



International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Operating Publisher
SciFormat Publishing Inc.
ISNI: 0000 0005 1449 8214

2734 17 Avenue SW,
Calgary, Alberta, T3E0A7,
Canada
+15878858911
editorial-office@sciformat.ca

ARTICLE TITLE	URINARY INCONTINENCE AFTER GYNECOLOGICAL SURGERY: RISK FACTORS, DIAGNOSIS, AND TREATMENT OPTIONS — A NARRATIVE REVIEW
----------------------	---

DOI	https://doi.org/10.31435/ijitss.2(50).2026.5911
------------	---

RECEIVED	21 March 2026
-----------------	---------------

ACCEPTED	17 June 2026
-----------------	--------------

PUBLISHED	29 June 2026
------------------	--------------

LICENSE



The article is licensed under a **Creative Commons Attribution 4.0 International License**.

© The author(s) 2026.

This article is published as open access under the Creative Commons Attribution 4.0 International License (CC BY 4.0), allowing the author to retain copyright. The CC BY 4.0 License permits the content to be copied, adapted, displayed, distributed, republished, or reused for any purpose, including adaptation and commercial use, as long as proper attribution is provided.

URINARY INCONTINENCE AFTER GYNECOLOGICAL SURGERY: RISK FACTORS, DIAGNOSIS, AND TREATMENT OPTIONS — A NARRATIVE REVIEW

Jakub Lewandowski [JL] (Corresponding Author, Email: j.lewandowski107@gmail.com)

Independent Researcher, Szczecin, Poland

ORCID ID: 0009-0006-2477-8660

Denis Myszak [DM]

Independent Researcher, Szczecin, Poland

ORCID ID: 0000-0001-5275-3141

Igor Szlegiel [IS]

Independent Researcher, Szczecin, Poland

ORCID ID: 0009-0000-8271-8945

Oktawia Gwiazdzińska [OG]

Independent Researcher, Szczecin, Poland

ORCID ID: 0009-0001-1212-4276

Anita Strzykała [AS]

Independent Researcher, Szczecin, Poland

ORCID ID: 0009-0003-5392-2199

ABSTRACT

Introduction and purpose: Urinary incontinence after gynecological surgery remains a relevant clinical problem because it affects physical functioning, emotional well-being, sexual life, and social activity, even when the leakage itself is not severe. The aim of this review is to summarize the current evidence on the main types of urinary incontinence after gynecological procedures, preoperative and operative risk factors, diagnostic pathways, conservative and surgical treatment, treatment effectiveness, and the impact of therapy on patient quality of life.

Brief description of the state of knowledge: Stress urinary incontinence is the most frequently reported form after gynecological procedures, but urgency and mixed urinary incontinence are also common, especially after more extensive pelvic surgery. Risk depends on the patient's baseline pelvic floor status, age, obesity, parity, previous surgery, menopausal status, and the extent of dissection performed during the operation. Diagnostic work-up is based on history, physical examination, voiding diary, urinalysis, post-void residual assessment, and selected use of urodynamics or cystoscopy in more complex cases.

Summary: Management should begin with accurate identification of the predominant symptom pattern and with measures that are proportionate to symptom severity. Supervised pelvic floor muscle training remains first-line treatment, while surgery is mainly reserved for persistent or severe stress urinary incontinence. Operative treatment may provide high rates of improvement, but treatment failure, recurrence, or bothersome new symptoms still occur in a relevant minority of patients and require reassessment and individualized follow-up.

KEYWORDS

Urinary Incontinence; Gynecological Surgery; Stress Urinary Incontinence; Pelvic Floor Muscle Training; Quality of Life

CITATION

Jakub Lewandowski, Denis Myszak, Igor Szlegiel, Oktawia Gwiazdzińska, Anita Strzykała. (2026) Urinary Incontinence After Gynecological Surgery: Risk Factors, Diagnosis, and Treatment Options — a Narrative Review. *International Journal of Innovative Technologies in Social Science*. 2(50). doi: 10.31435/ijitss.2(50).2026.5911

COPYRIGHT

© The author(s) 2026. This article is published as open access under the **Creative Commons Attribution 4.0 International License (CC BY 4.0)**, allowing the author to retain copyright. The CC BY 4.0 License permits the content to be copied, adapted, displayed, distributed, republished, or reused for any purpose, including adaptation and commercial use, as long as proper attribution is provided.

