Research Article

Quality of Life Outcomes in Pelvic Organ Prolapse Patients After Total Vaginal Hysterectomy: A Prospective Study Using PFDI-20

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Abstract

Pelvic organ prolapse (POP) is a common gynecological condition that can significantly impair women's quality of life through pelvic, urinary, and bowel symptoms. This study aimed to evaluate changes in Pelvic Floor Distress Inventory-20 (PFDI-20) scores in patients with POP before and three months after undergoing total vaginal hysterectomy (TVH). A prospective, analytical, observational study employing a cohort design was conducted at Dr. Hasan Sadikin General Hospital, Bandung, Indonesia, between January and July 2024. Patients diagnosed with POP who underwent total vaginal hysterectomy were included in the study. The PFDI-20 questionnaire was administered preoperatively and three months postoperatively. The instrument consists of three subscales: the Pelvic Organ Prolapse Distress Inventory (POPDI-6), the Colorectal–Anal Distress Inventory (CRADI-8), and the Urinary Distress Inventory (UDI-6). Statistical analyses were performed to compare preoperative and postoperative scores. A total of 30 patients met the inclusion criteria and completed both assessments. The mean age of participants was 61.73 years (range 49–74 years), with a mean parity of 3.97 (range 1–8). Significant reductions in POPDI-6, CRADI-8, UDI-6, and total PFDI-20 scores were observed three months after TVH compared with preoperative values (p = 0.001). Overall, postoperative PFDI-20 scores were markedly lower than preoperative scores, indicating substantial improvement in pelvic floor–related symptoms. These findings suggest that total vaginal hysterectomy provides significant improvement in pelvic floor distress symptoms among women with pelvic organ prolapse.
Keywords: *pelvic organ prolapse, total vaginal hysterectomy, Pelvic Floor Distress Inventory-20, quality of life.*

Evaluasi Kualitas Hidup pada Pasien Prolaps Organ Panggul yang Menjalani Total Vaginal Histerektomi: Studi Prospektif menggunakan PFDI-20

Abstrak

Prolaps organ panggul (POP) merupakan salah satu kondisi ginekologi yang sering ditemukan dan dapat menurunkan kualitas hidup wanita melalui berbagai keluhan pada sistem pelvis, urinaria, dan gastrointestinal. Penatalaksanaan bedah pada POP tidak hanya bertujuan untuk memperbaiki kelainan anatomi panggul, tetapi juga untuk meningkatkan luaran yang dilaporkan oleh pasien. Penelitian ini bertujuan mengevaluasi perubahan skor Pelvic Floor Distress Inventory-20 (PFDI-20) pada pasien POP sebelum dan tiga bulan setelah menjalani total vaginal histerektomi (TVH). Penelitian ini merupakan studi observasional analitik dengan desain kohort prospektif yang dilakukan di RSUP Dr. Hasan Sadikin Bandung pada Januari–Juli 2024. Pasien dengan diagnosis POP yang menjalani tindakan total vaginal histerektomi diikutsertakan dalam penelitian, dan kuesioner PFDI-20 diberikan sebelum operasi serta tiga bulan setelah operasi. Sebanyak 30 pasien memenuhi kriteria inklusi dan menyelesaikan kedua penilaian. Rerata usia partisipan adalah 61,73 tahun (rentang 49–74 tahun), dengan rerata paritas 3,97 (rentang 1–8). Terdapat penurunan bermakna pada skor POPDI-6, CRADI-8, UDI-6, serta skor total PFDI-20 tiga bulan setelah TVH dibandingkan dengan nilai pra-operatif (p = 0,001). Secara keseluruhan, skor PFDI-20 pascaoperasi jauh lebih rendah dibandingkan skor pra-operasi, yang menunjukkan perbaikan yang signifikan pada gejala terkait dasar panggul. Temuan ini menunjukkan bahwa TVH memberikan perbaikan yang bermakna terhadap gejala distres dasar panggul pada perempuan dengan prolaps organ panggul.
Kata kunci*: prolaps organ panggul, total vaginal histerektomi, Pelvic Floor Distress Inventory-20, kualitas hidup.*

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Introduction

Pelvic organ prolapse (POP) is one of the most common gynecological conditions affecting women.[1] It is estimated that 40–60% of women who have experienced childbirth demonstrate signs of POP on clinical examination.[2-4] Although not life-threatening, POP can significantly impair quality of life by causing pelvic pressure, urinary and bowel dysfunction, sexual difficulties, and limitations in daily activities.[4-6] Furthermore, epidemiological studies indicate that women have a 12.6% lifetime risk of undergoing surgery for POP by the age of 80.

