Research Article

Comparison of Quality of Life and Sexual Function between Pelvic Organ Prolapse Patients Using Pessary and Surgical Intervention

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Abstract

Objective: This study aims to compare the improvement in QoL (measured by PFDI-20) and sexual function (measured by FSFI) in POP patients (stage II-IV) treated with either surgical intervention or pessary insertion.

Methods: The study employed a quasi-experimental pre–posttest design involving 60 patients with stage II–IV pelvic organ prolapse (POP), consisting of 30 patients in the surgical group and 30 patients in the pessary group, conducted at two tertiary referral hospitals in Bandung. Quality of life and sexual function were assessed using the Pelvic Floor Distress Inventory-20 (PFDI-20) and the Female Sexual Function Index (FSFI) before and three months after the intervention. Statistical analyses included paired t-tests to evaluate within-group changes before and after the intervention and independent t-tests to compare post-intervention outcomes between the two groups.

Results: The results demonstrated that both the surgical group and the pessary group showed significant improvements in quality of life and sexual function ($p<0.001$). In the surgical group, the FSFI score increased from 16.46 ± 6.88 to 27.68 ± 3.17, surpassing the threshold for normal sexual function, while the PFDI-20 score decreased from 114.34 ± 57.44 to 14.93 ± 7.37. The pessary group also showed significant improvement, with the FSFI score increasing from 18.69 ± 4.76 to 24.80 ± 3.83 and the PFDI-20 score decreasing from 130.24 ± 48.80 to 36.98 ± 21.37. Post-intervention comparative analysis showed statistically better outcomes in the surgical group for both the FSFI score ($p=0.002$) and the PFDI-20 score ($p<0.001$).

Conclusion: Both surgical and pessary interventions are effective in improving the quality of life and sexual function in women with pelvic organ prolapse. Surgical intervention, however, offers superior and lasting outcomes. Pessary usage remains an important non-surgical option for patients seeking conservative management.

Keywords: Pelvic organs prolapse; pessary; quality of life; sexual function; surgery

Perbandingan Kualitas Hidup dan Fungsi Seksual antara Pasien Prolaps Organ Panggul yang Menggunakan Pessarium dan Tindakan Bedah

Abstrak

Tujuan: Penelitian ini bertujuan membandingkan perubahan kualitas hidup dan fungsi seksual pada pasien POP stadium II–IV yang menjalani terapi bedah dan penggunaan pessarium.

Metode: Metode penelitian yang digunakan yaitu kuasi-eksperimental dengan desain pre–posttest yang dilakukan pada 60 pasien POP stadium II–IV, terdiri atas 30 pasien kelompok bedah dan 30 pasien kelompok pessarium, di dua rumah sakit rujukan tersier di Bandung. Penilaian kualitas hidup dan fungsi seksual dilakukan menggunakan kuesioner Pelvic Floor Distress Inventory-20 (PFDI-20) dan Female Sexual Function Index (FSFI) sebelum dan tiga bulan setelah intervensi. Analisis statistik menggunakan uji *t* berpasangan untuk menilai perubahan sebelum dan sesudah intervensi pada tiap-tiap kelompok serta uji *t* tidak berpasangan untuk membandingkan luaran pascaintervensi antar kelompok.

Hasil: Hasil penelitian menunjukkan bahwa kelompok dengan terapi bedah dan kelompok dengan pessarium menunjukkan peningkatan bermakna pada kualitas hidup dan fungsi seksual ($p<0,001$). Pada kelompok bedah, skor FSFI meningkat dari 16,46 ± 6,88 menjadi 27,68 ± 3,17, melewati ambang fungsi seksual normal, sedangkan skor PFDI-20 menurun dari 114,34 ± 57,44 menjadi 14,93 ± 7,37. Kelompok pessarium juga menunjukkan perbaikan yang bermakna, dengan peningkatan skor FSFI dari 18,69 ± 4,76 menjadi 24,80 ± 3,83 dan penurunan skor PFDI-20 dari 130,24 ± 48,80 menjadi 36,98 ± 21,37. Analisis perbandingan pascaintervensi menunjukkan hasil yang secara statistik lebih baik pada kelompok bedah baik untuk skor FSFI ($p=0,002$) maupun PFDI-20 ($p<0,001$).

