

Our study complies with the Declaration of Helsinki, the principles of Good Clinic Practice, and does not conflict with the ethical rules of the subject research. All patients who participated in our study, having been thoroughly informed about the study, have provided their informed consent, confirming their willingness to participate.

**Outcome Measures:** All participating women were seen before and 3 months after surgery. For quantitative assessment, women were asked to complete the female sexual function index (FSFI) and short form health survey-36 (SF-36). The qualitative assessment consisted of a face-to-face interview conducted by a female consultant physician.

At the commencement of the interview, the interviewer elucidated the study's objectives and assured the confidentiality of the data collected by the participants.

FSFI was utilized to assess the sexual function of the patients. FSFI comprises 19 questions and is a questionnaire designed to evaluate sexual function over the last four weeks. It covers six subheadings: Desire, arousal, lubrication, orgasm, satisfaction, and pain. Questions are scored on a Likert-type scale from "always" to "never"; scores range between 0 and 5, with a total score ranging from a minimum of 2 to a maximum of 36. Higher scores indicate enhanced sexual function.

The validity and reliability of the Turkish version of the questionnaire were demonstrated by Ergun Oksuz.<sup>10</sup>

The QoL of all participants was evaluated using the SF-36 questionnaire, which includes the following eight sections: Physical functioning, role limitations resulting from physical problems, role limitations resulting from emotional problems, social functioning, mental health, energy/vitality, bodily pain, and general health. Each section is evaluated individually and scored from 0 to 100. A high score represents a better QoL. The validity and reliability of the Turkish version of the questionnaire were demonstrated by Kocuyigit et al.<sup>11</sup>

VH operation: The surgical steps followed a conventional approach. An immobile uterus was considered an exclusion criterion for VH. Prolapse degrees were not taken into account. An increased number of prior abdominal surgeries was not

considered a contraindication for VH. While McColl Kuldoplasty was applied to all patients, sacrospinous fixation was added when necessary.

## Statistical Analysis

IBM SPSS Statistics 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) and MS-Excel 2007 software were employed for statistical analysis and calculations. A significance level of  $p < 0.05$  was considered.

In the study, the normal distribution suitability of the scores for the subdimensions of the FSFI and SF-36 were assessed graphically and through the Shapiro-Wilks test. It was determined that none of the continuous variables followed a normal distribution.

Descriptive statistics for the variables were presented as mean  $\pm$  standard deviation and median (minimum-maximum) values. The Wilcoxon signed-rank test was utilized to compare preoperative and postoperative scores for the subdimensions of the FSFI and SF-36.

