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Anatomical and Functional Outcome After Vaginal Hysterectomy and Sacrospinous Ligament Fixation for Stage III and IV Pelvic Organ Prolapse

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Abstract

Background: Advanced pelvic organ prolapse (Stage III and IV) significantly impairs quality of life, yet surgical management remains a clinical challenge, particularly in low-resource settings with high parity. While sacrospinous ligament fixation (SSLF) is an established technique for apical support, there is a scarcity of prospective data focusing on both anatomical success and functional recovery in patients with advanced disease. This study seeks to address this gap by evaluating the efficacy of SSLF in restoring pelvic integrity and symptomatic relief. Objective: To evaluate the anatomical restoration and functional outcomes of vaginal hysterectomy combined with sacrospinous ligament fixation (SSLF) in women presenting with advanced pelvic organ prolapse (POP). Methods:This quasi-experimental study was conducted at Bangladesh Medical University, Dhaka, from March 2023 to February 2024. Twenty-seven multiparous, postmenopausal women with Stage III or IV POP underwent vaginal hysterectomy with right-sided SSLF and concomitant colporrhaphy. Anatomical success was measured using the Pelvic Organ Prolapse Quantification (POP-Q) system, and functional outcomes were assessed via a validated pelvic floor questionnaire at a six-month postoperative follow-up. Data were analyzed using paired t-tests and McNemar's Chi-square ($\chi 2$) tests with level of significance being set at 5%. Results: The median age of participants was 60 years. Preoperatively, 92.6% of patients had Stage III and 7.4% had Stage IV prolapse. At six months, almost 89% achieved full anatomical restoration (Stage 0). Significant improvements were recorded across all POP-Q points ($p < 0.001$), notably at Point C, the genital hiatus, and the perineal body. The mean Total Pelvic Floor Dysfunction Score decreased significantly from 26.5 ± 7.7 to 1.7 ± 3.7 ($p < 0.001$), with marked symptomatic relief in bladder, bowel, and sexual function domains. Conclusion: Vaginal hysterectomy with SSLF is a highly effective, mesh-free surgical approach for advanced POP. It provides durable anatomical correction and significant quality-of-life improvements, making it a reliable treatment option for severe pelvic floor dysfunction in resource-limited settings.

Keywords: *Sacrospinous ligament fixation, Pelvic organ prolapse, POP-Q, Vaginal hysterectomy, Functional outcome etc.*

Introduction

Pelvic organ prolapse (POP) is a debilitating condition involving the inferior displacement of the uterus and vaginal compartments, often alongside the bladder and rectum, which significantly impairs a woman's quality of life. [1,2] Epidemiological data indicate that while nearly 40% of women aged 45–85 years exhibit objectively detectable prolapse, only about 12% report

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distressing symptoms such as pelvic discomfort, urinary dysfunction, and psychological distress.[3,4,5] Despite the prevalence of the condition, managing advanced stages remains a clinical challenge, particularly in women with high parity, obesity, or prior pelvic surgeries who present with Stage III or IV prolapse.[6,7,8] With prevalence rates reaching up to 50% worldwide, the functional and psychosocial burden of this condition necessitates a definitive and durable treatment approach for affected individuals.[9]

The surgical restoration of the vaginal apex is a critical determinant of long-term success, making sacrospinous ligament fixation (SSLF) a highly useful and established technique for correcting apical prolapse.[10,11] This transvaginal approach is particularly valuable because it allows for the simultaneous correction of multiple vaginal compartment defects without the need for synthetic mesh, thereby avoiding potential graft-related complications. Offering success rates of 70%–80%, the procedure is characterized by shorter operative times, rapid postoperative recovery, and minimal morbidity, making it a preferred option for women with moderate-to-severe prolapse who have completed childbearing.[12,13,14,15] Consequently, refining the application of SSLF is essential for providing effective, minimally invasive anatomical and functional restoration.