Kesimpulan: Terapi bedah dan penggunaan pessarium secara bermakna meningkatkan kualitas hidup dan fungsi seksual pada pasien prolaps organ panggul. Terapi bedah memberikan perbaikan yang lebih besar dan lebih menyeluruh, sedangkan penggunaan pessarium tetap merupakan pilihan nonbedah yang efektif dan aman pada pasien terpilih.

Kata kunci: Fungsi seksual; kualitas hidup; pessarium; prolaps organ panggul; terapi bedah

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Introduction

Pelvic Organ Prolapse (POP) is a condition in which one or more pelvic organs, including the vaginal walls, uterus, or vaginal vault, descend from their normal position and bulge into the vaginal cavity, resulting in cystocele, rectocele, or enterocele.[1] The incidence of POP varies globally according to regional risk factors. The Global Burden of Disease 2019 estimates a prevalence of 10 cases per 100,000 people, reaching up to 20% in low-income countries.[2,3] Based on the National Health and Nutrition Examination Survey, approximately 3% of women in the United States experience symptoms of vaginal bulging, and about 300,000 surgical procedures for POP are performed annually in the country.[4,5]

In Indonesia, the estimated prevalence of POP is approximately 1.5%, predominantly affecting parous and older women and those engaged in heavy physical labor. National prevalence data remain limited; however, a five-year study at Dr. Soetomo Hospital, Surabaya (2007–2011), identified 371 POP cases, though only 92 had complete risk factor data. Among these, uterine prolapse accounted for 66.3%, cystocele for 6.5%, and mixed POP for 26.1%.[5,6]

POP causes various symptoms, including stress urinary incontinence, fecal incontinence, digestive problems, vaginal discharge, sexual dysfunction, vaginal structural changes, and lower abdominal pain. A study by Zewdu et al. reported that 57.5% of 409 participants experienced a decline in overall quality of life, with sexual relationships being the most affected domain (73.6%).[7,8] Given this significant burden, effective management strategies are essential.

Current interventions for POP include surgical options, such as native tissue repair, mesh repair, and minimally invasive techniques (laparoscopic or robotic surgery), and conservative management. Regarding the latter**,** pessaries remain an effective non-invasive treatment option.[9,10]

Both surgical and non-surgical interventions aim to improve quality of life (QoL) and sexual function. Some instruments assess general aspects of life, while others are specific to pelvic organ prolapse, such as the Pelvic Organ Prolapse Distress Inventory (POPDI-6) and the Pelvic Organ Prolapse Impact Questionnaire (POPIQ-7). Sexual function is commonly evaluated using the Female Sexual Function Index (FSFI), a multidimensional questionnaire assessing female sexual function.[11,12]

Several studies have demonstrated improvements in QoL following both interventions. A literature review by Rantell et al. examined current evidence on pessary use in improving sexual function. Additionally, Rodrigues et al. reported significant improvements in sexual function and quality of life one year after pelvic floor surgery.[13-16]

Although both approaches improve outcomes, comparative studies assessing which method leads to superior improvements remain inconsistent, particularly in the Indonesian population. Therefore, this study aims to compare the improvement in quality of life and sexual function between POP patients treated surgically and those managed with a pessary.

Method

This quasi-experimental study utilized a pre–post test design to compare two treatment groups, with assessments conducted before and after intervention. The study was conducted at the Urogynecology and Reconstructive Outpatient Clinics of Dr. Hasan Sadikin General Hospital and Al Ihsan Hospital, Bandung (tertiary referral centers in West Java) from July to December 2024. Ethical approval was obtained from the Health Research Ethics Committee of Dr. Hasan Sadikin General Hospital (DP.04.03/D.

XIV.4.4/2816/2024).

The sample size was determined based on a comparative analysis of two independent (unpaired) groups with numerical outcomes, using a standard formula for detecting a difference between two means.

$$n = \frac{(Z_\alpha + Z_\beta)^2 \sigma^2}{(\mu_2 - \mu_1)^2}$$

where:
n represents the required sample size per group;
Z_α is the standard normal deviate corresponding to a two-sided significance level of α=0.05(1.96);
Z_β corresponds to a statistical power of 90% (β=0.10,1.28);
μ^1 and μ^2 are the expected mean FSFI scores in the control (30.6) and intervention (36.1) groups, respectively, based on prior published data (Rodrigues et al., 2021);
σ denotes the standard deviation (8.5), derived from the intervention group.

$$n = \frac{[(1.96 + 1.28) \times 8.5]^2}{(36.1 - 30.6)^2} = 25.07$$

Thus, a minimum of 25 participants per group was calculated. Allowing for an anticipated 10% dropout rate, the final sample size was adjusted to 30 participants per group to ensure adequate power.

