

A Rare Case in Pediatric Urology: Coexistence of Congenital Anterior Urethral Diverticulum and Posterior Urethral Valve

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Abstract

Anterior urethral diverticulum (AUD) is considered a rare cause of urinary obstruction in children, and its association with posterior urethral valve (PUV) is also very rare. We presented our approach with the current literature in a 6-month-old male patient with coexistence of AUD and PUV. With early diagnosis and successful approach, we prevented the development of upper urinary tract damage and urinary tract infection.

Keywords: Anterior urethral diverticulum, pediatric urology, posterior urethral valve, urinary

Introduction

Anterior urethral diverticulum (AUD) and posterior urethral valve (PUV) are very rare congenital anomalies that are associated with various symptoms (1). AUD might lead to bladder outlet obstruction in children presenting with cystic dilatation in the anterior urethra. However, PUV represents membranous folds causing obstruction in the posterior urethra.

The presentation of such urethral anomalies is mainly associated with patient age and severity of the obstruction (2). In diagnosis, voiding cystourethrography (VCUG) and urethroscopy are widely used to evaluate urethral anatomy and simultaneous pathologies (3). Treatment of patients depends on voiding symptoms, upper urinary tract changes and diverticulum size (4).

Herein, we present a rare case of a male infant with AUD and PUV. Written informed consent was obtained from the parents of the patients.

Case Presentation

A 6-month-old male patient was admitted to our clinic with dribbling of urine and frequent urinary tract infection.

In physical examination, a normal external urethral meatus, adequate-sized bilateral testicles placed in the scrotum, and swelling of the ventral urethra were detected. In the urinary system ultrasonography, the bilateral kidney parenchyma was

measured as normal. The left kidney antero-posterior (AP) diameter was 8 mm, the right kidney AP diameter was 7 mm, the bladder lumen was trabeculated, and the bladder wall thickness was 5 mm. The serum creatinine level was 0.34 mg/dL. In complete urinalysis, nitrite was positive in 1394 leukocytes, and leukocyte esterase was +3. Urine culture yielded >100,000 CFU *Pseudomonas aeruginosa*.

Subsequent to treatment of urinary tract infection, voiding VCUG was performed, which revealed dilatation in the anterior urethra, elongated and wide posterior urethra, and trabeculated bladder wall (Figure 1).

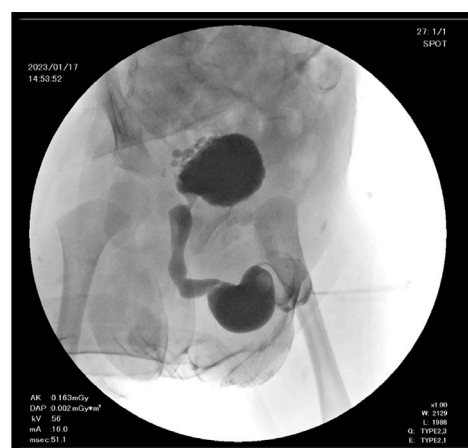


Figure 1. Voiding cystourethrography

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Cystourethroscopy was planned to identify potential urethral obstructive causes (Video 1). During the operation, large sized (4*2 cm) diverticulum in the ventral aspect of the anterior urethra, type 1 PUV, trabeculated bladder, and normal-shaped and placed ureteral orifices were observed (Figures 2 and 3). PUV ablation with cold knife, open diverticulectomy, and urethroplasty were performed in the same session, and an 8-Fr Foley catheter was placed (Figure 4).

No additional pathological findings were detected during the clinical follow-up. On 7th postoperative day, urethrography was performed and revealed no extravasation or dilatation; therefore, the Foley catheter was removed (Figure 5). The patient was discharged with prophylactic amoxicillin 10 mg/kg per day prophylaxis on the 10th day.



