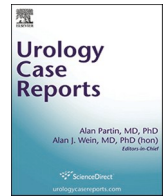


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Urology Case Reports

journal homepage: <http://www.elsevier.com/locate/eucr>

Functional medicine

## Conservative management of bladder endometriosis with acute renal failure

Mark C. Xu<sup>a,\*</sup>, Amanda C. Yunker<sup>b</sup>, Melissa R. Kaufman<sup>c</sup><sup>a</sup> Vanderbilt University School of Medicine, Nashville, TN, United States<sup>b</sup> Department of Obstetrics and Gynecology, Vanderbilt University Medical Center, Nashville, TN, United States<sup>c</sup> Department of Urology, Vanderbilt University Medical Center, Nashville, TN, United States

### ARTICLE INFO

#### Keywords:

Bladder endometriosis  
Shared decision making  
Renal Failure  
Bladder hypo-compliance

### ABSTRACT

Endometriosis involving the bladder is rare, but generally has a severe presentation with prominent lower urinary tract symptoms and can progress to renal failure. As endometriosis has a significant effect on quality of life and fertility, treatment plans must be centered on the patient's symptoms, expectations, and priorities. We present a case of a 37-year-old African American female with advanced bladder endometriosis and consequent renal failure, who desired to avoid extensive surgery and maintain her fertility. This case highlights the importance of shared decision making in balancing disease management with patient autonomy.

### Introduction

Endometriosis affects 10–20% of reproductive-age women and involves ectopic implantation of endometrial glands and stroma outside the uterine cavity.<sup>1</sup> Endometriosis affecting the urinary tract is comparatively rare, accounting for only 1–2% of all cases.<sup>1</sup> Such cases are associated with more complex deeply-infiltrative disease and predominantly involve the bladder, presenting with lower urinary tract symptoms of dysuria, hematuria, frequency, and suprapubic pain.<sup>2</sup> Obstructive uropathy is uncommon, but morbid, and can result in renal loss.<sup>3</sup> Herein we present a case of bladder endometriosis leading to acute kidney injury successfully managed with medical therapy.

### Case report

A 37-year-old African American female presented with worsening hypertension (185/109), elevated creatinine of 6.49, and deep venous thrombosis. Past medical history was significant for long-standing endometriosis and a year of lower urinary tract symptoms treated with oxybutynin that included dysuria, urgency incontinence, frequency and sensation of incomplete emptying. She denied gross hematuria or urinary tract infections. She underwent previous laparoscopic myomectomy for menorrhagia, but otherwise had no remarkable surgical history.

Renal ultrasound revealed bilateral hydronephrosis with thinning of the right renal parenchyma. A 3.7cm heterogenous mass was identified on the right bladder wall. She underwent an operative cystoscopy revealing a >5cm infiltrative bladder mass distorting the trigone (Fig. 1), with substantial trabeculations throughout. Retrograde pyelograms demonstrated hydronephrosis and tortuosity (Fig. 2a and 2b). A 6 x 28 double-J ureteral stent was passed into the left renal pelvis, but right stent placement was aborted due to exceptional difficulty navigating the tortuous ureter. Bladder biopsy revealed pathology consistent with intestinal metaplasia. Non-contrast CT scan showed severe cortical thinning of her right kidney, along with medial deviation and tortuous dilation of the ureters. Following left stent insertion, her creatinine trended downward to 3.85.

She subsequently presented for repeat bladder resection and right stent placement, which was successful with a 7 × 30 cm stent. Resection revealed extensive hematogenous debris and vascularity. Pathologic analysis revealed positive staining with estrogen receptor (Fig. 3), leading to a diagnosis of deep infiltrating endometriosis. The patient opted for hormonal treatment, which she deferred until 1 month following surgical resection when she was discovered to have rising creatinine at 5.66. She reported that she recently discontinued oxybutynin due to symptoms of weak stream. Bladder drainage was optimized with catheter placement and following fluid resuscitation, her creatinine returned to baseline.

\* Corresponding author.

E-mail address: [mark.c.xu@vanderbilt.edu](mailto:mark.c.xu@vanderbilt.edu) (M.C. Xu).