A total of 60 women with stage II–IV pelvic organ prolapse (POP-Q) were included. Participants were divided into surgical (n=30) and pessary (n=30) groups. Treatment allocation was based on patient preference following comprehensive counselling regarding the benefits and risks of each therapy.

In the surgical group, patients underwent definitive procedures based on POP type and stage (reconstruction or obliteration) performed by subspecialist urogynecologists according to established standards. Postoperative evaluation was conducted typically three months after surgery. In the non-surgical group, patients were fitted with a vaginal pessary appropriate for their prolapse type and degree. They received education on pessary care and underwent regular follow-up. Post-intervention assessment was performed approximately three months after initial placement, provided the patient was still using the device.

Data collection proceeded in three steps. First, a baseline (pre-test) assessment was performed using validated Indonesian versions of the Female Sexual Function Index (FSFI) and Pelvic Floor Distress Inventory-20 (PFDI-20). Second, patients underwent their chosen intervention. Third, after the three-month follow-up period, a post-test assessment was conducted using the same instruments.

The FSFI evaluates six domains of sexual function: desire, arousal, lubrication, orgasm, satisfaction, and pain (total score: 2.0–36.0). A score of >26.5 indicates functional sexual status. Meanwhile, the PFDI-20 assesses pelvic floor dysfunction symptoms across three subscales: POPDI-6, CRADI-8, and UDI-6 (total score: 0–300). The total score ranges from 0 to 300, with lower scores indicating better quality of life and milder symptoms. Measurements of FSFI and PFDI-20 were analyzed independently. Paired t-tests were used for within-group comparisons (pre- vs. post-test), and independent t-tests were used for between-group comparisons.

Results

The characteristics of the research subjects are shown in Table 1. The majority of POP patients treated with surgery or pessary at Dr. Hasan Sadikin General Hospital and Al Ihsan Hospital were over 50 years old (66.67%). Most patients had a parity of fewer than five,

Table 1 Characteristics of Research Subjects

Variable	Total Sample (n=60)	%	p-value (Homogenity test)
Age			
<50 years old	20	33.33%	0.672
≥50 years old	40	66.67%	
Parity			
Non-grande Multipara	47	78.33%	0.000
Grande Multipara	13	21.67%	
Delivery Methods			
Caesarean section	1	1.67%	0.000
Vaginal delivery	59	98.33%	
BMI (Kg/m^2)			
Underweight <18,5	0	0%	0.321
Normal 18,5–24,9	27	45.00%	
Overweight 25.0–29,9	24	40.00%	
Obesity >30	9	15.00%	
POP Staging			
Stage I	0	0%	0.000
Stage II	9	15.00%	
Stage III	31	51.67%	
Stage IV	20	33.33%	

Table 2 Comparison of Sexual Function and Quality of Life in POP Patients Before and After Pessary Therapy (Non-Surgical)

	FSFI			PFDI 20		
	Mean	SD	P	Mean	SD	P
Before therapy	18.69	±4.76	<0,001*	130.24	±48.80	<0,001*
After therapy	24.80	±3.83		36.98	±21.37	

*Paired T-Test

although 21.67% were grand multiparous. Nearly all patients had a history of vaginal delivery, with only one having undergone a cesarean section. BMI was predominantly normal (45%) or overweight (40%), with 15% classified as obese. Most patients presented with stage III POP (51.67%), followed by stage IV (33.33%) and stage II (15%); no cases of stage I were identified.

Table 2 compares sexual function and quality of life in POP patients before and after pessary therapy. A paired t-test shows that pessary treatment significantly improved sexual function and quality of life in POP patients. The mean FSFI score increased from 18.69 ± 4.76 to 24.80 ± 3.83 ($p < 0.001$); however, despite this improvement, the mean score remained below the functional threshold (FSFI < 26.5). The mean PFDI-20 score decreased significantly from 130.24 ± 48.80 to 36.98 ± 21.37 ($p < 0.001$), reflecting a marked improvement in quality of life.

