

## Early effect of pelvic organ prolapse surgery on female sexual functions

Sexual functions with POP surgery

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### Abstract

**Aim:** In this study, we aimed to detect changes in sexual functions before and after surgery in women who underwent pelvic reconstruction for pelvic organ prolapse and urinary incontinence.

**Material and Methods:** This prospective cross-sectional study included 60 patients who underwent anterior and posterior vaginal repair due to cysto-rectocele and/or uterine prolapse. One day before and three months after the operation, FSFI scoring was performed. Patients were divided into 3 groups according to age: 30-40 years old (Group 1), 41-49 years old (Group 2) and 50-59 years old (Group 3).

**Results:** There was no significant difference in the total FSFI score of the patients after the operation ( $p = 0.072$ ). There was a statistically significant increase in sexual desire and arousal scores ( $p = 0.011$  and  $p = 0.049$ , respectively) but there was no statistically significant difference in the other subscale scores. There was a statistically significant difference in the sexual desire and arousal scores of Group 1 and the sexual desire score of Group 3 patients ( $p = 0.028$ ,  $0.046$  and  $0.017$ , respectively). There was a decrease in the total FSFI score and sexual desire, lubrication, orgasm, satisfaction subscale scores after the operation but this decrease was not statistically significant.

**Discussion:** There was no change in the total FSFI score in the 3rd month after pelvic organ prolapse operation, but there was a statistically significant increase in sexual desire and arousal scores. We believe that this increase may be due to the changing body image and sexual self-confidence of the patients in the postoperative period.

### Keywords

Colporrhaphy Anterior, Colporrhaphy Posterior, Cystocele, FSFI, Rectocele, Sexual Function

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## Introduction

Sexual wellbeing, which can guide decisions in human life, can be interrupted by various factors. Sexual dysfunction is a more common problem in women than men, and its prevalence can increase by 19.7–28.7% (range 3.4–70.8%) in women with incontinence [1]. Urinary incontinence during sexual intercourse affects the sexual function of a woman by causing feelings of shame and liquidity, it can also have negative effects on the sexual life of her partner and sometimes cause him to leave the relationship [2].

Uterovaginal condition, which is characterized as herniation into or out of the vagina as a result of downward displacement of the pelvic organs, can cause inactivity and affect the patient's sexual relations [3]. Although the mortality probability of genital organ prolapse is extremely low, it is known to have a significant negative effect on the patient's quality of life.

In addition to physical factors, other important components of genital organ prolapse that affect sexual function include psychological aspects, genital image and sexual distress. Sociocultural factors also affect the patient's sexuality and sexual behavior [4].

Rectocele, cystocele and uterine prolapse are conditions under the umbrella of pelvic organ prolapse (POP) [5]. Pelvic floor weakness and POP are common physical conditions that affect sexual function. Information on sexual function after surgery for POP is conflicting. However, many studies suggest that sexual function remains the same or improves in the postoperative period. Thus, there is a need for a validated questionnaire assessing sexual function after POP surgery. One such scale is the Female Sexual Function Index (FSFI) [6,7].

The aim of this study was to determine whether there were changes in women's sexual function after undergoing pelvic floor surgery to repair POP using the FSFI questionnaire.

## Material and Methods

### Patients and Methods

This prospective cross-sectional study included 60 patients who underwent anterior and posterior vaginal repair due to cystocele and/or uterine prolapse between June 2017 and June 2018 at the gynecology clinic of the Haseki Training and Research Hospital. This study was approved by the institutional review board (Number 500. Date: 30.05.2017). Written informed consent was obtained from each patient. Patients aged 60 and over and those who were not sexually active were not included in the study. Patients' data on the following variables were collected: age; gravida; parity; childbirth delivery type; body mass index; cigarette or alcohol use; menopausal status; hormone replacement therapy use; the presence of diabetes, hypertension or dyslipidemia; previous hysterectomy, previous vaginal operation or additional anterior or posterior vaginal repair surgical procedures.