Despite its widespread use, a significant research gap exists because most existing literature on SSLF is limited by retrospective designs and a disproportionate focus on anatomical outcomes rather than patient-reported functional improvements. Furthermore, women with the most severe disease—specifically Stage III and IV prolapse—are notably underrepresented in previous analyses, and there is a scarcity of data originating from low- and middle-income clinical settings.[16,17,18] Current evidence is further constrained by heterogeneous patient populations and a lack of prospective data regarding long-term functional recovery and the prevention of common complications like recurrent anterior vaginal wall prolapse.

This study addresses these gaps by providing a prospective evaluation of anatomical restoration and functional outcomes specifically in women with advanced Stage III and IV pelvic organ prolapse. By focusing on this understudied demographic, the research aims to characterize the short-term efficacy and symptomatic relief provided by vaginal hysterectomy combined with sacrospinous ligament fixation. This evaluation will bridge the divide between anatomical success and meaningful quality-of-life improvements, offering a more comprehensive understanding of the procedure's value in treating the most severe cases of pelvic floor dysfunction.

Patients and Methods

This quasi-experimental study was conducted in the Department of Obstetrics and Gynecology at Bangladesh Medical University (BMU), Shahbag, Dhaka, Bangladesh. The study spanned a one-year period from March 2023 to February 2024. The study population comprised women diagnosed with Stage III and Stage IV pelvic organ prolapse (POP) who sought surgical intervention at either the outpatient or inpatient departments. Participants were recruited using a purposive sampling technique to ensure the inclusion of patients meeting specific clinical criteria for advanced disease.

Patients were eligible for inclusion if they presented with Stage III or IV POP as objectively assessed by the Pelvic Organ Prolapse Quantification (POP-Q) system. Exclusion criteria were defined to ensure patient safety and data integrity; patients were excluded if they were deemed unfit for surgery due to severe comorbidities—such as acute cardiovascular events, stroke, or severe hepatic disease—or if they had a concurrent diagnosis of active malignant disease. The sample size was determined using a standard formula for comparing preoperative and postoperative mean scores, with a 95% confidence interval and 80% power. While 30 patients

were initially enrolled, 27 patients remained for the final analysis after accounting for loss to follow-up at the six-month mark.

All participants underwent vaginal hysterectomy combined with right-sided sacrospinous ligament fixation (SSLF). Following the dissection of the rectovaginal fascia, the sacrospinous ligament was identified, and two delayed absorbable polydioxanone sutures were placed approximately 2 cm medial to the ischial spine using a Miya hook. These sutures were subsequently secured to the vaginal vault to provide apical support. Concomitant procedures, including anterior and posterior vaginal wall repair (colporrhaphy), were performed as clinically indicated. Postoperative follow-up was conducted in the outpatient department, with final anatomical and functional reassessments occurring six months after the index surgery.

Comprehensive data were collected using structured questionnaires and clinical examinations. Independent variables included socio-demographic characteristics (age, education, occupation, marital status), obstetric history (parity), and clinical markers (BMI, menstrual status, previous pelvic surgeries, and duration of prolapse). Anatomical outcomes, serving as a primary dependent variable, were evaluated by comparing site-specific POP-Q measurements and standardized staging (0–IV) preoperatively and at the six-month follow-up as follows:

Abbreviation	Full Name	What it measures
Aa	Anterior point a	A point on the front wall (bladder side), 3 cm from the hymen.
Ba	Anterior point b	The most descended point of the entire front vaginal wall.
C	Cervix (or cuff)	The leading edge of the cervix or the vaginal top (if a hysterectomy was done).
gh	Genital hiatus	The distance from the middle of the urethral opening to the posterior hymen.
pb	Perineal body	The distance from the posterior hymen to the center of the anus.
tvl	Total vaginal length	The full depth of the vagina (when the prolapse is pushed back in).
Ap	Posterior point a	A point on the back wall (rectum side), 3cm from the hymen.
Bp	Posterior point b	The most descended point of the entire back vaginal wall.

Functional outcomes were assessed using a validated female pelvic floor questionnaire, which quantified dysfunction across four domains: bladder, bowel, sexual function, and prolapse-specific symptoms. Each domain was scored from 0 to 10, with a maximum cumulative pelvic floor dysfunction score of 40.