Table 3 presents the outcomes for the surgical intervention group. Regarding sexual function, the mean FSFI score before surgery was 16.46 ± 6.88, indicating sexual

Table 3 Comparison of Sexual Function and Quality of Life in POP Patients Before and After Surgery Intervention

	FSFI			PFDI 20		
	Mean	**SD**	**P**	**Mean**	**SD**	**P**
Before Surgery	16.46	±6.88	<0,001*	114.34	±57.44	<0,001*
After Surgery	27.68	±3.17		14.93	±7.37	

*Paired T-Test

Table 4 Comparison of Sexual Function and Quality of Life After Pessary Placement and Surgical Therapy

	FSFI			PFDI 20		
	Mean	**SD**	**P**	**Mean**	**SD**	**P**
After surgery	27.68	±3.17	0.002*	14.93	±7.37	<0,001*
After pessary insertion	24.80	±3.83		36.98	±21.37	

*Independent T-Test

dysfunction. After surgery, the score increased significantly to 27.68 ± 3.17 ($p < 0.001$), restoring sexual function to a normal range (>26.5). In terms of QoL, the mean PFDI-20 score decreased significantly from 114.34 ± 57.44 to 14.93 ± 7.37 ($p < 0.001$) post-surgery, indicating substantial improvement.

An independent T-test was conducted to compare post-treatment sexual function and quality of life scores between the two groups, as shown in Table 4 below.

Post-treatment FSFI scores were significantly higher in the surgical group than in the pessary group (27.68 ± 3.17 vs. 24.80 ± 3.83; $p = 0.002$), with only the surgical group exceeding the normal sexual function cutoff (>26.5). Similarly, postoperative PFDI-20 scores were significantly lower in the surgical group compared to the pessary group (14.93 ± 7.37 vs. 36.98 ± 21.37; $p < 0.001$), indicating superior improvement in quality of life following surgical intervention.

Discussion

The prevalence of POP increases with age, peaking at around 5% among women aged 60–69 years.[17] The population in this study, recruited from Dr. Hasan Sadikin General Hospital and Al Ihsan Hospital in Bandung, confirms this global trend. Data indicate that the majority of POP patients treated with surgery or a pessary were over 50 years old (66.67%).

Parity or a history of vaginal delivery is the strongest predisposing factor for POP. Grand multiparity (≥5 deliveries) mechanically damages the supporting structures of the pelvic floor.[16,17] In this study, 21.67% of patients had a parity of five or more. This finding reinforces that while the absolute risk increases with the number of deliveries, the quality and degree of individual delivery trauma also play important roles. Moreover, only one patient in this study had delivered via cesarean section, underscoring the dominance of vaginal delivery as the main mechanism of pelvic floor injury.

Body Mass Index (BMI) also directly affects POP symptoms. In this study, BMI characteristics among POP patients were distributed across normal (45%), overweight (40%), and obese (15%) categories. This distribution indicates that while obesity is a significant risk factor, the high prevalence among normal and overweight groups emphasizes that prolapse is a multifactorial condition—not caused solely by obesity, but rather by a combination of structural predisposition and childbirth-related

trauma.[7,15]

Clinically, the severity of POP, based on the POP-Q staging system, was dominated by stage III (51.67%), followed by stage IV (33.33%) and stage II (15%).[15] Stage I pelvic organ prolapse was not included, consistent with the inclusion criteria, because it is typically asymptomatic and does not require intervention. The predominance of stage III–IV cases indicates that the study population largely comprised patients with advanced, symptomatic prolapse requiring definitive management.

Vaginal pessaries are well recognized as effective non-surgical treatment options, with reported fitting success rates of up to 92%. Conversely, surgical therapy is indicated for women whose POP symptoms are bothersome and who have failed or declined conservative treatment.[13,14] In this study, patients over 50 years of age were more likely to undergo surgical treatment (73.33%), whereas multiparous patients more often received pessary therapy (26.67%), likely due to greater pelvic floor damage and higher surgical risk in this group.

The Female Sexual Function Index (FSFI) is a multidimensional questionnaire consisting of six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain, with a total score below 26.5 indicating sexual dysfunction.[11,12] Postoperative FSFI assessments showed a significant improvement across all domains, particularly in arousal and lubrication. Anatomical correction after surgery eliminates vaginal bulging, pain (dyspareunia), and mechanical obstruction, thereby restoring optimal anatomy for sexual response.