### Data collection and questionnaires

Participants were asked to fill out the FSFI questionnaire the day before the operation and three months after the operation, and pre- and post-surgery scores were determined for each patient. The patients were divided into three groups according to their age: Group 1 consisted of patients 30–40 years old, Group 2 of those 41–50 years old and Group 3 of those 51–59

years old. Calculations were done to determine if there was a relationship between patient age and FSFI scores both pre- and postoperatively.

The FSFI was developed by Rosen et al. to evaluate female sexual function [8]. A validity and reliability study of the index was conducted by Aygin and Aslan [9]. The FSFI questionnaire consists of 19 items on sexual function divided into six subsections – desire, arousal, lubrication, orgasm, satisfaction and pain. Each item is scored from 0 to 5. Thus, the highest total score possible is 95 and the lowest 4 points are obtained on the scale. Calculations were also made to determine the scoring of the subscales and the wholesale scale, and a coefficient of 0.6 was found for desire, 0.3 for arousal and lubrication, and 0.4 for orgasm, satisfaction and pain. The averages of the subsections were multiplied by the coefficients, and the highest possible score for each subsection was calculated as 36, with the lowest score being 7. Thus, preoperative and postoperative scores were calculated for each patient. Analysis was done to determine if there was a difference between the total scores and between the subscale scores before and after the operation. Many studies have reported that an FSFI score below 26.55 poses a high risk for sexual dysfunction.

### Statistical analysis

Data were analyzed using the SPSS 16.0 statistics program. Numbers and percentages were given for categorical variables, and mean  $\pm$  standard deviation minimum-maximum for numerical variables. Numerical variables were compared using the Student-t Test and the Mann-Whitney U test, and more than two group comparisons were made with One-Way ANOVA and the Kruskal-Wallis tests. Subgroup analyzes were performed with the Tukey test since the parametric test condition was met. Dependent group comparisons were made with Paired t-test and the Wilcoxon test. Relationships between numerical variables were examined using the Pearson and Spearman Correlation Analysis test.  $P < 0.05$  was accepted as the statistical alpha significance level.

### Ethical Approval

Ethics Committee approval for the study was obtained.

## Results

The mean age of the patients included in the study was  $49.3 \pm 8.0$  years. When the patients were grouped according to age, 20% ( $n=12$ ) were in Group 1, 33.3% ( $n=20$ ) were in Group 2, and 46.7% ( $n=28$ ) were in Group 3. Stress urinary tract incontinence (SUI) was present in 58.3% ( $n=35$ ) of patients before the operation. In the study group, no additional surgical procedures other than colporrhaphy anterior and colporrhaphy posterior were performed in 20 (33%) patients, while transobturator tape (TOT) operation was added to 15 (25%) patients. In addition, while vaginal hysterectomy, sacrospinous ligament suspension (SSF) and mini sling operation were performed at the same time in 23 (38.4%) patients, abdominal hysterectomy operation was also performed in only 2 (3.3%) patients. Demographic data of the patients are shown in Table 1.

There was no significant change in the total FSFI score of the patients after the operation ( $p=0.072$ ). There was a statistically significant increase in the total scores of sexual desire and arousal of the patients after the operation ( $p=0.011$  and  $p=$

0.049, respectively), while no statistically significant change was found in the other scale scores. After the operation, a statistically significant increase was found in the sexual desire and arousal scores of Group 1 patients and in the sexual desire scores of Group 3 patients ( $p=0.028, 0.046$  and  $0.017$ , respectively). No significant change was found in the other scale scores of Group 1 and Group 3 patients. In the postoperative period, a decrease was found in the total FSFI score and subscale scores of sexual desire, lubrication, orgasm, and satisfaction in Group 2 patients, but this decrease was not statistically significant.