Figure 2. Posterior urethral valve

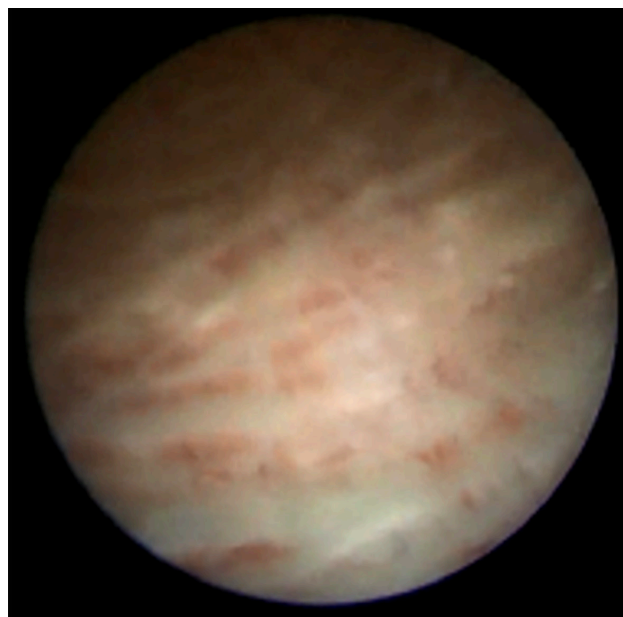


Figure 3. Trabeculated bladder

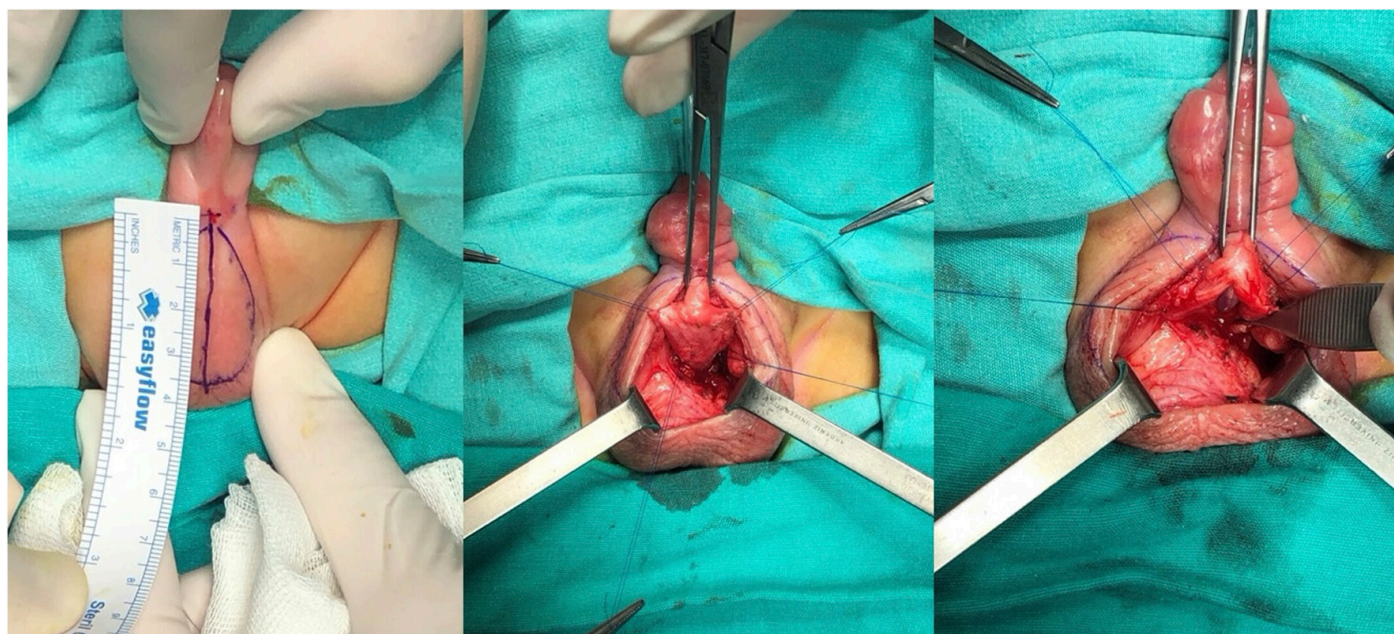


Figure 4. Open diverticulectomy



Figure 5. Seventh postoperative day

At 8 months after the procedure, the patient had normal urine calibration and no urinary tract infection during the postoperative period.

Discussion

AUD may be detected all along the anterior urethra but is more commonly located between the bulbous and penile urethra. The etiology of this condition remains unclear. It has been suggested that the lack of a corpus spongiosum results in urethral dilatation, leading to a diverticulum (5). A diverticulum typically appears as an outpouching from the ventral wall of the urethra and has a proximal and distal rim (6).