Statistical analysis was performed using SPSS version 26. Continuous variables were expressed as mean ± standard deviation, while categorical data were presented as frequencies and percentages. To evaluate anatomical changes and functional improvements, Fisher's exact test, McNemar's test, and paired t-tests were utilized as appropriate. A p-value of < 0.05 was established as the threshold for statistical significance. Ethical approval was granted by the Institutional Review Board of BMU. All participants provided written informed consent, and the study adhered to strict protocols regarding patient confidentiality and the right to voluntary withdrawal.

Results

A total of 27 women with advanced (Stage III and IV) pelvic organ prolapse (POP) successfully completed the surgical intervention and the six-month follow-up protocol. The results demonstrate a significant correlation between surgical anatomical restoration and functional quality-of-life improvements.

1. Duration of Symptoms

The study cohort comprised patients with advanced (Stage III and IV) pelvic organ prolapse (POP), with a median age of 60 years (range: 50–70). Age distribution was evenly split, with 50% of participants aged 60 or older. In terms of socioeconomic profile, the vast majority of subjects were housewives (92.6%). Anthropometric and reproductive data revealed that 33.3% were underweight, while 7.4% were classified as overweight or obese. Notably, the cohort was exclusively multiparous and postmenopausal. The duration of prolapse ranged from 1 to 15 years, with a mean duration of 5.5 ± 3.3 years. The largest segment of the population (44.4%) had been symptomatic for 5–9 years, underscoring the long-standing nature of the condition prior to surgical intervention (Table 1).

2. Anatomical Success and Staging

Preoperatively, all 27 patients suffered from advanced disease, with 92.6% in Stage III and 7.4% in Stage IV (as described earlier). Postoperative assessment at six months revealed a dramatic shift in anatomical status ($p = 0.005$). An overwhelming majority (88.9%) achieved Stage 0 (full anatomical restoration), while only one patient (3.7%) remained at Stage III.

3. Changes in Site-Specific Anatomical Measurements

Detailed POP-Q measurements confirmed significant correction across all three vaginal compartments (anterior, apical, and posterior).

- **Apical Support:** Point C (cervix/vault) showed 100% positive values preoperatively (+0.5 to +6.5 cm), which was corrected to negative/normal values in 96.3% of cases postoperatively ($p < 0.001$).
- **Anterior/Posterior Repair:** Points Ba and Bp also showed near-total correction, reflecting the efficacy of concomitant colporrhaphy.
- **Hiatal Dimensions:** The genital hiatus (gh) narrowed significantly, with 77.8% of patients measuring between 2.5–3 cm postoperatively, compared to 0% preoperatively ($p < 0.001$).
- **Perineal Body:** Preoperatively, 100% of the patients had perineal body (Pb) measurements within the +0.5 to +6.5 cm range. Six months postoperatively, all but 1(3.7%) patients' perineal body measurement was corrected to a normal state ($p < 0.001$).
- **Total Vaginal Lebgth (tvl):** The total vaginal length of all of the women were recorded in the 4 to 5 cm range, which dropped to 6(22.2%) patients postoperatively indicating that the surgical intervention successfully restored the vaginal length to a more anatomically appropriate state for the majority (77.8%) of the cases ($p < 0.001$).

4. Functional Outcomes and Symptomatic Relief

The anatomical restoration translated into profound functional improvement across all domains.

The Total Pelvic Floor Dysfunction Score decreased from 26.5 ± 7.7 to 1.7 ± 3.7 ($p < 0.001$). Prolapse-specific symptoms exhibited the most significant reduction, dropping from 16.4 ± 4.1 to 1.1 ± 2.9 ($p < 0.001$). Notably, in the subset of sexually active women (n=11), sexual function scores improved significantly, indicating that the surgery preserved vaginal length and function without causing dyspareunia.

