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Case Report

Congenital anterior urethral diverticulum: A case report

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ABSTRACT

Background: Anterior urethral diverticulum and valve are rare causes of lower urinary tract obstruction in children and cause recurrent urinary tract infections (UTIs).

Case Presentation: A 7-year-old male child presented with dribbling of urine and pain during micturition. RGU and MCUG showed a narrowed mouth diverticulum in the anterior urethral wall. He underwent laser fulguration of the posterior obstructing lip of the diverticulum which resulted in excellent urinary flow postoperatively.

Conclusion: Anterior urethral diverticulum and valve can be easily treated by valve fulguration using Laser of Bugbee with an excellent prognosis. It can avoid further deterioration of the upper tract with simple treatment.

Keywords: MCUG, Diverticulum, Valve fulguration

INTRODUCTION

The most common congenital anomalies in fetuses, neonates, and infants are those of urogenital tracts. [1] Anterior urethral diverticulum (AUD) is an uncommon cause of obstruction to urinary flow in children. They are classified as acquired or congenital in origin. Acquired diverticulum develops due to obstruction, infection, trauma, hypospadias repair, and prolonged catheterization. The congenital diverticulum accounts for only 10% to 20% of all diverticula of the anterior urethra. [2] Its clinical presentation depends on the child's age and the severity of the obstruction. [3,4] Herein, we report a case of congenital anterior urethral valve presenting with lower urinary tract symptoms.

CASE REPORT

A seven-year-old boy presented with dribbling of urine and pain during micturition. His history suggested poor urinary flow and straining during micturition since childhood. The symptoms were gradually increasing in severity over the last year. There was no history of trauma, catheterization, or any instrumentation. On examination, he had a soft abdomen with a non-palpable urinary bladder and during voiding, it was not associated with any swelling on the ventral aspect of the penis. Serum creatinine and urea were 0.6mg/dl and 21 mg/dl respectively. Retrograde Urethrography (RGU) and voiding cystourethrography (VCUG) were done for this patient. RGU showed a "narrow-mouthed" diverticulum arising from the ventral aspect of the bulbar urethral wall (Fig. 1). Uroflowmetry showed a box-shaped curve with a Qmax of 2.5 ml/sec and a flow time of 100 sec. VCUG showed dilation of the complete posterior urethra and proximal anterior urethra with a trabeculated urinary bladder. Vesicoureteral reflux (VUR) or diverticulum in the urinary bladder was not associated with this case.

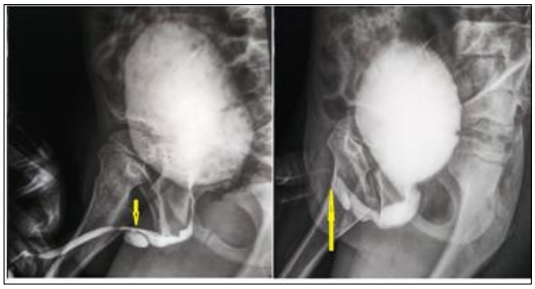

Figure 1: Narrow-mouthed" diverticulum arising from the ventral aspect of the bulbar urethral wall

Other systemic examinations like cardiac, respiratory, gastrointestinal, and musculoskeletal systems were

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normal in this case. The anterior urethral diverticulum causing valvular obstruction was diagnosed based on these RGU and VCUG findings. Under general anesthesia, a urethrocystoscopy was done. It revealed an out-pouching from the ventral wall of the bulbar urethra with the proximal lip and distal valvular lip of the diverticulum (Fig. 2). A 365-micron holmium-YAG laser fulguration was done in the same sitting and a 12 Fr Foleys catheter was placed. The Foley catheter was removed on the 3rd postoperative day, following which the boy had excellent urine flow without any signs of obstruction. The child was reviewed after 6 months. History revealed that his urinary flow was normal post-surgery. Uroflowmetry showed a Qmax of 18.3ml/sec and a flowtime of 27 sec (Figure 2B).

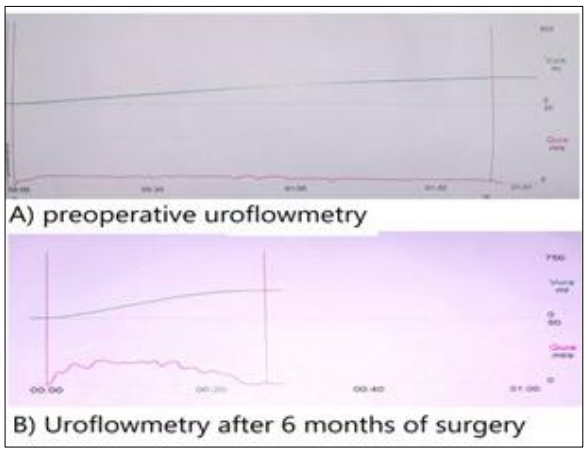

Figure 2: A) Preopertive Uroflowmetry B) Uroflowmetry after 6 months of surgery

DISCUSSION

The urethral diverticulum is an out-pouching of the urethra through the corpus spongiosum. The congenital anterior urethral diverticulum (CAUD) occurs most commonly in the ventral wall of the anterior urethra. The most common locations of the anterior urethral diverticula are bulbar urethra (40%), followed by penoscrotal (30%) and penile urethra (30). [5] In this case, the diverticulum was on the ventral aspect of the bulbar urethral wall. The distal lip of the diverticulum acts as a valve obstructing urinary flow in 30-40% of cases. [6]

Various etiology has been proposed for the diverticulum which may be due to the developmental abnormality of the urethral plate or periurethral gland dilation. It may also be due to urethral stricture in the intrauterine period or secondary to an anterior urethral valve. This leads to recurrent infections and urinary stasis, a stone may be found in the diverticulum.

Common clinical presentation includes recurrent urinary tract infections, poor urinary stream, pain during micturition, post-voiding dribbling, swelling at the penoscrotal junction during voiding of urine, or acute urinary retention.[7,8] There was no history of recurrent urinary tract infection in this case. As reported in many other cases, this case was also not associated with swelling in the penoscrotal region. [9] Many are associated with VATER anomalies, so a detailed evaluation of other systems is also important. Other system examinations were normal in this case.

Radiology plays an important role in diagnosis and planning management. VCUG is the most reliable radiological investigation. [10] It can show elongation or dilation of the posterior urethra, diverticulum or sacculation of the anterior urethra, thickening, and trabeculations of the bladder wall, hypertrophy of the bladder neck, and vesicoureteral reflux. It appears as a dilated proximal urethra and narrow distal urethra about an obstructed segment of the urethra on VCUG. “A urethral valve could be seen on RGU as a threadlike filling defect in the ventral wall. In MCUG it may be seen as a dilated urethra ending into a smooth bulge or a sudden change in diameter of dilated urethra.” [11] VCUG may also diagnose other associated anomalies apart from the diagnosis of the diverticulum. Thirty percent of cases have vesicoureteral reflux and about fifty percent develop upper tract deterioration. [12]

Treatment options include endoscopic surgery like incision or fulguration of anterior urethral valve or distal obstructing edge of the diverticulum with laser or Bugbee electrode and open diverticulectomy followed by urethroplasty. Diverticular stone can be fragmented using pneumatic lithotripsy or holmium laser.

To conclude, Anterior urethral diverticulum and valve are a rare diagnosis of lower urinary tract obstruction in children. They can be easily treated by valve fulguration with an excellent prognosis.

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