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ORIGINAL ARTICLE

The Impact of Surgical Management of Pelvic Organ Prolapse on Female Sexual Function

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ABSTRACT

Background: Female sexual dysfunction is rarely addressed between patients and doctors, which may be due to cultural and religious thoughts and confusion about available treatments. Disturbance of pelvic anatomy may hurt Female sexual function so, this study aimed to assess the impact of pelvic organ prolapse surgery (POP) on female sexual function through the female sexual function index.

Methods: We conducted a prospective cohort study on thirty-four cases with POP who underwent surgical correction at the Obstetrics and gynecology department at Zagazig University Hospitals. The implementation of the female sexual function index (FSFI) questionnaire was assessed before and after surgery.

Results: Regarding the degree of prolapse, there were 2 cases (5.9%) with grade 1 pelvic organ prolapse, 23 cases (67.6%) with grade 2 pelvic organ prolapse, 8 cases (23.5%) with grade 8 pelvic organ prolapse and 1 case (2.9%) with grade 4 prolapse. Our study demonstrated a statistically significant improvement in the total score of the Female Sexual Function Index (FSFI) after surgical correction of pelvic organ prolapse, with a mean score increasing from 15.16 ± 3.19 pre-surgery to 29.75 ± 1.58 post-surgery ($p < 0.001$).

Conclusion: Surgical correction of pelvic organ prolapse may have a positive effect on female sexual function.

Keywords: Surgical management; Pelvic organ prolapse; Female sexual function

INTRODUCTION

It is estimated that between 35 and 50 percent of women in the general population experience some sexual dysfunction in the form of [1, 2] induced orgasm, pain, discomfort, excitement, and desire/libido disorders. Among the most prevalent issues patients face in clinical environments are abnormalities related to desire and arousal phases [3].

Sexual dysfunction may be caused by pathological diseases affecting the pelvic organs. Prolapse of pelvic organs (POP) and urinary incontinence (UI) can affect sexual function in a variety of ways; stigma associated with sexual activities, depression and anxiety, and poor self-image [4]. Nevertheless, there was no sustained improvement in sexual function after surgical repair of the underlying problem. Even, some patients reported an amplification of sexual symptoms after surgery [5].

Restoring the proper anatomical balance of organs and eliminating functional abnormalities are the goals of POP surgery. Subjective functional outcomes, cosmesis, and quality of life are now part of the comprehensive evaluation that is necessary for outcomes, even though anatomical criteria have always been a part of it [6, 7].

The treatment of POP is expected to improve sexual function if the physical component of POP contributes to dysfunction. However, the data are controversial. Sexual performance after POP surgery cannot be guaranteed to improve and may even decrease [8].

Patients and doctors rarely discuss the issue of sexual dysfunction in women. Some explanations for this gap include cultural and religious considerations and the lack of knowledge of therapeutic value. However, the World Health Organization has stated that sexual health is an essential human right. It is therefore clear that we need to raise awareness and educate

ourselves about the causes of sexual complaints. On the other hand, physicians need continuous updates of guidelines that can help achieve better POP management. Therefore, it was compulsory to conduct a study to clarify the aspects of this problem [8].

This study aims to evaluate the impact of surgical management of pelvic organ prolapse on female sexual function by female sexual function index.

METHODS

This prospective cohort study, which lasted from April 2022 to April 2024, involved thirty-four cases with POP who underwent surgical correction at the Obstetrics and Gynecology department at Zagazig University Hospitals.

Patients were asked to sign an informed consent form. Each patient has explained the study's goal and a secret code number. The research was conducted under the World Medical Association's Code of Ethics (Helsinki Declaration) for human research. This study was carried out after the approval of the Institutional Review Board (IRB) (#9547/8-6-2022)

The inclusion criteria for this study comprised patients diagnosed with pelvic organ prolapse according to the Baden–Walker System. This system evaluates the degree of prolapse based on posterior urethral descent and the lowest position of other pelvic sites. Grades range from 0 to 4, with Grade 0 representing a normal anatomical position for all sites, Grade 1 indicating descent halfway to the hymen, Grade 2 reflecting descent to the hymen, Grade 3 showing descent halfway past the hymen, and Grade 4 representing the maximum possible descent. Eligible patients were those who consented to participate in the study and agreed to complete the Female Sexual Function Index (FSFI) questionnaire both before and after undergoing surgical intervention.