<sup>1</sup> Permanent Address: 1510 Edgehill Ave. Apartment A, Nashville, TN. 37212.

<https://doi.org/10.1016/j.eucr.2020.101263>

Received 5 May 2020; Received in revised form 14 May 2020; Accepted 18 May 2020

Available online 19 May 2020

2214-4420/© 2020 The Authors.

Published by Elsevier Inc.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

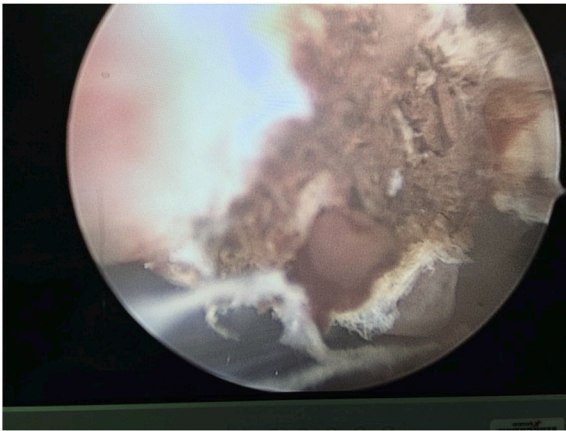


Fig. 1. Infiltrative bladder mass distorting the trigone.

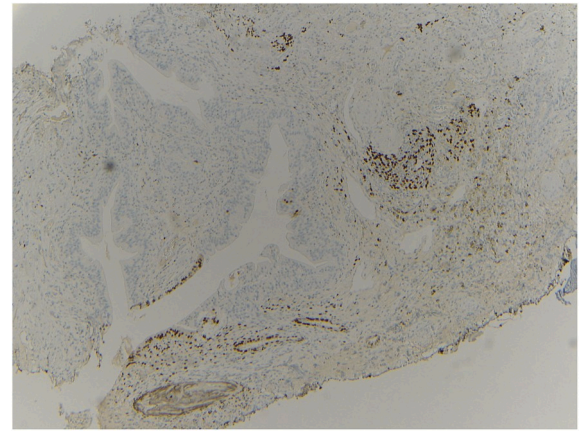


Fig. 3. Endometrial cells staining positive for estrogen receptor.

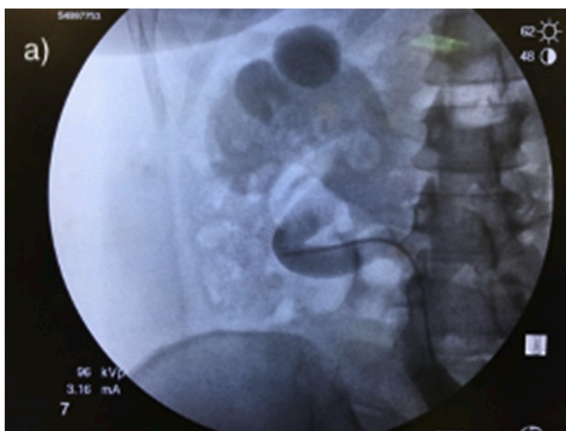


Fig. 2. Retrograde Pyelograms demonstrating hydroureteronephrosis and extreme tortuosity of ureters  
2a. Right Kidney and Ureter  
2b. Left Kidney and Ureter.

She subsequently began hormonal treatment of endometriosis with 11.25mg of IM depot Leuprolide. Unfortunately, she was again found to have an elevated creatinine of 6.74 and was again admitted. A CT scan of the abdomen and pelvis revealed both stents in appropriate position, with no significant change to the hydronephrosis. A percutaneous nephrostomy tube was placed on the left and her creatinine subsequently improved. On follow-up, the patient underwent stent removal and subsequent videourodynamics demonstrating decreased detrusor

compliance with pressures greater than 60 cm H<sub>2</sub>O, a postvoid residual of 200mL, and vesicoureteral reflux. However, her endometriosis was visually improved on cystoscopy. She elected to begin treatment of her poorly compliant bladder with Botox and underwent first injection of 200 units shortly thereafter.

