

Ureteral Endometriosis Presenting as Recurrent Hydronephrosis: A Case Report

Omar Al Ayoubi¹, Mohammad Alaa Aldakak¹, Grace Tannous¹, Aiham Mhimid², Mohamad Abdou Awad², Louai Alia²

¹Faculty of Medicine, Damascus University, Damascus, Syria; ²Department of Urology, Al-Assad University Hospital, Damascus, Syria

Correspondence: Omar Al Ayoubi, Email oalayoubi2002@gmail.com

Abstract: Ureteral endometriosis is an uncommon but potentially serious manifestation of deep endometriosis that may remain undetected until significant renal damage has occurred. We report the case of a 35-year-old woman with a 4-year history of right flank pain and macroscopic hematuria. She experienced recurrent bilateral hydronephrosis, managed previously with right-sided double J stents, while the left kidney was severely affected, asymptomatic, and diagnosed as non-functional for four years. Following removal of the right ureteral stent, she developed acute kidney injury necessitating urgent nephrostomy. Surgical exploration revealed distal ureteral fibrosis, and histopathological examination confirmed ureteral endometriosis. Ureteral reimplantation was successfully performed, leading to preservation of right renal function. This case underscores the diagnostic challenges of ureteral endometriosis and highlights the importance of early suspicion, multidisciplinary evaluation, and timely surgical management to prevent irreversible renal loss.

Keywords: endometriosis, hydronephrosis, Lich-Gregoir technique, chronic flank pain

Introduction

Endometriosis is defined as the presence of endometrial glands and stroma outside the uterus and is categorized into superficial or peritoneal, ovarian, and deep infiltrating types.¹ Deep infiltrating endometriosis (DIE) is considered the most severe variant of endometriosis, affecting about 1% of women in their reproductive years,² and is defined by subperitoneal invasion of endometrial tissue reaching a depth of at least 5 mm.³ DIE can involve rectovaginal lesions as well as infiltration of abdominal organs such as the bowel, ureters, and bladder detrusor muscle.⁴ The reported prevalence of ureteral endometriosis (UE) among women with endometriosis shows significant variability, ranging from 0.01% to 1.7%, depending on the different series of cases reported in the literature.^{5,6} UE is classified into extrinsic and intrinsic types, depending on the depth of ureteral wall involvement.³ Diagnosing UE can be challenging because up to 30% of patients may remain asymptomatic, while others present with non-specific complaints such as dysmenorrhea, dyspareunia, or chronic pelvic pain.^{6,7} Despite various imaging options proposed for UE assessment, there is no clear consensus on the preferred diagnostic method.² As for treatment, medical therapy may offer temporary relief, but surgery is required in cases of ureteral obstruction.⁸

This report presents a 35-year-old Syrian woman with persistent hydronephrosis caused by ureteral endometriosis, highlighting the rarity of the condition, diagnostic challenges, and the importance of timely treatment to preserve renal function.

Case Presentation

A 35-year-old Syrian woman presented to the Urology Department with persistent right-sided flank pain and macroscopic hematuria, which had been ongoing for the past 4 years.

The patient was unmarried, nulligravida (G0P0) and had no known allergies, chronic medication use, or relevant family history. Her medical history was significant for recurrent bilateral hydronephrosis, with multiple episodes of

obstructive hydronephrosis on the right side, each requiring the placement of a double J ureteral stent, which temporarily relieved symptoms. On the left side, she had a known history of severe hydronephrosis with marked cortical thinning. However, it remained asymptomatic and non-functional, and therefore, no catheter was placed, as it was not expected to provide any benefit in terms of renal function. Her surgical history was limited to repeated stent placements on the right kidney. Regarding her menstrual history, the patient reported regular cycles every 28 days with mild dysmenorrhea but no severe pelvic pain or cyclical urinary symptoms.

A prior non-contrast abdominal computed tomography scan, performed six months before the patient presented to our department, revealed bilateral hydronephrosis with mild tortuosity and dilation of both ureters, but no clear evidence of obstruction. The urinary bladder and abdominal organs were within normal limits. Although vesicoureteral reflux was initially suspected, it was ruled out by a subsequent voiding cystourethrogram (VCUG) conducted four months prior to the patient's presentation to our department. In addition, renal scintigraphy performed 6 months prior showed preserved right renal function (95%) and poor function on the left (only 5%), with the left kidney diagnosed as non-functional and remaining in this state for the past four years. The patient had also recently undergone stent replacement at another center prior to her referral to our department.