Introduction

Urinary incontinence after gynecological surgery is one of those complications that may seem less dramatic than bleeding, infection, or urinary tract injury, yet for many patients it becomes the most burdensome part of recovery. Leakage of urine affects routine activity, work, sleep, exercise, intimacy, and self-confidence, and its psychological weight is often greater than expected from the volume of leakage alone. This is why postoperative urinary incontinence should be discussed not only as a symptom, but also as a quality-of-life issue.

The problem may appear after hysterectomy, pelvic floor reconstruction, anti-prolapse surgery, and gynecologic oncology procedures. In some women the operation triggers symptoms that had not been apparent before, whereas in others surgery worsens a pre-existing but compensated dysfunction of the pelvic floor or lower urinary tract. A careful review of the literature suggests that postoperative urinary incontinence rarely results from a single mechanism.

In one study of women referred for urodynamic assessment after obstetric and gynecological surgery, stress urinary incontinence was diagnosed in 56% of patients, mixed urinary incontinence in 35%, and overactive bladder in 9%. These proportions show that the symptom pattern is often heterogeneous and that treatment should not be based on the assumption that every postoperative leakage is purely stress-related.

The purpose of this review is to present the current state of knowledge on urinary incontinence after gynecological surgery, with particular attention to clinical types, risk factors, diagnostic methods, conservative and operative treatment, treatment outcomes, and patient comfort before and after therapy.

State of knowledge**Types of urinary incontinence**

The most common form observed after gynecological surgery is stress urinary incontinence, defined as involuntary leakage during physical effort, coughing, sneezing, or laughing. In clinical terms, this usually reflects urethral hypermobility, intrinsic sphincter deficiency, or a combination of both mechanisms. The symptom may become more apparent after procedures that alter pelvic support and change the mechanics of the urethrovesical junction.

Urgency urinary incontinence forms another important group. These patients usually report sudden urgency, frequency, nocturia, and leakage preceded by an urge that is difficult to suppress. Such symptoms may follow pelvic surgery because of detrusor overactivity, altered neural regulation, postoperative irritation, or secondary dysfunction of bladder emptying.

Mixed urinary incontinence is common in daily practice and often creates the greatest diagnostic and therapeutic difficulty. In these women, both stress and urgency components coexist, and the dominant mechanism should be identified before treatment is chosen. Failure to do so may lead to disappointment even after technically correct surgery.

Less commonly, postoperative leakage may reflect overflow incontinence, chronic retention with overflow, fistula, or major lower urinary tract dysfunction. In such cases, the physician should think beyond typical incontinence pathways and rule out structural or functional complications that require a different type of management.

Risk factors

Preoperative risk is shaped by several well-known factors, including older age, obesity, vaginal delivery, multiparity, menopause, chronic cough, constipation, diabetes, neurological disease, pre-existing pelvic floor symptoms, and prior pelvic surgery. Pelvic organ prolapse deserves special attention because it may either coexist with urinary incontinence or temporarily mask it before surgery. A patient who seems continent before an operation may therefore become symptomatic once prolapse is corrected.

Operative risk depends on the type and extent of surgery. Hysterectomy, reconstructive vaginal surgery, prolapse procedures, and radical oncologic operations may alter the support of the bladder neck, affect urethral positioning, or disturb autonomic innervation. The greater the dissection and the more complex the pelvic anatomy, the more careful the preoperative counselling should be.

One study involving 392 women reported urinary incontinence within 12 months after hysterectomy in 149 patients, which corresponded to 38% of the cohort, although no statistically significant association with surgical route was found. This observation is clinically useful because it suggests that the preoperative pelvic floor condition may be as important as the access route itself.