The exclusion criteria eliminated patients with clinically significant systemic diseases, a history of post-menopausal bleeding, or malignant uterine or cervical lesions. Additionally, patients with abnormal cervical smears, uterine enlargement, or cervical ulceration were excluded from the study to ensure a more homogeneous patient population and to eliminate confounding factors that could affect the outcomes.

Full history taking together with full clinical examination (general and local gynecological examination) was done. A full preoperative laboratory investigation was done for all cases.

Implementation of the female sexual function index (FSFI) was done before and after surgery. The questionnaire identified six domains: Desire: the motivational state and an interest in sexual objects or activities, or as a wish, or drive to seek out sexual objects or to engage in sexual activities. [9]. Arousal: recounts the mental and physical reactions that occur before or during sexual activity or in response to sexual stimuli. [10]. Lubrication: is an indicator of tissue health and increases significantly during genital sexual arousal, facilitating sexual intercourse [11]. Orgasm: is the abrupt release of pent-up sexual desire during the climax of the sexual response cycle, leading to repetitive pelvic muscle spasms that are associated with a pleasurable sexual experience [12]. Satisfaction: is a satisfactory reaction that develops from an individual's subjective assessment of the good and bad aspects of their sexual experiences. [13]. Genital pain, also known as dyspareunia, is a common symptom that can happen before, during, or after sexual activity [14]

The female sexual function index (FSFI) The following domains were covered by the 19 questions: desire (2 questions), orgasm (3 questions), satisfaction (4 questions), arousal (4 questions), and lubrication (4 questions). A score of 1–5 was typical for the desired domain, while scores of 0–5 were typical for the other domains. [15]

Statistical Analysis:

A statistical analysis was performed on the data using IIBM SPSS, version 27.0. (IBM Corporation, Armonk, New York). Quantitative and qualitative data were expressed using percentages and numbers. A normality test was conducted using the Kolmogorov-Smirnov test. To determine whether there was a statistically significant difference between the means of the two dependent groups, the researchers employed a paired samples t-test. To determine whether the difference between the two dependent study groups' percentages was statistically significant, McNamar's test was employed. Significant results were defined as P-values less than 0.05.

RESULTS

The demographic characteristics of these females are shown in Table (1). The mean age of the cases was 42.65 ± 5.73 years . The mean duration of marriage was 20.15 ± 6.12 years. The mean Body Mass Index (BMI) of the participants was 27.54 ± 4.15 kg/m², which falls within the overweight category according to WHO standards (BMI 25–29.9 kg/m²). Regarding the degree of prolapse, there were 2 cases (5.9%)

with grade 1 pelvic organ prolapse, 23 cases (67.6%) with grade 2 pelvic organ prolapse, 8 cases (23.5%) with grade 8 pelvic organ prolapse and 1 case (2.9%) with grade 4 prolapse (Table 2).

Regarding the type of operations, anterior colporrhaphy was performed in 12 cases (35.3%), anterior and posterior colporrhaphy was performed in 14 cases (41.2%), sacrocolpopexy in 4 cases (23.52%) (Table 3).

A statistically significant improvement was found in all the domains of the female sexual function index after surgical correction of prolapse treatment as compared to before surgery ($p < 0.001$) for all domains (Table 4).

The Female Sexual Function Index (FSFI) total score was assessed before and after surgery for all 34 participants to evaluate changes in sexual function. The mean FSFI total score increased significantly from 15.16 ± 3.19 before surgery to 29.75 ± 1.58 after surgery. The statistical analysis using a paired t-test yielded a highly significant result with a P-value < 0.001, indicating a substantial improvement in sexual function following surgery.

Regarding the classification of female sexual dysfunction (FSD) based on the FSFI cutoff score of 26.557, all participants (100%) exhibited FSD before surgery. However, after surgery, the prevalence of FSD drastically decreased, with only one participant (2.9%) classified as having FSD. The McNemar test revealed a highly significant change in the proportion of participants with FSD, with a test statistic value of 66.518 and a P-value < 0.001. (Table 5).