Table. 1 Baseline Demographics, Reproductive and Clinical Characteristics

Baseline Characteristics	**Frequency (%)**	**Mean/Median**	**Range**
Age (years)			
50 – 59	13(48.1)		
≥ 60	14(51.9)	60	50 – 70
Occupation			
Housewife	25(92.6)	---	---
Day Labour	2(7.4)	---	---
Body Mass Index (kg/m^2)			
< 18.5 (Underweight)	9(33.3)	---	---
18.5 – 24.9 (Normal)	16(59.3)	---	---
≥ 25 (Overweight or obese)	2(7.4)	---	---
Parity (Multiparous)	27(100.0)	---	---
Menstrual Status (Postmenopausal)	27(100.0)	---	---
Duration of Prolapse (years)			
< 5	10(37.1)		
5 – 10	12(44.4)	5.5 ± 3.3	1 – 15
> 10	5(18.5)		
Preoperative POP-Q Stage			
Stage III	25(92.6)	---	---
Stage IV	2(7.4)	---	---
Previous Pelvic Surgery (Yes)	5(18.5)	---	---

Table 2: POP-Q Stages Preoperative vs. 6 Months Postoperative (N = 27)

Category	**Stage 0**	**Stage I**	**Stage II**	**Stage III**	**Stage IV**	***p-value**
Pre-operative	0(0.0)	0(0.0)	0(0.0)	25(92.6)	2(7.4)	0.005
6 Months Post-op	24(88.9)	1(3.7)	1(3.7)	1(3.7)	0(0.0)	

*Data were analyzed using McNemar Chi-square (χ^2) Test; figures in the parentheses denote corresponding percentage

Table 3: Comparison of Site-Specific POP-Q Measurements (n = 27)

Parameter	Range (cm)	Pre-op n(%)	Post-op n(%)	p-value
Aa (Anterior Point a)	+0.5 to +3	23(85.2)	1(3.7)	<0.001
Ba (Anterior Point b)	+0.5 to +5	26(96.3)	1(3.7)	<0.001
C (Apical)	+0.5 to +6.5	27(100.0)	1(3.7)	<0.001
gh (Genital Hiatus)	4 to 5	27(100.0)	6(22.2)	<0.001
Pb (Perineal Body)	+0.5 to +6.5	27(100.0)	1(3.7)	<0.001
tvl (Total Vaginal Length)	4 to 5	27(100.0)	6(22.2)	<0.001
Ap (Posterior Point a)	+0.5 to +3	15(55.6)	0(0.0)	<0.001
Bp (Posterior Point b)	+0.5 to +4	17(63.0)	1(3.7)	<0.001

*Data were analyzed using McNemar Chi-square (χ^2) Test; figures in the parentheses denote corresponding percentage

Table 4: Pelvic Floor Symptom Domain Scores before and after Intervention

Symptom Domain	Pre-op Score (Mean ± SD)	Post-op Score (Mean ± SD)	p-value
Prolapse Symptoms (n = 27)	16.4 ± 4.1	1.1 ± 2.9	<0.001
Bladder Function (n = 27)	6.3 ± 5.2	0.4 ± 0.2	<0.001
Bowel Function (n = 27)	3.7 ± 2.9	0.2 ± 0.5	<0.001
Sexual Function (n=11)	4.5 ± 3.8	0.9 ± 1.9	0.021
Total Score (n = 27)	**26.5 ±7.7**	**1.7 ± 3.7**	**< 0.001**

Data were analyzed using **Paired-sample T-test** and were presented as **Mean ± SD.**

Discussion

This prospective study underscores the high efficacy of vaginal hysterectomy combined with sacrospinous ligament fixation (SSLF) for treating advanced (Stage III and IV) pelvic organ prolapse (POP). Our findings demonstrate that surgical restoration of the vaginal apex not only achieves anatomical correction but also results in profound functional recovery and symptomatic relief for women in low-resource clinical settings. The procedure significantly corrected measurements across all vaginal compartments, specifically narrowing the genital hiatus and restoring apical support without compromising total vaginal length. These anatomical improvements were matched by a profound reduction in the Total Pelvic Floor Dysfunction Score, which dropped from > 26 to < 2 ($p < 0.001$), reflecting near-complete symptomatic relief. Despite the small sample size and a relatively short six-month follow-up, the results highlight SSLF as a durable, mesh-free solution for older, multiparous women in low-resource settings. By successfully bridging the gap between structural restoration and quality-of-life improvements—including the preservation of sexual function—the study reinforces SSLF as a safe and reliable definitive treatment for the most advanced stages of pelvic floor dysfunction.