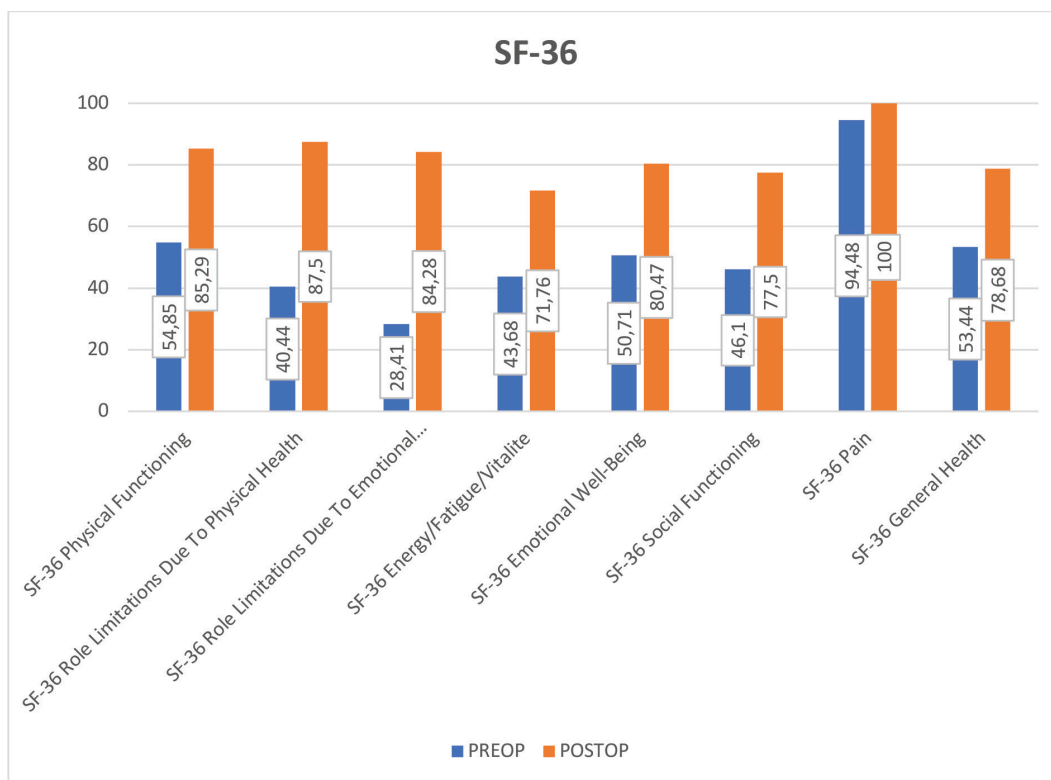
## RESULTS

Basic demographics are reported (Table 1).

Changes in total and individual domains of FSFI and SF-36 questionnaire scores are shown in Table 2 and 3, respectively.

**Table 1. Demographic characteristics of patients**

	All patients (n=34)
Age (year) mean $\pm$ SD	53.73 $\pm$ 8.41
<b>BMI, n (%)</b>	
Low	6 (17.64)
Normal	11 (32.35)
High	8 (23.52)
Obese	9 (26.47)
<b>Education status n (%)</b>	
Primary	23 (67.6)
Middle-high school	8 (23.5)
University	3 (8.8)
<b>Parity, n (%)</b>	
Multiparity	28 (82.3)
Grandmultipar	6 (17.6)
<b>Systemic disease, n (%)</b>	
None	22 (64.7)
Exist	12 (35.3)
<b>Habit, n (%)</b>	
None	22 (64.7)
Smoking	12 (35.3)
SD: Standard deviation, BMI: Body mass index	



**Table 2. Mean FSFI domain scores before and after surgery**

Parameters	Preop		Postop		p*
	Mean ± SD	Median (min-max)	Mean ± SD	Median (min-max)	
Sexual desire	1.73±0.53	1.8 (1.2-3.0)	3.87±0.62	3.6 (3.0-4.8)	<0.001
Arousal	2.36±1.40	3.0 (0.0-4.2)	4.54±0.68	4.8 (3.6-5.4)	<0.001
Lubrication	2.12±1.32	2.4 (0.0-4.0)	4.70±0.88	4.8 (3.0-5.7)	<0.001
Orgasm	2.01±1.12	2.0 (0.0-3.6)	4.98±0.48	4.8 (4.4-6.0)	<0.001
Satisfaction	3.38±0.80	3.2 (2.0-4.4)	4.82±0.73	4.4 (4.0-6.0)	<0.001
Pain, discomfort	3.43±0.95	3.6 (2.0-4.8)	4.12±1.04	4.0 (2.8-6.0)	<0.001

\*: Wilcoxon signed the rank test, SD: Standard deviation, FSFI: Female sexual function index

The data suggests a statistically significant difference with *p*-value <0.01 in total and individual scores of each domain of FSFI and SF-36 questionnaires before and after.

A statistically significant difference was found between the two time-dependent measurements (preop, post) of FSFI sub-dimensions: Sexual desire, arousal, lubrication, orgasm, satisfaction, and pain discomfort (*p*<0.001). Sexual desire, arousal, lubrication, lubrication, orgasm, satisfaction, and pain discomfort values all increased over time (Table 2).

A statistically significant difference was found between two time-dependent measurements (preop, postop) of SF-36 sub-

dimensions physical function, physical role difficulty, emotional role difficulty, energy/vitality/vitality, mental health, social functioning, pain, general health perception (*p*<0.001). There was an increase in the SF-36 quality of life of individuals after surgery compared to the preoperative period (Table 3).

