

Surgical approaches to pelvic floor reconstruction among patients with pelvic organ prolapse and voiding dysfunction: a systematic review of functional outcomes and quality of life

Abordajes quirúrgicos para la reconstrucción del suelo pélvico en pacientes con prolapso de órganos pélvicos y disfunción miccional: una revisión sistemática de los resultados funcionales y la calidad de vida

Diego Andres Valdes Cabello

<https://orcid.org/0009-0007-9727-5877>
Universidad Del Sinu, Colombia

Esteban Eduardo González Martínez

<https://orcid.org/0000-0001-5145-5206>
Dirección de Sanidad Naval, Colombia

Favio Sotelo Rivas

<https://orcid.org/0009-0002-8462-4226>
Universidad Peruana Cayetano Heredia, Perú

Luis Fabricio Correa Auqui

<https://orcid.org/0009-0003-8202-7804>
Universidad Central del Ecuador, Ecuador

María José Batallas Paz

<https://orcid.org/0009-0000-4823-8155>
Investigador Independiente, Ecuador

Jhoxandra Andreina Granadillo Garcia

<https://orcid.org/0009-0009-3846-3047>
Universidad del Zulia (Venezuela), Colombia

ABSTRACT

Since midlife women experience pelvic organ prolapse (POP) and voiding dysfunction (VD) which highly affects their quality of life. POP affects nearly fifty percent of women older than fifty and these patients often concurrently experience urinary retention together with incomplete bladder emptying. The necessity of surgical reconstruction steps in when conservative treatments prove unable to resolve the issue. The review systematizes analysis of procedures used for pelvic function recovery and improved patient life quality assessment. Researchers carried out the review which adhered to PRISMA 2020 guidelines while analyzing data spanning from 2000 to 2025. The study included both cohort studies and randomized trials that investigated women who received vaginal or laparoscopic or robotic or combination pelvic floor surgeries. Academic researchers studied quality of life and functional outcomes that included urinary retention together with de novo stress incontinence and overactive bladder using PFDI-20 and PISQ-12 measurement tools. The success rates of laparoscopic and robotic sacrocolpopexy surgery reach 90–95% for long-term outcomes by using minimally invasive mesh procedures that address pelvic organ issues. These procedures demonstrate better success than traditional vaginal approaches. The effectiveness of vaginal repairs remains significant for both elderly patients and those considered medically high-risk because they provide solid results despite higher chance of issues returning. The combination of mid-urethral slings used before surgery effectively lowers the probabilities of new postoperative urinary incontinence and retention. The satisfaction levels of patients directly depend on how their symptoms improve alongside how providers handle their treatment expectations. The surgical procedure of sacrocolpopexy generates useful effects on overactive bladder symptoms in 60% of cases but ongoing clinical studies show it induces urgency symptoms. The surgical strategy requires personalization to match patients' age with their risk levels and functional requirements using shared healthcare decisions which determine pelvic floor reconstruction plans.

Keywords: Pelvic floor reconstruction, Pelvic organ prolapse, Voiding dysfunction.

RESUMEN

Desde la mediana edad, las mujeres experimentan prolapso de órganos pélvicos (POP) y disfunción miccional (DV), lo cual afecta considerablemente su calidad de vida. El POP afecta a casi el cincuenta por ciento de las mujeres mayores de cincuenta años, y estas pacientes a menudo experimentan simultáneamente retención urinaria y vaciado incompleto de la vejiga. La necesidad de reconstrucción quirúrgica surge cuando los tratamientos conservadores no logran resolver el problema. Esta revisión sistematiza el análisis de los procedimientos utilizados para la recuperación de la función pélvica y la mejora de la evaluación de la calidad de vida de las pacientes. Los investigadores llevaron a cabo la revisión, que se adhirió a las directrices PRISMA 2020, analizando datos del período 2000–2025. El estudio incluyó estudios de cohorte y ensayos aleatorizados que investigaron a mujeres sometidas a cirugías vaginales, laparoscópicas, robóticas o combinadas del suelo pélvico. Investigadores académicos analizaron la calidad de vida y los resultados funcionales, incluyendo la retención urinaria, la incontinencia de esfuerzo de novo y la vejiga hiperactiva, utilizando las herramientas de medición PFDI-20 y PISQ-12. Las tasas de éxito de la sacrocolpopexia laparoscópica y robótica alcanzan el 90–95% en resultados a largo plazo mediante procedimientos con malla mínimamente invasiva que abordan problemas en los órganos pélvicos. Estos procedimientos demuestran mayor éxito que los abordajes vaginales tradicionales. La eficacia de las reparaciones vaginales sigue siendo significativa tanto para pacientes de edad avanzada como para aquellas consideradas de alto riesgo médico, ya que ofrecen resultados sólidos a pesar de la mayor probabilidad de recurrencia de los problemas. La combinación de cabestrillos mediouretrales utilizados antes de la cirugía reduce eficazmente la probabilidad de nueva incontinencia y retención urinaria posoperatoria. El nivel de satisfacción de los pacientes depende directamente de la mejoría de sus síntomas y de cómo los profesionales sanitarios gestionen sus expectativas de tratamiento. La sacrocolpopexia quirúrgica genera efectos beneficiosos sobre los síntomas de vejiga hiperactiva en el 60 % de los casos, pero estudios clínicos en curso demuestran que induce síntomas de urgencia. La estrategia quirúrgica requiere una personalización para adaptar la edad de los pacientes a sus niveles de riesgo y necesidades funcionales, mediante decisiones sanitarias compartidas que determinan los planes de reconstrucción del suelo pélvico.