Upon presentation to our department, the patient's systemic review and physical examination were unremarkable. Urine analysis conducted at this time revealed red-colored urine with cloudy appearance, specific gravity of 1.025, and acidic pH (5). Proteinuria was present (+), with strongly positive hemoglobin (++++). Microscopic examination demonstrated 8 leukocytes per high-power field and numerous erythrocytes, approximately 100–130 per high-power field. Renal ultrasound showed an enlarged right kidney with moderate hydronephrosis and a visible double J stent, while the left kidney displayed severe hydronephrosis with cortical thinning. Cystoscopy was then performed, revealing normal bladder mucosa and ureteric orifices, leading to the decision to remove the right-sided stent. Because the ureteral orifices appeared unremarkable and there was no visible intrinsic obstruction at this level, further ureteral assessment was not pursued during this procedure. Within 24 hours of stent removal, the patient developed complete anuria and acute kidney injury, which was confirmed by urgent ultrasound showing worsening right hydronephrosis with an empty bladder. As a result, an emergent percutaneous nephrostomy was performed, leading to immediate improvement in urine output and normalization of renal function.

A triple-phase contrast-enhanced computed tomography confirmed severe bilateral hydronephrosis, with the right kidney preserved and both ureters dilated, but no intrinsic obstruction. The left kidney showed cortical thinning, and the uterus appeared enlarged (Figures 1 and 2).

Laparoscopy was not performed due to right hydronephrosis and ureteral dilation suggesting a distal inflammatory stricture, likely due to repeated stent placements and prior ureteroscopy. Consequently, surgical reimplantation was considered the most appropriate approach in this setting.

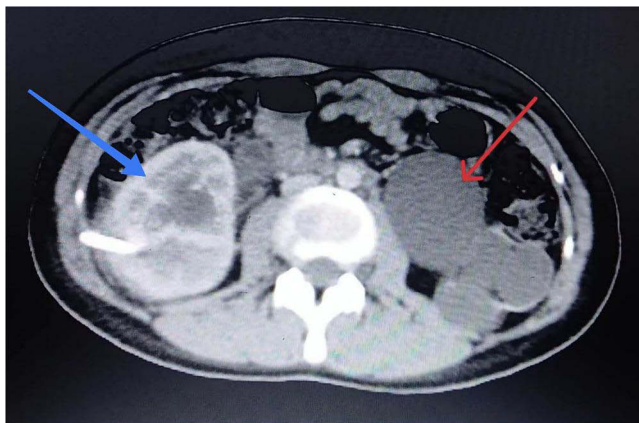


Figure 1 Axial non-contrast CT scan of the abdomen demonstrating bilateral hydronephrosis. The right kidney appears enlarged with a dilated pelvicalyceal system, consistent with moderate hydronephrosis (blue arrow). The left kidney shows marked cortical thinning and significant hydronephrosis (red arrow).

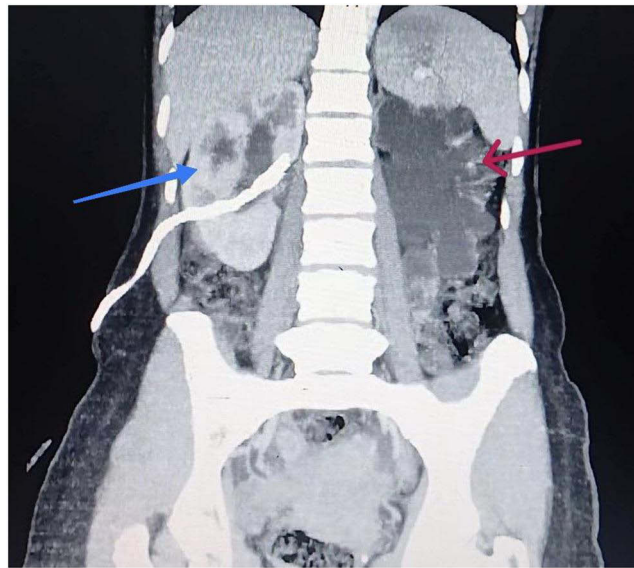


Figure 2 Coronal CT reconstruction showing severe hydronephrosis of the left kidney with extensive cortical thinning (red arrow). The right kidney shows moderate hydronephrosis (blue arrow). A double J stent is visible, indicating prior intervention.

Exploratory surgery was conducted via a right Gibson incision. Intraoperatively, the distal right ureter was found to be tightly encased in dense fibrotic tissue extending toward the right internal iliac artery and no other lesions were detected. Affected segments were carefully dissected, and tissue biopsies were taken. The urinary bladder was mobilized, and ureteral reimplantation was performed using the Lich-Gregoir technique over a new double J stent. Both suprapubic and transurethral Foley catheters were placed.

