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Endoscopic Removal of a Long Fibroepithelial Polyp of the Ureter in an Adolescent

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Abstract

Fibroepithelial polyps (FEPs) of the ureter are a benign outgrowth of tissue from the ureteral wall that has mesodermal origins. While the highest incidence of FEPs occurs in adults, these lesions have been reported in the pediatric population in association with ureteropelvic junction obstruction and as a solitary cause of flank pain, hydronephrosis, and hematuria. The purpose of this case report is to discuss the origins of large ureteral fibroepithelial polyps as a cause of ureteral obstruction, and to demonstrate that despite being long, space-occupying lesions, they can be safely resected in the pediatric patient with ureteroscopy alone.

Keywords

endoscopic removal; ureter; fibroepithelial polyp

Introduction

A fibroepithelial polyp (FEP) is a proliferation of urothelial-lined hamartomatous elements that embryologically originates from the mesoderm. FEPs are quite rare in the pediatric population and are considered benign, with derivation from mesenchymal tissue as opposed to the epithelial tissue that is associated with malignant transitional cell and squamous cell tumors [1,2]. A FEP typically consists of urothelial-lined connective tissue around a fibrovascular core that contains collagen, smooth muscle, and blood vessels [3]. The highest incidence of FEPs typically occurs during the 3rd and 4th decade of life. FEPs typically occur unilaterally, however metachronous cases and bilateral cases have been reported in several series in the literature [4]. The majority of FEPs are noted in males (89%) and more commonly involve the left ureter (67%) [5,6]. In the pediatric urology literature, FEPs are most commonly noted in the proximal ureter (73.3%) and are many times localized to the ureteropelvic junction (UPJ) either prior to or during a pyeloplasty [7-9]. In this report, we describe the diagnosis and surgical management of a pediatric patient with a unilateral FEP.

Case Report

A 14-year-old African American male was referred to pediatric urology with complaints of right flank pain and an unknown soft tissue lesion in his right ureter. Over the three months prior to referral, the patient developed intermittent right flank pain with occasional nausea and emesis. There was no history of fevers, urinary tract infections, hematuria or other urinary complaints. An outside emergency

room ordered a computed tomography (CT) scan to evaluate for renal stones and appendicitis. On the contrasted scan, right-sided hydroureteronephrosis and a filling defect in his right ureter was noted. There was no lymphadenopathy or other masses detected. The patient was referred at this time for workup and possible removal of the ureteral lesion.

The patient described his pain as intermittent with occasional severe colicky episodes. His medical and surgical history was otherwise unremarkable. There was no family history of genitourinary or renal anomalies. His physical examination and vital signs were age-appropriate and normal with a blood pressure of 114/76. His urinalysis demonstrated microscopic hematuria. A CT scan demonstrated a soft tissue density filling his right ureter on multiple cuts of the scan starting from the pelvic brim and extending down to the ureterovesical junction (UVJ). (Figure 1)In order to better characterize the lesion's extent and to facilitate operative planning, an intravenous pyelogram (IVP) was performed. The IVP demonstrated no hydronephrosis, however an abrupt dilation of the right ureter at the pelvic brim with a filling defect approximately 8cm in length coursing toward the UVJ was present. A rotational abnormality of the contralateral renal unit was incidentally noted (Figure 2).

Treatment and Outcome

Three treatment options were presented for consideration of removal of this soft tissue mass: 1) ureteroscopic resection; 2) robotic ureterotomy with removal of the mass; 3) open surgical excision. The patient and family elected to undergo an attempted endoscopic resection of the mass. The patient was brought to the operating room and placed in the dorsal lithotomy position after induction of anesthesia. A 0.035cm guide wire was passed to the kidney under fluoroscopic guidance. A ureteral access catheter was inserted into the distal ureter (already dilated from the presence of the mass) and the mass was drawn into the sheath. The mass was very long, redundant, and had the consistency of a polyp, as it was covered in mucosa and free-floating. The stalk of the mass emanated from the medial wall of the ureter around the pelvic brim. A holmium laser fiber through a semi-rigid pediatric ureteroscope was utilized to separate the stalk of the mass completely off of the ureteral wall after failed attempts to snare the stalk with various basket extractors. A basket was then used to extract the excised mass in its entirety. Repeat uretersoscopy revealed complete excision of the mass, an intact ureteral wall, and no evidence of additional lesions throughout the entire ureter. A JJ stent was then placed and confirmed in proper position with fluoroscopy.