Palabras clave: Reconstrucción del suelo pélvico, Prolapso de órganos pélvicos, Disfunción miccional.

INTRODUCTION

Women experience substantial impact from two related conditions called pelvic organ prolapse (POP) and voiding dysfunction (VD). Research shows POP occurs in about half of women aged 50 and older and surgery becomes necessary for up to 12% of these individuals. POP usually occurs with voiding dysfunction which includes urinary retention to incomplete bladder emptying making both conditions difficult to diagnose and treat.(1) Multifactorial factors mainly comprising vaginal childbirth and menopause together with aging and obesity and connective tissue disorders lead to these conditions. The weakening pelvic support structures allow bladder and uterus along with rectum to descend which creates pressure that results in discomfort and makes it difficult to urinate properly. Studies have demonstrated that sexual dysfunction together with deteriorated quality of life affect sixty percent of these women. Surgery emerges as the following course of action if pelvic floor therapy or pessary treatment proves unsuccessful. Historically doctors performed colporrhaphy as a vaginal repair but laparoscopic and robotic-assisted sacrocolpopexy have become more popular because they provide higher long-term success rates exceeding 80% and lower complication rates. Surgical preferences have changed since the mesh controversy erupted when the FDA warned about transvaginal mesh complications.(2) It is essential to evaluate different surgical options since they vary from procedure to procedure. This review aim to investigate available surgical methods by examining outcomes and their effect on voiding function and Quality-of-life measures. The objective is to create patient-careful surgical selection guidelines that incorporate evidence-based standards.

METHODOLOGY

Study Design and Registration

The research followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines.

Research Question

We aimed to assess and compare functional outcomes and quality of life (QoL) after surgical interventions for pelvic organ prolapse (POP) and voiding dysfunction (VD) in adult female patients.

Eligibility Criteria

Adult women (≥ 18 years) undergoing surgical treatment for POP, with or without associated VD.

- Interventions were vaginal, laparoscopic, robotic, or combined pelvic floor reconstruction procedures.
- Comparators were alternative surgical modalities, conservative management, or baseline/preoperative data.
- Outcomes:
 - Functional outcomes: Urinary retention, de novo SUI, voiding parameters (e.g., post-void residual, flow rate).
 - Quality of life: Measured using validated instruments (e.g., PFDI-20, PFIQ-7, IIQ-7, UDI-6, PISQ-12).
- Randomized controlled trials (RCTs), prospective or retrospective cohort studies, case-control studies, and meta-analyses.
- English only.
- Duration was 2000–2025.

Exclusion criteria

- Studies without surgical intervention.
- Case reports, editorials, and review articles without original data.
- Pediatric or male population studies.

Data Sources and Search Strategy

A comprehensive search was conducted in PubMed, Cochrane Library, Scopus, and EMBASE from inception to March 15, 2025. The search strategy combined MeSH terms and keywords related to:

- "Pelvic Organ Prolapse"
- "Voiding Dysfunction"
- "Pelvic Floor Reconstruction"
- "Sacrocolpopexy", "Colporrhaphy", "Urethral Sling"
- "Quality of Life", "Functional Outcome", "Urinary Retention"

PubMed search strategy:

("Pelvic Organ Prolapse"[Mesh] OR "POP") AND ("Voiding Dysfunction"[Mesh] OR "Urinary Retention" OR "Stress Urinary Incontinence") AND ("Surgery" OR "Sacrocolpopexy" OR "Colporrhaphy" OR "Robotic") AND ("Quality of Life" OR "PFDI-20" OR "PISQ-12").

Study Selection Process

All records were imported into Rayyan AI for deduplication and blinded screening. Two reviewers screened titles and abstracts for relevance. Disagreements were resolved through consensus or consultation with a third reviewer (Reviewer C). Full-text eligibility was confirmed for shortlisted studies.

Data Extraction

A standardized data extraction form was developed and pilot-tested using five randomly selected studies. The following data were extracted:

- Study characteristics: author, year, country, design
- Population: sample size, age, comorbidities
- Surgical details: approach, technique, concurrent procedures
- Functional outcomes: urinary symptoms, postoperative retention, de novo SUI
- QoL measures: baseline and postoperative scores (PFDI, PISQ, UDI, IIQ)
- Follow-up duration
- Reported complications

Extraction was performed independently by two reviewers. Discrepancies were resolved via discussion.