Table (1): Demographic criteria and obstetric data of the females included in the study:

Variables	**Study cases (n= 34)**	
Age (Years)		
Mean ± SD	42.65 ± ٥,٧٣	
Duration of marriage (Years)		
Mean ± SD	20.15 ± 6.12	
Median (Range)	20 (5 – 32)	
Duration of marriage (Years)	Number	Percentage
< 10 years	1	2.9 %
10 – 19 years	14	41.2 %
20 – 29 years	17	50 %
≥ 30 years	2	5.9 %
Number of parties		
Mean ± SD	4.26 ± 1.69	
Median (Range)	4 (2 – 10)	
BMI		
Mean ± SD	27.54 ± 4.15	

Quantitative data are expressed as mean± SD/median (Range)
Qualitative data are expressed as numbers (Percentage)

Table (2): Analysis of the degree of prolapse in the females included in the study:

Variables	**Study cases (n= 34)**	
Degree of prolapse	Number	Percentage
Grade 1 prolapse	2	5.9
Grade 2 prolapse	23	67.6
Grade 3 prolapse	8	23.5
Grade 4 prolapse	1	2.9

Qualitative data are expressed as numbers (Percentage)

Table (3): Types of operations in the females included in the study:

Variables	Study cases (n= 34)	
Types of operations	Number	Percentage
Anterior colporrhaphy	12	35.3
Anterior and posterior colporrhaphy	14	41.2
Sacrocolpopexy	8	23.52

Qualitative data are expressed as numbers (Percentage)

Table (4): Comparison and analysis of the domains of the Female Sexual Function Index before and after surgery among the female included in the study

Variables	Before surgery (N=34)	After surgery (N=34)	Test of significance	P-value
Desire	2.22 ± 0.89	4.91 ± 0.75	t = - 15.246	< 0.001*
Arousal	2.58 ± 0.84	4.84 ± 0.47	t = - 16	< 0.001*
Lubrication	2.78 ± 0.71	5.10 ± 0.51	t = - 16.704	< 0.001*
Orgasm	2.49 ± 0.59	4.86 ± 0.22	t = - 21.512	< 0.001*
Satisfaction	2.51 ± 0.54	4.87 ± 0.29	t = - 22.038	< 0.001*
Pain	2.47 ± 0.66	5.18 ± 0.63	t = - 18.745	< 0.001*

t: Paired samples t-test P: probability *: Statistically significant (p< 0.05)

Table (5): Comparison and analysis of the total score of the Female Sexual Function Index before and after surgery

Variables	Before surgery (N=34)	After surgery (N=34)	Test of significance	P-value
Total score	15.16 ± 3.19	29.75 ± 1.58	t = - 31.623	< 0.001*
Female sexual dysfunction (< 26.557)				
Absent	0 (0%)	33 (97.1%)	McN= 66.518	< 0.001*
Present	34 (100%)	1 (2.9%)		

t: Paired samples t-test McN : McNamar's test
P: probability *: Statistically significant (p< 0.05)

DISCUSSION

Our prospective cohort study was conducted at the Obstetrics and Gynecology Department, Faculty of Medicine, Zagazig University. Thirty-four cases with POP who underwent surgical correction were invited to join the study. This study aimed to evaluate the impact of surgical management of pelvic organ prolapse on female sexual function.

Our findings are consistent with several previous studies on pelvic organ prolapse and related sexual health outcomes. For instance, research by Glavind et al. [16] supports the idea that sexual function after surgical correction of POP can vary depending on age, with younger women often reporting more noticeable improvements. In our sample, the age distribution reflects a similar expectation, where younger participants may experience different outcomes based on their hormonal status and life stage.

Additionally, our finding of a mean parity of 4.26 aligns with the research by Maher et al. [17], which indicates that up to 50% of women who have given birth experience pelvic organ prolapse. Maher's review also highlights that higher parity is a contributing factor to pelvic organ prolapse and associated sexual dysfunction. This correlation is evident in our study, where higher parity seems to be a significant factor in the participants' pelvic health status.

