RESEARCH ARTICLE

Changes in sexual function in women undergoing posterior colporrhaphy and perineorrhaphy with or without anterior colporrhaphy

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Abstract

Objective: To assess the effects of posterior colporrhaphy and perineorrhaphy on women's sexual function.

Method: The prospective, observational study was conducted at King Saud University Medical City, Riyadh, Saudi Arabia, between December 2022 and August 2023, and comprised women scheduled for surgery after having been diagnosed with posterior vaginal or a combination of posterior and anterior vaginal prolapse. Data was collected using the Arabic version of the Pelvic Organ Prolapse/Incontinence Sexual Questionnaire before surgery and six months post-surgery. Data was analysed using SPSS 26.

Results: Of the 40 women, 17(42.5%) were aged 36-45 years and 5(12.5%) were aged <55 years. Overall, 24(60%) women underwent posterior colporrhaphy combined with perineorrhaphy, while 16(40%) had both posterior and anterior colporrhaphy along with perineorrhaphy. With respect to Pelvic Organ Prolapse/Incontinence Sexual Questionnaire score, 3(7.5%) patients saw a drop after surgery, 27(67.5%) experienced an increase of <1 and 10(25%) had an improvement >1. The average difference in the scores post-surgery was 0.67±0.42. Significant improvements were noted in all domains ($p<0.05$) after pelvic organ prolapse repair.

Conclusion: Women showed significant enhancement in sexual function after receiving either posterior pelvic organ prolapse repair or a combination of posterior and anterior repair.

Keywords: Pelvic organ prolapse, Sexual dysfunction, Colporrhaphy, Perineorrhaphy, Quality of life. (JPMA 76: 514 2026)

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Introduction

Sexual health includes the physical, emotional, mental and social aspects connected to sexuality. Female sexual dysfunction (FSD) is a prevalent concern in the general population, especially among individuals with pelvic organ prolapse (POP). As many as 50-60% of sexually active women visiting urogynaecology clinics indicate that they face sexual dysfunction.[1] A study in Saudi Arabia aimed at evaluating FSD prevalence within a community-based sample reported that 60% of the women experienced FSD, with the desire and arousal domains being the most significantly impacted, followed by difficulties related to orgasm.[2]

Gaining knowledge related to FSD, its risk factors, and its association with POP will have major public health and clinical implications. Surgeries for pelvic floor reconstruction, including posterior colporrhaphy and perineorrhaphy, successfully reduce bulge symptoms, enhance physical functionality, and improve the overall quality of life (QOL). A lot of women consider the maintenance of sexual activity and the improvement of sexual function as important objectives after having POP surgery.[3]

There are limited studies assessing the relationship between pelvic floor surgery and FSD. Several studies have indicated that sexual activity may return to normal or improve after POP surgery, whereas others have shown no change or a decline in sexual function.[4-8] POP is a prevalent condition that impacts women globally, exhibiting different occurrence rates. In the United States, prevalence reportedly reached up to 41%.[9] It is estimated that the number of POP cases will rise by 46%, increasing from 3.3 million to 4.9 million.[10] A study in 2022 in Saudi Arabia examined the occurrence of POP in Saudi women, involving a sample of 824 women aged 18 and older, and found that 172(20.9%) of them were affected by prolapse. Additionally, pelvic organ dysfunction (PFD) was observed in 60.2% of the participants.[11] The prevalence of the four components of PFD (bowel function, bladder function, sexual function and prolapse symptoms) ranged from 20.9% to 67.7%. Bowel dysfunction had the highest prevalence, while prolapse symptoms were the least prevalent in the studied population. Posterior colporrhaphy and perineorrhaphy are among the most common procedures undergone by women in Saudi Arabia with PFD.[11]

Given the rising incidence of PFDs among the Saudi

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Arabian population, which stands at 41.4% compared to an international rate of 27.6%,[12,13] there is a significant need for research focussed on assessing female sexual health in individuals with concurrent PFDs. Moreover, assessing the effects of pelvic floor surgery on FSD in the community is essential. The current study was planned to assess the effects of posterior colporrhaphy and perineorrhaphy on women's sexual function.