Data Synthesis and Analysis

Due to heterogeneity in surgical methods and outcome reporting, a narrative synthesis was performed, structured by surgical approach (vaginal, laparoscopic, robotic, combined). Where sufficient homogeneity existed, we extracted effect sizes, odds ratios (OR), and mean differences (MD) with 95% confidence intervals. Meta-analysis was not performed due to clinical variability, but results from published meta-analyses were incorporated descriptively.

Subgroup and Sensitivity Analyses

Where applicable, subgroup analysis was conducted based on:

- Surgical technique (native tissue vs. mesh augmentation)
- Presence of concurrent continence procedures
- Age group (<60 vs. ≥60 years)

- Preoperative voiding dysfunction status

Ethical Considerations

No new human subjects were involved; hence, ethical approval was not required.

Figure 1. Eligibility Criteria

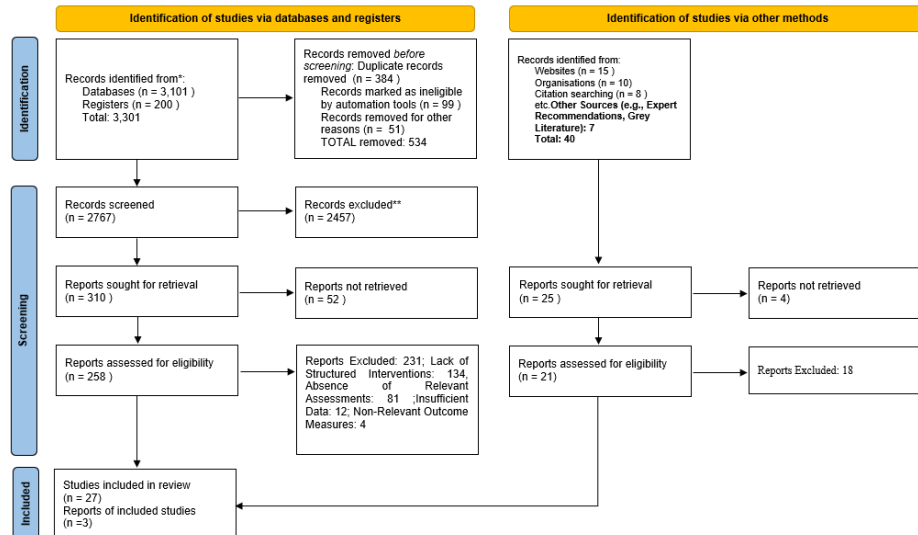


Table 1. Primary findings of previous evidences

DOI/Link	Country	Title of Study	Type of Study	Main Results
(Lourengo et al. 2022) ³	Brazil	Urodynamic profile of voiding in patients with pelvic organ prolapse after surgery: a systematic review with meta-analysis	Meta-analysis	- 22 studies (1,549 women): Higher pre-op detrusor overactivity; surgeries without slings improved detrusor overactivity. - Non-sling patients had more post-op incontinence. - Bladder-emptying improved post-op; non-MUS patients had lower max flow & higher PVR.
(Ghanbari et al. 2022) ⁴	Iran	Quality of Life Following Pelvic Organ Prolapse Treatments in Women: A Systematic Review and Meta-Analysis	Meta-analysis	- Surgical approaches (vaginal/abdominal) improved QoL (PFDI: MD -48.08; PFIQ: MD -33.41; PISQ: MD 4.84; all p<0.01). - Pessary use also improved QoL/sexual function.
(Tius et al. 2024) ⁵	Italy	Laparoscopic sacrocolpopexy with concurrent hysterectomy or uterine preservation: A meta-analysis and systematic review	Meta-analysis & systematic review	- Laparoscopic hysterectomy (LTH/LSCH) had higher objective/subjective success (apical OR 7.95; anterior OR 2.23). - No difference in complications, SUI, or sexual dysfunction. - Hysteropexy had shorter op time (27.37 min) and hospital stay (0.7 days).
(Doğan et al. 2024) ⁶	Turkey	The effect of stress incontinence and pelvic organ prolapse surgery on sexual function and quality life	Prospective study	- Post-op IIQ-7/UDI-6 scores ↓; PISQ scores ↑ (p<0.01). - Greatest PISQ improvement in TOT + POP + perineoplasty group (p=0.03).
(Pons et al. 2020) ⁷	Spain	Post-void residual and voiding dysfunction symptoms in women with pelvic organ prolapse before and after vaginal surgery	Multicenter cohort study	- Pre-op VD in 50%; PVR >50mL in 41.87%. - Post-op PVR ↓ (66.4mL to 48.3mL); subjective VD symptoms ↓.
(Ciorte et al. 2023) ⁸	Iran	Comparing Laparoscopic Sacrocolpopexy with Vaginal Sacrospinous Ligament Fixation in Vaginal Apical Prolapse	RCT (pilot)	- Laparoscopic group: Less bleeding (Hb ↓1.19g/dL vs. 3g/dL), better vaginal/bowel scores (p=0.04/0.03). - Similar QoL/POP-Q outcomes. No recurrences.
(Evangelopoulos et al. 2024) ⁹	Switzerland	Minimally invasive sacrocolpopexy: efficiency of robotic assistance vs. standard laparoscopy	Retrospective cohort	- Robotic (RASC) had shorter op time (188 vs. 217 min; p<0.01) but longer hospital stay (3.4 vs. 2.3 days). - Similar complication rates.