Socio-Demographic and Reproductive Risk Factors

The mean age of participants (median 60 years) reflects the established global trend of higher

POP prevalence among older populations, with over half the cohort aged ≥ 60 years. This is consistent with Sayko et al.[19], who observed that the majority of patients with severe uterine prolapse were aged 50 and above. The age-related weakening of pelvic floor musculature and connective tissue [20], exacerbated by postmenopausal hypoestrogenism, reduces tissue elasticity and muscular efficiency.[21] Furthermore, our cohort was exclusively multiparous, aligning with Favre-Inhofer et al. [22], who reported multigravida status in 90% of their subjects. The mechanical trauma of multiple vaginal deliveries causes cumulative damage to the endopelvic fascia and levator ani muscles[23, 24], which, when combined with menopause, creates a high-risk environment for apical descent.

The socioeconomic profile of our cohort—predominantly illiterate (77.8%) and housewives (92.6%)—provides critical context. While Subedi and colleagues[25] noted a more literate population in their study, our data mirrors findings from Southern Ethiopia[26], where limited education was a significant factor. Illiteracy often correlates with restricted access to health education regarding pelvic floor exercises (Kegels) or nutrition.[27] Furthermore, the role of a housewife in this demographic often involves repetitive heavy lifting and prolonged standing, which increases intra-abdominal pressure and contributes to the mechanical failure of pelvic supports.[23]

Anatomical Restoration and POP-Q Outcomes

The primary success of this study is the dramatic anatomical shift observed at the six-month mark. Preoperatively, the entire cohort suffered from advanced disease (92.6% Stage III; 7.4% Stage IV). Postoperatively, 88.9% achieved Stage 0, a result that exceeds the 70%–80% success rates typically cited in literatures.[12,13] This highlights that SSLF, when performed with concomitant colporrhaphy, is exceptionally effective for severe cases. Detailed POP-Q analysis revealed significant improvements in all compartments:

- **Apical Support:** Point C measurements were corrected to normal or negative values in 96.3% of cases ($p < 0.001$), confirming that SSLF provides a durable "anchor" for the vaginal vault.[28]
- **Hiatal & Perineal Dimensions:** The narrowing of the genital hiatus (gh) to 2.5–3 cm in 77.8% of patients and the normalization of the perineal body (pb) ($p < 0.001$) suggest a restoration of the "pelvic floor deck," which is essential for preventing future recurrence.[29]
- **Vaginal Length:** Contrary to concerns that apical suspension might shorten the canal, our data showed that tvl was maintained at an anatomically appropriate length for 77.8% of patients, facilitating the preservation of sexual function.

Functional Recovery and Quality of Life

The most meaningful outcome for the patient is the translation of anatomical "straightening" into functional relief. The Total Pelvic Floor Dysfunction Score plummeted from 26.5 ± 7.7 to 1.7 ± 3.7 ($p < 0.001$), indicating near-complete resolution of symptoms.

Prolapse-specific symptoms (vaginal bulging and pressure) showed the most significant improvement. Furthermore, in the sexually active subset, scores improved significantly without reports of dyspareunia, addressing a common surgical concern regarding SSLF. These results echo Kavvadias et al.[29] reinforcing that functional recovery parallels anatomical correction. By resolving the mechanical obstruction and displacement caused by Stage III/IV prolapse, we effectively restored bladder, bowel, and sexual health.