Patients and Methods

The prospective, observational study was conducted at King Saud University Medical City, Riyadh, Saudi Arabia, between December 2022 and August 2023. After approval from the institutional ethics review committee, the sample size was determined using power analysis based on sexual function outcomes reported earlier,[14] significance level (α) 0.05 and statistical power (1-β) 0.80. The sample was inflated by about 50% to cover for possible dropouts. A non-probability consecutive sampling technique was used, all eligible patients who presented to the clinic during the study, met the inclusion criteria and consented to participate were enrolled until the calculated sample size was achieved.

Those included were sexually active women who had a posterior compartment prolapse or a mixed posterior and anterior vaginal prolapse, and who needed posterior colporrhaphy and perineorrhaphy, potentially alongside anterior colporrhaphy. Those excluded were women with prolapse of the apical compartments, those suffering from vulvodynia, painful bladder syndrome, chronic pelvic pain and neurological deficits, those who did not complete the questionnaire, women with inadequate data, or those who were lost to follow-up after surgery.

After taking informed consent from the subjects, data was collected using the Arabic version of the Pelvic Organ Prolapse/Incontinence Sexual Questionnaire as revised by the International Urogynaecologic Association ((PISQ-IR), which is a reliable and valid survey split into two sections with 20 questions.[15] The data was gathered before the operation and at six months post-surgery.

The first section comprised demographic information, including age, menopausal status, body mass index (BMI; kg/m^2), education, income, gravidity, parity, route of deliveries (vaginal or Caesarean section [CS]), medical history (diabetes, hypertension, depression and others), Surgical history (prolapse procedure, incontinence procedure, hysterectomy/bilateral salpingo-oophorectomy and others), and current medications.

The second section was split into two segments: the first (Q2-6) targetted women who were not sexually active (NSA), while the second (Q7-20) focussed on those who were sexually active (SA). The SA section comprised six subscales: arousal/orgasm (4 items), partner-related issues (3items), condition-specific issues (3 items), global quality (4 items), condition impact (4 items), and desire (3 items).

The NSA portion consisted of four domains: partner-related issues, condition-specific issues, global quality, and condition impact.[15]

POP was evaluated through a physical examination utilising the International Continence Society Pelvic Organ Prolapse Quantification (ICS POP-Q) system, which classified the condition as normal, grade 1, grade 2, grade 3 and grade 4.[16] Muscle strength was assessed using the Oxford Grading Scale, which included the following categories: No contraction, flicker, weak, moderate, good, and strong.[17] Pelvic floor muscles were evaluated through a clinical examination using digital palpation of the vagina to assess muscle tone and contractility, which were classified into normal, overactive, underactive and non-functioning categories. Those who had had her measurements evaluated in the preceding one month without receiving treatment were not required to undergo re-examination. Two certified urogynaecologists performed all the procedures, using the technique of midline fascial plication of the native tissue.

The original PISQ-IR was translated into Arabic and was adapted to suit the distinct cultural context. For instance, the Arabic version (ArPISQ-IR) focussed on sexual practices specifically related to the husband-wife relationship.[18,19]

The ArPISQ-IR showed strong reliability in evaluating sexual function in sexually active Arabic-speaking women experiencing POP and/or urinary incontinence (UI). The internal consistency was robust for five of the six sexual ability (SA) scales, with Cronbach's alpha values ranging from 0.74 to 0.87. The arousal/orgasm subscale showed an acceptable level of consistency, with a Cronbach's alpha of 0.66. The analysis of test-retest data showed a high level of consistency in scores across all scales (concordance correlation coefficient >0.84), demonstrating a robust overall agreement.[18]

Data was analysed using SPSS 26. Data was expressed as mean±standard deviation, or frequencies and percentages, as appropriate. The association of demographic and clinical characteristics with ArPISQ-IR score before and after surgery was explored using independent sample t-test and one-way abalysis of variance (ANOVA). Data normality was assessed using Shapiro-Wilk test and Kolmogorov-Smirnov tests. Sicne PISQ-IR data was normally distributed, parametric tests were used. Paired sample t-test was used

to assess the difference between the scores before and after the PISQ-IR assessment. P<0.05 was regarded as statistically significant.