The mass measured 8.2 x 1cm and had the consistency of a polyp. (Figure 3) Final pathology confirmed a benign FEP. The JJ stent was removed by string extraction one week later and an ultrasound six weeks following the procedure revealed no evidence of recurrence and complete resolution of all hydroureteronephrosis. Since the time of the procedure, the patient has remained asymptomatic with no symptoms of urinary tract infection, flank pain, or hematuria.

Discussion

FEPs in the pediatric urologic population present a diagnostic as well as a treatment challenge. Hydronephrosis may or may not be present on ultrasonographic imaging at presentation. If the FEP is located in the distal ureter there may be no findings at the renal level, so the ureter must be imaged all the way down to the bladder, which can be difficult in the adolescent patient. Careful attention to the child's

symptoms such as pain and hematuria should prompt a high level of suspicion and further investigation to rule out a FEP as a potential cause. In this case, the lesion was noted because flank pain prompted an emergency room physician to obtain a CT scan in an effort to rule out a ureteral stone or appendicitis. Ultrasound and possible excretory urography, however, would be the preferred method of detecting these ureteral abnormalities.

In a review of the literature, FEPs that are characterized as large or giant in the pediatric population exist in a range from 5cm to 9cm, with one report of a 15cm long FEP. The treatment of choice based upon a review of these cases is heavily laden toward excision, either with open, laparoscopic, or robotic techniques. Many of these were performed in this manner as they were done concomitantly with a pyeloplasty as the polyp originated around the UPJ [10-12]. Ureteroscopic resection is generally viewed as difficult in the pediatric population due to the small diameter of the ureter. The length and redundancy of these giant FEPs causes difficulty getting to the origin of the stalk of the polyp in a safe fashion. The main advantage of ureteroscopic resection is that it leaves the ureter in continuity and without disruption of its blood supply. There also exists the theoretical advantage that ureteroscopic resection may lead to less scar tissue formation or strictures.

In this case, we exploited the preexisting distal ureteral dilation to allow placement of a ureteral access sheath. The lesion was drawn into the sheath and using semi-rigid ureteroscopy we were able to navigate to the origin of the FEP with only minimal ureteral trauma. The lesion was excised from the wall of the ureter using a holmium laser and extracted with a basket through the sheath, which also provided access back to the origin in case significant hematuria occurred after the excision. The case was uncomplicated and the 8.2cm lesion was successfully removed in its entirety without evidence of recurrence thus far during follow-up.

Ultimately, FEPs of the ureter are rare in the pediatric population, but remain a potential cause of UPJ obstruction, hydronephrosis, flank pain and hematuria. Careful imaging when a suspicion exists should be performed to rule out FEP as a cause of these symptoms. When possible, ureteroscopic resection should be considered by pediatric urologists as a possible first line intervention when the lesion is not associated with a UPJ obstruction.

Figures

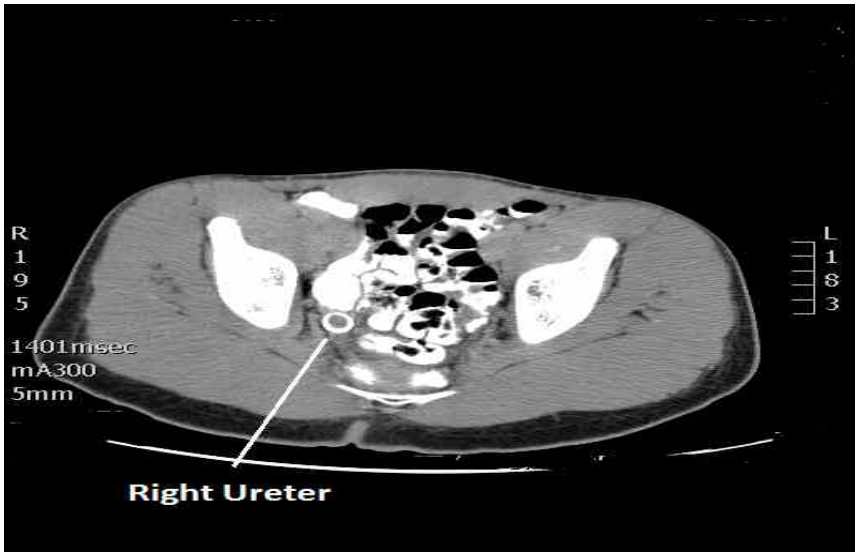

Figure 1: CT scan demonstrating a large filling defect in the mid right ureter just below the level of the pelvic brim