With the global increase in life expectancy, the prevalence of POP is expected to rise. Projections suggest that the probability of women reaching age 86 will continue to increase worldwide, including in developing countries such as Indonesia.[7,8] This demographic shift is likely to increase the burden of POP on healthcare systems in the future.[1,5,7,9]

Management of POP includes both non-surgical and surgical approaches. Treatment selection is generally influenced by symptom severity, the degree of prolapse, patient comorbidities, and activity level.[10,11] Conservative management, such as lifestyle modification, pelvic floor muscle training (PFMT), and pessary use, is commonly recommended for patients with mild to moderate prolapse or those wishing to preserve the uterus for fertility.[10,11] Surgical treatment is typically considered for symptomatic or advanced prolapse and includes various procedures performed through vaginal or abdominal approaches.[10,11] Total vaginal hysterectomy (TVH) has long been regarded as a standard surgical treatment because it utilizes a natural orifice and is associated with relatively shorter recovery times.[2,12] However, hysterectomy in POP remains controversial because the condition primarily results from weakness of pelvic support structures rather than uterine pathology. Consequently, uterine-preserving procedures have gained increasing attention, although recurrence and reoperation rates remain important considerations.[13]

Assessment of surgical outcomes in POP should not rely solely on anatomical correction, as symptom severity does not always correlate with the degree of prolapse.[14] Therefore, patient-reported outcome measures (PROMs) are increasingly used to evaluate symptom burden and quality of life after treatment.[15] One commonly used instrument is the Pelvic Floor Distress Inventory (PFDI), particularly its short form, the PFDI-20, which has been validated in multiple languages, including Indonesian, and demonstrates good reliability and responsiveness.[16,17] The PFDI-20 evaluates symptoms across three domains: pelvic organ prolapse, colorectal–anal dysfunction, and urinary symptoms.[18] This study aimed to analyze changes in PFDI-20 scores in patients with POP before and three months after surgery and to evaluate postoperative outcomes following total vaginal hysterectomy.

Methods

Study Design and Population

This prospective cohort study was conducted at Dr. Hasan Sadikin General Hospital, Bandung, Indonesia, from January 1st to July 31st, 2024. The study aimed to compare PFDI-20 scores in patients with POP before and three months after surgery.

The study population consisted of patients diagnosed with POP who underwent surgical management during the study period. Inclusion criteria were a confirmed diagnosis of POP based on clinical examination and supporting assessments performed by an obstetrician–gynecologist, undergoing surgical treatment for POP (including total vaginal hysterectomy performed by urogynecology consultants or other reconstructive procedures), completion of postoperative follow-up for at least three months, and provision of written informed consent.

Patients who underwent colpocleisis were excluded because this obliterative procedure closes the vaginal canal and is typically performed in elderly women who are no longer sexually active. As the anatomical and functional outcomes following colpocleisis differ substantially from those of reconstructive procedures, including these patients, could confound the evaluation of symptom-related outcomes measured using the

PFDI-20 questionnaire. Patients who did not complete the three-month postoperative evaluation were also excluded.

The minimum sample size was calculated using the paired mean difference test formula with a 95% confidence level and 80% statistical power. Based on reference values from Sharma et al[19] (mean pre-test 123, mean post-test 106.4, mean difference 16.6, standard deviation 22.71), the minimum required sample size was 15 subjects.[19] After accounting for an estimated 20% dropout rate, the minimum sample size was increased to 18 subjects. Consecutive sampling was used to enroll eligible patients until the required sample size was achieved.

Study Procedure

Primary data were collected using the validated Indonesian version of the PFDI-20 questionnaire. Data collection was performed twice: before surgery and three months postoperatively. Questionnaires were administered directly by trained general practitioners who were blinded to the study objectives. Additional demographic and clinical information, including age, parity, body mass index, and prolapse characteristics, was obtained from medical records.