Some children may present antenatally with antenatal ultrasound but mostly present postnatally with lower urinary tract dribbling of urine, poor urinary stream, and urinary tract infection. In the long term, renal failure and bladder trabeculation may occur due to severe bladder outlet obstruction in large diverticula (7,8).

The clinical characteristics of AUD vary with age. Patients may present with urosepsis, renal failure, or swelling on the ventral aspect of the penis (9). According to the literature, AUD has been shown to be associated with urologic pathologies, such as vesicoureteral reflux, anterior urethral valve, and penile torsion (10). PUV is the most common cause of bladder outlet obstruction in male patients. The embryological defect leading to the development of PUV is not known. Many authors believe the anomaly is caused by abnormal integration of the Wolffian ducts into the urethra, whereas others say it is a result of persistence of the cloacal membrane (11,12).

The combination of these two pathologies is extremely rare (2). VCUg and urethroscopy are helpful in detecting such urethral pathologies (3).

Treatment of congenital AUD depends on the size and degree of obstruction. There are various treatment options, including nonsurgical follow-up, endoscopic transurethral procedures, and open surgery, in the literature.

AUD and PUV coexistence may cause urinary retention, infection, and upper urinary tract damage. Cystourethroscopy and VCUg are crucial diagnostic tools for the evaluation of urethral anomalies. Clinicians should consider a total systematic urinary tract evaluation in order not to underestimate the coexistence of such pathologies.



Video 1.

Ethics

Informed Consent: Written informed consent was obtained from the parents of the patients.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.E.C., M.U., Concept: O.Ö., A.E.C., Design: M.U., Data Collection or Processing: O.Ö., M.U., Literature Search: A.E.C., Writing: O.Ö.

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References

1. Tran CN, Reichard CA, McMahon D, Rhee A. Anterior urethral valve associated with posterior urethral valves: report of 2 cases and review of the literature. *Urology*. 2014;84:469-471. [\[Crossref\]](#)
2. Keihani S, Kajbafzadeh AM. Concomitant anterior and posterior urethral valves: a comprehensive review of literature. *Urology*. 2015;86:151-157. [\[Crossref\]](#)
3. Bates DG, Coley BD. Ultrasound diagnosis of the anterior urethral valve. *Pediatr Radiol*. 2001;31:634-636. [\[Crossref\]](#)
4. Gupta DK, Srinivas M. Congenital anterior urethral diverticulum in children. *Pediatr Surg Int*. 2000;16:565-568. [\[Crossref\]](#)
5. Rawat J, Khan TR, Singh S, Maletha M, Kureel S. Congenital anterior urethral valves and diverticula: diagnosis and management in six cases. *Afr J Paediatr Surg*. 2009;6:102-105. [\[Crossref\]](#)
6. Singh SK, Ansari M. Congenital anterior urethral diverticulum. *Turk J Urol*. 2014;40:182-184. [\[Crossref\]](#)
7. Ortip SA, Gonzalez R, Williams RD. Diverticula of the male urethra. *J Urol*. 1980;124:350-355. [\[Crossref\]](#)

8. Jain P, Prasad A, Jain S. Are anterior urethral valve and anterior urethral diverticulum two separate entities: A radiological and endoscopic review. *J Pediatr Urol.* 2021;17:101.e1-101.e9. [\[Crossref\]](#)
9. Paulhac P, Fourcade L, Lesaux N, Alain JL, Colombeau P. Anterior urethral valves and diverticula. *BJU Int.* 2003;92:506-509. [\[Crossref\]](#)
10. Graham SD Jr, Krueger RP, Glenn JF. Anterior urethral diverticulum associated with posterior urethral valves. *J Urol.* 1982;128:376-378. [\[Crossref\]](#)
11. Mohamed AO, Eradi B, Owen A, Rajimwale A. Rare associations with posterior urethral valves. *Case Rep Urol.* 2021;2021:6647692. [\[Crossref\]](#)
12. Zia-ul-Miraj M. Congenital anterior urethral diverticula in children. *Pediatr Surg Int.* 1999;15:567-569. [\[Crossref\]](#)