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Fibroepithelial polyp causing urethral obstruction: diagnosis by cystourethrogram

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Abstract

Fibroepithelial polyps of the urethra are rare benign tumors that predominantly affect males in childhood or adolescence. In this report, we present a case of a 3-year-old boy in acute urinary retention with a urethral fibroepithelial polyp manifesting as a large filling defect on voiding cystourethrogram and successfully managed endoscopically with transurethral resection.

BACKGROUND:

Fibroepithelial polyps of the urethra are rare benign tumors that predominantly affect males in childhood or adolescence [1]. These polyps may cause urinary retention or hematuria and commonly arise from the verumontanum or posterior urethra [2]. Aside from the urethra, fibroepithelial polyps can occur anywhere in the urinary tract arising from the urothelium, and this sometimes causes ureteropelvic junction obstruction [3]. Voiding cystourethrogram (VCUG) may demonstrate a filling defect causing urethral obstruction [4]. Further workup and management may involve cystourethroscopy and endoscopic transurethral resection [5, 6]. In the present report, we present a case of a 3-year-old boy who presented with intermittent acute urinary retention found to have a large urethral fibroepithelial polyp manifesting as a filling defect on VCUG and successfully managed with transurethral resection

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CASE REPORT:

A 3-year-old previously healthy boy initially presented to an outside emergency department for evaluation of abdominal pain and one-day of decreased frequency of wet diapers. Physical examination revealed mild abdominal discomfort but was otherwise documented as normal. The outside facility chose to perform a non-sedated computed tomography (CT) examination of the abdomen and pelvis with intravenous contrast to assess for acute appendicitis. Of note, an abdominal ultrasound would have been a more appropriate initial examination that avoided ionizing radiation in accordance with the American College of Radiology appropriateness criteria [7]. The CT examination demonstrated a moderately distended urinary bladder, a normal CT appearance of the appendix, and was otherwise normal. There was no evidence of hydroureteronephrosis or other anomalies of the genitourinary system (Figure 1). An in-and-out bladder catheterization was performed, which evacuated 175 mL of urine and relieved the patient's abdominal discomfort. Urinalysis was obtained and normal; the patient was subsequently discharged. The next day, the patient presented again to the outside emergency department again with similar lower abdominal pain and new-onset nausea and vomiting. Bladder catheterization was performed and evacuated 440 mL of urine, and an indwelling foley catheter was left in the bladder. Urinalysis was positive for > 5 white blood cells per high-powered field and urine culture was eventually positive. The patient was started on antibiotics for urinary tract infection, and the patient was discharged with the Foley in place and referred to pediatric urology. VCUG was also requested for further evaluation and was performed 5 days after the initial presentation to the outside facility that prompted the CT examination.

At VCUG, the initial filling fluoroscopic spot image demonstrated an oval filling defect adjacent to the inflated Foley balloon at the bladder neck (Figure 2A). The Foley balloon was deflated, contrast instillation ensued, and the oval filling defect persisted through distention of the urinary bladder in multiple projections (Figure 2B-D). The patient was unable to void, however, and there was faint opacification of the posterior urethra adjacent to the filling defect, suggesting an obstructive process (Figure 2D). No reflux or bladder contour abnormality was noted.

Given this filling defect causing partial urethral obstruction, the patient was taken to the operating room for direct visualization and further management. Flexible cystourethroscopy was performed using a 7-French scope. On advancement into the bladder, retroflexion of the scope demonstrated a large, approximately 3.5 × 1.3 cm polyp arising from a stalk emanating from the verumontanum (Figure 3A). The polyp was smooth walled and had a benign appearance. Single ureteral orifices were noted bilaterally. The remainder of the bladder was normal. Transurethral resection was performed with an 11-French rigid resectoscope by amputating the polyp at its stalk using monopolar electrocautery, grasped using 3-French alligator graspers, and removed out of the patient's urethra (Figure 3B). No urethral catheter was left in place, and the patient was discharged home the same day. Surgical pathology revealed a benign fibroepithelial polyp (Figure 4). At follow-up, the patient had normal urinary function and was at baseline health.

DISCUSSION

Urethral fibroepithelial polyps are lesions typically lined with urothelium with various benign internal architecture [8]. They can arise anywhere in the urinary tract and have been implicated in some cases of ureteropelvic junction or upper tract urinary obstruction. These polyps may be congenital, although the etiology is a subject of debate. In reported cases, patients are often children or adolescence who present with varying lower urinary tract symptoms and may present with hematuria [5, 6]. Fibroepithelial polyps may rarely present in adults either symptomatically or as an incidental surgical pathology finding – the latter has been reported in cases of prostatectomy specimens [8].

