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Mixed epithelial and stromal tumor of the kidney extending to the proximal ureter in a 41-year-old female

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ABSTRACT

We report the case of a 41-year-old pregnant female who presented with a complicated urinary tract infection. Further imaging revealed left hydronephrosis and filling defects extending from the proximal ureter to the upper pole of the kidney, with the presumed diagnosis of a fibroepithelial polyp. The patient underwent a four-stage percutaneous and ureteroscopic ablation and resection. Following the procedure, pathology instead confirmed the presence of a Mixed Epithelial and Stromal Tumor of the Kidney. For lesions that extend intraluminally into the ureters, a ureteroscopic and percutaneous resection can be considered as an alternative surgical approach.

Introduction

Fibroepithelial polyps are the most common benign neoplasm of the ureters.[1] Unlike fibroepithelial polyps, mixed epithelial and stromal tumors of the kidneys (MESTKs) are rare dimorphic tumors with cystic and solid components and are usually confined to the kidney and renal pelvis. Both are typically benign lesions that differ in their clinical and surgical management.

Case presentation

A 41-year-old woman with no significant medical history initially presented to an outside institution with a urinary tract infection during pregnancy, left sided flank pain, and microscopic hematuria. Ureteroscopy revealed an intraluminal lesion in the mid-ureter. Intraoperative retrograde ureteropyelography demonstrated significant left hydronephrosis with filling defects in the renal pelvis.

The patient was lost to follow up but re-presented to our institution 18 months later. A CT urogram demonstrated a large heterogenous polypoid and cystic mass within the left renal pelvis and proximal ureter. This mass was seen as a large, contiguous filling defect on the intravenous pyelogram imaging phases (Fig. 1). The patient's creatinine and urinalysis were otherwise normal. The tentative diagnosis of a fibroepithelial polyp was given. The decision was made to undergo a multi-staged, combined ureteroscopic and percutaneous resection of the mass rather than a laparoscopic partial or simple nephrectomy.

Over a 17-day period, the patient underwent a four-stage resection of the mass on four different days. At each stage, two percutaneous accesses, one in a superior pole calyx, and one in an inter-polar calyx were acquired. Intraoperatively, both retrograde pyelography and ureteroscopy identified a large intraluminal mass causing significant dilation of the left renal collecting system (Fig. 2a). The mass was ablated endoscopically and resected in an antegrade and retrograde fashion. There were no significant intraoperative or post-operative complications.

During the fourth and final stage, the remainder of the mass was successfully removed in its entirety. On postoperative day one after the 4th stage procedure, imaging identified that the proximal curl of the stent had migrated out of the collecting system into one of the percutaneous tracts, and the patient underwent an uncomplicated stent repositioning.

Six weeks after the last staged resection, the patient underwent left retrograde ureteropyelograpy, diagnostic ureteroscopy, and ureteral stent removal. The intraoperative retrograde ureteropyelograms demonstrated persistent moderate hydroureter and hydronephrosis, however, no further filling defects were identified. The ureter was tortuous, but patent. There was mild residual edematous ureteral tissue that was not consistent any new intraluminal masses.

Initial pathology reports confirmed a polypoid tissue with a mixture of stromal and epithelial elements that lacked significant cytologic atypia. The stroma was predominantly composed of plump spindle cells with scattered mast cells, displaying accentuation and moderate cellularity around the epithelial components. The epithelial component was

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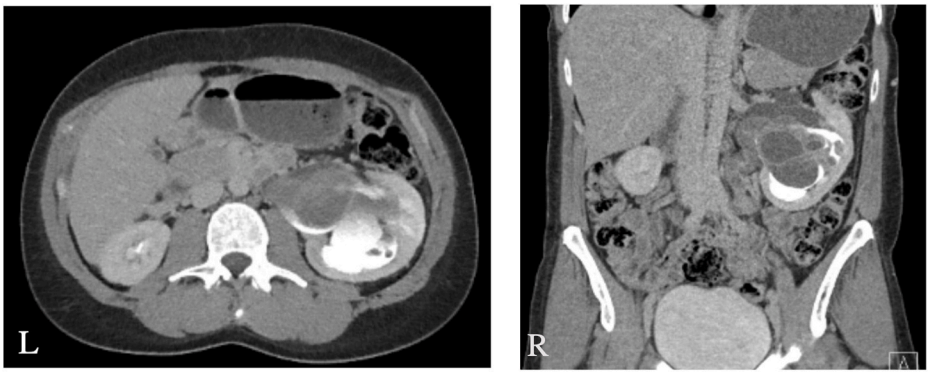

Fig. 1. Preoperative CT scan of the abdomen and pelvis with intravenous pyelogram phase, demonstrating transverse (left) and coronal (right) images of a left sided polypoid, cystic complex mass in the renal pelvis and proximal ureter, resulting in filling defects and significant hydroureteronephrosis.