### DISCUSSION

POP is defined as a protrusion of the pelvic organs through the vaginal walls and pelvic floor. Although it is a common condition, its prevalence is difficult to establish. The significance of POP can be easily understood by considering that in the United States,

**Table 3. Mean SF-36 domain scores before and after surgery**

	Preop		Postop		p*
	Mean ± SD	Median (min-max)	Mean ± SD	Median (min-max)	
<b>SF-36</b>					
Physical function	54.85±19.59	55.0 (10-95)	85.29±11.87	85.0 (55-100)	<0.001
Physical role difficulty	40.44±35.89	25.0 (0-100)	87.50±17.68	100.0 (50-100)	<0.001
Emotional role difficulty	28.41±31.91	33.3 (0-100)	84.28±18.80	100.0 (33-100)	<0.001
Energy/vitality	43.68±14.94	45.0 (10-75)	71.76±14.35	75.0 (40-90)	<0.001
Mental health	50.71±20.34	44.0 (20-88)	80.47±9.33	80.0 (60-92)	<0.001
Social functioning	46.10±28.32	50.0 (0-100)	77.50±15.07	75.0 (37-100)	<0.001
Pain	94.48±12.02	100.0 (42-100)	100.00±0.00	100.0 (100-100)	<0.001
General health perception	53.44±15.00	51.0 (30-85)	78.68±13.04	85.0 (35-90)	<0.001

SD: Standard deviation, SF-36: Short form health survey-36

approximately 11.8% of women undergo surgical interventions for POP by the age of 80.<sup>12</sup> This statistic highlights the substantial health challenges that POP poses for women and its association with increased susceptibility to sexual dysfunction and life quality.

The frequently cited statistic that approximately 50% of women will experience POP pertains mainly to anatomical changes, not necessarily the severity of prolapse or related symptoms.<sup>4</sup> Anatomical changes resulting from prolapse do not consistently align with the associated symptoms or their severity. Discrepancies in the reported prevalence of POP in the literature can be attributed to variations in research methodologies. Studies present a prevalence of up to 50% when focused on anatomic deterioration and yet much less when focusing on bothering symptoms.<sup>6</sup> Consequently, the reported prevalence of POP can vary widely across different studies, ranging from 3% to 50%.<sup>13</sup> Prevalence also varies with age and the type or degree of POP. The prevalence of high-grade POP in the general population is very low<sup>4</sup> but increases to 14% among symptomatic women<sup>14</sup> over 70% in women undergoing surgical repair.<sup>15</sup>

Various risk factors contribute to pelvic organ prolapse, weakening the endopelvic fascia and collagen.<sup>16</sup> These factors include non-modifiable ones such as race, gender, age, menopause, geriatric health status, and genetics. On the other hand, modifiable factors like occupation, obesity, smoking, infection, relationship issues, depression, and childbirth can potentially be addressed through intervention or prevention.<sup>2,17</sup>

The prevalence of POP tends to be higher among older age groups, with a notable increase in older women seeking medical attention for this condition. A substantial number of individuals diagnosed with POP are aged 50 and above, especially those

aged 80 or older.<sup>18</sup> As the population ages, the prevalence of symptomatic POP is anticipated to increase, posing a significant future health challenge.<sup>19</sup> By 2050, it is estimated that approximately 46% of women in the United States will experience symptomatic POP, affecting over 5 million individuals. Research indicates a direct relationship between age and the likelihood of seeking medical care for POP, with the highest consultation rates observed in women aged 70-79.<sup>20</sup>

As a result, from a public health perspective, POP imposes a substantial economic burden on healthcare systems, as approximately 13% of women will require surgical intervention for this condition during their lifetime.

Treatment options for POP include observation, pelvic floor physical therapy, pessary use, and surgery. The choice of surgery technique depends on factors such as the specific compartments involved, the severity of prolapse, the patient's medical and surgical history, comparative durability and risks of procedures, and patient involvement in making the decision.<sup>1</sup>

The primary objective of POP surgery is symptom reduction and enhancement of health-related quality of life (HRQoL).<sup>21</sup> The findings of Cadenbach-Blome et al.<sup>22</sup> align with prior research, indicating that surgical treatment improves HRQoL for women with POP.<sup>23</sup> Several literature studies have highlighted the significant benefits obtained in various subgroups of the QoL scale after POP surgery.<sup>22,24</sup> Our findings are consistent with the literature on postoperative changes in QoL.