Results

Of the 40 women, 17(42.5%) were aged 36-45 years and 5(12.5%) were aged <55 years. Overall, 24(60%) women underwent posterior colporrhaphy combined with perineorrhaphy, while 16(40%) had both posterior and anterior colporrhaphy along with perineorrhaphy. Socio-demographic and clinical data was noted in detail (Table 1) along with the associated chronic diseases among the subjects (Figure 1).

Table-1: Demographic and clinical characteristics of the participating women (n=40).

Study data	n (%)
Age group	
26 – 35 years	6 (15.0)
36 – 45 years	17 (42.5)
46 – 55 years	12 (30.0)
>55 years	5 (12.5)
Level of education	
High school	10 (25.0)
University	28 (70.0)
Postgraduate	2 (5.0)
Monthly income (SAR)	
<5,000	2 (5.0)
5,000 – 10,000	7 (17.5)
10,001 – 15,000	6 (15.0)
15,001 – 20,000	11 (27.5)
20,001 – 25,000	8 (20.0)
25,001 – 30,000	1 (2.5)
>30,000	5 (12.5)
BMI level (kg/m^2)	
Normal (18.5 – 24.9)	11 (27.5)
Overweight (25 – 29.9)	19 (47.5)
Obese (≥30)	10 (25.0)
Years of marriage	
≤20 years	23 (57.5)
>20 years	17 (42.5)
Number of pregnancies	
None	1 (2.5)
1 – 3	10 (25.0)
4 – 5	13 (32.5)
>5	16 (40.0)
Number of deliveries	
<5	22 (55.0)
≥5	18 (45.0)
Number of caesareans	
None	32 (80.0)
One	6 (15.0)
Two	2 (5.0)
Menopause	
Yes	11 (27.5)
No	29 (72.5)
Previous surgery	
No surgery	37 (92.5)
Incontinence surgery	1 (2.5)
Hysterectomy	1 (2.5)
Oophorectomy	1 (2.5)
Type of surgery	
Posterior colporrhaphy with perineorrhaphy	24 (60.0)
Combined Posterior and Anterior Colporrhaphy with perineorrhaphy	16 (40.0)

SAR: Saudi Arabian riyal, BMI: Body mass index.

The most common medication class used by the subjects was hypoglycaemic agents, followed by anti-hypertensive medication (Figure 2). The most common reason for

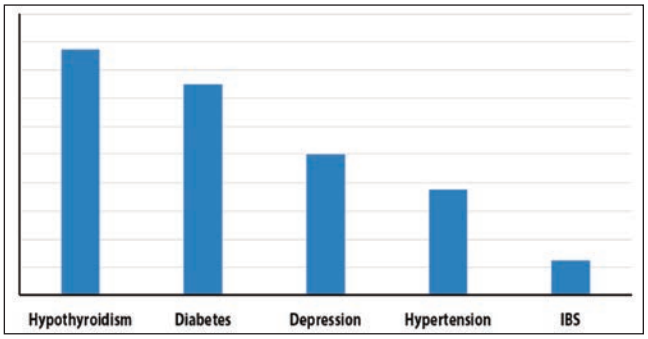

Figure-1: Associated chronic diseases. *IBS: Irritable bowel syndrome.*

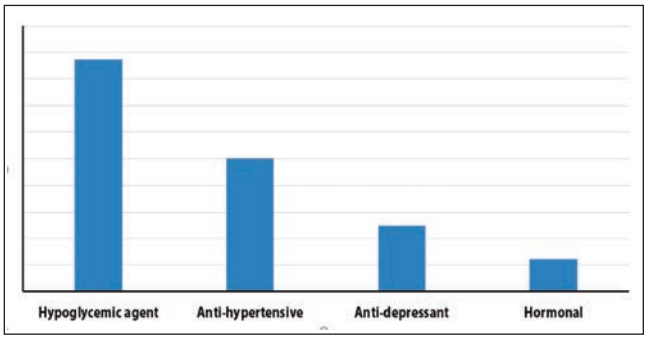

Figure-2: Type of medication.