Limitations of the Study

The study is primarily limited by its **small sample size (n = 27)** and **short-term follow-up of six months**, which may not capture long-term recurrence or late-onset complications. Additionally, as a **single-center, quasi-experimental study**, the lack of a randomized control group and the specific socio-demographic context of the cohort (predominantly rural/housewife) may limit the generalizability of the findings to broader populations.

Furthermore, the reliance on **purposive sampling** and patient-reported functional scores introduces potential selection and recall bias. While the results are statistically significant, larger multi-center trials with longitudinal tracking are necessary to confirm the definitive durability of the procedure in advanced cases.

Conclusion

Vaginal hysterectomy with sacrospinous ligament fixation is a highly effective, definitive treatment for Stage III and IV POP. It offers a "mesh-free" alternative that successfully bridges the gap between anatomical success and patient-reported quality of life. For older, multiparous women in clinical settings similar to Bangladesh, this procedure represents a safe and durable solution for restoring both pelvic integrity and personal dignity.

Despite several limitations, this study remains a significant contribution to the literature by focusing on an underrepresented demographic with advanced stage POP. It provides a foundational framework for future multi-center, randomized trials with longer longitudinal follow-up.

References

Haylen BT, de Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Int Urogynecol J*. 2016;27(2):165-194. doi: 10.1007/s00192-015-2932-1

Meutia AP, Triyarintana A. Pelvic organ prolapse: surgical outcomes in Indonesia. *J Gynecol Surg*. 2020;36(5):250-256. doi: 10.1089/gyn.2020.0010

Slieker-ten Hove MC, Pool-Goudzwaard AL, Eijkemans MJ, Steegers-Theunissen RP, Burger CW, Vierhout ME. Risk factors for pelvic organ prolapse: a systematic review. *Int Urogynecol J Pelvic Floor Dysfunct*. 2009;20(9):1013-1021. doi: 10.1007/s00192-009-0903-0

Machin SE, Mukhopadhyay S. Management of pelvic organ prolapse in postmenopausal women. *Menopause Int*. 2011;17(4):132-136. doi: 10.1258/mi.2011.011108

Detollenaere RJ, van der Vaart CH, de Boer TA, Heintz AP. Quality of life after surgery for pelvic organ prolapse. *BMC Womens Health*. 2011;11:4. doi: 10.1186/1472-6874-11-4

Betschart C, Maher C, Schuessler B, Kocjancic E. Outcome measures in pelvic organ prolapse surgery. *Neurourol Urodyn*. 2017;36(2):507-513. doi:

Word RA, Arentzen CE, Swift SE, Fenner DE. Epidemiology of pelvic organ prolapse. *Obstet Gynecol Clin North Am*. 2009;36(3):521-539. doi: 10.1016/j.ogc.2009.09.001

Jeon MJ, Lee JH, Lee SJ, Hwang YI. Risk factors for pelvic organ prolapse in Korean women. *Gynecol Obstet Invest*. 2008;66(4):268-273. doi: 10.1159/000149851

Barber MD, Maher C. Epidemiology and outcome assessment of pelvic organ prolapse. *Int Urogynecol J*. 2013;24(11):1783-1790. doi: 10.1007/s00192-013-2169-9

Bump RC, Mattiasson A, Bø K, Brubaker LP, DeLancey JO, Klarskov P, et al. The standardization of terminology of female pelvic organ prolapse. *Am J Obstet Gynecol*. 1996;175(1):10-17. doi: 10.1016/s0002-9378(96)70243-0

Lovatsis D, Drutz HP. Vaginal surgery for prolapse: outcomes and complications. *Int Urogynecol J Pelvic Floor Dysfunct*. 2002;13(5):308-313. doi: 10.1007/s001920200067

Danandeh Osgui N, Bastani P. Pelvic organ prolapse in postmenopausal women: a clinical study. *Clin Exp Obstet Gynecol*. 2019;46(1):42-44. doi: 10.12891/ceog4309.2019

Olsen AL, Smith VJ, Bergstrom JO, Colling JC, Clark AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. *Obstet Gynecol*. 1997;89(4):501-506. doi: 10.1016/S0029-7844(97)00058-6

