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Robotic resection of a fibroepithelial polyp arising in the setting of nephrolithiasis

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ABSTRACT

Though rare, fibroepithelial polyps of the ureter consistently present with symptoms such as flank discomfort and may lead to renal failure. This often affects young adults and characteristically arises in the proximal ureter. The pathogenesis is unclear. Flank pain is the most common presenting symptom, which may create diagnostic confusion. Indeed, resection provides lasting relief which otherwise may elude patients who receive other treatments. Resection modality may be selected on a patient-by-patient basis. Here we present a case in which flank pain, and historical episodes of abdominal pain, were resolved by excision of a fibroepithelial polyp by a robotic assisted laparoscopic approach.

Introduction

Between 1950 and 2015, a world-wide total of 242 cases of fibroepithelial polyps (FEP) of the ureter have been described; less than 4 cases per-year.[1,2] Still, owing to the low incidence of benign ureter neoplasms, up to 6% are diagnosed as FEP.[3] Young adults, though not exclusively, are the most frequently effected demographic. The proximal ureter is commonly involved and, rarely, the renal sinus. An etiology is unknown, however, the polyps are often long, thin, and may have multiple projections. Clinically, flank pain is the characteristic chief complaint. This also prompts consideration of nephrolithiasis in differential diagnosis since that is more prevalent, and may present with hematuria and hydronephrosis, as well. Non-contrast CT scan may show non-specific abnormalities of the ureter and renal pelvis. The diagnosis often arrives to medical attention because of long segment filling defects of the ureter by contrast ureterography, and is confirmed by ureteroscopy with biopsy. Histology reveals fibrous stoma with edema and prominent vasculature, occasionally with chronic inflammation, that is surfaced by normal to hyperplastic or thinned transitional epithelium. Definitive, efficient treatment may be achieved by endoscopic, or laparoscopic, resection of the ureter.[4]

Case report

This is a 19 year-old female with mild intermittent abdominal pain since she was 7 years old. At age 12 she presented to the ED with flank pain, though workup was unremarkable. At age 15, she presented to the ED with severe abdominal pain and emesis. Laboratory results showed leukocytosis and erythrocytosis and CT imaging revealed a 5 mm right renal calculus and prominence of the left renal pelvis and ureter to the pelvic brim; an obstructive process could not be ruled out. In clinic the following day, physical exam was inconsistent with reported flank pain, leukocytosis was attributed to recent respiratory infection, and the she received NSAIDs for mittelschmerz. At age 16, she presented to the ED with severe left lower quadrant pain radiating to the flank, and 7 bouts of emesis. Laboratory results were remarkable for hypokalemia, leukocytosis, and hematuria. Ultrasound at the time showed mild left sided hydronephrosis, and she was treated symptomatically for kidney stones. At age 18, she was seen at the ED with an identical presentation to her previous visit and again was treated symptomatically. At age 19, she received another non-contrast CT scan, which revealed no abnormality, and a urology referral because of abdominal pain. CT urogram revealed a dilated left proximal ureter with a long tubular filling defect extending 18cm from the proximal to distal ureter. There was no hydroureteronephrosis, however CT urogram did reveal a solitary 2mm left lower pole renal calculus. There was no delayed nephrogram or other

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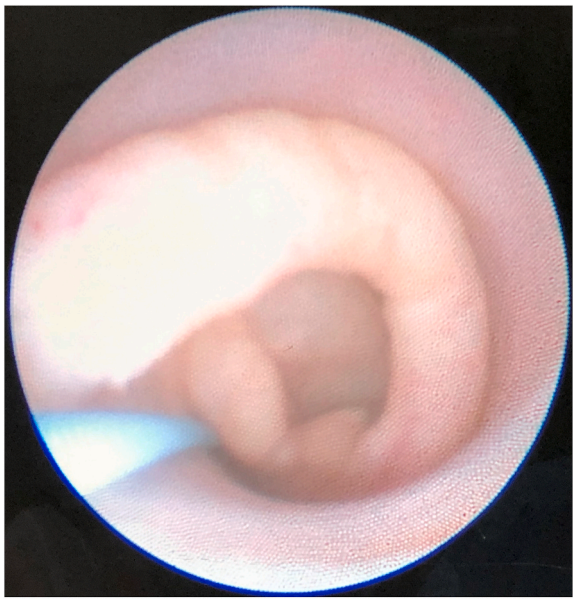

Fig. 1. Ureteroscopic photograph of polypoid mass in the proximal left ureter, compatible with fibroepithelial polyp.