Histopathological analysis of the fibrotic tissue obtained during surgery revealed endometriosis, with no evidence of malignancy. The ureteral segment showed benign urothelial mucosa with nonspecific inflammation and vascular congestion (Figure 3).

Thus, considering that the left kidney has been non-functional and in this impaired state for the past four years without associated symptoms, no surgical intervention was pursued, and the focus remained on managing the right-sided pathology.

The patient's postoperative course was uneventful. Her renal function and urine output remained stable. The nephrostomy tube was removed on postoperative day five. Six weeks later, the ureteral stent was removed. Follow-up imaging showed resolution of hydronephrosis and normalization of renal function. The patient remained symptom-free.

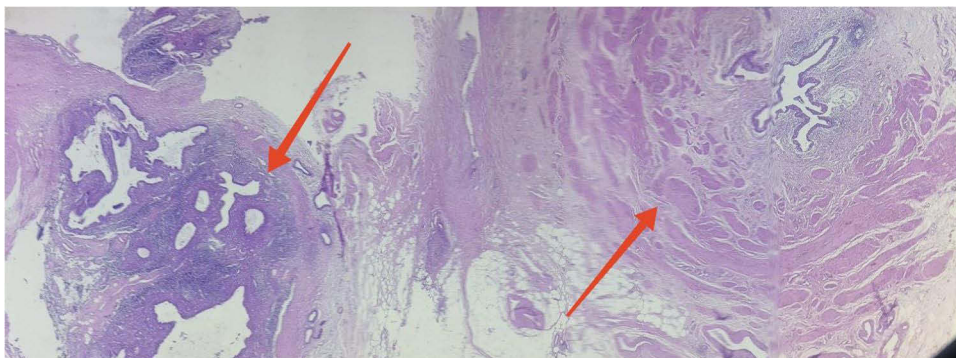


Figure 3 Histopathological section of the excised distal ureter showing endometrial glands and stroma embedded within dense fibrotic tissue (red arrows), consistent with ureteral endometriosis (Hematoxylin and Eosin stain, magnification $\times 100$). The surrounding urothelium is unremarkable, with associated nonspecific inflammation and vascular congestion. No evidence of malignancy is present.

and was referred to the gynecology department, where hormonal therapy was initiated as part of long-term management for endometriosis.

Discussion

Endometriosis is a prevalent benign gynecological disorder that may significantly impair quality of life due to pain, affecting up to 10% of women in their reproductive years.⁹ Involvement of the urinary tract, known as urinary tract endometriosis (UTE), occurs in approximately 1–5.5% of women with the disease, with the bladder being affected in 70–85% of cases and the ureter in 9–23%.² The highest incidence of ureteral endometriosis (UE) is observed in women between 30 and 35 years of age.¹⁰ Histologically, UE is classified into two subtypes: the extrinsic form, where endometrial tissue infiltrates the ureteral adventitia or periureteral connective tissue, leading to obstruction and hydronephrosis, and the intrinsic form, characterized by involving the muscularis mucosa or even the uroepithelium. In some cases, both forms may coexist.³ UE represents a considerable diagnostic challenge due to its often non-specific clinical presentation.³ While many patients experience pelvic pain, dysmenorrhea, or symptoms related to pelvic organ involvement, urinary tract-related manifestations such as flank pain, renal colic, or cyclic hematuria may also occur.³ Importantly, the disease may remain silent until advanced, leading to complications such as hypertension or renal impairment, with reported rates of renal failure reaching 25–50%.³ In comparison, our patient fits the typical age group and presented with uncommon urinary symptoms that initially mimicked other conditions. The ureteric involvement was unilateral but progressed silently, leading to significant renal compromise before definitive diagnosis. Despite multiple interventions, the diagnosis remained unclear until surgical exploration confirmed endometriosis, reflecting the same diagnostic difficulty and clinical ambiguity described in the literature.

Imaging methods for diagnosing endometriosis often face challenges in terms of specificity. However, endorectal ultrasound with a radial probe has proven to be highly sensitive and specific for detecting deep lesions.¹¹ Histopathological confirmation, requiring both glandular and stromal components, is crucial for accurate diagnosis. Although imaging techniques are useful, laparoscopy remains the gold standard for diagnosis with a sensitivity of 97% and specificity around 77%.^{12,13} Consistent with the literature, imaging in our case, including ultrasound and contrast-enhanced CT, was helpful in identifying ureteral dilation and hydronephrosis, but could not definitively confirm endometriosis. Definitive diagnosis was achieved only through histopathological analysis of the ureteral and periureteral tissue obtained during surgery, highlighting the ongoing challenge of relying solely on imaging for detecting ureteral endometriosis.