VCUG can help facilitate diagnosis of de novo acute urinary retention. The Foley balloon should be deflated, as it may mimic filling defects in the urethra [9]. In the present case, the balloon was not initially deflated as the Foley catheter was indwelling rather than inserted for the purposes of the imaging examination. The differential diagnosis of a urethral filling defect includes ureterocele, persistent müllerian remnant [10], foreign body, or fibroepithelial polyp causing posterior urethral obstruction.

Gleason and Kramer [5] presented a retrospective cohort spanning 35 years at a single center that included 16 pediatric patients with genitourinary polyps. The mean age at presentation was 8.9 years and nearly all patients were males (15 of 16; 94%). Twelve of these 16 patients had urethral polyps and presented either with obstructive symptoms or hematuria. In 5 patients, VCUG demonstrated a filling defect in the posterior urethra (the authors did not specify how many patients underwent VCUG). All polyps were managed with transurethral resection. The origin of the polyp was the verumontanum in 9 patients and the posterior urethra in the remaining 3 patients. Akbarzadeh et al. [6] presented a more modern series of congenital urethral polyps in 14 boys and 4 girls. In 17 of the 18 cases, the polyps were successfully managed with transurethral resection. In follow-up ranging from 3 to 17 years, the authors reported no suspected recurrences following resection. Six patients had concurrent vesicoureteral reflux and few patients had a concurrent inguinal (three patients) or umbilical (two patients) hernia. VCUG was used in their diagnostic evaluation but the authors do not detail imaging findings or if every patient underwent VCUG. The study proposed a clinical symptom triad of urinary retention, hematuria, and urinary tract symptoms; of note, hematuria was not present in the case at hand but was present in 14 of the 18 patients in the reference study [6]. It is important to note that a fibroepithelial polyp can present as an interlabial mass with vaginal bleeding in girls. In one retrospective cohort of 12 females with a mean age of 21.5 months who all presented with an interlabial mass with intermittent vaginal bleeding, 7 patients had surgically confirmed fibroepithelial urethral polyps and the remaining 5 had rhabdomyosarcoma of the vagina or urethra [11].

In conclusion, we present the radiologic and surgical findings of a fibroepithelial urethral polyp arising from the verumontanum which manifested as a filling defect on VCUG resulting in partial urethral obstruction and de novo acute urinary retention in a previously healthy male child. This rare, male-predominant benign lesion is an important consideration in the differential diagnosis of bladder neck filling defects at VCUG and have excellent outcomes with transurethral resection.

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Highlights

- Urethral fibroepithelial polyps are rare benign tumors.
- Voiding cystourethrogram may demonstrate filling defect in posterior urethra.
- Adolescent males and younger males are most frequently affected.
- Treatment is with endoscopic transurethral resection

Figure 1.

Contrast enhanced axial CT image (A) with coronal (B) and sagittal (C) reconstructions demonstrate a moderately distended urinary bladder with a normal CT appearance of the kidneys. There was no CT correlate to the filling defect at the bladder neck and posterior urethra seen on voiding cystourethrogram.

Figure 2.

Selected images from voiding cystourethrogram. Initial filling frontal fluoroscopic spot image (**A**) shows a filling defect adjacent to the Foley catheter balloon. The balloon was deflated, and this oval filling defect persisted (**B**). On subsequent distended views (**C and D**), this filling defect persisted in multiple obliquities. The patient was unable to void, but upon attempted micturition, there was mild filling of the posterior urethra (**D**), suggesting partial obstruction by this filling defect. The balloon was re-inflated at the end of the procedure.

Figure 3.

Intraoperative endoscopic and photographic views of the urethral fibroepithelial polyp. **(A)** Retroflexed cystoscopic view looking down from the bladder dome to the bladder neck with the large polyp emanating from the posterior urethra and clearly obstructing the bladder neck. **(B)** Photograph following removal of the resected urethral polyp, which was removed transurethraly with 3-French alligator graspers.

Figure 4. (A) Polypoid morphology characteristic of fibroepithelial polyp at 2× magnification. (B, C) Bland epithelial lining and stroma with dilated/congested vessels at 10× and 20×, respectively.