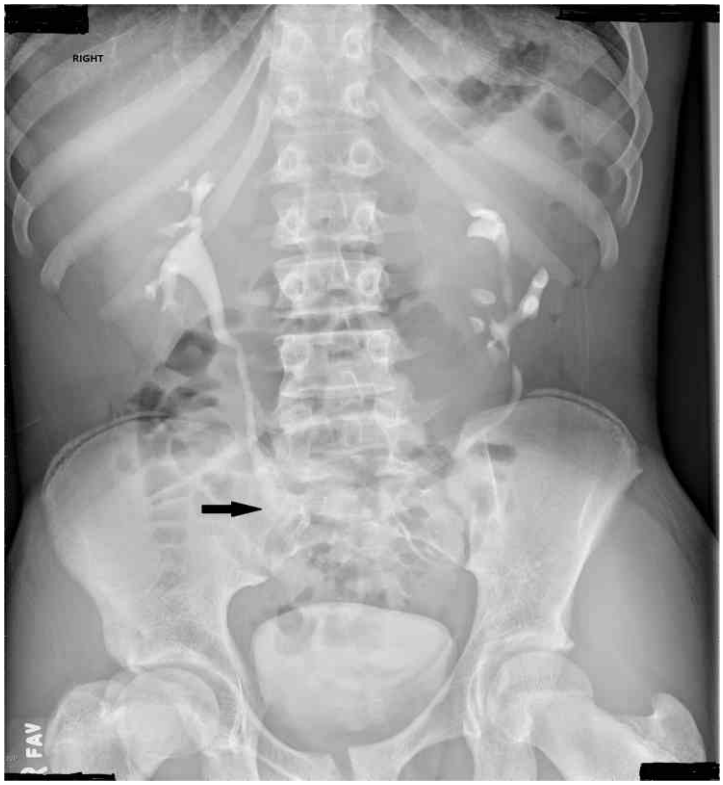

Figure 2: IVP imaging demonstrating ureteral dilation and a filling defect in the distal right ureter just below the level of the iliac crest

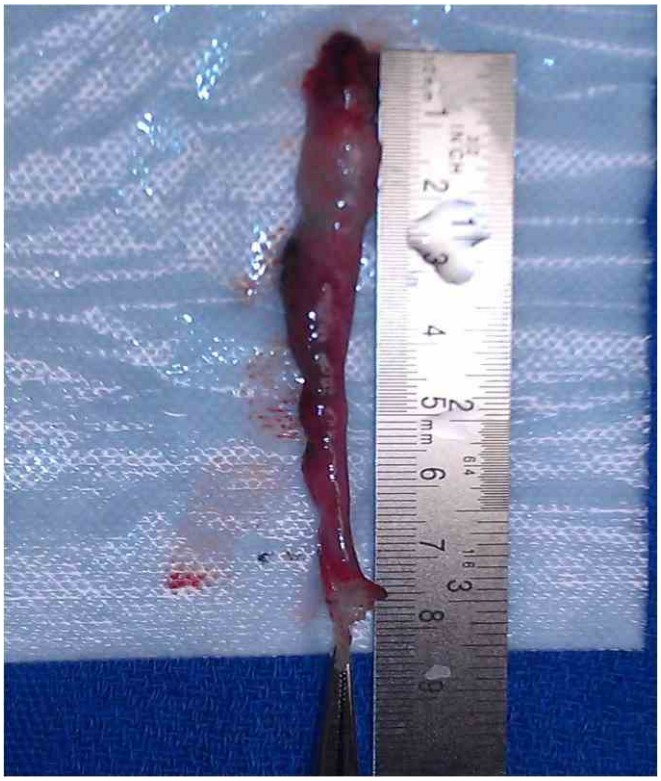

Figure 3: Photograph of the 8.2 x 1cm fibroepithelial polyp of the ureter removed in its entirety from a completely endoscopic approach

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