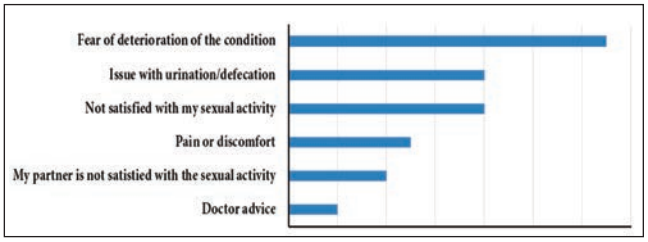

Figure-3: Reasons for undergoing vaginal repair.

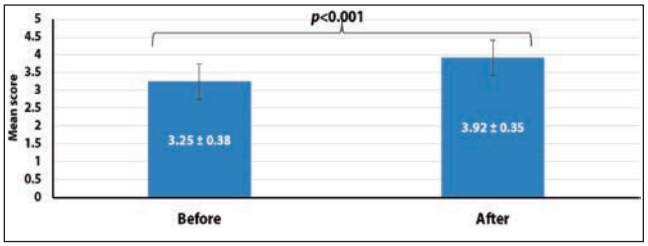

Figure-4: Comparison of women's sexual function score before and after pelvic organ prolapse (POP) repair.

Table-2: PISQ-IR and its domain scores before and after pelvic organ prolapse (POP) repair.

PISQ-IR domains	Before Mean ± SD	After Mean ± SD	*p*-value §
Arousal Orgasm (AO) score	3.16 ± 0.46	3.67 ± 0.45	<0.001 **
Condition-Specific (CS) score	4.02 ± 0.59	4.54 ± 0.47	<0.001 **
Partner-Related (PR) score	3.18 ± 0.49	3.45 ± 0.44	0.011 **
Desire (D) score	3.01 ± 0.85	3.38 ± 0.89	0.029 **
Condition Impact (CI) score	2.95 ± 0.74	3.79 ± 0.46	<0.001 **
Global Quality (GQ) score	3.32 ± 0.79	4.39 ± 0.42	<0.001 **
Overall PISQ-IR score	3.25 ± 0.38	3.92 ± 0.35	<0.001 **

§ *p*-value has been calculated using paired sample t-test; ** Significant at $p<0.05$ level; PISQ-IR: Pelvic Organ Prolapse/Incontinence Sexual Questionnaire as revised by International Urogynaecologic Association, SD: Standard deviation.

Table-3: Association of demographic and clinical characteristics with the total mean score of PISQ-IR before and after vaginal prolapse repair.