It was observed that the total FSFI score and both preoperative and postoperative scores of sexual desire, arousal, lubrication and climax subscale scores decreased statistically with increasing age (preoperatively;  $p=0.008, 0.005, 0.007, 0.020, 0.004$ , postoperatively;  $p=0.002, 0.002, 0.001, 0.005, 0.001$ ). It was determined that the post-operative satisfaction score decreased statistically significantly as the age of the patients increased ( $p=0.043$ ). There was no statistically significant relationship between the satisfaction parameters in the preoperative period and the increase in age ( $p= 0.0529$ ) (Table 3).

**Table 1.** General characteristics of the patients.

Age (year)	n	%
Age (year)Med±SD (min-max)	48,3±8,0 (31-59)	
30-40 years old	12	20
41-50 years old	20	33,3
51-60 years old	28	46,7
BMI (kg/m2)Med±SD (min-max)	30,1±5,1(21,1-42,4)	
Parity	3,6±1,8 (1-10)	
VD	51	85
VD+C/S	9	15
Menopause	31	51,7
Hrt	6	10
Alcohol	2	3,3
Cigarette	11	18,3
SUI	35	58,3
DM	9	15
HT	22	36,7
Dyslipidemia	11	18,3
History of hysterectomy	8	13,3
History of pelvic reconstruction	2	3,3
Additional surgery, None	20	33,3
TOT	15	25
VH, SSF, KK, Minisiling	23	38,4
TLH+BSO	2	3,3

Body Mass Index (BMI); Vaginal Delivery (VD); Cesarean Section (C/S) Hormone Replacement Therapy (HRT); Stress Urinary Incontinence (SUI); Diabetes Mellitus (DM); Hypertension (HT); Transobturatour Tape (TOT); Vaginal Hysterectomy (VH); Sacrospinous Ligament Fixation (SSF); colporrhaphy (KK); Total abdominal hysterectomy bilateral salpingo-oophorectomy (TLH+BSO)

**Table 2.** Comparison of patients' pre- and postoperative FSFI score subgroup scores with total FSFI scores and their relationship with age groups.

FSFI		Total Patients Group aged 30-59 (n=60)	30-40 age Group 1 (n=12)	41-50 age Group 2 (n=20)	50-59 age Group 3 (n=28)
Subgroups		Mean±SD	Mean.±SD	Mean.±SD	Mean.±SD
Sexual Desire Total Score	Preop	2,72±1,30	3,20±1,18	3,18±1,26	2,19±1,20
	Postop	3,05±1,25	3,95±0,79	3,09±1,32	2,64±1,18
	Diff	0,33±1,12	0,75±1,12	-0,09±1,27	0,45±0,95
	p	0,011	0,028	1	0,017
Arousal Total Score	Preop	2,72±1,46	3,20±1,45	3,30±1,43	2,10±1,27
	Postop	2,96±1,60	3,78±1,31	3,42±1,59	2,28±1,47
	Diff	0,24±1,19	0,58±1,20	0,12±1,53	0,18±0,89
	p	0,049	0,046	0,442	0,284
Lubrication Total Score	Preop	3,32±1,88	3,45±1,86	4,26±1,78	2,58±1,70
	Postop	3,50±1,91	4,20±1,70	4,23±1,88	2,68±1,73
	Diff	0,19±1,72	0,75±1,80	-0,03±1,83	0,10±1,63
	p	0,108	0,16	0,486	0,497
Orgasm Total Score	Preop	3,29±1,81	3,93±1,65	4,06±1,54	2,47±1,76
	Postop	3,43±1,73	4,27±1,69	3,96±1,42	2,69±1,70
	Diff	0,13±1,50	0,33±1,86	-0,10±1,42	0,21±1,42
	p	0,335	0,678	0,797	0,372
Satisfaction Total Score	Preop	3,52±1,81	3,93±1,92	4,14±1,53	2,90±1,80
	Postop	3,75±1,72	4,43±1,64	4,08±1,49	3,21±1,80
	Diff	0,23±1,65	0,50±1,81	-0,06±1,72	0,31±1,56
	p	0,263	0,37	0,905	0,253
Pain Total Score	Preop	4,67±1,87	4,87±1,80	4,30±1,75	4,86±2,00
	Postop	4,50±1,57	4,80±1,71	4,36±1,55	4,47±1,56
	Diff	-0,17±2,23	-0,07±1,91	0,06±1,98	-0,39±2,55
	p	0,349	0,599	0,977	0,257
FSFI Total Score	Preop	20,24±7,73	22,58±6,20	23,24±6,77	17,10±7,96
	Postop	21,18±7,94	25,43±6,00	23,14±7,54	17,97±7,84
	Diff	0,94±6,90	2,84±6,62	-0,10±7,15	0,87±6,91
	p	0,072	0,108	0,5	0,269