Similarly, Jie Li et al. [18] noted that women with higher parity and longer durations of pelvic organ prolapse tend to experience worsened sexual function and overall quality of life. The high average parity in our study mirrors this pattern, suggesting a link between multiple births and the severity of pelvic health issues, further reinforcing the relevance of parity in understanding pelvic organ dysfunction.

Prateek et al. [19] also identified a strong relationship between early marriage, high parity, and the

incidence of pelvic organ prolapse, along with reduced sexual frequency and satisfaction. This is consistent with our findings, where the long marriage duration and high parity could contribute to sexual dysfunction and pelvic health issues post-surgery.

While our results align with several key studies, there are also notable differences. For example, Vardanyan et al. [20] highlighted that while pregnancy and childbirth are major contributors to pelvic floor dysfunction, their study showed that surgical recovery and sexual function outcomes vary significantly based on the type of surgical intervention. In contrast, our results did not indicate worse surgical recovery or sexual function outcomes, despite the high mean number of parities among participants. Vardanyan's research suggests that specific surgical methods might mitigate the negative impact of high parity, a factor that may not have been fully explored in our study. This points to a potential area for further investigation into how surgical techniques can influence postoperative outcomes in women with a high number of childbirths.

Our study examined the degree of pelvic organ prolapse among 34 participants, revealing that 2 cases (5.9%) had grade 1 prolapse, 23 cases (67.6%) had grade 2 prolapse, 8 cases (23.5%) had grade 3 prolapse, and 1 case (2.9%) had grade 4 prolapse. These findings illustrate that most participants presented with grade 2 prolapse, while more advanced grades (3 and 4) were less common, yet likely associated with more severe symptoms and distress.

Thompson and Rogers [21] demonstrated that surgical intervention significantly improves sexual function in women with pelvic organ prolapse, aligning with our observation that surgical correction generally supports maintaining or enhancing sexual function across various prolapse grades.

While our study focused on the physical severity of prolapse and its correlation with surgical outcomes, Djusad et al. [22] introduced a different perspective by emphasizing the role of genital self-image in predicting sexual dysfunction. Their study found that psychological factors, such as a woman's self-image, had a stronger influence on sexual health than the grade of prolapse itself. This diverges from our findings, which primarily link surgical success and sexual function to the physical severity of prolapse rather than psychological impacts. This suggests that future research may benefit from incorporating a more comprehensive evaluation of both physical and psychological aspects to provide a fuller understanding of sexual health outcomes in women undergoing prolapse surgery.

Our study examined the types of surgical procedures performed on 34 participants with pelvic organ prolapse. Among these cases, anterior colporrhaphy was performed in 12 cases (35.3%), combined anterior and posterior colporrhaphy in 14 cases (41.2%), sacrocolpopexy in 8 cases (23.52%). These results highlight the use of different surgical approaches tailored to the specific needs of each patient, with a preference for combined anterior and posterior colporrhaphy as the most frequently performed procedure.

Our results align with several studies that emphasize the efficacy of fascial repairs such as anterior and posterior colporrhaphy in managing pelvic organ prolapse. Nobili et al. [23] found that these procedures are commonly utilized for prolapse correction, and they emphasized the importance of choosing surgical methods based on the individual needs of the patient. This supports our findings, where 35.3% of participants underwent anterior colporrhaphy, and 41.2% underwent combined anterior and posterior colporrhaphy, reflecting the relevance and effectiveness of these approaches in addressing pelvic floor defects.

Additionally, the use of sacrocolpopexy in 23.52% of our cases is consistent with the findings of Larouche et al. [24], who highlighted sacrocolpopexy as a highly effective treatment for apical pelvic organ prolapse. Larouche's review demonstrated that sacrocolpopexy offers better long-term anatomical outcomes compared to vaginal procedures, with lower recurrence rates. This aligns with our decision to perform sacrocolpopexy in a subset of cases, further reinforcing the value of this technique in managing more advanced prolapse conditions.