The optimal treatment strategy for ureteral endometriosis remains a matter of debate. Laparoscopy is considered the gold standard for both definitive diagnosis and surgical management. However, complete excision of all visible endometriotic implants is crucial to reduce the risk of recurrence.^{14,15} Among surgical options, laparoscopy has largely replaced laparotomy due to its effectiveness and lower morbidity, and has been shown to offer superior symptom control.^{14,16,17} Surgical techniques for ureteral involvement include ureterolysis, ureterotomy with end-to-end anastomosis, and ureteroneocystostomy. However, ureterolysis alone may be inadequate in cases of moderate to severe obstruction, often resulting in persistent or recurrent symptoms if the ureter remains compromised. Ureteroneocystostomy, while more definitive, is associated with a lower recurrence rate but carries higher risks of perioperative and postoperative complications such as anastomotic leakage, ureteral fistula, and infections.^{2,17–19} The management of our patient's complex ureteral stricture was dictated by the extent and location of the disease. In contrast to reported cases where partial ureterectomy and anastomosis were sufficient for localized lesions,²⁰ our patient's extensive ureteral fibrosis and the distal location of the stricture made a simple end-to-end anastomosis unfeasible. Consequently, we opted for a more definitive procedure, a ureteroneocystostomy, which allowed for the complete resection of the diseased segment and its successful reimplantation into the bladder. This strategy aligns with recommendations for severe distal strictures and highlights the importance of tailoring the surgical approach to the specific pathological findings. In addition, Hormonal therapies—including gonadotropin-releasing hormone (GnRH) agonists and combined oral contraceptives—are generally considered temporary measures. They may be useful in preoperative preparation, in patients who are poor surgical candidates, or as adjunctive postoperative therapy to reduce recurrence.⁸

In our case, we initiated hormonal therapy postoperatively as an adjunctive measure, which is consistent with this guidance.

Strengths and Limitations

The primary strength of this report lies in its detailed presentation of a rare condition, providing a clear clinical timeline supported by multimodality imaging and definitive operative and pathological confirmation. It also offers a unique perspective on diagnostic and management challenges within a resource-constrained setting. Furthermore, the case highlights the crucial importance of early diagnostic suspicion and interdisciplinary collaboration to prevent irreversible renal damage.

However, as a single case report, its findings are inherently limited and cannot be generalized. Key limitations include the lack of long-term renal function trends and incomplete historical records due to fragmented follow-up. The quality of some imaging figures was constrained by the available equipment, but they still adequately demonstrate the key diagnostic findings, with annotations added to improve clarity. Causal inferences cannot be made from a single-patient design, and external validity is therefore limited. Nevertheless, this case effectively highlights common diagnostic pitfalls and supports the early consideration of ureteral reimplantation when intrinsic ureteral disease is suspected.

Conclusion

Ureteral endometriosis remains a rare but serious cause of silent upper urinary tract obstruction that can lead to irreversible renal damage if left undiagnosed. This case highlights the diagnostic challenges, showing that significant ureteral disease may occur even when gynecologic symptoms are minimal, and underscores the importance of early suspicion and appropriate surgical management to preserve renal function. Multidisciplinary care and long-term follow-up remain essential for optimal outcomes.

Ethical Approval

Institutional Review Board (IRB) approval is not required for de-identified single case reports or case histories, in accordance with institutional policies.

Patient Consent

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Acknowledgments

The authors would like to express their gratitude to Dr. Lina Assad's Pathology Laboratory for their invaluable support in the histopathological evaluation of this case.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Disclosure