At her next follow up, repeat urodynamic screening showed improved compliance and bladder capacity. Her creatinine was at a baseline of 2.15, and her nephrostomy was eventually removed. She continued to be stable on depot Leuprolide and Botox and declined definitive treatment with a hysterectomy and salpingo-oophorectomy due to desire to maintain fertility. She was lost follow up until she presented for 2 years after her last depot Leuprolide injection. Notably, her creatinine remained stable at 1.82, but she developed increasing pain and heavy menses indicative of endometriosis relapse. She received depot Leuprolide and was scheduled for an MRI which is pending.

## Discussion

Bladder endometriosis implies endometrial glands and stroma in the detrusor muscle, with the base and dome most commonly affected.<sup>4</sup> It is associated with the deep infiltrating subtype of endometriosis, which is regarded as the most severe subtype.<sup>2</sup> Bladder endometriosis is classified as primary or secondary, with primary endometriosis occurring spontaneously and secondary to iatrogenic implantation in pelvic surgery.<sup>4</sup> Although iatrogenic implantation of endometrial tissue remains controversial, there is an increased incidence of bladder endometriosis in patients with a history of pelvic surgery, particularly cesarean sections.<sup>4</sup> This patient developed lower urinary tract symptoms consistent with bladder endometriosis after myomectomy.

Bladder endometriosis often presents with nonspecific lower urinary tract symptoms, and there is a broad differential diagnosis to consider. Diagnosis of bladder endometriosis rests on appropriate imaging with ultrasound or MRIs.<sup>4</sup> Cystoscopy may also be valuable, but endometrial lesions present a visible mass in only half of cases.<sup>4</sup>

Obstructive uropathy is closely linked to reduced bladder compliance and renal damage, as increased storage pressure results in structural and functional changes and vesicoureteral reflux.<sup>5</sup> Anti-muscarinic drugs are the first line management, with therapeutic failure leading to progression to Botox.<sup>5</sup> Although our patient's poorly compliant bladder was likely a long-standing issue given her history, Botox treatment led to a marked improvement in her urinary symptoms and renal function. This recovery was sustained over a year following Botox therapy.

Treatment of bladder endometriosis involves both medical and surgical approaches. Medical management with hormonal treatments with combined contraceptives and progestogens results in relief of symptoms but are generally not curative.<sup>2</sup> GnRH agonists have specifically been shown to be superior to combined oral contraceptives for inducing

regression.<sup>4</sup> Long term hormonal control is generally achieved through bilateral oophorectomy or menopause. With surgical treatment, the efficacy of transurethral resection is generally limited with high recurrence of disease.<sup>4</sup> Partial cystectomy, however, demonstrates excellent long-term results in terms of symptom relief and recurrence.<sup>2</sup> Surgical treatment is generally preferred after failure of medical management or with upper tract obstruction. For this patient, a conservative treatment approach was preferred based on patient preference and surgical risk due to trigonal location.

This case highlights the importance of shared decision making in managing advanced bladder endometriosis, with focus placed on managing patient symptoms versus disease eradication. For this patient, we were able to maintain symptom control and stabilize renal function without compromising fertility.

#### Sources of funding

This research did not receive any specific grant from funding

agencies in the public, commercial, or not-for-profit sectors.

#### Declaration of competing interest

The authors have no conflicts of interest to disclose.

#### References

1. Comiter CV. Endometriosis of the urinary tract. *Urol Clin North Am.* 2002;29(3):625–635.
2. Nezhat C, Falik R, McKinney S, King LP. Pathophysiology and management of urinary tract endometriosis. *Nat Rev Urol.* 2017;14(6):359–372.
3. Kane C, Drouin P. Obstructive uropathy associated with endometriosis. *Am J Obstet Gynecol.* 1985;151(2):207–211.
4. Leone Roberti Maggiore U, Ferrero S, Candiani M, Somigliana E, Vigano P, Vercellini P. Bladder endometriosis: a systematic review of pathogenesis, diagnosis, treatment, impact on fertility, and risk of malignant transformation. *Eur Urol.* 2017;71(5):790–807.
5. Prakash NS, Lopategui DM, Gomez C. Changes in management of poorly compliant bladder in botulinum toxin A era. *Curr Urol Rep.* 2017;18(8):64.