Factor	Pre-PISQ-IR Score Mean ± SD	*t*-test; *p*-value	Post-PISQ-IR Score Mean ± SD	*t*-test; *p*-value
Age group				
≤40 years	3.27 ± 0.31	0.167; 0.868	4.11 ± 0.32	2.580; 0.014 **
>40 years	3.25 ± 0.42		3.83 ± 0.33	
Level of education				
High school	3.26 ± 0.29	0.067; 0.947	3.97 ± 0.29	0.474; 0.638
University or postgraduate	3.25 ± 0.41		3.91 ± 0.37	
Monthly income (SAR)				
≤15,000	3.21 ± 0.41	0.534; 0.597	3.82 ± 0.35	1.461; 0.152
>15,000	3.28 ± 0.37		3.99 ± 0.35	
BMI level (kg/m^3)				
Normal (18.5 – 24.9)	3.32 ± 0.27	4.163; 0.023**‡	4.18 ± 0.19	9.641; <0.001 ** ‡
Overweight (25 – 29.9)	3.36 ± 0.32		3.94 ± 0.29	
Obese (≥30)	2.98 ± 0.48		3.62 ± 0.38	
Years of marriage				
≤20 years	3.19 ± 0.36	1.287; 0.206	4.02 ± 0.36	1.976; 0.055
>20 years	3.34 ± 0.41		3.80 ± 0.32	
Number of pregnancies †				
1 – 3	3.01 ± 0.39	3.075; 0.058 ‡	3.88 ± 0.42	4.261; 0.022 ** ‡
4 – 5	3.38 ± 0.31		4.14 ± 0.22	
>5	3.30 ± 0.39		3.79 ± 0.33	
Number of deliveries				
<5	3.16 ± 0.39	1.689; 0.099	3.94 ± 0.38	0.336; 0.739
≥5	3.37 ± 0.34		3.90 ± 0.32	
Underwent caesarean				
Yes	3.09 ± 0.52	1.332; 0.191	3.77 ± 0.41	1.229; 0.168
No	3.29 ± 0.34		3.96 ± 0.33	
Menopause				
Yes	3.33 ± 0.45	0.752; 0.457	3.78 ± 0.36	1.652; 0.107
No	3.23 ± 0.36		3.98 ± 0.34	
Associated chronic disease				
Yes	3.27 ± 0.45	0.175; 0.862	3.83 ± 0.32	1.466; 0.151
No	3.25 ± 0.34		3.99 ± 0.37	
Taking medication				
Yes	3.19 ± 0.43	0.691; 0.494	3.84 ± 0.38	0.962; 0.342
No	3.28 ± 0.37		3.96 ± 0.34	

† One woman without previous pregnancy was excluded from the analysis; § p-value has been calculated using independent sample t-test; ‡ P-value has been calculated using One-way analysis of variance (ANOVA) test; ** Significant at $p<0.05$ level; PISQ-IR: Pelvic Organ Prolapse/Incontinence Sexual Questionnaire as revised by International Urogynaecologic Association, SAR: Saudi Arabian riya, BMI: Body mass index, SD: Standard deviation.

women undergoing vaginal repair was fear of deterioration in the condition, followed by issues with urination/ defecation, and lack of sexual satisfaction (Figure 3).

The mean PISQ-IR score showed that the domains of arousal orgasm ($p<0.001$), condition-specific ($p<0.001$), partner-related issues ($p=0.011$), desire ($p=0.029$), condition impact ($p<0.001$), and global quality ($p<0.001$) were significantly higher after POP repair (Table 2). Additionally, the average score of PISQ-IR following vaginal repair was significantly greater ($p<0.001$) (Figure 4).

Women who were obese were more likely to have a lower baseline PISQ-IR score, while an increased post-surgeru PISQ-IR score was more likely to be associated with being younger, having a normal BMI, and having 4-5 pregnancies (Table 3).

Discussion

The current study examined changes in sexual function among women who underwent POP repair for posterior or combined posterior and anterior vaginal compartment prolapse. The findings indicated a significant enhancement in sexual function among women following POP surgery. According to the PISQ-IR criteria, the overall mean score of women at baseline was 3.25, which increased to 3.92 post-surgery ($p<0.001$), indicating an improvement in sexual function. Kim et al.[3] reported similar findings using PISQ-12 with significantly higher scores after POP surgery. A study in the United States[20] after 12 months of native-tissue POP surgery with or without hysterectomy, patients who were sexually active reported a significant improvement in their sexual functions.

A study in Switzerland[21] revealed that there were no significant differences in women's sexual function before and after undergoing surgery for complex pelvic floor disorders (CPFDs). However, patients in the perineal approach group reported a decrease in sexual arousal during comparisons within that group. The study concluded that the choice of surgical method for PFDs did not appear to affect the sexual function outcomes in women after surgery.