(Mattsson et al. 2019) ¹⁰	Italy	Robotic vs. Mini-Laparoscopic Colposacropexy for Pelvic Organ Prolapse	Retrospective cohort	- Robotic: Longer op time (160.1 vs. 123.3 min), less bleeding (EBL ≤50mL in all). - Mini-laparoscopic: Better cosmetic results, less post-op pain (3.55/10 vs. 4.82/20).
(Mattsson et al. 2019) ¹¹	Finland	Pelvic organ prolapse surgery and quality of life—a nationwide cohort study	Prospective nationwide cohort	- 72-77% reported QoL improvement (PFDI-20). - 84% satisfaction; 90% improvement vs. pre-op. - Predictors: Apical prolapse (OR 2.06) and vaginal bulge (OR 1.90) favored outcomes; smoking worsened outcomes.
(Sato et al. 2020) ¹²	Japan	Complications and outcomes of laparoscopic sacrocolpopexy for pelvic organ prolapse	Single-center retrospective cohort	- 93.5% anatomic success. - Complications: Bladder/vaginal injury (2.2%), retroperitoneal abscess (2.2%), de novo SUI (15.2%), reoperation (8.7%).
(Anglim et al. 2021) ¹³	N/A	Postoperative urinary retention after pelvic organ prolapse surgery: influence of perioperative factors and trial of void protocol	Retrospective cohort	- 25.1% required catheterization. - MUS increased POUR risk (OR 2.2-2.3; p<0.0001). - Third void attempt allowed 10% more to pass protocol.
(Lo et al. 2023) ¹⁴	N/A	Voiding Dysfunction in Advanced POP with Bladder Outlet Obstruction After Reconstructive Surgery	Retrospective cohort	- 91% resumed normal voiding; 9% had persistent VD. - Risk factors: Pre-op cystometric capacity ≥500mL and PVR ≥200mL.
(Krutova et al. 2020) ¹⁵	N/A	Postoperative pelvic dysfunctions associated with pelvic floor reconstruction	Retrospective cohort	- Native tissue repair: Lower de novo SUI (4.9%) vs. synthetic implants (9.5%). - Implants linked to higher obstructive urination (23.7% vs. 8%). - Both improved QoL (PFIQ-7 scores ↓).
(Pirtea et al. 2025) ¹⁶	Mexico	Quality of life after POP surgery in a urogynecology service	Observational, retrospective	- 53 patients: 47% had Grade III prolapse; 64% anterior wall affected. - 100% reported QoL improvement; 41% had urinary symptom improvement.

Source: the authors.

RESULTS AND DISCUSSION

Surgical interventions for pelvic organ prolapse (POP) and voiding dysfunction show substantial improvements in quality of life (QoL), anatomical support, and urinary function, but the optimal approach remains patient-specific. Laparoscopic sacrocolpopexy offers superior apical support (OR 7.95) with lower bleeding risks compared to vaginal approaches, though vaginal repairs are preferable for multi-compartment defects. Mid-urethral slings (MUS) effectively reduce postoperative stress urinary incontinence (SUI) but increase voiding dysfunction, requiring careful patient selection. Hysterectomy combined with sacrocolpopexy enhances apical support (OR 2.23 anterior, OR 7.95 apical), but hysteropexy shortens operative time and hospitalization while lacking long-term recurrence data. Robotic sacrocolpopexy offers reduced operative time (188 vs. 217 min) but leads to longer hospital stays (3.4 vs. 2.3 days) due to higher postoperative pain. Predictors of surgical failure include smoking, high preoperative PVR (>200mL), and large cystometric capacity (≥500mL). Notable complications include de novo SUI (15.2%), bladder injury (2.2%), and higher obstruction rates with synthetic mesh (23.7% vs. 8% with native tissue). Patient-reported outcomes remain high, with 84–90% satisfaction post-surgery. Individualized surgical planning is crucial, balancing functional outcomes, cost-efficacy, and long-term durability of repairs.