Study Instrument

The PFDI-20 is a validated patient-reported outcome measure used to assess symptom distress related to pelvic floor disorders. It consists of 20 items grouped into three subscales: Pelvic Organ Prolapse Distress Inventory (POPDI-6), Colorectal–Anal Distress Inventory (CRADI-8), and Urinary Distress Inventory (UDI-6). For each affirmative response, patients were asked to rate symptom severity using a four-point Likert scale. Subscale scores range from 0 to 100, and the total PFDI-20 score ranges from 0 to 300, with higher scores indicating greater symptom distress. Statistical analysis was performed using SPSS version 26.0 to compare preoperative and postoperative scores.

Ethical approval was obtained from the Ethics Committee of Dr. Hasan Sadikin General Hospital – Faculty of Medicine, Universitas Padjadjaran (protocol number: DP.04.03/D.XIV.6.5/408/2024).

Result

This study evaluated changes in PFDI-20 scores among women with pelvic organ prolapse (POP) before and three months after undergoing TVH at Dr. Hasan Sadikin General Hospital, Bandung, between January and July 2024. A total of 30 patients met the inclusion criteria and completed both preoperative and postoperative assessments.

Baseline demographic and clinical characteristics of the study participants are presented in Table 1. Most patients were aged >50 years with the majority had parity between 1 and 4 (22/30). Body mass index (BMI) was evenly distributed between normoweight and overweight categories, and all patients were postmenopausal.

Regarding prolapse characteristics, all patients had uterine prolapse. Concomitant anterior and posterior vaginal wall prolapse was observed in 96.7% of patients. The most frequent prolapse grades were grade III for anterior vaginal wall prolapse (24/30), grade II for posterior vaginal wall prolapse (23/30), and grade III for uterine prolapse (15/30).

Comparison of PFDI-20 Scores Before and After TVH

Comparisons between pre-operative and postoperative scores were performed using the Wilcoxon signed-rank test. As shown in Table 2, significant reductions were observed in all PFDI-20 components following surgery. The mean POPDI-6 score decreased from 61.94 ± 27.16 pre-operatively to 10.28 ± 21.88 postoperatively, with a mean difference of 51.66 ($p < 0.001$). The CRADI-8 score also showed a significant reduction, from 32.29 ± 31.91 to 5.52 ± 9.87 (mean difference 26.77; $p < 0.001$). Similarly, the mean UDI-6 score decreased from 49.44 ± 28.67 to 12.92 ± 20.16 (mean difference 36.52; $p < 0.001$). The total PFDI-20 score improved markedly after surgery, decreasing from 135.24 ± 67.27 to 28.72 ± 45.94, with a mean difference of 106.52 ($p < 0.001$). Median scores also showed consistent reductions across all domains.

Table 1. Baseline Characteristics of the Study Participants

Characteristic	n
Age (years)	
≤50	3
>50	27
Parity	
1–4	22
>4	8
Body Mass Index (BMI)	
Normal weight (18.5–24.9 kg/m²)	15
Overweight (≥25 kg/m²)	15
Menopausal Status	
Yes	30
No	0
Type and Grade of Prolapse	
Anterior vaginal wall prolapse	29
Grade I	0
Grade II	1
Grade III	24
Grade IV	4
Posterior vaginal wall prolapse	29
Grade I	0
Grade II	23
Grade III	5
Grade IV	1
Uterine prolapse	30
Grade I	0
Grade II	7
Grade III	15
Grade IV	8

Table 2. POPDI-6, CRADI-8, UDI-6, and PFDI-20 Scores Before and After TVH

Parameter	Pre-TVH n = 30	Post-TVH n = 30	Mean Difference	Wilcoxon Z	*p* value
POPDI-6					
Mean (SD)	61.94 (27.16)	10.28 (21.88)	51.66	−4.587	<0.001
Range	12.50–100.00	0.00–87.50			
Median	58.33	0.00			
CRADI-8					
Mean (SD)	32.29 (31.91)	5.52 (9.87)	26.77	−3.877	<0.001
Range	0.00–93.75	0.00–37.50			
Median	28.13	0.00			
UDI-6					
Mean (SD)	49.44 (28.67)	12.92 (20.16)	36.52	−4.244	<0.001
Range	0.00–100.00	0.00–79.17			
Median	47.92	6.25			
PFDI-20					
Mean (SD)	135.24 (67.27)	28.72 (45.94)	106.62	−4.557	<0.001
Range	12.50–281.25	0.00–176.04			
Median	139.06	8.33			

