

Case Report

Congenital Diverticulum at the Proximal Part of Penile Urethra with Secondary Calculus

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Abstract

Voiding dysfunction and lower urinary tract symptoms (LUTS) in children due to congenital anomalies of urogenital system is common, but congenital anterior urethral diverticulum (CAUD) in male is very rare. Sometimes the problem is associated with anterior urethral valve. CAUD with secondary stone is rare. Here we report a case of a 12-year-old male child with obstructive symptoms. It was treated by excision of diverticulum, removal of stone and primary repair.

Key words: Voiding dysfunction; LUTS; CAUD; Secondary calculus

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Introduction

Many young children attending Outpatient Department of Urology with the complaints of voiding difficulties and other lower urinary tract symptoms are due to congenital anomalies of urethra. Among congenital anomalies of urethra causing bladder outflow obstruction and obstructive voiding dysfunction, anterior urethral diverticulum in male is rare.¹ Congenital anterior urethral diverticulum (CAUD) with secondary stone in the diverticulum is even rarer.² Moreover, exact embryology of development of diverticula in male anterior urethra is not fully understood.³ Most of the male children with CAUD present in their young childhood. In this article we are reporting a case of CAUD in penile urethra with secondary stone within it.

Case report

A 12-year-old male child presented with complaints of poor urinary stream for long time, dribbling of urine and swelling on the ventral aspect of penile urethra. Swelling was felt soft and cystic; when compressed it disappeared completely along with small amount of urine coming out through urethral

meatus. Measurement of swelling was 3 × 2 cm when examined in Urology outpatient clinic and a hard nodular structure was palpable at the root of penis during compression of the diverticulum (Fig 1). Urinalysis, routine blood count, blood urea nitrogen, serum creatinine were normal. Ultrasound of whole abdomen showed normal kidneys and urinary bladder. Ultrasonogram of scrotum and penis revealed a urethral diverticulum with secondary calculus at the root of the penis at ventral aspect of the swelling. Voiding cystourethrography (VCUG) revealed a large urethral diverticulum in the proximal anterior urethra adjacent to bulbar urethra and a calculus in the diverticulum (Fig 2). Urethrocystoscopic assessment revealed normal appearance of both ureteric orifices and intact bladder neck. In addition, there was an anterior urethral valve distal to the diverticulum and a stone in the diverticulum. Urethral meatus and penile urethra distal to the diverticulum were found normal. Patient was managed by open operative procedure. Diverticulum was opened by ventral midline incision over the swelling at penoscrotal junction (Fig 3). Stone was removed and redundant part of the diverticulum was excised and valve was incised in midline. A 12

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FR bi-channel Foley's catheter was introduced and balloon was inflated with 5 mL distilled water for continuous drainage. Refashioned urethra was closed with 5/0 vicryl running suture. Dartose fascia and skin were closed by interrupted sutures with 5/0 vicryl. A sheath drain was introduced and kept in situ during closure. A light compression dressing was applied at the end of the operation and was removed on 2nd post-operative day (POD) along with the drain. Patient was discharged on 3rd POD. Penile catheter was removed on 14th POD. Satisfactory voiding was observed after removal of catheter with uroflowmetry. Patient was satisfied with the cosmetic result after surgery and had no complaints of voiding up to six months after surgery.



Fig 1. Image of genitalia showing diverticulum at peno-scrotal junction



Fig 2. VCUG image showing urethral diverticulum



Fig 3. Per-operative image showing open diverticulum with stone inside

Discussion

Although congenital anomalies of urethra are common, congenital anterior urethral diverticulum (CAUD) in male is rare. Urethral diverticulum may be defined as a saccular or tubular dilated structure whose openings are in the urethra. Congenital urethral diverticulum may occur in males as well as females but more in females. In males both anterior and posterior urethra may be involved but most of the literatures state that CAUD is rare. CAUDs commonly arise from ventral wall of bulbar or penile urethra. Bulbar urethra is more commonly involved than penile urethra and penoscrotal junction is the commonest site involved. According to the type of opening, CAUD may be categorized as wide-mouthed, narrow-mouthed and megalourethra.⁴

Exact cause of the formation of CAUD is not clear. Various embryologic theories have been proposed – developmental defect causing weakness in corpus spongiosum, incomplete hypospadias, cystic dilatation of urethral glands, sequestration of epithelial rest, anterior urethral valve (AUV), ruptured syringocele of Cowper's duct etc. Some authors believe CAUDs and AUVs are same entities and others believe as different entities. Sometimes CAUD is associated with patent ductus arteriosus (PDA) and polydactyly but no genetic linkage or family inheritance has been established.⁵

Patients with CAUDs may present at any age (infancy to adulthood) but most commonly are diagnosed during young childhood and adolescence. The average age of diagnosis is 13 years. Patients usually presented

with LUTS predominantly obstructive variety along with a fusiform swelling in the penoscrotal area. Poor urinary stream and postmicturition dribbling of urine are almost always present. The swelling is usually saccular or fusiform in shape, soft in consistency and cystic in nature. Swelling usually subsides or reduces in size after voiding. Compression of the swelling leads to reduction in size along with drops of urine coming through the urethral meatus. Commonly the swelling is found at the ventral aspect of penile and bulbar urethra. The commonest site is penoscrotal. Sometimes it may be confused with congenital hernia or hydrocele in very young children or infants.⁶ Recurrent urinary tract infection and secondary stone formation, although rare, are among the secondary complications of CAUD. Single or multiple stones in the diverticula have been reported in literatures. If secondary stone develops, it can usually be felt as hard mass within the diverticulum during examination.

Routine investigations of urinary tract for LUTS are usually done for diagnosis of the disease. Ultrasonography, RGU and VCUG are usually enough for diagnosis of CAUD in males. Urethrocystoscopy is reliable for diagnosis and treatment of the lesion and should be performed in every case just before the definitive surgical treatment under anesthesia. MRI is considered as gold standard for diagnosis of urethral diverticulum especially in females but majority of CAUD in males do not require it for diagnosis and evaluation of the extent of the disease. Treatment should be individualized. Conservative treatment like milking and compressing of diverticulum after voiding may be enough in very mild form of diverticulum with no or few symptoms but not very useful in most patients. Endoscopic incision and valve ablation are usually effective in patients having congenital anterior urethral valve along with CAUD. Most patients

require surgery to correct the problem as excision of the redundant portion of the diverticulum is almost always required.⁷ Innovative surgical technique and modifications of the technique may be required as the disease is not common and no standard surgical technique is written in most literatures and books. Post-operative complications like wound infection, fistula formation and stricture may occur.

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