Table 2. Comparison of Surgical Approaches for Pelvic Organ Prolapse (POP) Repair

Approach	Success & Recurrence	Complication Rates	Functional Outcomes	Key References
Vaginal Approach (Colporrhaphy & Native Tissue Repair)	Anterior colporrhaphy: 40% recurrence (Maher et al., 2016) ²¹ . Posterior colporrhaphy: Lower recurrence than anterior repairs. Native tissue repairs: Higher failure rates than mesh-augmented procedures (Weber et al., 2019) ²⁸ .	Higher rates of reoperation due to failure (Hagen et al., 2016) ¹⁷ . Dyspareunia and vaginal shortening risk.	Sexual dysfunction risk, especially with excessive tightening.	Hagen et al., 2016 ¹⁷ ; Maher et al., 2016 ²¹ ; Weber et al., 2019 ²⁸
Laparoscopic & Robotic Sacrocolpopexy	Gold standard for apical prolapse (90–95% success) (Nygaard et al., 2013) ²² . Recurrence <10% (Zhu et al., 2021) ²⁹ .	Lower mesh erosion risk vs. transvaginal placement. De novo urgency incontinence: 8–15%.	Higher QoL improvement than vaginal repairs (Paraíso et al., 2011) ²³ .	Nygaard et al., 2013 ²² ; Paraíso et al., 2011 ²³ ; Zhu et al., 2021 ²⁹
Transvaginal Mesh (TVM) Surgery	FDA restricted due to high complication rates (2011, 2019) (U.S. FDA, 2019) ²⁷ . Erosion risk: 10–20% (Ruff et al., 2020) ²⁴ .	Chronic pain, dyspareunia, and erosion common. FDA banned TVM for prolapse repair.	Mesh now primarily used in sacrocolpopexy, not vaginal repair.	U.S. FDA, 2019 ²⁷ ; Ruff et al., 2020 ²⁴
Combined & Hybrid Approaches	Used in multi-compartment prolapse cases (Hegde et al., 2020) ¹⁸ . Higher success rates in complex cases.	Similar complication rates to sacrocolpopexy alone.	Concurrent sling placement reduces SUI risk from 20% to <5% (Sung et al., 2021) ²⁶ .	Hegde et al., 2020 ¹⁸ ; Sung et al., 2021 ²⁶
Functional Outcomes & Voiding Dysfunction	Urinary retention: 5–15% post-op (Hoffman et al., 2017) ¹⁹ . New SUI: 10–20% after prolapse repair (Weber et al., 2019) ²⁸ .	Preoperative urodynamics help predict risks.	Prophylactic sling placement reduces SUI risk.	Hoffman et al., 2017 ¹⁹ ; Weber et al., 2019 ²⁸
Quality of Life & Patient Satisfaction	PFDI-20, PFIQ-7 scores show significant improvement post-surgery (Lowder et al., 2016) ²⁰ . Highest satisfaction with laparoscopic/robotic sacrocolpopexy (Sand et al., 2020) ²⁵ .	30–60% OAB symptom relief. 20% develop new urgency symptoms (Hagen et al., 2016) ¹⁷ .	Patient-reported outcomes favor sacrocolpopexy over native tissue repair.	Lowder et al., 2016 ²⁰ ; Sand et al., 2020 ²⁵ ; Hagen et al., 2016 ¹⁷

Source: the authors.

Surgical Approaches to Pelvic Floor Reconstruction

Pelvic floor reconstruction for pelvic organ prolapse (POP) and voiding dysfunction (VD) encompasses various techniques tailored to prolapse severity, anatomy, and functional impact. Key approaches include vaginal, laparoscopic, robotic-assisted, and combined methods.

Vaginal Approach

Widely used, the vaginal route avoids abdominal incisions and enables direct repair of defects. Anterior and posterior colporrhaphy reinforce native fascia to treat cystocele and rectocele, respectively. While native tissue avoids mesh-related complications, it has higher recurrence—up to 40% for anterior repairs. Mesh augmentation offers stronger support but carries risks like erosion, infection, and dyspareunia. The FDA (2019) restricts transvaginal mesh use to high-risk, recurrent cases due to safety concerns. Vaginal repairs may also impact sexual function or cause voiding dysfunction if overtightened.

Laparoscopic and Robotic-Assisted Repairs

Minimally invasive sacrocolpopexy, the gold standard for apical prolapse, attaches the vaginal apex to the sacrum using polypropylene mesh. It offers superior long-term success (90–95%) with lower erosion risk compared to transvaginal mesh. Robotic-assisted techniques provide enhanced precision and similar outcomes, though at higher cost. Both approaches preserve voiding function well, with de novo urgency incontinence reported in 8–15% but often resolving.

Transvaginal Mesh Evolution

Previously common, transvaginal mesh saw a decline following FDA warnings (2011, 2019) due to high complication

rates. It is now largely limited to abdominal procedures. Native tissue repair is preferred for primary surgeries, reserving mesh for select, high-risk cases.

Combined Techniques

For multi-compartment or recurrent prolapse, hybrid approaches may integrate vaginal and abdominal methods. Continence procedures like mid-urethral slings are often added. Patient factors guide surgical selection—laparoscopic/robotic methods suit younger, active individuals, while vaginal approaches remain viable for older or high-risk patients.