While our study utilized traditional surgical methods like anterior colporrhaphy and sacrocolpopexy, Vargas Maldonado et al. [25] emphasized a growing preference for laparoscopic techniques in pelvic organ prolapse surgery. Their study highlighted that laparoscopic approaches offer lower costs, excellent outcomes, and greater durability, especially for apical prolapse management, compared to traditional open or vaginal surgeries. This differs from our study, which did not report the use of laparoscopic techniques, suggesting that while our methods are effective, there may be a shift towards minimally invasive approaches in more recent surgical practices.

Furthermore, Alshankiti et al. [26] found that abdominal approaches, such as sacrocolpopexy, were associated with higher intraoperative complication rates compared to vaginal procedures. This contrasts with our findings, where sacrocolpopexy was performed in 11.8% of cases without reporting higher complication rates. Alshankiti's study suggests that the choice of surgical approach can significantly impact complication rates, and further investigation into the specific risks associated with sacrocolpopexy in our cohort may be necessary to ensure a comprehensive evaluation of outcomes and safety.

Our study demonstrated a statistically significant improvement in the total score of the Female Sexual Function Index (FSFI) after surgical correction of pelvic organ prolapse, with a mean score increasing from 15.16 ± 3.19 pre-surgery to 29.75 ± 1.58 post-surgery ($p < 0.001$). Before treatment, all participants exhibited female sexual dysfunction, but after the surgery, only one case continued to show dysfunction. This underscores the positive impact of pelvic organ prolapse surgery on sexual function, with notable improvements in various FSFI domains such as desire, arousal, lubrication, orgasm, satisfaction, and pain.

Several studies align with our findings of significant improvements in FSFI scores following pelvic organ prolapse surgery. Rahayu et al. [27] reported that 72.2% of women showed improved sexual function within six months post-surgery, particularly in areas like sexual arousal. This supports our observation of enhanced sexual function across multiple domains, suggesting that surgical correction can effectively address sexual dysfunction in women with pelvic organ prolapse.

Similarly, Antosh et al. [28] conducted a systematic review that found most women prioritized improvements in sexual function after pelvic organ prolapse surgery. Their review concluded that various surgical approaches lead to enhanced sexual outcomes, as measured by validated questionnaires like the FSFI. This directly correlates with our findings, where significant improvements in FSFI scores were observed post-treatment.

While our study found broad improvements across all FSFI domains, some studies present differing results. Fıskın and Beji [29] reported that surgical intervention for pelvic organ prolapse improved body image satisfaction, but did not lead to significant improvements in sexual function. This contrasts with our findings, which showed comprehensive sexual enhancement post-surgery. Their study suggests that while body image may improve, sexual function may not always be fully addressed by surgery, indicating that other factors could play a role in postoperative sexual health outcomes.

Coroleucă et al. [30] also presented a differing perspective, finding that while vaginal surgery for pelvic organ prolapse restored anatomical function, it impaired certain domains of sexual function. This contrasts with our results, where significant improvements were observed across all FSFI domains, including arousal, satisfaction, and lubrication. Their findings suggest that different surgical techniques may lead to varying sexual outcomes, highlighting the importance of surgical approach selection.

Anglès-Acedo et al. [31] found that while dyspareunia (pain during intercourse) decreased significantly post-surgery, there were no notable differences in sexual function between patients undergoing laparoscopic and anterior vaginal mesh procedures. This contrasts with our study's clear post-surgery improvement in FSFI scores across all domains. Their findings imply that surgical techniques or patient population differences may contribute to varying outcomes in sexual function, which may not be as universally improved as indicated in our study.

Larger and multi-enter studies are recommended to enhance the generalizability of these findings, future research should focus on larger, multi-center studies that include a more diverse population. This would provide a more holistic view of the impact of pelvic organ prolapse surgery on sexual function across different demographics and cultural contexts. Preoperative education should focus on how surgical correction can improve sexual health and well-being, helping patients understand both the benefits and limitations of the procedure. Comparative Analysis recommended of different surgical approaches for managing pelvic organ prolapse could provide valuable insights, guiding the selection of optimal techniques for enhancing patient outcomes.

Conclusion

Surgical correction of pelvic organ prolapse may have a positive effect on female sexual function.

Conflict of Interest: None

Financial Disclosures: None

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