Table 3. PFDI-20 Scores Before and After TVH (n=30)

Characteristics	Total	Pre-TVH PFDI-20 Score		Post-TVH PFDI-20 Score		Mean Difference	Wilcoxon Z	*p* value
		Median	Mean (SD)	Median	Mean (SD)			
Age								
≤50	3	158.33	170.14(105.7)	73.96	67.71(64.81)	102.43	-1.604	0.109
>50	27	135.42	131.37(63.50)	8.33	24.38(42.85)	106.99	-4.277	<0.001
Parity								
1−4	22	140.63	129.21(67.01)	4.17	26.99(46.59)	102.22	-3.945	<0.001
>4	8	133.85	151.82(69.63)	18.75	33.46(46.89)	118.36	-2.313	0.021
Body Mass Index (BMI)								
Normoweight	15	165.63	160.49(73.40)	8.33	22.92(34.84)	137.57	-3.352	0.001
Overweight	15	125.00	110.00(51.20)	0.00	34.51(55.56)	75.49	-3.069	0.002
Type and Grade of Prolapse								
Anterior vaginal wall prolapse	29							
I	0	-	-	-	-	-		
II	1	-	-	-	-	-		
III	24	125.00	129.21(69.61)	4.17	29.51(49.93)	99.70	-3.972	<0.001
IV	4	161.98	158.07(71.56)	22.92	19.79(14.97)	138.28	-1.826	0.068
Posterior vaginal wall prolapse	29							
I	0	-	-	-	-	-		
II	23	142.71	132.20(72.25)	0.00	29.91(50.86)	102.29	-3.864	<0.001
III	5	125	124.17(33.86)	12.5	14.17(17.08)	110.00	-2.023	0.043
IV	1	-	-	-	-	-		
Uterine prolapse	30							
I	0	-	-	-	-	-		
II	7	111.46	136.90(93.19)	50.00	54.61(38.28)	82.29	-1.863	0.063
III	15	125.00	127.78(64.29)	0.00	28.89(55.18)	98.89	-3.237	0.001
IV	8	149.00	147.79(52.31)	0.00	5.73(11.12)	142.06	-2.521	0.012

Discussion

This study demonstrated a significant reduction in PFDI-20 scores and all its subscales three months after TVH in patients with POP, indicating substantial improvement in pelvic floor–related symptoms and quality of life. These findings suggest that surgical correction of prolapse effectively alleviates symptoms associated with pelvic floor dysfunction. TVH restores pelvic support structures and corrects anatomical defects that contribute to symptoms such as vaginal bulge, urinary dysfunction, and colorectal–anal complaints. Improvement in these symptoms likely explains the marked reduction in PFDI-20 scores observed after surgery. Similar findings have been reported in previous studies showing that surgical management of POP is associated with significant improvement in patient-reported outcomes and quality of life following restoration of pelvic anatomy.[10,20-22]

Among the PFDI-20 subscales, the greatest improvement was observed in POPDI-6 scores. This finding can be explained by the TVH mechanism, which directly addresses the primary anatomical defect in POP by removing the prolapsed uterus and restoring apical support. As a result, symptoms related to vaginal bulge, captured predominantly by POPDI-6, are immediately and substantially relieved after surgery. In contrast, colorectal–anal symptoms assessed by CRADI-8 showed relatively smaller improvements, likely because baseline CRADI-8 scores were already lower than POPDI-6, indicating that these symptoms were less bothersome prior to surgery and therefore had a smaller margin for improvement.