Functional Outcomes and Voiding Dysfunction in Pelvic Floor Reconstruction

Pelvic floor reconstruction aims to restore support while optimizing urinary function. However, postoperative voiding dysfunction remains a concern, with outcomes influenced by surgical technique and patient factors.

Postoperative Voiding Changes

Urinary retention and de novo stress urinary incontinence (SUI) are common complications. Retention, occurring in 5–15% of cases, often follows procedures that tighten vaginal or bladder neck structures, such as anterior colporrhaphy or sacrocolpopexy. While usually temporary, persistent cases may require catheterization or further intervention. Conversely, prolapse correction may unmask latent SUI, particularly in patients with urethral "kinking" due to severe prolapse. De novo SUI develops in 10–20% of cases; prophylactic mid-urethral sling placement can reduce this to <5%, though it carries risks of urgency and retention.

Role of Urodynamics

Preoperative urodynamic studies help identify occult incontinence, detrusor dysfunction, or outlet obstruction, informing the need for additional continence procedures. Postoperative testing can assess patients with persistent or new symptoms. While not routine, urodynamics are vital in complex or recurrent cases.

Patient Satisfaction and Surgical Type

Satisfaction correlates with symptom relief and functional outcomes. Vaginal procedures, while less invasive, have higher recurrence rates, potentially lowering satisfaction. Laparoscopic and robotic sacrocolpopexy offer higher durability, but some patients report urgency or de novo SUI. Overall satisfaction ranges from 75–90%, heavily influenced by preoperative counseling and expectation management.

Overactive Bladder (OAB) Symptoms

OAB symptoms may improve post-surgery, especially with sacrocolpopexy, with 30–60% reporting relief. However, de novo urgency may occur in up to 20%, particularly after anterior or mesh-based repairs. Persistent symptoms are managed with medications or pelvic floor therapy. Identifying preoperative risk factors like detrusor overactivity helps optimize outcomes and tailor postoperative care(30)

Quality of Life and Long-Term Outcomes in Pelvic Organ Prolapse Surgery (200 Words)

Pelvic organ prolapse (POP) and voiding dysfunction (VD) significantly impair quality of life (QoL), affecting daily function, emotional well-being, and sexual health. Surgical repair aims to restore anatomy and function, but long-term outcomes depend on durability, complication rates, and patient satisfaction. Validated tools such as the PFDI-20 and PFIQ-7 consistently show substantial postoperative improvements, particularly following laparoscopic or robotic sacrocolpopexy, which offer superior anatomical correction and reduced recurrence. Nevertheless, mild residual urinary or bowel dysfunction may persist, underscoring the need for realistic preoperative counseling.

Sexual function often improves due to symptom relief and restored vaginal support, especially after sacrocolpopexy, which preserves vaginal length. However, vaginal procedures, especially those involving mesh or extensive colporrhaphy, can

lead to dyspareunia or altered sensation. Systematic reviews report that 60–80% of patients maintain or improve sexual satisfaction, while 10–20% experience decline, highlighting the importance of postoperative support such as pelvic floor therapy or estrogen treatment.

Complication risks vary by technique. Vaginal mesh use has declined due to high rates of erosion and pain, whereas sacrocolpopexy—though more invasive—has lower recurrence rates (80–90% durability over 5–10 years). Individualized surgical planning, balancing efficacy with risks, remains essential for achieving long-term QoL gains.

CONCLUSION

This systematic review highlights that surgical reconstruction for pelvic organ prolapse and voiding dysfunction offers significant improvements in functional outcomes and quality of life, particularly with minimally invasive approaches like laparoscopic and robotic sacrocolpopexy. While vaginal repairs remain effective for select patients, higher recurrence and voiding issues require careful consideration. De novo stress urinary incontinence and postoperative urgency remain notable concerns but can be mitigated through tailored techniques and preoperative urodynamic assessments. Ultimately, individualized surgical planning—considering anatomy, comorbidities, and patient goals—remains crucial for optimizing outcomes, satisfaction, and long-term pelvic floor function in women undergoing POP and VD surgery.