Female Sexual Function Index (FSFI); Preoperative (Preop); Postoperative (Postop), Difference (Diff)

**Discussion**

Pelvic floor weakness and POP are physical conditions that negatively affect sexual functions and sexual satisfaction. Information on sexual functions after POP surgery is conflicting. There are studies advocating that sexual functions improve, not change, or even worsen after surgery. While using different questionnaires, different population characteristics and different operative techniques seem to be effective in these results; age, parity, cultural differences, and history of pelvic surgery are other factors [10].

In a prospective study by Feldner et al., in which 27 patients who underwent traditional anterior colporrhaphy and 29 patients who underwent anterior vaginal repair with small bowel submucosa grafts, the FSFI scores at preoperative and postoperative 12 months were compared. A statistically significant increase was found in both groups in the postoperative period both in the total score of the FSFI scale and in the scores of desire, arousal, lubrication, orgasm, satisfaction, and pain scales [11]. In current study, a statistically significant increase was observed only in the sexual desire and arousal subscale scores in the postoperative

**Table 3.** Relationship of FSFI total scores and FSFI score subgroup scales with age in the preoperative and postoperative periods.

		Age	
		rho	P
Sexual Desire Total Score	Preop	-0,361	0,005
	Postop	-0,396	0,002
	Diff	-0,037	0,778
Arousal Total Score	Preop	-0,343	0,007
	Postop	-0,422	0,001
	Diff	-0,061	0,646
Lubrication Total Score	Preop	-0,3	0,02
	Postop	-0,359	0,005
	Diff	-0,04	0,76
Orgasm Total Score	Preop	-0,367	0,004
	Postop	-0,414	0,001
	Diff	0,004	0,975
Satisfaction Total Score	Preop	-0,252	0,052
	Postop	-0,262	0,043
	Diff	0,02	0,882
Pain Total Score	Preop	0,043	0,745
	Postop	-0,104	0,43
	Diff	-0,091	0,488
FSFI Total Score	Preop	-0,339	0,008
	Postop	-0,389	0,002
	Diff	-0,036	0,784

Female Sexual Function Index (FSFI); ; Preoperative (Preop); Postoperative (Postop), Difference (Diff)

period, while no significant change was observed in the other subscale scores. Perhaps this result can be attributed to the combination of anterior repair with other surgical procedures in this study. Colombo et al. followed up postmenopausal patients who underwent Burch due to stress urinary incontinence and cystocele and underwent anterior colporrhaphy for 8 years. They reported that dyspareunia developed in 56% of sexually active patients who underwent anterior colporrhaphy. However, it is not clear which procedure is effective in dyspareunia because simultaneous vaginal hysterectomy, posterior colporrhaphy with levator ani plication and perineorrhaphy were performed in the patient group who underwent anterior colporrhaphy [12]. Similarly, in our study, anterior colporrhaphy procedure was not performed alone, posterior colporrhaphy procedure was added in all our patients, and vaginal hysterectomy was also performed in 30% of patients; however, no significant change was observed in the dyspareunia scale in the postoperative period. We think that this may be due to the fact that we did not apply levator ani plication.