The average age in our study aligns with the literature. The composition of our study group, consisting of older and advanced-stage patients, can be attributed to women delaying physician visits and treatment-seeking for their prolapse symptoms, hesitating to discuss anatomical changes that have

occurred in their genital regions, feeling embarrassed, and eventually accepting to live with these conditions over time.

Handa et al.<sup>2</sup> reported that stage III-IV prolapse was significantly associated with infrequent orgasm ( $p=0.02$ ), but other sexual complaints were not more common with increasing prolapse stage in their study. The American Foundation for Urologic Disease identifies four categories of female sexual dysfunction: Low libido, issues with sexual arousal, difficulty in achieving orgasm, and dyspareunia.<sup>25</sup> Research has indicated that sexual concerns are prevalent in women with pelvic floor disorders, although the findings vary.<sup>26</sup> One study showed that women with urinary symptoms were more inclined to report decreased libido and dyspareunia compared to those without urinary symptoms. In contrast, a recent community-based study found no significant disparities in sexual activity or satisfaction among women experiencing pelvic floor symptoms.<sup>26</sup>

Sexuality is a significant component of both physical and emotional well-being. Anatomic deformities in the genital area due to POP can have a negative impact on a person's body image. A decline in self-confidence in women can negatively impact their sexual lives, as the belief that they are no longer sexually attractive to their partners may lead to a loss of interest in sexuality.

Various studies have investigated the changes in sexual functions following surgeries for POP with diverse outcomes.<sup>27</sup> A prospective, multi-center cohort study involving patients who underwent traditional vaginal surgery for grade  $\geq$ II symptomatic POP demonstrated an improvement in sexual functions as assessed by the pelvic organ prolapse/urinary incontinence sexual questionnaire before and 12 months after POP surgery.<sup>28</sup> Similarly, a prospective randomized trial with 78 patients evaluating sexual function in women before and after VH for uterine prolapse of stage 2 or higher reported improved anatomical and sexual function postoperatively. However, it was noted that VH might negatively impact sexual function if new-onset or worsening dyspareunia or incontinence develops postoperatively.<sup>29</sup>

Long et al.<sup>30</sup> examined the impact of POP surgery on the sexual function of both premenopausal and postmenopausal women using the FSFI. They found that, despite the effective anatomical restoration of POP, surgery was linked to a deterioration in individual and overall FSFI domains in premenopausal women postoperatively, particularly with a significantly higher rate of worsened dyspareunia compared to postmenopausal women.<sup>30</sup> Our study population includes women in the postmenopausal period, and the study results remained independent of changes that may arise from the premenopausal to postmenopausal transition.

In our study, all FSFI domains exhibited significant improvement after surgery, which differs from a study by Hoda and Kim et al.<sup>31</sup>, where no significant changes in orgasm function were found in women who underwent anterior or posterior repair for prolapse. Our study's key strengths lie in the utilization of a validated FSFI questionnaire for the assessment of sexual functions both prior to and following surgery, along with the prospective collection of data. Additionally, all surgeries were performed by the same surgeon team, reducing potential bias. Notably, no patients were lost to follow-up throughout the study. Our research sheds light on an especially delicate subject in developing countries, where issues related to sexual functions are often underreported.

## CONCLUSION

In conclusion, from a public health point of view, POP has a tremendous economic burden on health systems. The increase in life expectancy and the movement towards improved QoL contribute not only to the increase in the prevalence of POP but also to the increase in the prevalence of women seeking treatment and solutions for their symptoms.

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## ETHICS

**Ethics Committee Approval:** The Kafkas University Medicine Faculty Research and Application Hospital Review Board approved this study (80576354-050-99/341).

**Informed Consent:** All patients who participated in our study, having been thoroughly informed about the study, have provided their informed consent, confirming their willingness to participate.

**Peer-review:** Externally peer-reviewed.

## Contributions

Surgical and Medical Practices: M.C., A.Y.; Concept: M.C.; Design: M.C., A.Y.; Data Collection or Processing: M.C., A.Y.; Analysis or Interpretation: M.C., A.Y.; Literature Search: M.C.; Writing: M.C.

## DISCLOSURES

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

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