



## Case Report

# Case report of pediatric anterior urethral diverticulum arising at the bulbar urethra

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## ABSTRACT

Congenital anterior urethral diverticulum at the bulbar urethra is a rare entity. Accumulation of urine within the diverticulum causes obstruction to the free flow of urinary stream and resultant symptoms such as difficulty in micturition, dribbling of urine, and urinary tract infection. Correct recognition of this condition is important to initiate early surgical treatment. Micturating cystourethrogram and ultrasonography are imaging modalities of choice for identification and surgical planning of this entity.

**Keywords:** Congenital anterior urethral diverticulum, Micturating cystourethrogram, Pediatric urogenital imaging

## INTRODUCTION

A rare cause of obstructive uropathy in male children are congenital urethral diverticula.<sup>[1]</sup> The location of these diverticula can be anywhere along the course of urethra, more commonly in the mid or distal penile portion and infrequently at the bulbar urethra. The symptoms that result due to this entity are difficulty in micturition, dribbling of urine and urinary tract infections.<sup>[2]</sup> There can be other causes of these symptoms in children, but correct recognition of urethral diverticulum, though a rare cause is crucial in order to treat these patients surgically. Radiology plays pivotal role in the identification and diagnosis of this condition. Micturating cystourethrogram (MCU) and ultrasonography are the imaging investigations of choice to correctly identify and aid in surgical planning of such cases.

## CASE REPORT

A 5-year-old male child presented with a soft, non-tender, translucent, and fluctuant swelling over the left posterolateral aspect of penis increasing in size during micturition [Figure 1]. It showed progressive decrease in size after micturition and on pressure. There was associated dribbling of urine post-micturition.

An ascending urethrogram and micturating cystourethrogram (MCU) were performed which revealed a saccular outpouching which showed filling and accumulation of contrast at the bulbar urethra [Figures 2 and 3].

Abdominal ultrasound showed that both kidneys were normal in size and position with no evidence of hydronephrosis or hydroureter. On local ultrasound examination, an anechoic

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**Figure 1:** On gross examination, a translucent and fluctuant swelling noted over the left posterolateral aspect of penis (black arrow) increasing in size during micturition.



**Figure 3:** Filling and accumulation of contrast within the saccular diverticulum on the left posterolateral aspect of bulbar urethra (black arrow) as seen on micturating cystourethrogram on lateral view.



**Figure 2:** Filling and accumulation of contrast within the saccular diverticulum on the left posterolateral aspect of bulbar urethra (black arrow) as seen on micturating cystourethrogram on anteroposterior view.

fluid collection was noted in communication with the true urethral lumen at the bulbar urethra.

A diagnosis of anterior urethral diverticulum was made based on the imaging findings.

A treatment plan of transurethral resection of the diverticulum was made. After taking consent and with appropriate patient preparation, transurethral excision of the diverticulum was performed. The residual bulbar urethral defect was repaired. The patient showed complete resolution of complaints after the surgery and no post-operative complications were seen.

## DISCUSSION

Congenital anterior urethral diverticulum (CAUD) in most cases is found in mid or penile part of male anterior urethra.<sup>[3]</sup> It is rare for CAUD to be in the bulbar part of urethra as reported in this case.

Children with this condition usually present with penile swelling on the ventral aspect,<sup>[4]</sup> difficulty in micturition, urinary dribbling, poor urinary stream, or urinary tract infections.<sup>[4]</sup> The mass is unattached to the overlying skin and non-tender and shows lateral mobility on clinical examination. On compression, urine will be seen dribbling out of the external meatus. The swelling is seen to be emptying and resolves gradually on completion of micturition.<sup>[5]</sup> All these clinical features correspond in the above reported case.

MCU is the imaging investigation of choice.<sup>[5]</sup> Transabdominal and local ultrasonography (USG) of the swelling are also useful in complete assessment of this condition as it aids in evaluation of the upper urinary tracts as well. Moreover, voiding USG can be a substitute to MCU in forming a diagnosis of CAUD.

The close differential diagnoses to this condition in male children could be, ectopic/ extravesical ureterocele<sup>[6]</sup> and Cowper's duct syringocele.<sup>[7]</sup> These conditions have been described and their differentiating features from urethral diverticula have been mentioned in Table 1.

## CONCLUSION

Congenital anterior urethral diverticulum (CAUD) is an infrequent cause of obstructive uropathy in male children.

**Table 1:** Differential diagnoses of anterior urethral diverticulum in male children.

Differential diagnosis	Definition	Differentiating imaging features from CAUD
Ectopic/extravesical ureterocele	Abnormal congenital dilatation of distal most portion of ectopic ureter inserting into the urethra	MCU and VCUG – Contrast filling of ectopic ureter opening into urethra with ureterocele, urethra, and bladder show normal appearance CT IVP – can demonstrate contrast opacification of ectopic ureter and ureterocele MR urethrography – demonstrates opening of ectopic ureterocele at urethra
Cowper's duct syringocele	Cystic dilatation of main duct of bulbourethral (Cowper's) glands	USG – cystic lesion at posterior or posterolateral aspect of posterior urethra MRI – midline T2WI hyperintense oval structure at penile base adjacent to ventral aspect of proximal bulbar urethra

CAUD: Congenital anterior urethral diverticulum, VCUG: Voiding cystourethrography, MCU: Micturating cystourethrogram, USG: Ultrasonography

The diverticulum can be located anywhere along the urethra. Though rare, it can also be seen arising at the bulbar urethra.

Presenting symptoms that could suggest this diagnosis are penile swelling on the ventral aspect, difficulty in micturition, urinary retention and dribbling or recurrent urinary tract infections.<sup>[8]</sup>

The primary imaging investigation of choice is micturating cystourethrogram (MCU). For complete assessment of the condition and to rule out other causes, transabdominal and local ultrasonography (USG) of the swelling can be done.<sup>[8]</sup> This aids in confirming the diagnosis, in evaluating the patient's upper urinary tracts and in planning of appropriate management.

#### Teaching points

1. Anterior urethral diverticulum presenting as a soft fluctuant translucent swelling over penis, with lower urinary tract symptoms is a rare congenital entity but should be suspected and treated early in children. The site of this diverticulum at bulbar urethra as reported in this case is a unique finding.
2. MCU is an investigation of choice for this condition. The precise diagnosis requires a careful delineation of urethral anatomy for planning surgical repair.

#### MCQs

1. Congenital anterior urethral diverticulum is most commonly seen at which part of the male urethra?
  - a. Prostatic urethra
  - b. Bulbar urethra
  - c. Membranous urethra
  - d. Penile urethra

Answer Key: d

2. What is the investigation of choice for congenital urethral diverticula?
  - a. Ultrasonography
  - b. MR urethrography

- c. Micturating cystourethrogram
- d. Radionuclide cystography

Answer Key: c

3. Which of the following is not a differentiating feature between Cowper's gland syringocele and anterior urethral diverticulum?
  - a. Location within the urethra
  - b. Treatment approach
  - c. Choice of investigations
  - d. T2WI hyperintensity on MRI

Answer Key: d

#### Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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#### Conflicts of interest

There are no conflicts of interest.

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