

## CLINICAL VIGNETTE

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# Ureteral Endometriosis Causing Hydronephrosis and Functional Loss of One Kidney

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### *Introduction*

Endometriosis is a relatively common condition affecting an estimated 10% of women of reproductive age.<sup>1</sup> It poses a diagnostic challenge given its nonspecific symptoms and inability to definitively diagnose without surgery, resulting in an average 7-year delay from symptom onset to surgical diagnosis.<sup>1</sup> Urinary tract endometriosis is seen in 0.3-6% of women with endometriosis,<sup>2</sup> while endometriosis specifically affecting the ureter represents less than 1% of cases.<sup>3</sup> We present a patient with left ureteral endometriosis that resulted in hydronephrosis and functional loss of one kidney.

### *Case*

A 47-year old female presented to the emergency department for worsening pelvic and left lower quadrant pain. She reported intermittent pain for nearly four years, initially attributed to a presumed ureteral stone at an outside hospital. She presented with left sided renal colic symptoms and left-sided hydronephrosis was noted on imaging. She continued having intermittent left lower quadrant and left flank pain with progressive worsening over the past couple of months prompting emergency department evaluation.

Past Medical History included hypertension, infertility and irregular menses. She had prior hysteroscopy and polypectomy for irregular menses and no history of abdominal surgery. Her pain was evaluated more than three years ago with CT KUB and urogram revealing severe left hydronephrosis and proximal hydroureter with associated cortical thinning. There was no significant contrast excretion in the left kidney. An enhancing soft tissue mass was seen in the left distal ureter raising concern for neoplasm. Cystourethroscopy noted a large, smooth polyp like mass which was biopsied. Path report noted bland appearing glandular proliferation without definitive evidence of malignancy. Labs included Creatinine 1.0 mg/dL with eGFR of 60 with no associated electrolyte abnormalities. Unfortunately, the patient was lost to follow-up for several years due lapse of insurance, claustrophobia delaying MR and family health issues.

On presentation to the emergency department, she had normal vital signs but appeared uncomfortable. Abdominal exam was notable for left lower quadrant tenderness without rebound or guarding. Initial labs included normal CBC, and CMP with creatinine 1.0 mg/dL and GFR 67, normal amylase and

urinalysis. Imaging revealed severe left hydronephrosis and proximal hydroureter with severe cortical thinning, progressed since her initial evaluation nearly 4 years earlier but otherwise no acute explanation for her pain. She was admitted for pain control. During hospitalization, MRI revealed an 8 cm mass in the left distal ureter. She was discharged after achieving adequate pain control on oral analgesics and readmitted for urologic surgery. She underwent robotic laparoscopic left nephroureterectomy, partial cystectomy and partial hysterectomy. Pathology revealed extensive endometriosis involving paraureteral soft tissue with polypoid extension into a dilated ureteral lumen, which completely obstructed the lumen.

### *Discussion*

Ureteral endometriosis represents only a small portion of endometriosis, but its potential complications including hydronephrosis and loss of renal function make it important to include when evaluating urinary tract obstruction in a female without a stone. The left ureter is more commonly affected, as with our patient, making up 64% of ureteral endometriosis.<sup>4</sup> Assymetry is theorized to be related to the left pelvis having a small region shielded by the sigmoid colon. This area is less exposed to the peritoneal fluid current that would normally help with clearance.<sup>4</sup> The distal third segment at 3-4 cm above the vesico-ureteric junction is most frequently affected when the ureter is involved.<sup>5</sup> Ureteral endometriosis has been associated with larger endometriosis lesions of the retrocervical or rectosigmoid region and ovarian endometriomas.<sup>5,6</sup>

Patients with ureteral endometriosis may present with nonspecific symptoms, if any, that include dysmenorrhea, dyspareunia, pelvic pain, infertility, dysuria, frequency, recurrent urinary tract infection, flank pain, renal colic, and unexplained hypertension.<sup>6,7</sup> Physical exam is often unremarkable in ureteral endometriosis, although its association with rectovaginal nodules may reveal nodularity of the septum.<sup>6</sup> Ureteral endometriosis can be classified as either extrinsic or intrinsic. Extrinsic ureteral endometriosis is attached to the external portion of the ureter, and intrinsic endometriosis is within the muscularis layer of the ureter.<sup>4,7</sup>

Further evaluation of a patient with suspected ureteral endometriosis should include assessment of renal function and possible anemia. Urinalysis may reveal hematuria. Urine

cytology is generally unrevealing since endometriosis rarely involves mucosal membranes of the ureters.<sup>7</sup> Ultrasound (US) of kidneys in addition to the pelvis should be performed to evaluate for hydronephrosis or hydroureter and may also detect endometriosis adjacent to the ureter.<sup>5,6</sup> Intravenous pyelography (IVP) was considered one of the best methods for diagnosis of ureteral endometriosis and can determine the precise location and degree of involvement.<sup>6,8</sup> IVP findings are not specific for ureteral endometriosis will not detect extrinsic disease.<sup>5,6</sup> After US, MRI allows for evaluation of both the urinary tract and remaining pelvic organs.<sup>5,6</sup> Typical endometriosis lesion on MRI are solid nodules with low T2 signal, irregular spiculated margins, with or without a solid-cystic pattern depending on the presence of hemorrhagic cysts within the lesion.<sup>9</sup> MRI is reported to have sensitivity of 91% and specificity of 59% when compared with gold standard histological diagnosis of intrinsic disease.<sup>10</sup> Another study reported MRI identification of ureteral endometriosis with a 95.7% accuracy when compared with histopathology.<sup>9</sup> Although it presents a minimally invasive diagnostic method, ureteroscopy is not routinely recommended since it will not identify extrinsic disease, which is the more common pathologic type of ureteral endometriosis.<sup>5,6</sup> The majority of these imaging techniques require a high index of suspicion. Furthermore, if there is a clinical suspicion for endometriosis, hydronephrosis on US should trigger additional evaluation of the urinary tract.<sup>5</sup> In our patient, although hydronephrosis and a ureteral mass were noted on CT KUB initially, there was no initial suspicion for endometriosis, and therefore MRI was not initially obtained. It was ordered later to evaluate for a possible mass, not specifically endometriosis.

Endometriosis remains a clinically challenging diagnosis with nonspecific signs and symptoms. While our patient had suggestive findings on history and imaging including left-sided ureteral mass and infertility, her evaluation was delayed. The initial biopsy showed nonspecific pathology, not suggestive of endometriosis. Although studies of ureteral endometriosis detail optimal diagnostic strategies, a high index of suspicion is needed to trigger the optimal evaluation and interpretation of findings.

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