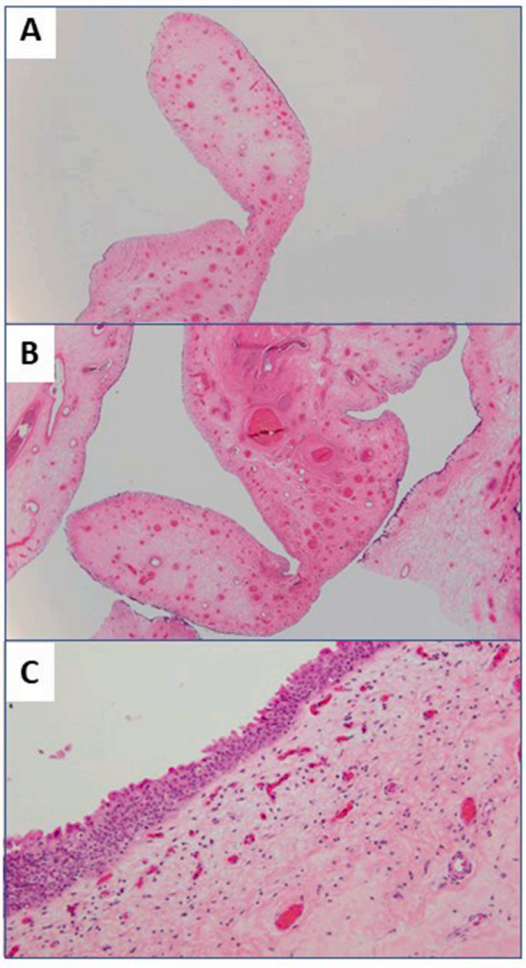

Fig. 2. (A) Polypoid fragment of fibrovascular tissue, 4x, H&E. (B) Focus of ectatic blood vessels in a fibrovascular core. 4x, H&E. (C) Normal urothelium overlying fibrous stroma with numerous dilated blood vessels, 20x, H&E.

indication of renal dysfunction. Subsequent ureteroscopy showed a free-floating, cylindrical polypoid mass that was adherent to the proximal left ureter, and extending into the distal ureter (Fig. 1). There was no stricture or other ureteral abnormalities noted. Ureteroscopic biopsy of the mass revealed benign subepithelial tissue. The patient ultimately elected robotic excision of the mass. Intraoperatively, a 2.0 cm segment of the polyp was found almost circumferentially adherent to the proximal ureter and was unable to be dissected from healthy ureter. The polyp required excision of the ureter followed by uretero-ureterostomy. The final histologic diagnosis was FEP of the ureter (Fig. 2). At two month follow up, the patient reported no recurrent symptoms, and renal imaging showed no hydronephrosis or ureteral abnormality.

Discussion

Fibroepithelial polyp should be included in the differential diagnosis of hematuria and flank pain to avoid delay in treatment and renal dysfunction, especially in young patients. Non-contrasted CT scan cannot confirm the diagnosis. While contrast ureterography with long segment filling defect is suggestive, ureteroscopy allows visual confirmation and biopsy to rule out carcinoma, as was the case here. Malignant histology like increased mitoses, or epithelial thickening and atypical differentiation, are not present in FEP.

To our current knowledge, no case series evaluates the efficacy and outcomes of robotic/laparoscopic versus endoscopic management of FEP of the ureter. However, in this case we applied the principles of ureteral stricture and ureteral pelvic junction obstruction, which we believe are appropriate. For small ureteral polyps, endoscopic resection can be attempted with either electrocautery or laser resection. While the endoscopic approach may be less invasive, risk of treatment sequelae such as stricture are increased compared to open or laparoscopic excision and ureteral reconstruction.[5]

During surgical planning, several patient factors should be considered. In this patient, pre-operative evaluation revealed a relatively long, adherent segment of polyp to the proximal ureter. The inward growth of the polyp decreased luminal diameter such that the ureteroscope could not be advanced in to the renal pelvis without mechanical dilation. Location of the adherent segment should be confirmed with ureteroscopy as proximal polyps may be more amenable to robotic/laparoscopic excision, whereas distal lesions may provide opportunity for endoscopic management. The robotic approach offers several advantages compared to endoscopic management including improved ability for complete resection, and a more complete specimen for pathologic analysis. Intraoperative frozen section may be considered if there is concern for malignancy, which can aid in decision for reconstruction versus need for more radical intervention. However, if pre-operative pathology is obtained, this step may be omitted as FEP does not possess malignant potential. For large masses or significant ureteral narrowing or concurrent stricture disease, the robotic/laparoscopic approach permits the ability to reconstruct the ureter following resection. Because this patient's polyp was relatively large, had a long adherent segment that was located in the proximal ureter, a robotic approach was chosen, and the ureter was reconstructed by uretero-ureterostomy.

Conclusion

Although rare and benign, patients with FEP of the ureter can endure significant discomfort and increased risk for renal dysfunction after prolonged periods of misdiagnosis. Diagnostic confusion arises because the symptoms of FEP resemble those of renal stones or UTI, which may supervene. Finally, without employing ureteroscopy or ureterogram the diagnosis is challenging. This underscores the importance of continued reporting of these cases. However, recurrence is low and definitive treatment is readily available with both endoscopic and robotic techniques.

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