Regarding sexual function, FSFI scores in the surgical group increased significantly from 16.46 ± 6.88 to 27.68 ± 3.17 ($p < 0.001$), exceeding the cutoff for normal sexual function (>26.5). This restoration of function is consistent with Kuhn et al., who reported postoperative improvements across multiple sexual domains. In contrast, while the pessary group saw significant improvements (particularly in arousal and orgasm), the mean post-treatment score (24.80 ± 3.83) remained below the functional threshold. This suggests that while pessaries improve function, likely by reducing physical obstruction, they may not fully resolve dysfunction due to mechanical interference, lack of anatomical repair, and psychological factors related to device use.

Rantel and Cert reported that many contemporary pessary designs are compatible with sexual activity and often go unnoticed by sexual partners.[13] Expanding on this evidence, this study demonstrates that pessary therapy yields significant improvements across all FSFI domains, particularly in arousal and orgasm. However, full restoration of sexual function to non-dysfunctional levels remains limited.

The Pelvic Floor Distress Inventory-20 (PFDI-20) measures symptom-related distress, with lower scores indicating better quality of life, and provides high-quality evidence for criterion and construct validity as well as responsiveness.[11,18]

Surgical patients showed significant improvement across all PFDI-20 domains, with scores decreasing from 114.34 ± 57.44 preoperatively to 14.93 ± 7.37 postoperatively ($p < 0.001$), indicating near-complete symptom resolution and marked improvement in quality of life, consistent with previous meta-analyses.

Pessary treatment also significantly improved quality of life, with PFDI-20 scores decreasing from 130.24 ± 48.80 to 36.98 ± 21.37 ($p < 0.001$), indicating substantial symptom relief, though less pronounced than surgical outcomes, in line with prior meta-analytic findings.

Post-treatment FSFI scores were significantly higher in the surgical group (27.68 ± 3.17) than in the non-surgical group (24.80 ± 3.83), with $p=0.002$. The mean

difference of 2.88 points carries important clinical implications:

a. Resolution of Clinical Dysfunction: Only surgical therapy restored sexual function to the non-dysfunctional range (>26.5).
b. Anatomical vs. Mechanical Correction: The superiority of surgery reflects the comprehensive restoration of pelvic floor anatomy, including fascia and ligament repair, which provides a stronger physiological foundation for sexual function than mechanical support alone.
c. Supporting Evidence: While Indarti et al. did not find a significant difference in total FSFI scores, they reported notably better arousal (p=0.004) and lubrication (p=0.008) outcomes in the surgical group—findings consistent with the key domain improvements observed in this study.[19]

Similarly, postoperative QoL outcomes favored surgery (p<0.001). The mean postoperative PFDI-20 score for surgical patients (14.93 ± 7.37) was markedly lower than that of the pessary group (36.98 ± 21.37). This demonstrates that while both modalities are highly effective, surgery yields a more optimal and near-complete recovery. These results align with comparative studies such as Aimjirakul et al., who found that surgical interventions generally result in better QoL scores due to their definitive nature. Pessary users, despite reporting substantial symptom relief, may still experience mild discomfort related to device maintenance and periodic cleaning, which is reflected in their slightly higher PFDI-20 scores.[20]

This non-randomized, quasi-experimental study is subject to selection bias because treatment allocation was influenced by patient preference and clinical factors. Confounding by indication related to prolapse severity, age, and comorbidities cannot be fully excluded. Unblinded, self-reported questionnaires may have introduced detection bias, and differences in peri-interventional care could contribute to performance bias. The pre–post design also raises the possibility of regression to the mean, and heterogeneity of interventions, combined with short follow-up, limits long-term inference and generalizability. Baseline characteristics were compared, and outcome changes were analyzed using pre–post differences to mitigate these limitations.

Conclusion

Based on PFDI-20 and FSFI scores, both surgical and pessary therapies result in significant improvements in quality of life and sexual function among women with pelvic organ prolapse. Although greater improvements were observed in the surgical group, pessary therapy remains a safe and effective conservative option, particularly for patients who are unsuitable for surgery or prefer non-operative management. These findings suggest that while both treatment modalities provide meaningful benefits, surgical intervention offers superior patient-reported outcomes.

Conflict of Interest

The authors declare no conflict of interest regarding the publication of this paper.

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