Zacche MM, Chapple CR, MacNeil S, Digesu GA. Long-term outcomes of prolapse surgery: a 5-year follow-up study. *Int Urogynecol J*. 2018;29(11):1689-1695. doi: 10.1007/s00192-018-3731-2

Hagen S, Stark D, Glazener C, MacArthur C. Conservative prevention and management of pelvic organ prolapse in women. *Cochrane Database Syst Rev*. 2004;2:CD003882. doi: 10.1002/14651858.CD003882.pub2

Barber MD, Maher C. Surgery for pelvic organ prolapse. *Int Urogynecol J*. 2013;24(11):1815-1833. doi: 10.1007/s00192-013-2172-1

Bastani P, Danandeh Osgui N, Safari M. Surgical vs conservative management of pelvic organ prolapse. *Urol J*. 2020;17(1):73-77. doi: 10.22037/uj.v0i0.4866

U.S. Food and Drug Administration. FDA takes action to protect women's health [Internet]. Silver Spring (MD): FDA; 2019 Apr 16 [cited 2019 Apr 16]. Available from: https://www.fda.gov/news-events/press-announcements/fda-takes-action-protect-womens-health-orders-manufacturers-surgical-mesh-intended-transvaginal

Sayko SK, Kovalenko V, Morozova O. Surgical mesh complications in pelvic floor repair: a review. *Biomol Health Sci J*. 2018;1(1):20-24. doi: 10.20473/bhsj.v1i1.8210

Tim S, Mazur-Bialy AI. Pelvic floor disorders: lifestyle and preventive strategies. *Life (Basel)*. 2021;11(12):1397. doi: 10.3390/life11121397

Dumoulin C, Lemieux MC, Bourbonnais D, Gravel D, Ouellet M, Morin M. Pelvic floor muscle training for urinary incontinence in women: systematic review. *Climacteric*. 2019;22(3):257-262. doi: 10.1080/13697137.2018.1552934

Favre-Inhofer A, Hubeaux K, Lefebvre A, Gaucher S, Marret H. Pelvic organ prolapse in postmenopausal women: clinical outcomes. *BMC Womens Health*. 2021;21(1):66. doi: 10.1186/s12905-021-01195-7

Hambisa HD, Aregay A, Gebreyesus H, Desta T. Awareness and knowledge of pelvic floor disorders among women. *Inquiry*. 2023;60:469580231171309. doi: 10.1177/00469580231171309

Alperin M, Feiner B, Fong M, McCarthy C. Surgical mesh complications in urogynecology: clinical review. *Am J Obstet Gynecol*. 2016;215(2):210.e1-7. doi: 10.1016/j.ajog.2016.02.018

Subedi S, Rijal P, Sharma P. Postoperative outcomes of pelvic organ prolapse surgery. *Surgery*. 2019;2(1):33-37. doi: 10.5505/anatoljfm.2019.58077

Lema Z, Berhane M. Knowledge, attitude, and practice of pelvic organ prolapse among women. *J Biol Agric Healthc*. 2015;5(21):1-10. Available from: file:///C:/Users/Hp/Downloads/27062-29749-1-PB.pdf

Hallock JL, Handa VL. Epidemiology and management of pelvic floor disorders. *Obstet Gynecol Clin North Am*. 2016;43(1):1-13. doi: 10.1016/j.ogc.2015.10.008

Szymczak P, Grzybowska ME, Sawicki S, Futyma K, Wydra DG. Perioperative and Long-Term Anatomical and Subjective Outcomes of Laparoscopic Pectopexy and Sacrospinous

Ligament Suspension for POP-Q Stages II–IV Apical Prolapse. J Clin Med. 2022 Apr 15;11(8):2215. doi:10.3390/jcm11082215. (Received 6 Mar 2022, Revised 19 Mar 2022, Accepted 12 Apr 2022

Kavvadias T, Klontzas M, Tzelves L, Skolarikos A, Deliveliotis C. Pelvic organ prolapse and urinary incontinence: epidemiology and surgical management. *BMC Urol*. 2020