Diagnostic approach

The diagnostic process begins with a detailed history. The clinician should establish when the symptoms started, whether leakage occurs with effort or urgency, how often the patient voids, whether nocturia is present, and whether there is pain, incomplete emptying, recurrent infection, or continuous leakage that may suggest fistula. Just as important is the degree to which symptoms interfere with work, movement, sleep, intimacy, and confidence.

Physical examination should include abdominal, pelvic, and focused neurological assessment when indicated. Stress testing with a filled bladder, evaluation of pelvic organ prolapse, observation of urethral mobility, and assessment of vaginal trophic status may provide substantial diagnostic information before more advanced tests are considered.

Urinalysis, a voiding diary, and post-void residual measurement are simple but valuable tools. Urinalysis helps exclude infection and hematuria, the diary records symptom pattern across the day, and post-void residual helps identify impaired emptying or possible outlet obstruction. These steps are especially useful in women who have previously undergone pelvic surgery.

Urodynamic testing is not recommended routinely for every patient with uncomplicated stress urinary incontinence. It becomes more useful in women with mixed symptoms, previous failed treatment, elevated post-void residual, uncertain diagnosis, or discordance between symptoms and clinical findings. Cystoscopy is reserved for selected cases, particularly when bladder or urethral pathology, fistula, hematuria, recurrent urinary tract infections, or prior surgical complications are suspected.

Conservative treatment

Conservative management is the starting point for most women. This is particularly true for mild and moderate symptoms and for patients in whom the dominant mechanism is still being clarified.

Supervised pelvic floor muscle training remains the best supported first-line option for stress urinary incontinence. The Canadian guideline recommends an intensive supervised program lasting at least three months. According to a summary cited by the American Academy of Family Physicians, up to 38% of women with pure stress urinary incontinence may achieve cure after at least three months of pelvic floor muscle training, while a larger group reports partial but meaningful improvement.

Lifestyle interventions also matter. Weight reduction, treatment of constipation, smoking cessation, adjustment of fluid habits, and modification of high-impact physical activity may reduce symptom burden, especially when combined with formal pelvic floor therapy.

In urgency or mixed urinary incontinence, bladder training and pharmacotherapy may be added. Vaginal support devices can also be useful in selected women. Guideline data show successful fitting of a pessary in about 89–92% of patients, while symptom improvement is reported by 45–58%.

Operative treatment

Surgery is considered when conservative treatment fails or when symptoms are sufficiently severe to limit normal functioning despite appropriate non-operative care. The best candidates are women with clearly confirmed stress urinary incontinence and realistic expectations regarding outcome.

Midurethral sling procedures remain the most commonly performed operations. Guideline estimates place short-term subjective cure rates at about 62–98% for transobturator slings and 71–97% for retropubic slings, while long-term subjective cure rates range from 43–92% and 51–88%, respectively. These results explain why sling surgery continues to play a central role in treatment.

Other options include colposuspension, autologous fascial slings, and periurethral bulking agents. Bulking procedures tend to be less effective than sling-based operations, but they are less invasive and may be useful for frail patients, for women with significant comorbidity, or after previous failed procedures.

Surgical planning should also take into account prior radiation therapy, tissue quality, prior mesh complications, pain syndromes, and voiding dysfunction. In such settings, a staged or non-mesh approach may be safer and more appropriate.

Effectiveness, quality of life, and treatment failure

Treatment success should not be reduced to pad tests or technical endpoints alone. For most patients, the decisive question is whether they can return to work, physical activity, travel, social contact, and intimate life without constant fear of leakage.

A study evaluating quality of life after surgery for stress incontinence found the greatest improvement between the preoperative assessment and the 6-month follow-up, with benefit persisting to 24 months. The mean decrease in the Incontinence Impact Questionnaire score was 133.1 points, indicating a major reduction in the day-to-day burden of symptoms. Importantly, the improvement in quality of life was more strongly linked to symptom relief than to a narrow technical definition of success.

Not all patients achieve full success. In the SISTEr trial, overall treatment failure at 24 months was reported in 64.4% of women, although this figure reflected a very strict composite definition of success and should not be interpreted as meaning that most patients derived no benefit. Even among women classified as treatment failures by strict trial criteria, many still experienced clinically relevant improvement in quality of life.