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

References

1. Al Ayoubi O, Aldakak MA, Alabdullah N, Alabdullah F, Alasfar A. Sigmoid colon endometriosis as an uncommon cause of large bowel obstruction: a case report. *Int J Surg Case Rep.* 2025;135:111927. doi:10.1016/j.ijscr.2025.111927
2. Barra F, Scala C, Biscaldi E, et al. Ureteral endometriosis: a systematic review of epidemiology, pathogenesis, diagnosis, treatment, risk of malignant transformation and fertility. *Hum Reprod Update.* 2018;24(6):710–730. doi:10.1093/humupd/dmy027
3. Palla VV, Karaolanis G, Katafigiotis I, Anastasiou I. Ureteral endometriosis: a systematic literature review. *Indian J Urol.* 2017;33(4):276–282. doi:10.4103/iju.IJU_84_17
4. Vercellini P, Frontino G, Pietropaolo G, Gattei U, Daguati R, Crosignani PG. Deep endometriosis: definition, pathogenesis, and clinical management. *J Am Assoc Gynecol Laparosc.* 2004;11(2):153–161. doi:10.1016/s1074-3804(05)60190-9
5. Vercellini P, Pisacreta A, Pesole A, Vicentini S, Stellato G, Crosignani PG. Is ureteral endometriosis an asymmetric disease? *BJOG.* 2000;107(4):559–561. doi:10.1111/j.1471-0528.2000.tb13279.x
6. Antonelli A, Simeone C, Zani D, et al. Clinical aspects and surgical treatment of urinary tract endometriosis: our experience with 31 cases. *Eur Urol.* 2006;49(6):1093–1098. doi:10.1016/j.eururo.2006.03.037
7. Huang JZ, Guo HL, Li JB, Chen SQ. Management of ureteral endometriosis with hydronephrosis: experience from a tertiary medical center. *J Obstet Gynaecol Res.* 2017;43(10):1555–1562. doi:10.1111/jog.13422
8. Nezhat C, Falik R, McKinney S, King LP. Pathophysiology and management of urinary tract endometriosis. *Nat Rev Urol.* 2017;14(6):359–372. doi:10.1038/nrurol.2017.58
9. Tennfjord MK, Gabrielsen R, Tellum T. Effect of physical activity and exercise on endometriosis-associated symptoms: a systematic review. *BMC Womens Health.* 2021;21(1):355. doi:10.1186/s12905-021-01500-4
10. Berlanda N, Vercellini P, Carmignani L, Aimi G, Amicarelli F, Fedele L. Ureteral and vesical endometriosis. Two different clinical entities sharing the same pathogenesis. *Obstet Gynecol Surv.* 2009;64(12):830–842. doi:10.1097/OGX.0b013e3181c4bc3a
11. Abrão MS, Neme RM, Averbach M, Petta CA, Aldrighi JM. Rectal endoscopic ultrasound with a radial probe in the assessment of rectovaginal endometriosis. *J Am Assoc Gynecol Laparosc.* 2004;11(1):50–54. doi:10.1016/s1074-3804(05)60010-2
12. Kennedy S, Bergqvist A, Chapron C, et al. ESHRE guideline for the diagnosis and treatment of endometriosis. *Hum Reprod.* 2005;20(10):2698–2704. doi:10.1093/humrep/dei135
13. Buchweitz O, Poel T, Diedrich K, Malik E. The diagnostic dilemma of minimal and mild endometriosis under routine conditions. *J Am Assoc Gynecol Laparosc.* 2003;10(1):85–89. doi:10.1016/s1074-3804(05)60240-x
14. Nezhat C, Nezhat F, Nezhat C. Endometriosis: ancient disease, ancient treatments. *Fertil Steril.* 2012;98(6 Suppl):S1–62. doi:10.1016/j.fertnstert.2012.08.001
15. Nezhat CR. When will video-assisted and robotic-assisted endoscopy replace almost all open surgeries? *J Minim Invasive Gynecol.* 2012;19(2):238–243. doi:10.1016/j.jmig.2011.12.026
16. Kelley WE. The evolution of laparoscopy and the revolution in surgery in the decade of the 1990s. *JSLS.* 2008;12(4):351–357.
17. Nezhat C, Nezhat F, Nezhat C. Operative laparoscopy (minimally invasive surgery): state of the art. *J Gynecol Surg.* 1992;8(3):111–141. doi:10.1089/gyn.1992.8.111
18. Chudzinski A, Collinet P, Flamand V, Rubod C. Ureterovesical reimplantation for ureteral deep infiltrating endometriosis: a retrospective study. *J Gynecol Obstet Hum Reprod.* 2017;46(3):229–233. doi:10.1016/j.jogoh.2017.01.001
19. Camanni M, Bonino L, Delpiano EM, et al. Laparoscopic conservative management of ureteral endometriosis: a survey of eighty patients submitted to ureterolysis. *Reprod Biol Endocrinol.* 2009;7:109. doi:10.1186/1477-7827-7-109
20. Bai Y, Li Y, Li Q, Zhao W. Severe ureteral endometriosis complicated with hydronephrosis: a case report. *Am J Case Rep.* 2022;23:e937172. doi:10.12659/AJCR.937172

Research and Reports in Urology

Publish your work in this journal

Research and Reports in Urology is an international, peer-reviewed, open access journal publishing original research, reports, editorials, reviews and commentaries on all aspects of adult and pediatric urology in the clinic and laboratory including the following topics: Pathology, pathophysiology of urological disease; Investigation and treatment of urological disease; Pharmacology of drugs used for the treatment of urological disease. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/research-and-reports-in-urology-journal>

Dovepress
Taylor & Francis Group