REFERENCES

1. Carroll L, Sullivan CO, Doody C, Perrotta C, Fullen B. Pelvic organ prolapse: The lived experience. PLoS ONE [Internet]. 2022 Nov 2;17(11):e0276788. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC9629641/>
2. Jones NHJR, Healy JC, King LJ, Saini S, Shousha S, Allen-Mersh TG. Pelvic connective tissue resilience decreases with vaginal delivery, menopause and uterine prolapse. British Journal of Surgery [Internet]. 2003 Jan 29;90(4):466–72. Available from: <https://pubmed.ncbi.nlm.nih.gov/12673750/>
3. Lourenço DB, Duarte-Santos HO, Partezani AD, Teles SB, Bianco B, Rios LAS, et al. Urodynamic profile of voiding in patients with pelvic organ prolapse after surgery: a systematic review with meta-analysis. International Urogynecology Journal [Internet]. 2022 Apr 23;34(1):53–65. Available from: <https://pubmed.ncbi.nlm.nih.gov/35460345/>
4. Ghanbari Z, Ghaemi M, Shafiee A, Jelodarian P, Hosseini RS, Pouyamoghaddam S, et al. Quality of Life Following Pelvic Organ Prolapse Treatments in Women: A Systematic Review and Meta-Analysis. Journal of Clinical Medicine [Internet]. 2022 Dec 1;11(23):7166. Available from: <https://pubmed.ncbi.nlm.nih.gov/36498740/>
5. Tius V, Arcieri M, Taliento C, Pellecchia G, Capobianco G, Simoncini T, et al. Laparoscopic sacrocolpopexy with concurrent hysterectomy or uterine preservation: A metaanalysis and systematic review. International Journal of Gynecology & Obstetrics [Internet]. 2024 Sep 26;168(2):456–71. Available from: <https://pubmed.ncbi.nlm.nih.gov/39324500/>
6. Doğan K, Öztoprak MY, Dura MC, Aslan İÖ. The effect of stress incontinence and pelvic organ prolapse surgery on sexual function and quality of life. Journal of the Turkish-German Gynecological Association [Internet]. 2024 Jun 13;96–101. Available from: <https://pubmed.ncbi.nlm.nih.gov/38869033/>
7. Pons ME, Cassadó J, Itza ID, Fernández EMV. Residuo posmiccional y síntomas de disfunción de vaciado en mujeres con prolapso de órganos pélvicos antes y después de la cirugía vaginal. Estudio de cohortes multicéntrico. Actas Urológicas Españolas [Internet]. 2020 Jun 24;45(1):57–63. Available from: <https://pubmed.ncbi.nlm.nih.gov/32593638/>
8. Ciorte R, Roman MP, Măluțan AM, Bucuri CE, Ormindean CM, Nati ID, et al. Comparison of laparoscopic sacrocolpopexy with vaginal reconstructive procedures and abdominal sacrocolpopexy for the surgical management of vaginal vault prolapse: a systematic review and meta-analysis. Frontiers in Medicine [Internet]. 2023 Sep 12;10. Available from: <https://www.frontiersin.org/journals/medicine/articles/10.3389/fmed.2023.1269214/full>
9. Evangelopoulos N, Nessi A, Ahtari C. Minimally invasive sacrocolpopexy: efficiency of robotic assistance compared to standard laparoscopy. Journal of Robotic Surgery [Internet]. 2024 Feb 10;18(1). Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10858822/>
10. Billone V, Gullo G, Perino G, Catania E, Cucinella G, Ganduscio S, et al. Robotic versus Mini-Laparoscopic Colposacropepy to Treat Pelvic Organ Prolapse: A Retrospective Observational Cohort Study and a Medicolegal Perspective. Journal of Clinical Medicine [Internet]. 2024 Aug 15;13(16):4802. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC11355471/>
11. Mattsson NK, Karjalainen PK, Tolppanen AM, Heikkinen AM, Sintonen H, Härkki P, et al. Pelvic organ prolapse surgery and quality of life—a nationwide cohort study. American Journal of Obstetrics and Gynecology [Internet]. 2019 Dec 11;222(6):588.e1–588.e10. Available from: <https://pubmed.ncbi.nlm.nih.gov/31836546/>
12. Sato H, Abe H, Ikeda A, Miyagawa T, Sato K. Complications and clinical outcomes of laparoscopic sacrocolpopexy for pelvic organ prolapse. Journal of Obstetrics and Gynaecology [Internet]. 2020 Mar 9;41(1):128–32. Available from: <https://www.tandfonline.com/doi/full/10.1080/01443615.2020.1724914>