When treatment does not work, the next step is not immediate repeat surgery but careful reassessment. The clinician should review the original diagnosis, determine whether the predominant problem is now stress leakage, urgency, obstruction, retention, pain, or recurrence of prolapse, and then repeat the focused work-up as needed. Some women benefit from renewed conservative treatment or pharmacotherapy, whereas others require revision surgery, bulking agents, autologous sling procedures, or referral to a tertiary urogynecology center.

Conclusions

Urinary incontinence after gynecological surgery is a multifactorial condition and should be approached as a clinical syndrome rather than a single postoperative complication. Stress urinary incontinence is the most frequent type, but mixed and urgency forms are also common and need to be recognized early.

A good diagnostic pathway still begins with careful listening, focused examination, and simple tests. In many patients this is enough to define the problem and guide treatment. More advanced investigations should be reserved for cases that are unclear, recurrent, or complicated.

Conservative treatment remains the first step for most women. Pelvic floor muscle training offers meaningful benefit, and surgery provides high rates of improvement in properly selected patients. At the same time, not every patient becomes fully dry, and follow-up care should include management of treatment failure, recurrence, and long-term quality of life.

REFERENCES

1. Bazi, T., Cote, J. F., Carlson, K. V., Guralnick, M. L., Keefe, D. T., Lacombe, L., et al. (2024). 2024 Canadian Urological Association guideline: Female stress urinary incontinence. *Canadian Urological Association Journal*, 18(4), E170–E194.
2. Bogusiewicz, M., Monist, M., Gałazka, I., & Rechberger, T. (2010). Urinary incontinence after obstetric gynecological surgery—Urodynamic studies. *Ginekologia Polska*, 81(5), 370–373.
3. Cundiff, G. W., & Komesu, Y. M. (2017). Evaluation and treatment of female stress urinary incontinence. *Mayo Clinic Proceedings*, 92(12), 1834–1844.
4. Davidson, E. R. W., & O'Connell, P. R. (2022, January 3). *Urinary and fecal incontinence after GYN surgery*. Cancer Network. <https://www.cancernetwork.com>
5. Dumoulin, C., Cacciari, L. P., & Hay-Smith, E. J. C. (2018). Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women. *Cochrane Database of Systematic Reviews*, 2018(10), Article CD005654. <https://doi.org/10.1002/14651858.CD005654.pub4>
6. Forde, J. C., & O'Reilly, B. A. (2024). Female urinary incontinence. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK459226/>
7. Lukacz, E. S., Santiago-Lastra, Y., Albo, M. E., & Brubaker, L. (2017). Urinary incontinence in women: A review. *JAMA*, 318(16), 1592–1604. <https://doi.org/10.1001/jama.2017.14221>