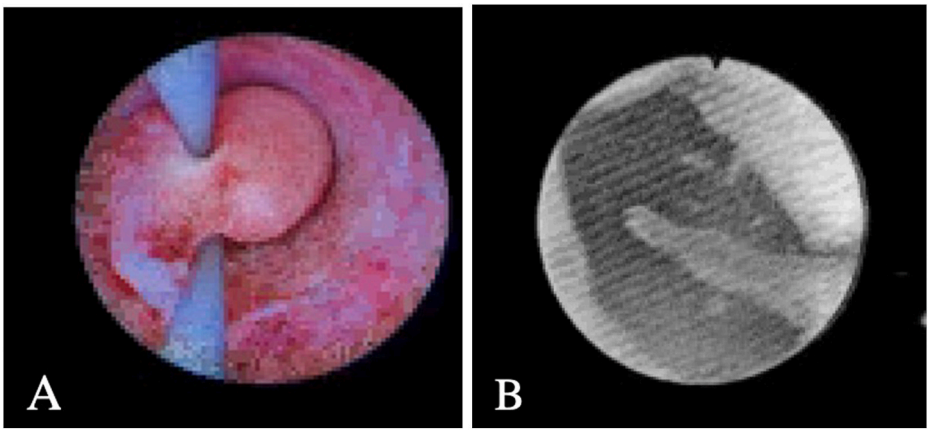

Fig. 2. A (left): Ureteroscopic image taken at during the initial ureteroscopy of the first stage resection demonstrating a polypoid mass filling the entirety of the left mid/proximal ureter. B (right): Ureteroscopic image taken at the former anatomic site of the mass during the stent exchange/removal 6 weeks after final stage resection, demonstrating patent ureter with no residual/recurrence of the intraluminal mass.

predominantly seen as branching glandular profiles lined by columnar cells that were occasionally ciliated. Immunohistochemical stains showed epithelial cells strongly and diffusely positive for CK7 and PAX8 with focal rimming by CK20 and p63 positive cells, while the stromal component was diffusely and strongly positive for CD10 and ER (endoplasmic reticulum). Subsequent pathology reports revealed similar findings and confirmed a new diagnosis of MESTK.

Discussion

The surgical approach for this patient was based on the preliminary diagnosis of a fibroepithelial polyp. The diagnosis of fibroepithelial polyp guided the chosen surgical management, as most previous cases have reported successful treatment with endoscopic techniques.[2]

Surprisingly, the final pathologic findings were of a MESTK. This rare biphasic tumor tends to occur in middle-aged women and is usually confined to the kidney. Studies assessing existing case reports on MESTK confirmed the shared characteristics of our tumor, which has stromal components of plump spindle cells and epithelial components of branching glands with columnar cells. Immunohistochemistry staining for both components were consistent with findings from the literature.[3]

The typical surgical management for MESTK is a partial or simple nephrectomy due to the nature of its location. The treatment of our patient in a minimally invasive, endoscopic fashion was aimed to help optimize and preserve her renal function. Our report four individual stages of ureteroscopic and percutaneous resections proved to be effective and represents the first documentation of such an approach for the treatment of a MESTK, which is a nephron sparing alternative.[4] At the six-week follow-up ureteroscopy and retrograde pyelogram, there were no signs of recurrence; however longer follow-up is needed to asses success of this intervention.

Conclusion

MESTKs usually present in peri-menopausal women and the pathology is typically confined to the kidney. The differential diagnosis in women with a history of estrogen exposure, a ureteral lesion, flank pain, and hematuria should be expanded to include ureteral neoplasms and renal tumors. Optimal surgical management, directed by location and extent of the lesion, and the need to preserve nephron units, should include consideration of a ureteroscopic and percutaneous approach to resection.

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Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Declaration of competing interest

The authors declare that they have no conflict of interest.

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