In the current analysis of PISQ-IR outcomes with a cohort of 40 patients, it was discovered that only 3(7.5%) patients exhibited a decline in their PISQ-IR score following surgery. In contrast, 27(67.5%) patients showed an increase in their scores of <1 point, while 10(25%) had an increase of >1 point.

The average difference in PISQ-IR scores from preoperative to postoperative assessments was 0.67. the findings indicated that initially, obese women were more prone to having poorer sexual function, but post-surgery, notable enhancements in sexual function were observed among younger women, individuals with a normal BMI, and those who experienced 4-5 pregnancies.

In a previous study among women presenting in urogynaecology clinics, non-sexually active women were significantly associated with age, marital status and prolapse stage 1 or 2. This was comparable to a study in Lebanon[22] that used the Global Pelvic Floor Bother Questionnaire (PFBQ), and found that being older, being less educated, having increased number of vaginal delivery, and those performing heavy lifting/physical activity showed a significant increase in PFBQ scores, with BMI >25kg/m^2 identified as the most significant independent risk factor for PFD symptoms.

However, in a study in Riyadh,[2] taking antidepressants, longer marriage duration, menopause, higher number of deliveries, encountering sexual assault, the need for lubricants, and lower relationship rating with partners were identified as the most relevant factors for sexual function disorders.

After POP repair, all domains of the PISQ-IR showed significant improvement (p<0.05) in the current study. The greatest average score was noted in the condition-specific domain, followed by global quality, condition impact, arousal, orgasm, and partner-related issues, while desire showed the least improvement, though it was still significant when compared to the baseline result (p=0.029). This was mirrored by an earlier study in Riyadh[2] in which the lowest score was in the desire domain, followed by arousal, orgasm, pain, satisfaction, and lubrication.

Consistent with these reports, a study in Italy[23] indicated that the postoperative scores related to arousal, desire, and orgasm in the uterus-sparing group exhibited a notable enhancement when compared to the hysterectomy group following POP repair. In another study done in Italy,[24] the most common issues observed in men were premature ejaculation (14%) and erectile problems (10%). In contrast, lubrication difficulties (16%) and inability to reach orgasms were the most common dysfunctions in women.

Incidentally, Pauls et al.[1] found that partner problems/no partner, low desire, prolapse, and pain were the most common reasons for women's sexual inactivity. This was also observed in a study by Chang et al.[20]which reported that the presence of prolapse, having no partner, or having a partner with sexual dysfunction, no interest, and pain were the most detrimental factors to sexual activity. In the current study, however, fear of deterioration of the condition was the major reason (52.5%), followed by issues with urination/defecation (20%), unsatisfied with sexual activity (20%), pain or discomfort (12.5%), partner dissatisfaction with sexual activity (10%) and doctor advice (5.5%).

The current study has several limitations, like a small sample size which could have affected the broader applicability of the results. Additionally, the research took place at a single location, which could have led to selection bias and restricted the generalisability of the findings. The follow-up period of six months may not be sufficient to capture long-term changes in sexual function, and there may be other confounding factors not accounted for, such as variations in surgical technique or postoperative care. Furthermore, the reliance on self-reported measures through the PISQ-IR could have introduced response bias, as participants might have under-reported or over-reported their sexual function due to social desirability or recall bias. Future studies must address these limitations by incorporating more extensive and more varied samples, extended follow-up durations, and by performing more thorough evaluations of sexual function and associated factors.

Despite the limitations, however, the current study provides preliminary evidence of the effectiveness of POP surgery, especially posterior colporrhaphy, in women's sexual function.

Conclusion

There was a significant enhancement in women's sexual functions following POP surgery. Younger women with a healthy BMI who had undergone at least 4-5 prior pregnancies were more likely to show improved sexual functions compared to their peers. Additionally, women demonstrated improved sexual function, especially in the condition-specific, global quality, and condition-impact domains.

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Conflict of Interest: None.

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GA: Study design, data analysis, revision and final approval.