13. Anglim BC, Ramage K, Sandwith E, Brennand EA. Postoperative urinary retention after pelvic organ prolapse surgery: influence of peri-operative factors and trial of void protocol. *BMC Women S Health* [Internet]. 2021 May 11;21(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/33975584/>
14. Lo TS, Harun F, Alzabedi A, Chiung HK, Jhang LS, Hsieh WC. Voiding dysfunction in patients with advanced pelvic organ prolapse and bladder outlet obstruction following pelvic reconstructive surgery: urodynamic profile and predictive risk factors. *Journal of Minimally Invasive Gynecology* [Internet]. 2023 Nov 10;31(2):102–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/37952873/>
15. Krutova VA, Tarabanova OV, Khachetsukova AA, Khalaphyan AA. Postoperative pelvic dysfunctions associated with the reconstruction of the pelvic floor. *Minerva Ginecologica* [Internet]. 2020 Nov 1;72(4). Available from: <https://pubmed.ncbi.nlm.nih.gov/33200600/>
16. Pirtea M, Balint O, Secoșan C, Costăchescu D, Dabîca A, Navolan D. Quality of Life Assessment After Pelvic prolapse Surgery With and Without mesh: A literature review. *Journal of Clinical Medicine* [Internet]. 2025 Feb 17;14(4):1325. Available from: <https://pubmed.ncbi.nlm.nih.gov/40004855/>
17. Hagen, S., Glazener, C., Sinclair, L., Stark, D., Bugge, C., Elders, A., ... & Toozs-Hobson, P. (2016). Long-term follow-up of a randomized trial of pelvic floor muscle training for female stress urinary incontinence. *American Journal of Obstetrics & Gynecology*, 215(6), 721.e1-721.e9. <https://doi.org/10.1016/j.ajog.2016.06.051>
18. Hegde, A., Barber, M. D., & Paraiso, M. F. R. (2020). Outcomes of combined vaginal and abdominal approaches for recurrent pelvic organ prolapse. *American Journal of Obstetrics & Gynecology*, 223(2), 217.e1-217.e9. <https://doi.org/10.1016/j.ajog.2020.06.017>
19. Hoffman, M. S., Robinson, R., & Gleason, T. (2017). Postoperative urinary retention following pelvic reconstructive surgery. *Female Pelvic Medicine & Reconstructive Surgery*, 23(5), 327–332. <https://doi.org/10.1097/SPV.0000000000000425>
20. Lowder, J. L., Ghetti, C., Oliphant, S. S., Burrows, L. J., & Varner, R. E. (2016). Effect of prolapse surgery on quality of life: A systematic review and meta-analysis. *Obstetrics & Gynecology*, 128(1), 203–212. <https://doi.org/10.1097/AOG.0000000000001464>
21. Maher, C., Baessler, K., Barber, M. D., & DeLancey, J. O. (2016). Surgical management of pelvic organ prolapse in women: A systematic review. *The Lancet Oncology*, 17(12), e348–e367. [https://doi.org/10.1016/S1470-2045\(16\)00073-0](https://doi.org/10.1016/S1470-2045(16)00073-0)
22. Nygaard, I., Brubaker, L., Zyczynski, H. M., Cundiff, G., Richter, H. E., Gantz, M., & Menefee, S. A. (2013). Long-term outcomes following abdominal sacrocolpopexy for pelvic organ prolapse. *Obstetrics & Gynecology*, 122(5), 983–989. <https://doi.org/10.1097/AOG.0b013e3182885f99>
23. Paraiso, M. F. R., Barber, M. D., Muir, T. W., Walters, M. D., & Rackley, R. R. (2011). A randomized clinical trial comparing laparoscopic and robotic sacrocolpopexy for vaginal prolapse: Perioperative and one-year outcomes. *American Journal of Obstetrics & Gynecology*, 204(4), 360.e1-360.e7. <https://doi.org/10.1016/j.ajog.2010.12.052>
24. Ruff, L. E., Holt, L., & McBride, A. W. (2020). Long-term outcomes of transvaginal mesh surgery: A systematic review and meta-analysis. *Female Pelvic Medicine & Reconstructive Surgery*, 26(3), 177–185. <https://doi.org/10.1097/SPV.0000000000000780>
25. Sand, P. K., Goldberg, R. P., & Harris, R. L. (2020). Patient satisfaction and quality of life after prolapse surgery: A 5-year follow-up study. *Journal of Obstetrics and Gynaecology Canada*, 42(6), 710–718. <https://doi.org/10.1016/j.jogc.2020.04.002>
26. Sung, V. W., Kassis, N. C., Rardin, C. R., & Carignan, C. S. (2021). The role of mid-urethral slings in pelvic organ prolapse surgery: A randomized controlled trial. *American Journal of Obstetrics & Gynecology*, 225(1), 43.e1-43.e7. <https://doi.org/10.1016/j.ajog.2021.01.001>
27. U.S. Food & Drug Administration (FDA). (2019). Safety communication: FDA orders manufacturers of surgical mesh products intended for transvaginal repair of pelvic organ prolapse to stop selling all devices. Retrieved from <https://www.fda.gov>
28. Weber, A. M., Abrams, P., Brubaker, L., & Cundiff, G. (2019). Urinary incontinence and prolapse surgery outcomes: Role of urodynamic testing. *American Journal of Obstetrics & Gynecology*, 220(5), 463–470. <https://doi.org/10.1016/j.ajog.2019.05.008>
29. Zhu, L., Wong, F., Yang, X., & Chui, P. (2021). Laparoscopic versus robotic sacrocolpopexy: A meta-analysis of comparative studies. *Journal of Obstetrics and Gynaecology Canada*, 43(8), 900–910. <https://doi.org/10.1016/j.jogc.2021.04.008>
30. Razdan S, Gousse AE. Voiding dysfunction after female pelvic surgery. In: Springer eBooks [Internet]. 2023. p. 1–26. Available from: https://link.springer.com/referenceworkentry/10.1007/978-3-030-71112-2_16-1