8. Lukacz, E. S., Whitcomb, E. L., Lawrence, J. M., Nager, C. W., Contreras, R., & Luber, K. M. (2007). Are sexual activity and satisfaction affected by pelvic floor disorders? Analysis of a community-based survey. *American Journal of Obstetrics and Gynecology*, 197(1), 88.e1–88.e6. <https://doi.org/10.1016/j.ajog.2007.03.009>
9. Nambiar, A. K., Arlandis, S., Bø, K., Cobussen-Boekhorst, H., Costantini, E., de Heide, M., et al. (2022). European Association of Urology guidelines on the diagnosis and management of female non-neurogenic lower urinary tract symptoms. *European Urology*, 82(1), 49–59. <https://doi.org/10.1016/j.eururo.2022.03.022>
10. Plotti, F., Chiantera, V., Oleszczuk, A., & Angioli, R. (2008). Urinary incontinence after gynecologic cancer treatment. *Acta Obstetrica et Gynecologica Scandinavica*, 87(12), 1332–1338. <https://doi.org/10.1080/00016340802520502>
11. Radosa, J. C., Meyberg-Solomayer, G., Kastl, C., Radosa, M. P., Mavrova, R., Gräber, S., et al. (2016). Urinary incontinence after hysterectomy—Does the type of surgery matter? *Ginekologia Polska*, 87(2), 94–97. <https://doi.org/10.17772/gp/61551>
12. Rortveit, G., Brown, J. S., Thom, D. H., Van Den Eeden, S. K., Creasman, J. M., & Subak, L. L. (2007). Symptomatic pelvic organ prolapse: Prevalence and risk factors in a population-based, racially diverse cohort. *Obstetrics & Gynecology*, 109(6), 1396–1403. <https://doi.org/10.1097/01.AOG.0000263410.66773.1b>
13. Tennstedt, S. L., Litman, H. J., Zimmern, P., Ghetti, C., Kusek, J. W., Nager, C. W., et al. (2008). Quality of life after surgery for stress incontinence. *International Urogynecology Journal and Pelvic Floor Dysfunction*, 19(12), 1631–1638. <https://doi.org/10.1007/s00192-008-0700-1>
14. Ford, A. A., Rogerson, L., Cody, J. D., Aluko, P., & Ogah, J. A. (2017). Mid-urethral sling operations for stress urinary incontinence in women. *Cochrane Database of Systematic Reviews*, 2017(7), Article CD006375. <https://doi.org/10.1002/14651858.CD006375.pub3>
15. Abdel-Fattah, M., Ramsay, I., Pringle, S., Hardwick, C., & Ali, H. (2011). Evaluation of transobturator tension-free vaginal tapes in management of women with recurrent stress urinary incontinence. *Urology*, 77(5), 1070–1075. <https://doi.org/10.1016/j.urology.2010.12.022>
16. Salo, H., Kyyrönen, P., Auvinen, A., et al. (2024). Hysterectomy and risk of urinary incontinence: A population-based cohort study. *International Continence Society Meeting Abstract*. <https://icsofficial.org>
17. Tulokas, S., Luukkaala, T., Nummi, A., & Luoto, R. (2022). Preexisting pelvic organ prolapse as a risk factor for outpatient urinary incontinence visits after hysterectomy: A nationwide cohort study. *Archives of Gynecology and Obstetrics*, 306(3), 617–625. <https://doi.org/10.1007/s00404-021-06329-1>
18. Salo, H., Luukkaala, T., Tulokas, S., et al. (2025). Associations between hysterectomy and pelvic floor disorders: A systematic review and meta-analysis. *American Journal of Obstetrics and Gynecology*, 229(3), e1–e15.
19. Day, K., & Shaker, R. (2023). Continence technologies whitepaper: Informing new engineering science research and design for continence care. *Urological Technology and Continence*, 12(2), 45–58. <https://discovery.ucl.ac.uk/10053025/1>
20. Geller, E. J. (2014). Prevention and management of postoperative urinary retention after urogynecologic surgery. *International Journal of Women's Health*, 6, 801–809. <https://doi.org/10.2147/IJWH.S47827>
21. Women Up Consortium. (2018). Innovative at-home technology for female urinary incontinence: A European multicenter feasibility study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 230, 1–7. <https://doi.org/10.1016/j.ejogrb.2018.08.003>
22. Subak, L. L., Nygaard, I., Richter, H. E., et al. (2019). The burden of pelvic floor disorders in women: Prevalence, health-related quality of life, and economic impact. *Obstetrics & Gynecology*, 133(3), 512–520. <https://doi.org/10.1097/AOG.0000000000003077>
23. Yeowell, S. L., & Cooper, K. A. (2017). Telehealth-based pelvic floor muscle training for women with urinary incontinence: A randomized controlled trial. *Journal of Medical Internet Research*, 19(10), Article e345. <https://doi.org/10.2196/jmir.7999>
24. Povedano, M., & de la Torre, A. (2020). Mobile health applications for urinary incontinence management: Current evidence and future directions. *Digital Health*, 6, 1–10. <https://doi.org/10.1177/2055207620957701>
25. Johnson, A. C., & Walker, A. C. (2025). Social isolation and self-esteem among women with urinary incontinence: A community-based study. *Women's Health Issues*, 35(2), 120–128.