A study by Azar et al. evaluated preoperative and postoperative 3rd-month FSFI scores of patients undergoing anterior colporrhaphy and/or posterior colporrhaphy in women in the reproductive period. They stated that with the significant increase in sexual desire, arousal, lubrication, orgasm, satisfaction and total FSFI scores, postoperative dyspareunia also increased significantly [13]. The increase in dyspareunia was attributed to vaginal narrowing and levator application. In addition, the reason for the increase in the parameters of lubrication, orgasm, satisfaction and total FSFI score in this study, unlike our study, may that the mean age of the patients

included in the study was 36.7 years, younger than the patients in our study. Similarly, in this study, when the preoperative and postoperative FSFI scores of the patients were compared, a statistically significant change was found in the total scores of sexual desire and arousal, but no significant change was observed in the orgasm parameter. Brandner et al. conducted a study with the postmenopausal patient group who underwent rectocele repair; although there was a statistically significant increase in the preoperative and postoperative 6th-month FSFI scores, sexual desire and satisfaction parameters of the patients, and a significant decrease in dyspareunia, there was no significant change in arousal, lubrication and orgasm parameters [14].

In the study by Roos et al., in which they performed vaginal hysterectomy, anterior repair, posterior repair, and sacrocolpopexy operations due to POP, the the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire scale showed the change in sexual functions (67%) of the perimenopausal patient group and their sexual life improved positively in the preoperative and postoperative 3rd month. The reason for this in this study is the fact that women whose body image and genital perceptions have changed do not worry about sexual activity and develop behavior of not avoiding sexual activity in the post-operative period [15]. In contrast, Helström and Nilsson found that the development of dyspareunia increased after vaginal surgery in the preoperative and postoperative 1st year in their study in which they applied the Manchester technique for the descent. They stated that the reason for this is that the blood and nerve support in the vaginal wall may be damaged during surgery and thus sexual arousal and lubrication may be impaired [16]. However, in the current study, we did not find any significant change in pain and lubrication when we compared the preoperative and postoperative periods.

Sexual satisfaction can be affected by education level, cultural structure, stress, spiritual and sexual harmony between spouses. At the same time, negative anatomical changes in the genital organs such as weakness of the pelvic floor muscles and relaxation in the pelvic organs may also cause sexual dysfunction. [17,18]. Barber et al. suggested that sexual performance and sexual satisfaction would not change after colporrhaphy [19]. In the study by Hoda et al., in which they performed anterior and posterior vaginal repair using transobturator mesh for cystocele and SUI and evaluated the sexual functions of patients with the FSFI scale for 2 years, a statistically significant increase in sexual desire, arousal and lubrication in the postoperative period was found. Although there was a remarkable increase in orgasm and sexual satisfaction parameters, the increase in these parameters was not statistically significant [20]. Similarly, we did not find any significant difference in terms of sexual satisfaction in the postoperative period in this study.

In their study, Shahghaibi et al. reported that while increased sexual desire, sexual satisfaction and orgasm were detected in the FSFI scale applied to women with prolapse 3 months before and 6 months after the colporrhaphy operation, the frequency of intercourse and sexual arousal did not change. It has also been reported that dyspareunia due to the narrowing

of the vagina as a result of colporrhaphy may also occur with increasing age and obesity [21].

In the current study, we did not detect a significant change in preoperative and postoperative pain parameters. As the age of women increases, there is a decrease in sexual desire, orgasm, arousal, lubrication and satisfaction, and there is an increase in dyspareunia. It has been shown that the decrease in estrogen causes dyspareunia, loss of desire, decrease in the number of sexual activity, decrease in genital sensitivity, and difficulty in reaching orgasm [22,23].

### Conclusion

In this study, it was observed that the total FSFI score and both preoperative and postoperative scores of sexual desire, arousal, lubrication and orgasm subscale scores decreased statistically significantly as age increased. In addition, it was determined that the postoperative satisfaction score decreased significantly as the age of the patient increased. Although there are limited studies on the relationship between age and the sexual function of patients who have undergone POP-repair surgery, we found a decrease in sexual function with age in our study.

The main limitations of this study are its single-center and relatively small sample size.

### Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

### Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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### Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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