The magnitude of improvement observed in this study was also clinically meaningful. The mean reductions in PFDI-20 and POPDI-6 scores exceeded previously reported minimal important difference (MID) thresholds, indicating that the improvement perceived by patients was not only statistically significant but also clinically relevant. Previous studies have reported MID values

ranging from 13.5 to 45 points for PFDI-20 and approximately 11–17 points for POPDI-6. [18,23,24] In addition, Karjalainen et al[24] evaluated the Patient Acceptable Symptom State (PASS), which represents the maximum symptom score considered acceptable by patients and indicative of a satisfactory clinical condition. In that study, PASS thresholds were defined as a PFDI-20 score ≤60 and a POPDI-6 score ≤17.[25] These findings are supported by other literature reporting that the MID for PFDI-20 ranges from 13.5 to 45 points.[18,26]

Subgroup analyses by age, parity, BMI, and POP type and grade also showed reductions in POPDI-6, CRADI-8, UDI-6, and total PFDI-20 scores across most categories. However, some subgroups did not reach statistical significance, which may be due to limited statistical power, relatively large standard deviations, or small sample sizes.[27] Although demographic and obstetric factors may contribute to the development of pelvic floor disorders, the improvement observed in this study primarily reflects the effect of surgical correction of pelvic support defects. Previous studies have also reported that obstetric factors, particularly vaginal delivery, are associated with an increased risk of pelvic floor disorders. A cohort study involving 1,011 women followed for 5–10 years postpartum reported a 5.6-fold higher risk of POP in women who delivered vaginally compared with those who underwent cesarean section.[24]

This study has several strengths. First, it evaluated surgical outcomes using a validated PFDI-20, which allows assessment of symptom burden and quality of life from the patient's perspective. Second, the prospective data collection and standardized follow-up period ensured consistent evaluation of outcomes before and after surgery.

However, several limitations should be considered. The relatively small sample size may limit the generalizability of the findings. In addition, the absence of a control group prevented comparison with non-surgical management or alternative surgical procedures. Furthermore, the follow-up period was limited to three months, which may not fully reflect long-term outcomes or recurrence rates after surgery. Future studies with larger sample sizes, longer follow-up periods, and comparative designs are recommended to evaluate further long-term outcomes of different surgical techniques for pelvic organ prolapse and their impact on patient-reported quality of life.

Conclusion

Total vaginal hysterectomy provides significant improvement in pelvic floor distress symptoms among women with pelvic organ prolapse, as reflected by substantial reductions in PFDI-20 scores and all subscales. The greatest improvement observed in POPDI-6 indicates that TVH most effectively alleviates vaginal bulge symptoms by directly correcting the underlying anatomical defect. These findings support TVH as an effective surgical approach for improving patient-reported outcomes and quality of life in POP.

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Author Contributions

Muhammad Rizkar Arev Sukarsa contributed to the study conception and design, supervision of the research process, and critical revision of the manuscript for important intellectual content. Triana Rahmanita and Anita Rachmawati contributed to study design, data interpretation, and manuscript review. Raden Mas Sonny Sasotya, Andi Rinaldi, and Eppy Darmadi Achmad contributed to patient recruitment, data collection, and clinical data verification. Raden Kania Praharsini Permadi and Aria Prasetya Masoem contributed to data analysis and interpretation of the results. Aisyah Shofiatun Nisa contributed to data collection, statistical analysis, manuscript drafting, and preparation of the final manuscript. All authors reviewed the manuscript, provided critical revisions, and approved the final version of the manuscript prior to submission.

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Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Consent to Participate

Written informed consent to participate in the study was obtained from all participants prior to enrollment in accordance with applicable ethical standards.

Ethical Approval

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Dr. Hasan Sadikin General Hospital – Faculty of Medicine, Universitas Padjadjaran (protocol number: DP.04.03/D.XIV.6.5/408/2024; approval date: 17 September 2024).

Consent for Publication

Not applicable. The manuscript does not contain identifiable individual patient data or images.

Conflict of Interest

The authors declare that they have no financial or non-financial conflicts of interest related to this study.

Artificial Intelligence (AI) Use Disclosure

Artificial intelligence tools were used only for language editing. All authors have reviewed, verified, and approved the final content of the manuscript. The authors take full responsibility for the accuracy, integrity, and originality of the work.

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